ENERGY EFFICIENCY ASSET MANAGEMENT STRATEGY

This asset strategy was prepared before BPA's proposal to reduce costs. Spending levels in this document may not tie to proposed reductions. The strategy will be revised upon conclusion of the CIR and the IPR.

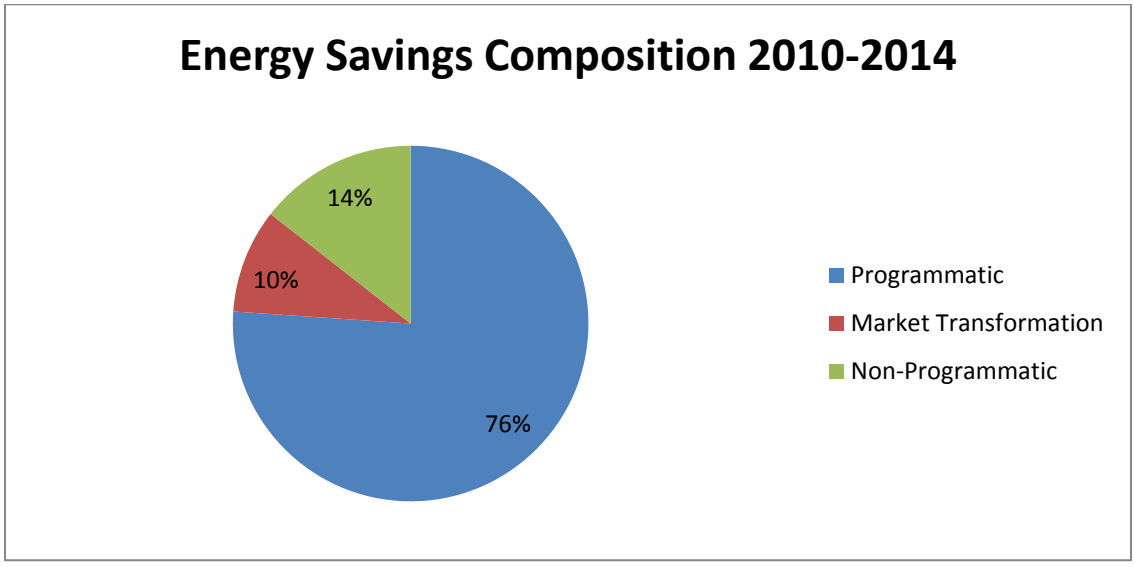
Profile of assets

BPA's asset strategies generally concern physical assets owned by BPA (e.g., hydroelectric dams, transmission facilities, Information Technology equipment). The energy efficiency asset is different than other BPA assets because the physical assets are acquired, owned, operated, and maintained by residential, industrial, commercial or other end-users. From BPA's perspective as a funding entity, the asset acquired is the energy efficiency resource, i.e., the electric energy savings produced by physical assets not owned by BPA, but by end-users. Since neither BPA nor BPA's customer utilities own the asset, BPA treats energy efficiency as a "regulatory asset." However, BPA is required to acquire the asset, which it does through a variety of expenditure deployment strategies, as explained in this asset strategy. BPA has extensive processes to ensure expenditures result in the achievement of real reductions in electric power consumption as a result of increases in efficiency of energy use, production, or distribution.

Below is a figure that demonstrates the relationship between the agency, expenditures, and the acquisition of a regulatory asset:

The energy efficiency asset serves the purpose of reducing the administrator's obligation to serve load as articulated in the 1980 Pacific Northwest Power Planning and Conservation Act (Power Act), which directs the agency to acquire cost-effective conservation.

Energy efficiency also differs from other BPA assets in that products and services produce the asset rather than the other way around. For example, the installation of energy efficient appliances (products) produces the energy savings (the regulatory asset). In this way, there are no energy efficiency asset groups as a kilowatt hour saved is a kilowatt hour not produced. The variation comes in how a kilowatt hour saved is captured by BPA. Generally, there are three types of energy savings: 1) programmatic savings, 2) market transformation savings, and 3) non-programmatic savings. Below is a graph that demonstrates the relative size, on a planning basis, of each of these savings types over the course of fiscal years 2010 – 2014.



Objectives of this strategy

BPA's Long-Term Regional Dialogue Policy sets the agency's overarching energy efficiency goal to "*pursue conservation equivalent to all cost-effective conservation in the service territories of those public utilities served by BPA."* These savings are to be achieved in partnership with public utilities at the lowest possible cost to BPA. Pursuing this objective allows BPA to meet its load obligations at low cost, maximize the value of the hydro system by "stretching the river," and minimize long-term economic costs by investing in the region's lowest cost resource.

To determine the amount of energy savings that constitutes "all cost-effective conservation," BPA looks to the power plans of the Northwest Power and Conservation Council (Council). Each power plan spans twenty years and sets a five-year regional target for cost-effective conservation with a portion of the target attributable to public power. The scope, therefore, of the asset strategy is the amount of energy savings defined in each power plan and attributed to public power. The planning horizon for this asset strategy, spanning 2014 through 2023, will cover the Council's Sixth, Seventh, and Eighth Power Plans.

Capital funds are essential for Energy Efficiency, working in collaboration with public power customers, to achieve its organizational objective and, perhaps more important, for the agency to meet its energy savings commitment. To facilitate savings acquisition, energy efficiency capital is split between covering the costs for 1) payments to utility customers for savings achieved and 2) the costs relating to BPA-managed program implementation. Covering program implementation costs with capital funds allows the region to reach implementation economies of scale across a wide variety of service territories, which lowers the overall regional cost of acquiring savings. An example of capital funds paying for program implementation is the Energy Smart Grocer program that allows utilities to use one regional implementer to acquire energy savings at grocery stores rather than having each utility run its own program or contract individually with an implementer.

Strategic challenges

According to the Council's Sixth Power Plan, the population of the Pacific Northwest will increase from about 13 million in 2010 to about 16.7 million by 2030. Load is projected to increase from 21,000 average megawatts (aMW) to 28,000 aMW, a growth of 7,000 aMW. The implication is that the region will invest in energy efficiency rather than new generation facilities for at least 85 percent, or 5,900 aMW, of the expected load growth.

As one of six agency strategic priorities, BPA is pursuing energy efficiency to meet 85 percent of the load growth of regional public utilities through energy efficiency and conservation over 20 years. Energy efficiency, therefore, is BPA's priority resource for meeting its customers' load growth. Energy efficiency is the lowest cost and least risk resource in the Pacific Northwest. It also:

- Reduces customer utilities' load and load growth and eliminates or defers the need for new generation and transmission infrastructure;
- Supports U.S. energy independence by reducing the need for imported fuel sources; and
- Contributes to climate change mitigation and adaptation efforts because it has a negligible carbon footprint.

A foundation for accomplishing the 85 percent load growth target was established through BPA's new tiered rate design now in effect through the Long-Term Regional Dialogue contracts. Preference customers can extend the value of their allocation of low-cost Tier 1 power from BPA by investing in energy efficiency, which reduces their load and defers their need to purchase more costly Tier 2 power or make other resource acquisitions.

The ambitious target in the Council's Sixth Power Plan required BPA and its customers to expand on existing methods as well as identify and develop new ways to acquire energy efficiency. The portfolio of programs, offerings and activities outlined in the 2012 Action Plan for Energy Efficiency (Action Plan), covering fiscal years 2010-2014, are designed to facilitate meeting public power's share of the Council's target. The Action Plan helps guide BPA's program decisions and its evaluation of progress toward the target.

Drivers

A host of drivers influence BPA's energy efficiency capital investments. First and foremost, the Power Act considers energy efficiency a priority resource. The Power Act specifically calls for the Council to create power plans and for BPA to act consistently with those plans. As mentioned above, the most recent power plan, the Sixth Power Plan, calls for the region to cover 85 percent of load growth with energy efficiency savings and, therefore, BPA's strategic objective is to act consistently with the Plan and ensure public power's share of the regional target is met. BPA and public power customers are committed to capturing energy efficiency benefits for the Pacific Northwest as set out in the agency's long-term strategic objective for energy efficiency: *"BPA and public power cooperatively accomplish public power's share of regionally cost-effective energy efficiency and demand management."*

Energy efficiency is expected to play a critical role in meeting future load growth because it is the lowest-cost resource available to the region. In addition to being the region's lowest-cost

resource, energy efficiency allows BPA to meet its load obligations and plays a critical role in the agency's resource program. Other drivers for the agency's acquisition of energy efficiency include:

- Reducing BPA utility customers' exposure to higher costs for serving above high water mark loads;
- Reducing overall regional electricity consumption, which helps reduce the need for, and costs of, acquiring power and further reduces the need for new transmission and distribution investments; and
- Reducing the amount of carbon emissions that would be emitted by some generation of electricity to serve load growth not otherwise reduced because of energy efficiency savings.

Challenges

The agency faces two primary challenges to achieve its goal of meeting 85 percent of load growth with energy efficiency. The first concerns technology. After years of successfully acquiring energy savings from relatively inexpensive technologies (e.g., lighting from compact florescent lights), the region is transitioning from an era of "low hanging fruit" – low cost savings – to an era of more expensive cost-effective energy efficiency measures and, therefore, higher overall acquisition costs. The consequence of such an increase in overall cost is a failure to meet the agency's targets if budgets do not keep pace with potentially escalating costs.

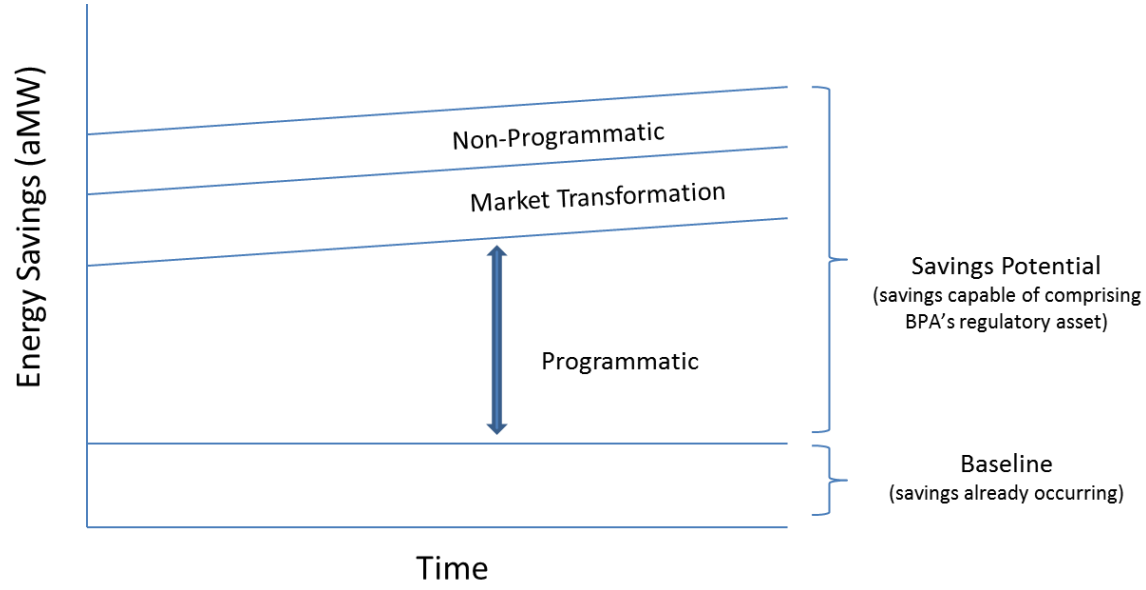
The second challenge concerns the mismatch between Washington State's Initiative 937 (I-937), which requires utilities with at least 25,000 customers to acquire energy efficiency, and the Council's power plan conservation targets. In effect, the mismatch results from target setting using different approaches: the Council's target is based on regional achievable potential and utility targets under I-937 are based on utility-specific conservation potential assessments. When the I-937 individual utility targets are added together, they do not add to the amount of conservation the power plan assumes those utilities will acquire. Thus, BPA's ability to achieve the regional target could be jeopardized since many of its largest public utilities will be acquiring savings at lower levels than the Council's plan assumes. BPA is aware of current legislation in Washington State that may minimize this concern.

Relationship to agency top tier risks

The Energy Efficiency asset strategy does not have many relationships to the agency's Top Tier Enterprise Risks. The main relationship exists with the Capital Availability and Prioritization top tier risk. Between FY2014 and 2023, Energy Efficiency expects to require approximately $100 million in capital funding per fiscal year. Given the agency's earlier practice of using expense dollars rather than capital to fund energy efficiency achievements and the interest on behalf of some customers to work with BPA to identify alternative models to the status quo for funding achievements, it is possible that such changes (and others yet to be identified) could help mitigate the risk of inadequate capital to fund investments that ensure the agency's continued ability to meet the low rate, system reliability, and environmental stewardship pillars of its vision.

Major elements of the strategy

To meet the ambitious goal of meeting 85 percent of load growth with conservation, Energy Efficiency pursues energy saving strategies in the following three areas, as the diagram illustrates below: 1) Programmatic; 2) Market Transformation; and 3) Non-Programmatic. At any given point in time, there is a certain amount of savings that have already been accounted for and comprise the baseline. Any savings above the baseline are eligible to be reported against BPA's targets. Programmatic savings are achieved with the use of capital funding, whereas market transformation and non-programmatic savings are achieved with expense funding.



Programmatic savings

Programmatic savings are achieved in two ways: through BPA's customer utilities and BPA regional programs. Customer utilities offer programs to incent end-users to save energy. Those energy savings are then reported to BPA, which pays the utilities for acquiring the savings. Utility programs achieve savings in each market sector (commercial, industrial, residential, agricultural) through a mix of Unit Energy Savings (i.e., savings on a per-unit basis), calculators (e.g., lighting), and custom projects and programs.

At least 70% of the capital funding made available to Energy Efficiency for acquiring energy efficiency savings is allocated to utility customers via Energy Conservation Agreements and the Energy Efficiency Incentive (EEI). Therefore, customers, not BPA, have direct control over the timing and specific use of these funds. EEI funds must be spent in a particular rate period on cost-effective energy efficiency savings that count toward public power's share of the regional target. Utilities must follow the Energy Efficiency Implementation Manual (IM) (http://www.bpa.gov/Energy/N/implementation.cfm) in order to be reimbursed. Energy Efficiency Contracts Administration provides receipt and acceptance as well as oversight on the savings acquisition and spending. Detailed information on measures and projects that are claimed toward the target are retained in the Energy Efficiency Database, an internal resource

used for reference and future program design.

Energy Efficiency uses the portion of its capital spending not allocated to customers via the EEI mechanism to cover the costs of delivering regional programs. This includes the costs associated with managing regional programs, such as Energy Smart Grocer and Energy Smart Industrial. Energy Efficiency prioritizes the portion of the capital spending over which it retains control by directing it to regional programs that meet a market need or offer a program opportunity. Energy Smart Grocer is an example of a program that fills a niche need and has proven to be a successful delivery mechanism across BPA's service territory while meeting the diverse needs within the agency's customer base. Energy Smart Industrial is an example of a successful program that captured available energy efficiency that was not being fully tapped. With increased resources and focus, this potential has been successfully reached.

Market transformation savings

Market transformation savings leverage the regional market's power to accelerate innovation and adopt energy-efficient products, services and practices. Examples include collaborating with manufacturers to integrate energy efficiency into their product designs and with architects and builders to promote early adoption of energy efficient designs and practices. BPA partners with and is the major funder of the Northwest Energy Efficiency Alliance, which promotes market transformation.

Non-programmatic savings

Non-programmatic savings are:

- Cost-effective;
- Above the assumed baseline for determining conservation potentials in the Council Plan;
- Not incented through utility-sponsored energy-efficiency programs; *and*
- Not part of net-market effects claimed by NEEA.

For instance, thousands of compact fluorescent light bulbs are purchased and installed in the region without the use of utility financial incentives. BPA tracks and accounts for these savings through data collection to inexpensively capture the savings that count toward public power's target.

Key execution risks

The agency faces several risks that may jeopardize achieving the agency's energy efficiency strategic objective of meeting public power's share of the regional savings target.

1. *The costs for acquiring energy efficiency end up being more than what the agency has planned*. Energy Efficiency estimates the cost of acquiring savings for each of the five years of a power plan. If actual costs are more than projected costs, there might not be enough funding to reach annual savings targets, which would increase the possibility of missing the five-year savings target. To mitigate this risk, the costs are managed at both the measure and portfolio levels. BPA sets reimbursement rates at levels that represent the value to the system as well as help move the market for a particular measure or technology. This allows some control on the uptake of a measure, although that is ultimately controlled by

customer utility programs.

2. *Utility customers do not deliver 25 percent of the programmatic savings.* Beginning in fiscal year 2012, BPA has planned to achieve 75 percent of public power's programmatic savings targets via the Energy Efficiency Incentive, i.e., payments paid by BPA to utilities. Utility customers are expected to achieve the remaining 25 percent without payment from BPA. This achievement split provides customers with a degree of local control and lowers BPA's wholesale power rate. Although this achievement split was agreed to during the original Post-2011 Public Process, it poses a risk to BPA's energy efficiency objective if customers do not deliver enough programmatic savings to reach the 25 percent target. For the FY 2012-2013 rate period, utilities surpassed the target by delivering more than the projected 30 aMW. The risk, however, remains for FY 2014 and beyond, especially considering the mismatch between Washington State I-937 utility targets and the Council's power plans (as discussed above in the *Challenges* section). This is being considered in the Post-2011 Review, that is currently taking place.

3. *The timing of BPA's setting of proposed spending and the setting of regional savings targets do not easily align*. BPA's Integrated Program Review and rate setting necessitate that Energy Efficiency's proposed spending is set before regional savings targets stipulated by the Council are known. For example, the FY 2014-2015 IPR and rate case schedules have resulted in Energy Efficiency spending levels being set before the Seventh Power Plan conservation targets are known, which is now estimated to be late 2015. As was the case with the release of the Sixth Power Plan, BPA can revise out-year spending levels appropriately to meet the targets.

Technology Innovation

There are a number of ways in which BPA's Technology Innovation (TI) Office helps deliver value to BPA's Energy Efficiency organization and, by extension, the Pacific Northwest. Collectively, this support can be understood as helping to "fill the pipeline" of energy efficiency products and services through the deeper research and development (R&D) process, into the realm of technology evaluation and verification, and thence on to utility program implementation that drives regional energy efficiency achievements.

Since 2006, the TI Office has funded and continues to help facilitate the development and maintenance of the *National Energy Efficiency Technology Roadmap Portfolio* (*EE Roadmap*). This resource distills input from subject matter experts across North America to identify research needs in the residential, commercial, and industrial sectors. This input then helps guide agency R&D planning and the development of research focus areas that serve as the core of the agency's annual research proposal solicitation process.

The *EE Roadmap* largely identifies research needs that extend beyond the three-year time horizon to help fill the pipeline of products and services for future efficiency measures. The TI Office also funds an array of projects for technologies that are nearer to being market-ready but perhaps require some additional laboratory testing, field trials, or pilot projects to verify energy savings. These kinds of projects are under the purview of the agency's Energy Efficiency Emerging Technology (E3T) team. Such projects include work with national laboratories,

research universities, vendors, and other utilities. It also includes funding for an array of projects that the Electric Power Research Institute (EPRI) manages by leveraging the involvement of multiple utilities to ensure robust results for all participants while minimizing the financial commitments and risk of any particular utility.

Another important initiative that the TI Office funds is BPA EE's membership to EPRI itself. This funding ensures deep and ongoing engagement with this recognized international leader in conducting research and development on behalf of the global utility industry. This engagement includes working together (since 2012) on the maturation of the *EE Roadmap* and BPA EE representation on EPRI's boards and committees providing strategic planning and technical guidance. Both of these ensure that BPA is a valued partner and contributor during discussions of regional, national, and international importance to the utility industry.

Another way in which the BPA TI Office supports the agency's EE Asset Strategy is by providing the service of "technology management." Technology management is a professional discipline that encapsulates all of the above elements by ensuring a robust, disciplined, and strategic approach to all phases of technology research, development, and deployment. With a strong foundation in both the academic discipline of technology management and the complex real-world dynamics within the utility industry, the BPA TI Office is well-equipped to provide tools, funding, staff support, and best practices in roadmapping, project management, budget management, and other areas. Though BPA's E3T team provides the expertise to transfer technologies from the laboratory into utility programs, the TI Office is equipped to support this function as well, as they do for other groups in the agency.

There are many ways in which the broad context of support from the TI Office to help "fill the pipeline" for regional energy savings is reflected in tangible achievements. Two specific recent projects provide examples.

Because heat pump water heaters offer 50% savings over standard water heaters, both BPA and EPRI have been keenly interested in gathering the quantitative data necessary to support widespread introduction into utility programs. With funds from the TI Office, BPA and EPRI are currently researching next-generation technologies that show an additional 50% savings compared to current technologies with designs that can be optimized to meet both energy efficiency and demand response needs.

A second example involves commercial heating and ventilation controls. Current technologies are very inefficient. Emerging products are relatively easy to implement and save more than 30% on average through variable speed technologies, better controls, remote monitoring, and by turning things off when spaces are not occupied. One R&D project that the TI Office funds is helping to address an important gap that contributors to the *National Energy Efficiency Technology Roadmap Portfolio* have observed: developing integrated solutions. This project integrates the heating, ventilation, and air conditioning (HVAC) monitoring system with the lighting and water heating systems to deliver both energy efficiency and dispatchable demand response functionality.

Process performance

Energy Efficiency has a number of process performance measures and targets. A principle leading performance measure is the organization's annual savings target. Based on the conservation target in the Council's power plan and the subsequent Action Plan for Energy Efficiency, Energy Efficiency develops an annual target for programmatic energy savings. The purpose of this target is ensuring the agency is able to fulfill its commitment to delivering public power's share of the regional target over the five-year plan. To help the organization monitor and measure its progress toward the annual target, the organization has a reporting system that aggregates the total amount of savings reported to BPA. Reports generated by the system, therefore, capture savings reported on a looking-back basis. To forecast savings delivery during the rest of the year, the organization requests spending and savings levels from customer utilities on a quarterly basis. Thus, reports from the reporting system and forecasts from customer utilities provide the organization information necessary to gauge annual performance.

A principle lagging performance measure is the organization's customer satisfaction survey. Generally, EE has customer utilities complete a satisfaction survey typically every other year. Given that EE's asset strategy is so dependent on its relationship with customer utilities, the survey provides necessary feedback to determine how well EE is performing in terms of its business relationship with customer utilities in their efforts to acquire energy savings.

Results to be achieved

By the end of the 2016-2017 rate period, public power will be two years into the Council's Seventh Power Plan. Success, therefore, will be measured by whether public power is on track to meet the five year conservation target in the Seventh Power Plan. Because the Seventh Power Plan will not be final until the end of calendar year 2015, it is impossible to say at this point what "on track" looks like in terms of savings achievements as the overall five year target is not yet known.

Spending levels

Without knowing the conservation targets in the Seventh Power Plan, it is difficult to confidently estimate the capital level of funding for Energy Efficiency over a 10-year planning horizon. However, the five year savings target in the Sixth Power Plan is based on a twenty year power plan and it is the twenty year plan that envisions 85% of load growth being met through conservation. Therefore, it is likely a safe assumption that the savings target in the Seventh Power Plan will not be significantly lower than the target in the Sixth Power Plan. In fact, the twenty year plan assumes an upward trend of targets over time, so it is more likely the Seventh Power Plan target will be larger than the one in the Sixth Power Plan. At this point, however, such an increase remains speculative. Therefore, as the regional power planning and Post-2011 Review processes evolve, the 10-year planning horizon for Energy Efficiency capital funding only assumes annual budgets are increased by the rate of inflation beginning in FY2015 (as was also done in the last Integrated Program Review).

Energy Efficiency ($M)	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	10-Year Total
EE Incentive (EEI)	52.6	64.4	66.33	68.3	70.37	72.5	74.7	76.9	79.2	81.4	706.7
BPA-Managed	22.6	27.6	28.43	29.3	30.16	31.1	32.0	33.0	33.9	34.9	302.9
Total	75.2	92.0	94.8	97.6	100.5	103.6	106.7	109.9	113.1	116.3	1,009.6

Financial Disclosure

This information has been made publicly available by BPA on February 19, 2014 and contains information not reported in BPA financial statements.