

Energy Conservation Annual Review 2023



A Note From Jamae Hilliard Creecy

Vice President of Energy Efficiency

It is my pleasure to share Bonneville Power Administration's (BPA's) Energy Conservation Annual Review 2023, a highlight of Energy Efficiency Program fiscal year (FY) 2023 accomplishments achieved by BPA, its customers, and regional partners. With BPA incentive funding and infrastructure support, BPA customers and partners delivered 48.4 average megawatts (aMW) of programmatic and market transformation energy savings last fiscal year.

Energy conservation investments reduce the need for higher cost resource acquisitions to meet BPA's power load obligations and help conserve one of the region's most important energy resources—the Federal Columbia River Power System (FCRPS).

BPA continues to make program implementation and accessibility improvements by removing ineffective measures, adding new measures, and increasing incentive levels across each sector.

With a focus on increasing conservation projects in small, rural, residential utility service territories and expanding access to conservation benefits for communities most in need, BPA introduced a Direct Fund Demonstration pilot. This effort resulted in BPA acquiring additional cost-effective energy conservation while advancing a more equitable portfolio across the region.

Energy conservation is fundamental to the region's ability to meet growing energy needs. BPA is committed to working together with our customers and regional partners to advance innovative energy solutions that enrich Pacific Northwest communities. We look forward to another great year!

Sincerely,

ae Millind Creecy

Jamae Hilliard Creecy

A History of Resource Acquisition

MW acquired

Since 1982, BPA and its customers have achieved a lasting resource that includes...

\$1.9B ratepayer savings every year

avoided tons of CO₂e

Accomplishments in 2023

48.4

10.3M

aMW acquired (providing 109 MW of winter morning capacity)

192,831 avoided tons of CO₂e (equivalent to

42K cars' annual emissions)

\$36.3M

bill savings for ratepayers (enough to fund 680 average-wage jobs)

778,340 square feet serviced by weatherization measures

576 custom projects completed (providing 23 aMW of energy savings)

35,317 average Pacific Northwest homes powered annually by the energy saved

2023 Energy Savings

BPA, its customers, and partners delivered 48.4 aMW of energy savings in FY 2023. This is equivalent to reducing consumers' cost of electricity by \$36.3 million annually, avoiding emissions of more than 192,831 tons of carbon dioxide equivalent (CO_2e), or taking 41,920 cars off the road for a year.¹

BPA customers implemented program offerings directly responsible for 41.7 aMW of energy savings. As shown in **Table 1**, utilities acquired a diverse mix of conservation resources across all sectors.

TABLE 2: Savings by Type, FY 2023

Savings Type	Savings (aMW)
Programmatic	41.7
NEEA Reported Savings	6.7
Momentum Savings	TBD
Total	48.4

TABLE 1: Programmatic Savings by Sector, FY 2023

Sector	Savings (aMW)
Industrial	20.6
Commercial	8.4
Residential	7.7
Federal	2.4
Agricultural	1.9
Utility System Efficiency	0.6
Total	41.7

Annual conservation achievements also include 6.7 aMW of Northwest Energy Efficiency Alliance (NEEA) energy savings as shown in **Table 2**. Please note, Momentum Savings will be reported at the end of the Energy Efficiency Action Plan (Action Plan) period.

¹CO₂e reductions are based on the Northwest Power and Conservation Council's estimate of 0.91pounds/kWh CO₂e avoided. See <u>https://www.nwcouncil.org/media/filer_public/ac/d9/</u> acd94f75-20ef-4d1c-b0c9-ea5cf113778d/2018-1.pdf



A History of Conservation in the Pacific Northwest

The Power Act and its influence on energy conservation

The Pacific Northwest Electric Power Planning and Conservation Act (the Act) was passed in 1980 to help electrical consumers of the Pacific Northwest achieve cost-effective energy conservation, encourage the development of renewable energy resources, establish a representative regional power planning process, and to ensure an efficient and adequate power supply into the foreseeable future. The Act obligates BPA to acquire and encourage the development of energy conservation to maximize the value of the FCRPS. While the regional energy landscape has evolved significantly since 1980, energy conservation has proven to be a consistent and reliable resource for the agency and it's customers. Energy efficiency has been a somewhat invisible but critical resource that has helped mitigate the impacts of market swings, extreme weather events, and a changing utility landscape.

Over the more than 40 years since the passage of the Act, in partnership with BPA customers and stakeholders, BPA has acquired an estimated 2,590.7 aMW of energy. To put this into perspective, this is enough energy to fuel 1.89 million homes for a year and an estimated \$1.9 billion in annual ratepayer savings due to BPA's commitment to energy conservation and investment in the FCRPS.



2023 Accomplishments

A cornerstone of BPA's success are the talented and dedicated professionals who specialize in planning and evaluation, program development, engineering, technical oversight, emerging technologies, program marketing, market research, and customer service. They work closely with BPA customers and regional partners to achieve the agency's conservation goals.

Agricultural Sector

BPA's work in the Agricultural sector achieved 1.9 aMW of savings. The Agricultural sector is investing in demonstration projects to promote zonal variable rate irrigation conversions and advanced water management irrigation scheduling. BPA also implemented a new agriculture energy audit measure to identify potential energy efficiency improvements at producer's sites.

As part of the investment in irrigation, BPA collaborated with Okanogan County Public Utility District (PUD) to install a 600 horsepower (hp) irrigation pump upgrade for the Aeneas Lake Irrigation District, a district that irrigates 1,164 acres of farmland including orchards, hay, grass seed farms, and serves 87 agricultural and residential end users. The installation was a resounding success with the new pump delivering more water with improved efficiency, saving over 143,000 kWh annually, with less maintenance. The incentive check from BPA and Okanogan County PUD covered 70 percent of the project costs and according to Aeneas Lake Irrigation District Secretary, Page Davisson, "This is a huge win for our little district, so very thankful for this."

BPA also worked with Fall River Rural Electric Cooperative to install equipment upgrades at Mickelson Farm to pump water from the Teton River over 500 feet uphill to irrigate farmland. Six 800 hp pumps and one smaller 350 hp pump were installed and provided over 400,000 kWh in energy savings.



Pump upgrade for Aeneas Lake Irrigation District.



Irrigation pumps installed at Mickelson Farm working with Fall River Electric Cooperative.

Commercial Sector

The Commercial sector acquired 8.4 aMW of efficiency with a strong focus on heating, ventilation, and air conditioning (HVAC), and water heating upgrades and retrofits. BPA started a promotional campaign in April 2023 with increased incentives available for advanced rooftop unit controls, commercial insulation, and consumer heat pump water heaters installed in commercial settings.

New performance metrics were added to qualify ductless heat pumps and air-source heat pumps. These new metrics aligned with the U.S. Department of Energy's (DOE) shift to requiring Heating Seasonal Performance Factor 2 (HSPF2) ratings for some classes of equipment manufactured on or after January 2023.

BPA's Trade Ally Network NW program prioritized outreach and training on networked lighting controls, and prepared HVAC trade allies for the transition in performance metrics required for some equipment classes.

Significant programmatic and engineering resources were invested to develop new measures to add to the portfolio in FY 2024. These new Unit Energy Savings (UES) measures included midstream lighting, heat recovery ventilation, efficient pumps, variable frequency drives for pumps, floating refrigeration controls, refrigerated display case doors, and commercial-duty unitary heat pump water heaters.

In 2023, BPA worked with Eugene Water and Electrical Board (EWEB) to install grocery upgrades in WinCo Foods. Upgrades included interior and exterior LED upgrades, demand control kitchen ventilation, heat recovery ventilators, refrigerated case doors, air curtains, an HVAC water-loop heat pump system, and an innovative solo chill micro-distributed refrigeration system. All together, these projects saved WinCo an estimated 886,238 kWh annually, approximately 23 percent of their total electric use.



Winco refrigeration system upgrades.

BPA teamed up with EWEB again for retro-commissioning projects at the University of Oregon campus, upgrading HVAC systems and installing LED lighting in Unthank Hall student housing and a recreational center. Lighting upgrades saved 332,072 kWh annually and HVAC savings totaled 903,215 kWh annually, approximately 33 percent of the building's total electricity usage.

BPA worked with Forks Community Hospital in Sequim, WA, on system improvements and partnered with Clallam County Public Utility District to secure funding to make necessary replacements including a dual fire condensing boiler from an oil-fired boiler, an air-cooled high efficiency chiller replacement, variable speed controlled equipment, and pneumatic controls upgraded to a digital control system. The upgrades increased comfort in the facilities and saved an estimated 430,496 kWh annually.



Mattias (Clallam County PUD), Clint (Forks Community Hospital), and Lonnie (Trane) standing in general chiller system area.

Federal Sector

The Federal sector acquired 2.4 aMW in reported savings in FY 2023 with the biggest drivers of savings being custom measures like canal lining (to reduce water loss and energy used to pump water), water flow management systems, and UES measures including pumps and variable frequency drives. BPA's Energy Smart Reserve Power Program works with its reserve power customers' irrigation districts, which take power directly from the federal system to identify energy efficiency opportunities, assist with technical support, and complete required documentation. To better utilize resources, BPA is performing market potential assessments to identify projects with higher benefit-cost ratios.

BPA worked with Idaho Falls Power to finalize an efficiency upgrade for the DOE's Idaho National Laboratory in Idaho Falls. This upgrade improved roof insulation from R-13 to R-30 and replaced inefficient electric resistance heating delivered by radiant heat through ceiling tiles with a cutting edge reverse cycle chiller with both heat and cooling capabilities. While verification is ongoing, this project is expected to save one million kWh annually.



New reverse cycle chiller installed at the Idaho DOE building.

Direct Fund Demonstration

BPA launched the Direct Fund Demonstration pilot to identify and capture additional cost-effective energy conservation occurring within the region. This project focused primarily on projects in small rural utility regions as well as those that benefit disadvantaged communities.

Bonners Ferry participated in the program to fund planer drive upgrades for Idaho Forest Group's Moyie Spring Mill. The project included a full modernization of the entire planer including 19 variable frequency drives (VFD). This included removal of the hydraulic system and installing VFD drives on motors to power the electric motors. These upgrades successfully reduced the operating time of the planer process allowing them to shut down equipment during breaks and operating down time, reduced the overall horsepower of the drive system, and improved efficiency with the new motors without hydraulic pumping. In addition to the 631,177 kWh of annual energy savings, the jobsite is now safer, and planer operators no longer need to work on their days off, improving morale and reducing overtime.

Jefferson Public Utility District utilized funding to assist with creating a net zero, low income multifamily housing complex in Port Townsend, WA. This 43-unit housing complex also provides space for a childcare facility and parking to assist individuals or families making 50 percent or less of the area's median income. BPA awarded \$15,015 toward this \$16.1 million new construction project that resulted in an estimated savings of 36,057 kWh.

Industrial Sector

The largest programmatic savings in FY 2023 came from the Industrial sector with 20.6 aMW in reported savings. BPA's Energy Smart Industrial (ESI) program continued its focus on custom project identification and implementation. A highlight for FY 2023 was participation by Small, Rural, Residential (SRR) utilities. ESI completed 37 Custom Projects with SRR utilities, which was 27 percent of the total project volume. BPA also prioritized enrollment in a streamlined Energy Project Manager (EPM) offering. The number of enrolled EPMs increased from nine to 32 over the course of FY 2023, and EPM goals grew to more than 76 million kWh in savings.

A new ESI Strategic Energy Management (SEM) cohort focuses on sites operating in the timber and wood products space. A hybrid, in person, and remote approach was leveraged to engage and enroll ten sites in the cohort. This resulted in the program enrolling a diverse cross section of the industry with eight utilities and four states represented.

Served by Cowlitz Public Utility District, Steelscape is an industry leading producer of high quality coated and painted metal roofing and siding. In FY 2023, BPA identified an opportunity to replace the existing high pressure air nozzles with engineered low pressure air knives in their Kalama, WA, mill to significantly reduce the system's electrical load. These replacements achieved over 1.1 million kWh in annual verified savings, which equates to over \$55,000 per year in avoided energy costs. BPA worked with Columbia River Public Utility District to implement a SEM program and various industrial projects at Berry Global. Projects included repairing compressed air leaks, installing hot gas bypass lines in chillers, a variable frequency drive air compressor, and LED lighting upgrades throughout the facility. These combined efforts saved an estimated 926,000 kWh and \$46,300 annually.

Weyerhaeuser, located in Kalispell, MT, recently completed their first year of SEM through Flathead Electric and BPA. Through participation in the SEM program, and diligent work, they exceeded their corporate energy savings target of 2 percent and achieved 4.24 percent energy savings or 1,381,850 kWh per year, enough energy to power 187 average homes.



Weyerhaeuser Mill in Kalispell, MT.



Residential Sector

In addition to acquiring 7.7 aMW of savings, the Residential sector continued to focus on high efficiency water heating and HVAC measures. New residential HVAC measures added to the portfolio include ductless heat pump retrofits in low, mid, and high rise multifamily buildings, ground source heat pump upgrades and conversions, and ductless and ducted mini-split heat pumps and ductless heat pump conversions for low income projects.

The Residential sector supports measures that reduce residential heating and cooling loads and high efficiency water heating measures that will provide greater energy savings opportunities. New residential HVAC measures with updated ratings requirements were implemented that better align with modern testing.

BPA's Comfort Ready Home program began offering promotional incentives to participating contractors for the installation of qualifying heat pump water heaters (HPWH). The program has also increased outreach in small rural residential territories and other underrepresented communities.

Clatskanie People's Utility District (PUD) provided \$848,693 in reimbursement incentives for 70 income qualified manufactured homes to install insulation, helping residents stay comfortable and reduce their utility bills. In total, these projects will save roughly 80,000 kWh per year. Clatskanie PUD communicated the offer to end users using social media, Ruralite magazine, print media in the office, community events, and door-to-door outreach. For this effort, the utility sought out higher density locations with a need for weatherization which led mostly to mobile home parks. Clatskanie plans to build upon this successful initiative by promoting energy efficient windows to income qualified residents in FY 2024.

BPA provided funding for the City of Forest Grove's weatherization program. In 2023, Forest Grove incentivized 14 efficient window installations at the College Place Apartments complex. These installations improved comfort for occupants and saved an estimated 78,200 kWh.



Efficient windows installed at the Bonners Ferry apartment complex.

BPA also worked with the city of Bonners Ferry municipal electric utility in Idaho to install efficient windows and new HPWH upgrades in the 18 units of the Bonners Ferry apartment complex. These upgrades are expected to save \$1,960 in electricity costs annually.



Low Income Program

BPA's Low Income Program is implemented through BPA customers, state agencies, tribes, and Community Action Agencies to improve equitable access to energy efficiency across the Northwest. These programs provide critical assistance to the most vulnerable households in BPA's service territory. In FY 2023, BPA's low income program energy savings were almost half an aMW. Several updates were made to both the utility and grant programs, including increasing incentives, adding new measure offerings, and streamlining implementation requirements. New low income measures were added including Variable Speed Heat Pumps, 40-gallon Tier-4 HPWHs, and HPWHs in all multifamily family housing types. Incentives were also increased for Ductless Heat Pumps, Ducted Heat Pumps, and all tiers of HPWHs to reflect rising equipment and installation costs. To streamline the program, BPA dropped Performance Tested Comfort System requirements for HVAC measure options, removed several required forms to align with the equivalent non-low income measures, and now allows income self attestation which removes barriers for income qualification.

BPA provided low income state grants to Washington, Oregon, Montana, and Idaho, as well as several tribes. For tribes, grant funding supports their ability to manage staffing, community outreach, and the scale of the program to best meet their needs.

BPA established tribal grants with the Lower Elwha, Coeur d'Alene, Kalispel, Blackfeet, Yakama, Fort Bidwell, and Cowlitz tribes, as well as Rural Nevada Development Corporation. BPA's Low Income Program also worked on an engineering pilot program to install high efficiency heat pumps for the Blackfeet, Colville, Burns Paiute, Yakama, and Coeur d'Alene tribes.

Tribal grants provided funding for efficiency measures including insulation, windows and patio doors, ductless and ducted air source heat pumps, heat pump water heating, efficiency appliances, and lighting, which reduced energy burden and improved the health and safety of residents' homes.

The program allowed full coverage of federally negotiated, indirect cost rates to align with other BPA tribal grants beyond energy efficiency, allowing more tribes access to grant money to complete their efficiency projects.

State grantee networks continued to repurpose multifamily buildings for housing homeless families, partnered with local tribal communities for energy efficiency work, supported Community Action Partnerships to navigate a growing number of funding sources, and developed training opportunities to expand the workforce to meet a growing demand for energy efficiency.

The state and tribal grant programs have been highly beneficial for recipients and communities. In Clallam County, a family was struggling to make ends meet without a regular source of income. A home assessment determined that the insulation in the floor and attic was inadequate, the ducts leaked, and the overall draftiness was considerable for the size of the home.



Through BPA's low income program, Clallam County PUD added insulation to the attic and floor, sealed the ducts, repaired the furnace, and corrected for improper sequencing, fan imbalance, and high heat rise. Energy costs were also reduced with installation of a high efficiency ductless heat pump. The home was made more comfortable, more secure, and more efficient to heat.

In West Tacoma, an elderly homeowner experiencing health issues contacted their utility when their oil furnace broke. Tacoma Power went out for an energy audit where they identified a failing oil furnace and deteriorating

Utility Distribution Sector

Many utilities in the Pacific Northwest have aging transmission and distribution infrastructure. As the distribution system landscape changes and demand for power increases, BPA provides several opportunities for utilities to increase their system performance, while also claiming energy savings. BPA increased the incentive rate for re-conductor, transformer and conservation voltage reduction measures. Additionally, Energy Efficiency staff worked closely with utility managers and their system engineers to promote the value of these upgrades and identify small and midsized utilities that previously have not participated in these offerings. This communication asbestos near the furnace and in the ductwork that may have contributed to health issues. Abating the asbestos and replacing the furnace with a ducted heat pump system not only keeps the homeowner warm in winter and comfortable in summer, but it also saves money on energy bills and improved the indoor air quality of the home, making it healthier and safer. Clatskanie PUD reported the most applications for low income manufactured home insulation that they have ever reported for 105 measures across 70 unique addresses. These installations resulted in savings of 80,245 kWh and an EEI reimbursement of \$848,693.

push has seen an increase in first time participants across the region. BPA captured 0.6 aMW in savings in the Utility Distribution sector.

Okanogan County PUD utilized utility distribution measures as part of their capital improvement plan. These upgrades included nine transformers installed between 2019 and 2023 to replace original BPA transformers from the 1960s that were reaching the end of their useful life. The Okanogan – Brewster Transmission line was also completely replaced to shift load to a new substation for capacity needs.



Engineering Services

Whether designing a new hot water system, supporting dairy farmers, testing product performance in tribal service territory, or improving the efficiency of a historic building, BPA engineers stretch the energy efficiency capabilities and bandwidth of BPA customers while identifying new measure opportunities, and deploy and prove emerging technologies.

Spanning the region BPA engineers help utilities look for new energy savings opportunities. Last summer, energy efficiency field engineers hit the road and completed over 70 irrigation pump tests. Across four states, BPA engineers and interns completed 32 assessments in 30 days. Regional farmers and ranchers rely on pump tests to inform of potential energy efficiency improvements. One farmer submitted BPA's report and received a United States Department of Agriculture Environmental Quality Incentives Program grant to replace his entire irrigation system. BPA site visits identified a non-functioning utility

meter, which could have cost the utility more than \$10,000 annually in unreported energy usage.

Working alongside ESI partners, BPA engineers completed a high level market assessment for industrial heat pumps across various industrial segments including pulp and paper, chemical manufacturing, frozen foods, wood products, and high technology manufacturing.

Working with Tillamook People's Utility District, BPA discovered an opportunity to install waste heat recovery and steam trap upgrades to reduce kilowatt-hour consumption at the electric boiler in the Tillamook Creamery facility.

High performance high capacity heat pumps (HPHCHP) field research continues to be a priority. In partnership with five Tribes, BPA installed New HPHCHP at 16 Tribal residents. This is an exciting opportunity to measure energy efficiency savings in some of the coldest parts of the BPA service territory.



In partnership with utilities, researchers, and stakeholders, BPA identifies and conducts field demonstrations of new energy efficiency technologies. For the last several years, BPA and its partner the Advanced Water Heater Initiative (AWHI), have developed and installed high performing multifamily hot water systems. Specifically, these new domestic hot water systems have high energy efficiency, low global warming potential, and demand response support in both existing building stock and new construction installations.



Webb Basin Dairy heat pump water heater installation.

A demonstration opportunity was identified with a Raft River Electric customer, Webb Basin Dairy. The newly designed commercial heat pump water heater system installation will begin in 2024, and measurement and verification will continue into 2025. It is estimated that this project will save 100,000 kWh annually in refrigeration savings and \$20,000 in yearly propane costs for the dairy. Oregon Trail Electric Cooperative installed HPWH systems in the Timber Ridge Apartments, an affordable housing complex located in LaGrande, OR. These were installed along with other energy efficiency upgrades including LED lighting and HVAC mini splits to reduce overall energy consumption by 25 percent.

Building envelope measures offer significant savings potential but are difficult to address because replacing windows is costly, takes a significant amount of time, and can disrupt building use. In partnership with NEEA, BPA installed window inserts into existing windowpanes in a historical office building in Clark Public Utility's territory. The demonstration was completed on a historical building without disturbing the exterior. The floor-to-ceiling singlepane windows were retrofitted with new efficient inserts with extraordinary results; the window upgrades were proven to be three-to-four times more efficient than the previous single-pane windows, cost one-seventh of a total window replacement, and took only two weeks to complete. The building owner was ecstatic with the results and the DOE recognized the project as part of its Building Envelope Campaign.



Clark Public Utility window insert installation.

Evaluation & Market Research

BPA's program evaluations provide an independent assessment of performance and improvement opportunities for energy efficiency measures and programs.

BPA analyzed the savings and costs of custom projects coming in from Option 2 customers to verify reported savings and cost effectiveness. Option 2 customers manage the project performance and cost effectiveness of custom projects instead of BPA. The results were very positive, showing booked savings as having a 102 percent realization rate, meaning the reported savings reflected actual measured savings from the evaluation. This accuracy in savings keeps confidence in these projects high and demonstrates the rigor of the analysis coming from Option 2 customers in their projects. The evaluation also found these projects to be highly cost effective, with a benefit-cost ratio of 4.9, showing that for every dollar spent on Option 2 Custom Projects, the region received approximately \$4.89 in overall benefits.

Another area of study in FY 2023 was BPA's SEM program that provides industrial end users with a variety of energy saving opportunities including updating facility operations, repairs, and maintenance practices to optimize energy usage at each step. BPA reviewed 108 SEM measures to determine how many of the installed energy saving efforts were still active and how long SEM energy savings persist. The data showed SEM measures averaged a useful life of over eight years and that out of those 108 measures, 95 were still active and saving energy. Informed by these great results, the SEM program expanded their measure offerings to include a longer measure life and higher incentives in the new rate period.

BPA's market research activities included characterizing markets for HVAC, lighting, and advanced building controls. For HVAC, BPA partnered with NEEA to provide an annual snapshot of equipment sales and market trends in the region. For the first time since BPA and NEEA began tracking regional sales in 2016, the volume of heat pumps sold in the region surpassed gas furnace sales. As heat pumps are now the dominate technology in the market, the research team noted a decline in gas furnace and central air conditioners market shares. Lastly, variable speed heat pumps have seen tremendous growth in recent years and now make up 35 percent of ducted heat pump sales.

Control technologies for lighting and HVAC in non residential buildings were another area of interest for BPA. A controls market characterization was conducted to determine how controls are used and energy savings opportunities. The research included interviews with over 50 market actors, and a review of regional stock and flow data, 2021 Power Plan documentation, and regional utility program incentive and savings data.

The research concluded that code requirements drive most control installations and controls are rarely installed in retrofit projects. Building operators, building type, and building size have significant influence in the adoption and use of controls, and end users often override control strategies, which impacts the persistence of controls savings. While controls appear to be an important savings opportunity, more data is needed to fully understand their regional savings opportunities. BPA will continue to monitor the growth in use of controls to help the region understand the potential savings value, and how to best facilitate technology for demand response and demand flexibility programs in the future.

By exploring various technologies and how effectively they are utilized, BPA continues to identify opportunities to improve BPA's efficiency portfolio.

Compliance & Oversight Reviews

Compliance review is the process of reviewing all submitted applications to ensure that they are entered accurately into BPA Energy Efficiency Tracking System (BEETS) and contain the information and documentation specified by the Implementation Manual for the initial submission to BPA.

Oversight review is the process of reviewing the documents held in the customer file for a sample set of applications and projects to verify that the customer has retained the proper documentation and to provide reasonable assurance to BPA that the claimed measures were implemented correctly. In FY 2023, BPA successfully migrated all utility customers to the BEETS platform to report savings. Compliance and oversight reviews confirmed that the system increased accuracy and efficiency, resulting in processing time reductions of 25 percent from initial submittal through payment, helping customers get reimbursed for conservation savings faster.

Customer Service

Customer service is a central tenet of BPA's Energy Efficiency program. BPA's energy efficiency representatives (EERs) and marketing specialists work with customers to ensure the success of their energy efficiency programs. Whether assisting in reporting and budget transfers, or creating custom marketing materials, BPA is always standing by to help. Customer support for BEETS was a primary focus in FY 2023. At the start of the fiscal year, all customers had successfully migrated to the new reporting system but still required additional support and training. BPA scheduled training sessions, produced instructional materials such as printable guides and demonstration videos, and EERs were available for one on one training and technical support to investigate issues, respond to questions, and ensure customers used the system effectively.



In the last month of the rate period alone, BPA successfully negotiated 62 Energy Efficiency Incentive (EEI) funding transfers between utilities totaling over \$7 million. This enabled utilities to use funding for conservation that might have otherwise not been utilized. Funding transfers were instrumental in helping Energy Efficiency exceed BPA's rate period average aMW savings targets.

BPA coordinated with customers and third parties on a campaign to package and promote energy saver kits. It included various customizable marketing pieces such as bill stuffers, flyers, and utility lobby posters with unique quick response codes allowing end users to order kits from their utility. This turnkey program was a success with 7,510 energy saver kits claimed and 0.17 aMW saved in FY 2023.

New resources were created for customers including an updated Utility Quickstart Guide, a comprehensive tool for BPA customers that defines and explains the people, organizations, processes, procedures, and resources critical to developing a successful energy efficiency program.

BPA continued the annual regional customer roundtable meetings to get feedback, tackle issues, share successes,



Utility led presentation at the Eastern Washington Roundtable.

and establish best practices. Each event was packed with a full agenda including topics such as sector energy savings strategies, BPA energy efficiency marketing products, distribution system upgrades, additional training for the new BEETS reporting system, low income program updates, NEEA updates, federal tax credits, and discussions about why utilities should promote energy conservation. BPA provided customers the opportunity to present their successful programs.



Market Transformation

BPA's energy efficiency portfolio includes energy savings created by market transformation achieved in partnership with NEEA, an alliance of more than 140 Northwest utilities and energy efficiency organizations working to accelerate the innovation and adoption of energy efficient products, services, and practices in the region. NEEA supports BPA customers by pooling regional resources to identify and validate emerging technologies, find and remove barriers to adoption, and deliver tools and resources to encourage consumers to use energy efficient technologies. They actively seek technologies that have broad benefits across the region including in small and/or rural markets. Examples include variable speed heat pumps, HPWHs, and efficient pumps.

TABLE 3: NEEA Reported Savings by Sector, 2023

Sector	Savings (aMW)
Residential	5.9
Commercial	0.8
Industrial	0
Agricultural	0
Total	6.7

As shown in **Table 3**, NEEA contributed 6.7 aMW of regional savings directly attributed to their influence in expediting market transformation opportunities. NEEA's investment in a variety of evolving market technologies accelerated the removal of barriers to existing and new efficiency technologies, influencing their adoption without continued direct investment.

NEEA implemented a market transformation initiative in advanced heat pumps which will transform the residential HVAC market by focusing on next generation variable speed heat pumps that operate more efficiently and in colder climates. The initiative will help BPA strengthen its residential heat pump offerings. NEEA is also undertaking another social media marketing campaign for HPWHs, building on success in previous campaigns. In FY 2023, NEEA conducted some key regional studies. BPA collaborated with NEEA to release the 2022 Residential Building Stock Assessment, which inform about the efficiency of the existing residential building stock. The next Commercial Building Stock Assessment is now underway, and work will continue through 2024 to assess the region's commercial buildings. The End Use Load Research Study is continuing to meter end use loads in 400 residential and 80 commercial buildings to further understanding of how and when buildings use energy and demonstrate the time value of energy efficiency. NEEA research and evaluation efforts help BPA and the region understand how markets function and how to overcome barriers to expedite the adoption of existing and future market technologies.



2022-2027 Energy Efficiency Action Plan Update

Published in FY 2023, BPA's Energy Efficiency Action Plan describes BPA's portfolio management strategy and program measures to meet the agency's energy conservation goal of 300 aMW from 2022-2027.

In the FY 2022-2023 rate period, BPA acquired 89.6 aMW of programmatic conservation. Conservation Purchases EEI funded programs resulted in 79.1 aMW of energy savings and an additional 10.5 aMW of savings was delivered through Market Transformation activities led by NEEA. BPA remains on track to exceed its 300 aMW energy conservation goal.

The Agricultural, Federal, Industrial, Residential, and Utility Distribution sectors met or exceeded their two-year targets. Industrial efficiency was an area of significant success, exceeding the forecast by more than 25 percent at a cost of less than \$0.12 per kilowatt hour (kWh). Supply chain constraints, high equipment costs, and uncertainty over the impact of federal legislation targeting energy efficiency are contributing to project delays and increased costs across all sectors. Based on FY 2022-2023 energy savings results, market drivers, and new data, BPA has reduced its six-year forecast from 358.4 aMW to 340.7 aMW. The following factors influenced the adjustment:

- Lower than anticipated Commercial sector savings acquisition forecast
- Oregon code legislation that will reduce nonresidential lighting savings in the final years of the Action Plan
- A small reduction in NEEA's Market Transformation savings forecast

Incremental adjustments to planning forecasts are expected given the time horizon covered by the Action Plan. BPA continues to work with customers and stakeholders to chart a course for energy efficiency acquisition under long term preference power contracts. Creating a post-2028 outlook for BPA's Energy Efficiency Program provides an opportunity to think creatively about how to best continue a legacy of energy conservation.



Appendix A

FIGURE 1: BPA's Annual Programmatic Savings (aMW), FY 2018-2023



TABLE 4: BPA's Annual Conservation Savings, FY 1982-2023 (aMW)

	Total FY 1982-2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	Total FY 1982-2023
Residential	506.3	13.5	12.4	9.9	10.0	8.7	7.7	568.5
Commercial	390.6	23.3	23.3	10.6	14.3	10.0	8.4	480.6
Industrial	284.7	15.2	15.1	10.9	12.6	7.8	20.6	366.9
Agricultural	63.6	5.2	5.6	1.0	1.5	1.4	1.9	80.2
Multi Sector	108.9	0.0	0.0	0.0	0.0	0.0	0.0	108.9
Utility System Efficiency	9.3	0.3	0.3	0.0	0.5	0.2	0.6	11.4
Federal	7.1	1.1	1.4	6.6	1.1	2.9	2.4	22.6
Sectors Subtotal	1370.6	58.6	58.1	39.1	40.0	31.0	41.7	1639.0
Residential Building Codes	128.6	-	-	-	-	-	-	128.6
Commercial Building Codes	59.9	-	-	-	-	-	-	59.9
Building Codes Subtotal	188.5	-	-	-	-	-	-	188.5
NEEA Reported Savings	264.8	22.3	29.9	27.0	29.3	5.8	6.7	385.8
BPA Momentum Savings	306.0	17.7	18.1	20.4	15.2	N/A	N/A	377.4
TOTAL SAVINGS	2129.8	98.5	106.1	86.5	84.5	36.8	48.4	2590.7

Data in this document may include corrections to prior years' data. This data should be used as official data until the next Annual Review.

TABLE 5: BPA's Annual Conservation Savings by Sector, Funding Source, FY 2017-2023 (aMW)

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	Total FY 2017-23
Programmatic Residential							
Low Income Weatherization, State Implemented	0.1	0.2	0.1	0.2	0.1	0.1	1.0
Programmatic Low Income Weatherization, Utility Self-Funded	0.1	0.1	0.0	0.1	0.1	0.0	0.6
Programmatic Low Income Weatherization, EEI Funded	0.5	0.3	0.2	0.2	0.2	0.3	1.6
Programmatic Utility Self-Funded	3.3	5.7	1.1	0.9	2.4	2.1	25.3
Programmatic EEI Funded	9.5	6.2	8.4	8.7	6.0	5.1	48.3
Programmatic Residential Subtotal	13.5	12.4	9.9	10.0	8.7	7.7	76.8
Programmatic Commercial							
Programmatic Utility Self-Funded	7.0	11.8	0.7	3.8	0.5	0.7	24.5
Programmatic EEI Funded	16.2	11.5	10.0	10.5	9.5	7.8	65.6
Programmatic Commercial Subtotal	23.3	23.3	10.6	14.3	10.0	8.4	90.0
Programmatic Industrial							
Programmatic Utility Self-Funded	5.9	4.1	2.5	2.5	1.4	9.1	25.5
Programmatic EEI Funded	9.3	11.0	8.5	10.1	6.4	11.5	56.8
Programmatic Industrial Subtotal	15.2	15.1	10.9	12.6	7.8	20.6	82.2
Programmatic Agricultural							
Programmatic Utility Self-Funded	1.2	1.7	0.0	0.2	0.0	0.2	3.3
Programmatic EEI Funded (with Scientific Irrigation Scheduling [SIS] adjustment)	4.0	3.9	1.0	1.3	1.4	1.7	13.3
Programmatic Agricultural Subtotal	5.2	5.6	1.0	1.5	1.4	1.9	16.6
Programmatic Utility Systems Efficiency							
Programmatic Utility Self-Funded	0.1	0.1	0.0	0.3	0.1	0.1	0.6
Programmatic EEI Funded	0.2	0.2	0.0	0.2	0.1	0.6	1.4
Programmatic Utility Sys. Efficiency Subtotal	0.3	0.3	0.0	0.5	0.2	0.6	2.0
Programmatic Federal							
Programmatic Federal	1.1	1.4	6.6	1.1	2.9	2.4	15.4
Programmatic Federal Subtotal	1.1	1.4	6.6	1.1	2.9	2.4	15.4
NEEA and Momentum Savings							
NEEA Reported Savings	22.3	29.9	27.0	29.3	5.8	6.7	121.0
BPA Momentum	17.7	18.1	20.4	15.2	N/A	N/A	71.4
NEEA and Momentum Savings Subtotal	40.0	48.0	47.4	44.5	5.8	6.7	192.4
Total Savings	98.5	106.1	86.5	84.5	36.8	48.4	460.9
ALL EEI-Funded Programmatic Savings	40.9	34.6	34.8	32.4	26.6	29.5	198.7
ALL Self-Funded Programmatic Savings	17.7	23.5	4.3	7.6	4.4	12.2	69.8
All Programmatic Savings	58.6	58.1	39.1	40.0	31.0	41.7	268.5

Data in this document may include corrections to prior years' data. This data should be used as official data until the next Annual Review.





DOE/BP-5409 • November 2024