BONNEVILLE POWER ADMINISTRATION

Energy Conservation Agricultural Quickstart Guide

2026

Introduction

Bonneville Power Administration's (BPA) energy conservation group works with utility customers to meet energy-saving targets established in the Northwest Power and Conservation Council's Power Plan. To support this objective, BPA's Agricultural sector develops measures, programs, and opportunities identified in the Implementation Manual (IM) that utilities can implement within their service territories.

This guide is intended as a resource for utilities to identify measures, programs, and opportunities that can strengthen their energy efficiency initiatives and keep power rates low. For specifics on the complete suite of Agricultural sector program guidelines and requirements, please consult the BPA Implementation Manual.

What is the Implementation Manual?

The Implementation Manual provides the guidelines and requirements for implementing energy conservation projects in the region. The IM describes the requirements that BPA's public and federal utility customers must meet to receive incentive payments and savings credits for conservation accomplishments.

BPA publishes the IM once a rate period (every three years) and updates it every six months (in April and October). These six-month, or mid-cycle updates are revisions or amendments that address critical changes, such as new policy directives, urgent regulatory requirements, or significant adjustments that cannot wait for the next annual publication. The IM is available on the BPA energy conservation webpage.

Energy Conservation Measures

BPA's agricultural sector offers a range of programs and measure opportunities to help customer utilities serve their agricultural consumers and meet their energy conservation goals. The agricultural sector offers a number of measures, including on-farm energy audits, pump testing, irrigation system conversions and hardware upgrades, Variable Frequency Drives (VFDs) for agricultural pumps, high efficient pumps, and custom project opportunities for dairies and wineries.

Agricultural energy conservation is primarily offered through Unit Energy Savings (UES) measures listed in the IM. The BPA engineering team is available for custom projects in technologies that aren't available in the IM. Priority measures in the Agricultural sector are detailed in the following pages.

Agricultural Energy Audit Screening

The initial screening helps determine if a detailed on-farm energy audit is right for a dairy. It's a quick look at the farm's energy use, daily production, and equipment (like milk cooling, ventilation, and water heating). To get started, farmers fill out the BPA Ag Energy Audit Screening Tool form with help from their electric utility or with an experienced agricultural energy auditor.

On-Farm Energy Audits

Energy audits offer dairy farmers an opportunity to cut energy costs and improve operations. This is a thorough energy audit done by a professional to find ways to reduce energy use specifically for dairy farms. This can include things like plate coolers, variable speed drives for vacuum pumps, compressor heat recovery, and other custom energy-saving projects. An experienced agricultural energy auditor will examine and analyze milking parlors, cooling systems, barns, and other dairy processes to pinpoint exact areas where energy can be saved.

Irrigation

Irrigation System Conversions

Switching irrigation systems can provide more uniform irrigation application for crops by lowering sprinkler heads closer to the ground. When sprinkler heads are closer to the crops they water, it reduces water evaporation and also reduces the overall pressure needed to get it there. This conserves energy and water and saves money. This may also include low pressure conversion for center pivots and laterals, reducing friction losses in piping, and rebuilding or replacing pumps and trimming pump impellers. Irrigation systems conversions include:

- **Low Elevation Spray Application (LESA)** systems lower sprinkler heads closer to the ground (12-18 inches)
- **Mid-Elevation Spray Application (MESA)** systems use sprinklers that operate within 5-10 feet above the ground.
- **Low Elevation Precision Application** (**LEPA)** systems use sprinklers or bubblers that operate at the ground level.
- **Mobile Drip Irrigation (MDI)** systems operate at the ground level and use level drip tubing attached to the end of drop tubes.

Pump Testing

Pump testing can identify opportunities to increase the efficiency of a pumping plant and irrigation delivery system.

VFDs for Irrigation Pumps

VFDs adjust water pump motor speed to match changing irrigation needs and control the frequency of electrical power that's supplied to a motor. Even small speed adjustments can create big energy savings, as much as 20 percent, plus greater precision and more control over water distribution and pressure (and helps the pump match-flow requirements).

High Efficiency Irrigation Pumps

Some irrigation pumps may wear out, become less efficient over time, or be incompatible with a farm's irrigation system requirements. Installing a new, more efficient pump improves operation and saves energy.

Irrigation Hardware Upgrades

New nozzles and gaskets provide more uniform water application and save energy. Making the switch is one of the easiest ways to start saving water and power. Learn more about irrigation sprinkler equipment by visiting these websites.

- Washington State University- Irrigation in the Pacific Northwest
- Oregon State University - Irrigation
- University of Idaho - Irrigation Water Management
- Nelson Effective Irrigation Technologies
- Senninger - Irrigation Management Tools and Resources

Thermostatically Controlled Outlets

Thermostatically controlled outlets (TCOs) offer significant energy savings for agricultural users by intelligently managing electric heaters in various settings like pump houses or livestock buildings. Instead of continuously running, TCOs activate heaters only when temperatures drop below a set point (e.g., 39°F) and deactivate them once a slightly higher temperature (e.g., 50°F) is reached, preventing freezing while avoiding unnecessary energy consumption and reducing operational costs. This optimized heating not only saves money but also helps protect sensitive equipment and maintain suitable environments for livestock.

Livestock Waterers

Anyone caring for livestock during the winter months knows an immersion tank heater uses a lot of electricity. Replacing the tank with an energy-free tank or adding a thermostatically controlled outlet to limit tank-heater operation on freezing days provides fresh water to animals—and saves electricity.

Dairies

BPA supports utility incentives in dairies that include barn and area LED lighting, chiller improvements, heat pump water heaters, and VFD applications on milking vacuum pumps and milk transfer pumps.

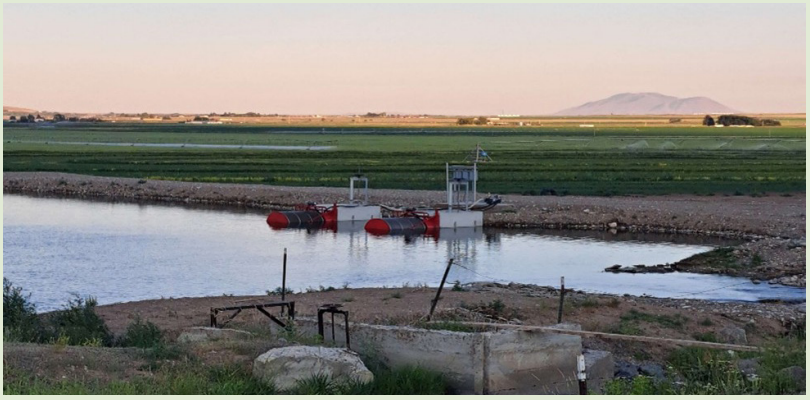
Wineries

Many processing applications at wineries—including crushing, destemming, pumping, cooling, and fermenting—are ripe for energy improvements. Lighting upgrades, HVAC, pipe insulation, compressed air, VFDs, and refrigeration are all eligible opportunities for incentives.

Custom Projects

Custom projects offer a flexible and impactful pathway to achieve deep energy savings that other measures may not address. These projects involve a comprehensive, site-specific engineering approach to identify and implement unique energy efficiency upgrades tailored precisely to an individual farm's complex operations.

Example Project:



BPA energy conservation grants funded Big Lost River Irrigation District's pipeline project, increasing water access, energy savings, and water conservation.

Getting Started

BPA provides the following resources to help utilities effectively market the benefits of their energy efficient products, programs, and rebate offers to their customers.

Utility Resources

Access to Agricultural sector resources is as easy as reaching out to your Energy Conservation Account Executive (ECAE). They can help connect utilities with additional information for energy audits, irrigation pump testing, VFD for pumps, high-efficiency irrigation pumps, irrigation hardware upgrades, system conversions, and livestock waterers.

You can also consult the BPA Energy Conservation Quickstart Utility Guide for information including overviews, references, links to additional resources for common tasks, and activities and responses to your potential questions.

AUG Meetings

The Agricultural sector has the Agriculture Utility Group (AUG) that meets quarterly via conference call or webinar. BPA staff leads the meeting and presents topics such as new ag energy conservation opportunities, new ag equipment technologies, and regional ag trends. The AUG meeting also provides the opportunity for dialogue between utilities about ag energy conservation project installations in their service territory and how they assisted the ag producer. If you are not on the AUG meeting email distribution list or have not been invited in the past 6-12 months, please inform your ECAE so you can be added to the invitation list.

Customer Service

ECAEs foster and maintain customer relationships with utilities, and serve as the primary support for BPA's Energy Conservation program. They lead the customer service team, which also includes field engineers and Program Compliance Specialist (PCS) for each utility. ECAEs collaborate with all BPA staff, third-party personnel, and contract support to oversee, coordinate, and execute all communications with utilities.

If a utility is interested in a building model to estimate potential energy savings, the ECAE can bring in a subject matter expert (SME), such as a program manager, engineer, or sector lead to perform a field visit.

For inquiries, feedback, or concerns regarding BPA's Energy Conservation program, your ECAE should be your initial point of contact. If the ECAE does not immediately have an answer, they will find it or facilitate a connection with the right person.

Marketing Toolkit

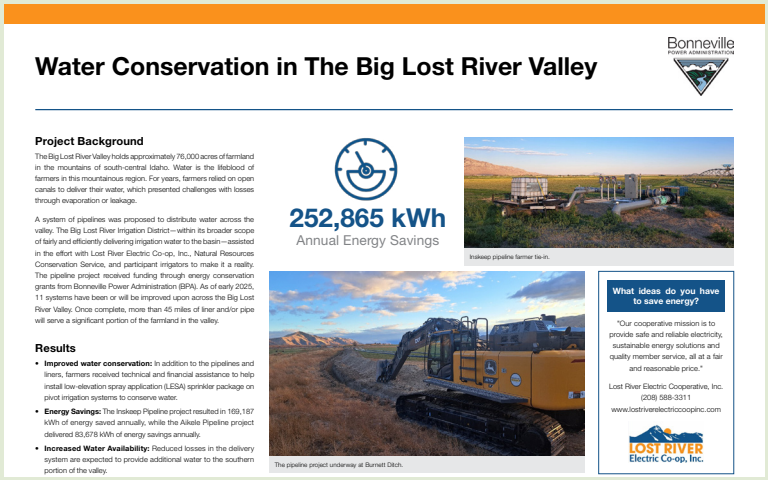
Marketing tools and templates are available in the Agricultural Marketing Toolkit on bpa.gov. This suite of tools includes a wide range of customizable marketing templates, graphics, and stock photography available for download.

Utilities may also work directly with the BPA Marketing team to adapt toolkit materials if they lack the capacity or resources to work with the files. Your ECAE and Marketing team are happy to help you find a solution that meets your needs.

BPA marketing specialists are available to help brand and customize digital and print collateral.

Important Resources

- Energy Conservation Implementation Manual
- The Document Library
- Utility Toolkit
- Agricultural Marketing Toolkit



BPA can help customize a variety of materials to help utilities promote measures and rebates for their customers. This can include everything from social media graphics to project success posters, application forms, flyers, or bill inserts.

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 Agricultural Sector section of the Implementation Manual.

7.1 INCENTIVE PAYMENT SUMMARY

MEASURE CATEGORY	INCENTIVE PAYMENT
7.2 Freeze Resistant Stock Water Tanks and/or Fountains	$140 per tank or fountain (Heating Zone 1) $165 per tank or fountain (Heating Zone 2) $225 per tank or fountain (Heating Zone 3)
7.3 Thermostatically Controlled Outlets	$14 per outlet
7.4 Transformer De-Energization	$0.03 per kWh
7.5 Irrigation Measures	
7.5.1 Irrigation System Conversion: LESA/LEPA/MDI	$26 per drop
7.5.2 Sprinkler Package Replacement	Varies, see the Payment section of this measure
7.5.3 Irrigation System Low Pressure Conversion: High Pressure to Low Pressure	$23 per head per Wheel line or Hand line $23 per drop per Center pivot or Lateral move
7.5.4 Irrigation Hardware	Varies, see the Payment section of this measure
7.6 Agricultural Pumps and VFDs	
7.6.1 Irrigation Pump Testing and System Analysis (BPA-Qualified)	Varies, see the Payment section of this measure
7.6.2 Variable Frequency Drive for Agricultural Centrifugal Pump (BPA-Qualified)	$95 per VFD hp
7.6.3 Variable Frequency Drive for Agricultural Turbine Pumps (BPA-Qualified)	$135 per VFD hp
7.6.4 Variable Frequency Drive for New Agricultural Pump (BPA-Qualified)	$95 per VFD hp (new centrifugal pump) $135 per VFD hp (new turbine pump)
7.6.5 Agricultural New Pump Efficiency Upgrade (BPA-Qualified)	$95 per pump hp
7.7 Custom Projects	
7.7.1 New Agricultural Construction	See section 4.1: Custom Project Payment Rate Table
7.7.2 Other Agricultural Measures	See section 4.1: Custom Project Payment Rate Table
7.8 Agricultural Energy Audits	
7.8.1 Agricultural On farm Energy Audit Screening	$150 per agricultural producer (e.g., farm, ranch, greenhouse, dairy, etc.)
7.8.2 Agricultural On farm Energy Audit	Lesser of actual energy audit cost minus any funding provided by other federal, state or local agencies, or $15,000
Additional Multisector Opportunities	
Some Industrial and Commercial Sector measures may be applicable to Agricultural projects. Measures eligible for installation in multiple sectors are identified where applicable in the body of the IM in the primary sector.	

For more information, visit bpa.gov

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