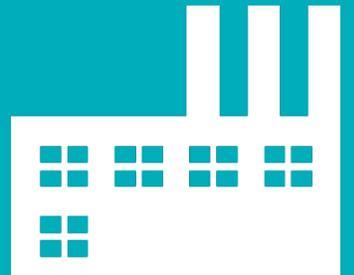




BPA ENERGY EFFICIENCY  
INDUSTRIAL  
NEW OPPORTUNITIES GUIDE



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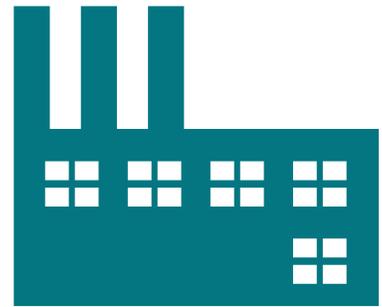
## Introduction

The Bonneville Power Administration, or BPA, energy-efficiency program is continuously evolving to meet Public Power's share of energy savings targets laid out by the Northwest Power and Conservation Council's Power Plan. Strategically, BPA also uses energy efficiency to address future energy-resource constraints in a cost-effective manner. To achieve these two goals, BPA periodically reviews program offerings. This Industrial New Opportunities Guide is a resource that utilities can use to help identify measures, programs and opportunities that support their energy efficiency programs. For more information on the complete suite of Industrial sector program components and offerings, please consult the [BPA Implementation Manual](#).



## Industrial Measures

The Industrial sector focuses on energy savings achieved through fixed pieces of equipment, buildings, or complexes that manufacture or store goods. Transportation and food production are examples of businesses that fall under the Industrial sector. The sector has one comprehensive third-party program, Energy Smart Industrial, or ESI, which is offered to BPA's public utility customers to help the region's industries achieve measurable and cost-effective energy savings. ESI provides services targeted at a diverse landscape of industrial facilities, project types and sizes, and technologies to utilities, end-users and contractors. Industries participating in the program include pulp and paper, food processing, wood products, high-tech manufacturing, cold storage, chemical processing, mining, and water and wastewater treatment. BPA has hired a third-party implementer to administer all aspects of the program. The ESI management team, with oversight from the BPA Commercial and Industrial sector team, manages the overall implementation of the ESI program contract.



## Sector Offerings

Each utility has an assigned Energy Smart Industrial Partner, or ESIP, who serves as a single point-of-contact for the utility and their industrial customers, and supports custom projects from inception to completion. ESIPs also provide technical expertise, ensure effective project-pipeline management, engage Technical Service Provider, or TSP, resources, and develop custom project proposals and completion reports.

To drive energy savings in the Industrial sector, ESI offers support for various site-specific energy-efficiency projects, including large retrofits and new construction.

## CUSTOM PROJECTS

ESI works closely with the industrial end-use customer to uncover energy savings opportunities. ESI then develops a Custom Project Proposal that includes the estimated energy savings, project costs, and a custom Measurement and Verification, or M&V, plan. The utility will create and submit the proposal to BPA for review and approval.

Once installed, a Post-Implementation M&V study is performed by ESI to calculate verified energy savings. A Custom Project Completion Report — which documents the verified energy savings, project implementation costs and performance incentives — is submitted to BPA for review and acceptance. Final payment from BPA to the utility is based on acceptance of the Completion Report.

Any measure not featured on the Unit of Energy Savings Measures List, or that does not have an associated calculator in the BPA Implementation Manual Document Library, can be submitted as a custom project. Individual projects must meet the cost-effectiveness requirements described in the BPA Implementation Manual.

## STRATEGIC ENERGY MANAGEMENT

Industrial customers can achieve significant reductions in energy consumption without the cost of major capital upgrades. ESI's Strategic Energy Management, or SEM, offer helps industries reduce energy intensity using a peer, cohort-driven approach to energy management and by providing organizational training, technical support for operations and maintenance, or O&M, improvements, and energy monitoring and reporting tools.

SEM promotes implementation of a structured, sustainable energy program that delivers consistent long-term results. Organizations successful in SEM have clear support from top management, a designated Energy Champion to lead implementation, and are willing to consider new methods and procedures to improve energy performance and reduce costs.

ESI offers several SEM cohorts throughout the region that focus on wastewater and other industries, and are always considering opportunities to develop new SEM cohorts.

### CASE STUDY

[City of Kennewick](#): Wastewater treatment plant saved 2.7 million kWh and \$150,000 through 2018.



# ENERGY PROJECT MANAGER

Large industrial customers often lack the staffing resources to identify, develop and implement energy-saving opportunities. The energy project manager component of BPA's Energy Smart Industrial program uses a structured process to help those customers overcome this resource barrier by providing co-funding and support.

An Energy Project Manager, or EPM, is an assigned industrial employee or contractor who is responsible for the implementation of a portfolio of electrical energy-efficiency projects, and the achievement of a savings goal based on reaching specific milestones during a 12 – 18 month period.

# LIGHTING

BPA's nonresidential lighting measures are offered via a Microsoft Excel-based, site-specific tool — the BPA Lighting Calculator. The lighting calculator offers a robust selection of deemed and calculated incentives for interior and exterior LED lighting.

The current versions of the lighting calculator are listed in the [IM Document Library](#) and the [Commercial/Industrial Lighting page](#). The lighting calculator can be customized by BPA's customers to include utility logos, utility-specific rates used to determine project payback/return on investment and customized incentives.

For assistance, please contact the BPA lighting team at [lighting@bpa.gov](mailto:lighting@bpa.gov), or the assigned ESIP.

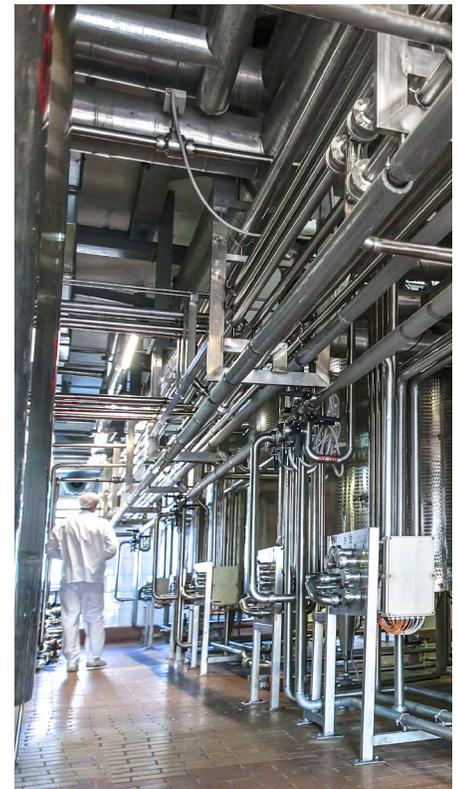
# PRESCRIPTIVE MEASURES

BPA offers a number of prescriptive measures targeting common industrial systems, including small compressor systems, high-frequency battery chargers, welder upgrades and water-system leak abatement. Each of these offers is supported by a calculator that greatly simplifies the energy savings and incentive calculation. While these offers are available outside the ESI program, it is on hand to support utility and end-user completion of these measures.

## CASE STUDIES

[Boise Cascade](#): Saving more than \$24,000 annually with air compressor energy upgrades.

[Pasco Processing](#): Refrigeration energy improvements are saving Pasco Processing more than 1.7million kilowatt-hours and \$60,000 annually.



# Sector Savings Overview

## INDUSTRIAL SAVINGS ACHIEVEMENT BY MEASURE TYPE

| MEASURE TYPES        | TYPICAL CONTRIBUTION |
|----------------------|----------------------|
| Custom               | 65%                  |
| Lighting             | 20%                  |
| Energy Management    | 15%                  |
| Other (Deemed, etc.) | 1%                   |

## TOP FIVE END-USES TARGETED FOR CUSTOM PROJECTS

1. Process Loads\*
2. Refrigeration
3. Motors/Drives
4. Compressed Air
5. HVAC

\*The Process Load end-use will vary significantly depending on the industry and product being produced at each facility. Examples include pulping machines at a paper mill or aeration pumps at a waste water treatment plant.



# Resources

The following resources are available to help utilities optimize their working relationships with BPA, program operations and other personnel to support utilities in their work to achieve better energy efficiency and savings.

## MARKETING MATERIALS

The ESI team works closely with utilities to perform direct outreach that engages industrial end-users. The primary marketing materials used by the ESI team are case studies that showcase project successes. ESI also offers two ways to recognize the achievements of program participants:

- **Big check ceremonies** may be available for significant projects or when large incentives are delivered. These ceremonies are planned in close collaboration between ESI, BPA and the local utility.
- **Project success posters** are developed to help provide highlights from completed projects. Posters can be laminated and placed at the industrial facility to showcase upgrades and incentives delivered.



Shelton Sawmill

### Energy Savings Projects 2020



**Projects Implemented**

**Bakerville Dust Collector Fan VFD Upgrade**

The 220 hp Bakerville Dust Collector Fan conveyors were upgraded from three Bakerville saw lines, each with multiple saws. Between one to three lines run simultaneously for ten hours a day, five or six days a week. Prior to the VFD, the fan ran full speed with excess velocity and flowrate to convey the sawdust to the cyclone for separation.

The programmable VFD provided the ability to adjust the dust collector fan speed depending on the number of saw lines operating. This new level of control led to a 40% savings in electricity.

A Facility Scoping Audit, co-funded by Mason PUD 3 and Energy Smart Industrial, identified the savings opportunity. After fully scoping and developing the project, ALTA Forest Products' Shelton Electricians Mike Paw ordered, installed and programmed the VFD.



**221,766**  
kWh Annual Energy Savings



**\$9,713**  
Annual Avoided Cost  
(at \$0.044/kWh)



**16+**  
Pacific Northwest Homes' Annual Energy Use




**What ideas do you have to save energy?**

**CONTACT:**  
Kend Miller, Automation Manager  
Mason PUD 3  
508.682.4570  
kend.miller@masonpud3.org

Members of the Energy Team (L-R):  
Kend Miller, Automation Manager

Bakerville Dust Collector Fan





Energy Project Manager (EPM)

### Five Years of Success



**14 Projects Implemented**

**EPM Highlights**

**Installed variable frequency drives on pumps**

Many projects include filtered water, wastewater sour sewers, and sanitary pumps  
**3,841,750 kWh/year**

**Installed variable frequency drives on fans**

Fan projects include boiler and bag dust dryer fans  
**1,363,124 kWh/year**

**Upgraded agitators**

Many agitator projects include wastewater, bleach cell and H2O tank agitators  
**1,883,309 kWh/year**

**Compressed air system tune-up**

Tune compressed air system to reduce energy use  
**174,575 kWh/year**



**\$293,000**  
Cosmo's Total Capital Project Cost



**\$1,474,000**  
Total Value to Cosmo to Date



**7,800,000+**  
kWh Annual Energy Savings

**Cumulative Financial Benefit to Cosmo**

| Year | EPH Consulting | Utility Incentive | Energy Cost Savings |
|------|----------------|-------------------|---------------------|
| 2015 | \$300 K        |                   |                     |
| 2016 | \$504 K        |                   |                     |
| 2017 | \$367 K        |                   |                     |
| 2018 | \$1,127 K      |                   |                     |
| 2019 |                |                   | \$1,474 K           |



Energy Project Manager, David Church,  
works with an ESI Technical Service Provider





Darigold Sunnyside

### Energy Savings Projects 2011-2019



**Projects implemented**

**2019 Dry Mill Plant Expansion**

Installed variable frequency drives (VFD) for improved process control on pumps, refrigeration, and fans

**2018 Refrigeration Plant Upgrade & Lighting**

Installed compressor replacement and ammonia refrigeration systems for better control and optimized lighting

**2016-2016 Refrigeration Operator Coaching Strategic Energy Management Cohort**

Low cost operational approaches to improve overall energy performance

**2014 Boiler Fan VFDs**

Installed VFDs to optimize combustion control on the steam system

**2013 Condenser Fan VFDs**

Installed VFDs for improved refrigeration performance

**2013 New Chiller and Lighting**

Upgraded chiller plant for process quality improvement and energy performance



**+12,180,000**  
kWh Annual Energy Savings



**\$423,000**  
Annual Avoided Cost



**\$644,000**  
Benton REA Performance Incentive



**What ideas do you have to save energy?**

**CONTACT:**  
Eric Miller, Senior ESI Energy Services  
Tom Andrus, Darigold Technical Manager  
Tom Wright, Darigold Process Engineer  
Tony Dixon, ESI Program Delivery Manager

Members of the Darigold Sunnyside Energy Team (L-R):  
Eric Miller, Senior ESI Energy Services; Tom Andrus, Darigold Technical Manager; Tom Wright, Darigold Process Engineer; Tony Dixon, ESI Program Delivery Manager





Tillamook County Creamery Association

### Energy Savings Projects 2019



**Projects Implemented**

**1. Installed Variable Frequency Drives (VFD) on:**

- Sales Vacuum Pumps
- Tower Vacuum Pumps
- Evaporator Fans

VFDs allow control to start at a slower speed. This allows for more precise control of the process. A fan that was drawing 120 hp at 100% speed may now only draw 80 hp at 75% speed.

**2. Installed a Logic Control System on the South Refrigeration System**

This control system optimizes the operation of the refrigeration system by allowing for greater control by plant technicians.

**3. Designed and Installed Photo Eyes to Reduce Compressed Air Usage in Packaging**

Photo Eyes were installed to only blow when there is product on the packaging line. A timer will turn off compressed air once all product has passed. Compressed air is a very expensive utility. Reduction of compressed air usage will greatly save energy.



**1,191,905**  
kWh Annual Energy Savings



**\$63,000**  
Annual Avoided Cost



**141**  
Pacific Northwest Homes' Annual Energy Use



**What ideas do you have to save energy?**

**CONTACT:**  
Gary Daughler, Associate Process Engineer

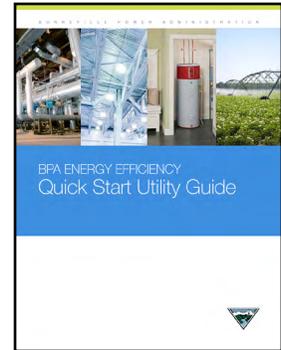
Members of the Tillamook County Creamery Association Energy Team (L-R):  
Gary Daughler, Associate Process Engineer



## GETTING STARTED WITH INDUSTRIAL PROGRAMS

Getting access to Industrial sector resources is as easy as reaching out to your energy efficiency representative, or EER, or connecting with your local ESIP. BPA hosts a quarterly meeting, the Utility Focus Group, for utilities interested in sharing best practices with peers working in the Industrial sector and BPA on ESI program offers.

You can also consult the [BPA Energy Efficiency Quick Start Utility Guide](#) for information including overviews, references, links to additional resources for common tasks, and activities and responses to your potential questions.



## CUSTOMER SERVICE

Roles and responsibilities: EERs are accountable for building and maintaining customer relationships and act as the key means to support BPA's Energy Efficiency program communication with utilities. EERs lead the customer service team — composed of the EER, field engineer and the contracting officer's representative — for each utility. EERs work with all BPA staff, third-party staff and contract support to provide oversight, coordination, and execution of communication to and from utilities.

How do we work together? Your EER should be your first point of contact for any questions, comments, or concerns about BPA's Energy Efficiency program. If your EER doesn't know the answer, he or she will find it and get back to you, or put you in touch with the right person.



## BPA INDUSTRIAL EE WEBSITE

Resource type: Program Details

[The BPA Industrial Energy Efficiency Website](#) provides a description of ESI components; Find a utility and ESIP, Industrial Audit Guide and case studies.

## ESI UTILITY PARTICIPANT LIST

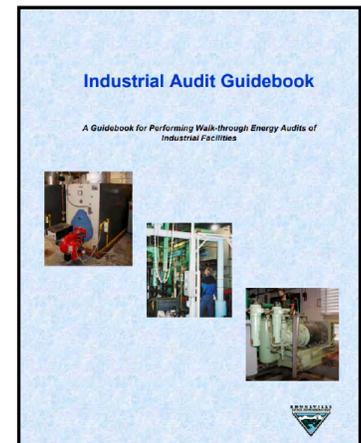
Resource type: Program Details

[The ESI Utility Participant List](#) features all participating utilities and the ESIP assigned to support them.

## BPA INDUSTRIAL AUDIT GUIDE

Resource type: Audit Guide

[The BPA Industrial Audit Guide](#) introduces technical and nontechnical audiences to common energy-efficiency opportunities identifiable in a walk-through audit of an industrial facility.



## Measure Summary Table

The payment levels described in this table provide a summary only and can change. Complete, up-to-date details of the payment levels and associated requirements are in the Industrial Sector section of the [Implementation Manual](#).

| 9.1 PAYMENT SUMMARY*   |  |
|--|--|
| PROGRAM COMPONENT OR MEASURE   | PAYMENT                                  |
| <b>9.2 Energy Smart Industrial</b>   |  |
| 9.2.1 Energy Project Manager   | See the Payment section of this offering |
| 9.2.2 Strategic Energy Management Projects   | See the Payment section of this offering |
| 9.2.3 Industrial Custom Projects   | See the Payment section of this offering |
| 9.2.4 Small Industrial Projects  | See the Payment section of this offering |
| 9.2.5 BPA-Funded Technical Service Providers (TSP)   | Not applicable                           |
| <b>Other Industrial Measures</b>   |  |
| 9.3 Variable Frequency Drives for Fans in Potato and Onion Storage Facilities  | \$200 per horsepower                     |
| 9.4 Small Compressed Air Systems   | See the Payment section of this offering |
| 9.5 High Frequency Battery Charger Upgrade (BPA-Qualified)   | See the Payment section of this offering |
| 9.6 Welder Upgrade (BPA-Qualified)   | See the Payment section of this offering |
| 9.7 Water System Leak Abatement (BPA-Qualified)  | See the Payment section of this offering |
| <b>Additional Multisector Opportunities</b>  |  |
| Some Commercial and Agricultural Sector measures may be applicable to Industrial Sector projects. Measures eligible for installation in multiple sectors are identified where applicable in the body of the IM in the primary applicable sector. |  |