ENERGY EFFICIENCY ASSET STRATEGY SUMMARY

9 ENERGY EFFICIENCY

9.1 STRATEGIC PRIORITY

BPA is pursuing energy efficiency as one of six strategic priorities. Advance energy efficiency: Meet 85 percent of the load growth of regional public utilities through energy efficiency and conservation over 20 years.

Energy efficiency 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 and
- contributes to climate change mitigation and adaptation efforts because it has a negligible carbon footprint.

Energy efficiency efforts have already enabled the Pacific Northwest to capture over 4.2 gigawatts in cumulative energy savings since 1980, enough to power four cities the size of Seattle for a year.

As reaffirmed in a recent public process, 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."*

Together, the agency and public power aim to meet 85 percent of public power's 20-year load growth with energy efficiency, a goal consistent with the Northwest Power and Conservation Council's Sixth Power Plan targets (www.nwcouncil.org). According to the 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 to 28,000 aMW. The implication is that the region will invest in energy efficiency rather than new generation facilities for 85 percent, or 5,900 aMW, of the expected load growth.

BPA's new tiered rate design, now in effect through the Long-Term Regional Dialogue contracts established the foundation for accomplishing the 85 percent load growth target. 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. To meet the 85 percent target, BPA is pursuing energy saving strategies in three areas.

Utility program savings (programmatic savings)

Utility programs will represent the bulk of the savings through efforts that emphasize three areas.

- *Infrastructure support*, which includes developing policies to encourage energy efficiency, improving the region's ability to achieve energy efficiency through regional programs,

reaching out and engaging with customer utilities and other energy efficiency project implementation stakeholders, conducting research and evaluations, and providing technical support for project implementation.

- *Acquisition funding and support,* which is provided in the form of incentive dollars to help customers achieve cost-effective energy efficiency.
- *Innovation,* which continues to develop new ways to save energy at the lowest possible cost.

Market transformation savings

Market transformation savings will 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.

Nonprogrammatic savings

Nonprogrammatic savings will target energy efficiency that occurs through codes and standards as well as through opportunities outside utility programs or market transformation efforts. For instance, thousands of compact fluorescent light bulbs are purchased and installed in the region without utility financial incentives, making them extremely cost effective. BPA will track and account for these savings because they count toward public power's target.

Figure 66 - 6th Power Plan Savings Summary (aMW)

Savings by funding source	2010 Actual	2011 Estimated	2012 Projected	2013 Projected	2014 Projected	Total Savings
BPA Funded Programmatic Savings	57	105	46	42	39	**289**
Utility Self Funded Savings	23	2	16	14	13	**68**
Norpac	0	1	6	0	5	**12**
Market Transformation (NEEA)	11	11	8	8	8	**46**
Non-Programmatic	15	14	14	14	13	**70**
Carryover	0	0	11	11	11	**34**
Total Annual Savings	**106**	**132**	**102**	**89**	**89**	**518**
Total Reported 6th Plan Savings*	**103**	**128**	**98**	**86**	**89**	**504**
Self- Funded % of Total	29%	2%	25%	25%	25%	19%

*Savings toward the 6th Plan targets count 1 year measure life savings once, in 2014, although savings are achieved annually and count toward annual targets (e.g., Scientific Irrigation Scheduling).

9.2 PURPOSE AND SCOPE OF ASSET STRATEGY

This plan covers the capital expenditures BPA will use to acquire energy efficiency (conservation) in partnership with its public power customer utilities. The vast majority of these funds are used in energy efficiency incentive programs that reimburse customer utilities and third-party program implementers. BPA is currently investing in two software tools that, when fully developed, will enable the agency to report and track customer utility savings and expenditures. Other energy efficiency targets, such as staffing, marketing, evaluation, research and funding for the Northwest Energy Efficiency Alliance, are expenses rather than capital investments.

This asset strategy is somewhat different from other BPA asset strategies 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 – the electric energy savings. BPA treats its expenditures as a regulatory asset; neither BPA nor the customer utility owns the asset. BPA pays for the savings based on criteria explained below and has an extensive acceptance and oversight process to ensure the investment is achieving real reductions in electricity usage.

9.3 BACKGROUND

As BPA and public power planned to meet the aggressive energy efficiency targets in the Sixth Power Plan, the agency developed an Action Plan for Energy Efficiency 2010 – 2014. The Sixth Power Plan, adopted in February 2010, calls for the region to acquire 1,200 aMW of efficiency between FY 2010 and FY 2014. Public power's share of that target is 504 aMW (42 percent), a significant increase over past targets and a much higher target than the savings achieved in any previous five-year period. The annual targets for FY 2010 and FY 2011 were 80 and 99 aMW, respectively, for programmatic savings and market transformation.

The ambitious target in the Council's plan requires BPA and its customers to expand existing methods as well as to identify and develop new ways to acquire energy efficiency. The portfolio of programs, offerings and activities outlined in the agency's Action Plan are designed to facilitate meeting public power's share of the Council's target. The Action Plan will help guide BPA's program decisions and its evaluation of progress toward the target. BPA will continue to collaborate with its customers and other stakeholders to update the Action Plan as conditions warrant.

Since the development of the Action Plan in 2010, public power and BPA have been very successful in meeting the annual targets within the Sixth Power Plan. In FY 2010 public power achieved over 90 aMW, and in FY 2011 that number was 118 aMW of programmatic and market transformation savings at a cost of approximately $1.7 million per aMW. This is less than the $2.1 million per aMW that was forecast in the Energy Efficiency Plan. If nonprogrammatic savings are included (assumed to be approximately 14 aMW per year), BPA and public power are collectively well on track to meeting public power's 504 aMW target. An updated Action Plan reflects the successes of the past two fiscal years and responds to the ever-changing energy efficiency landscape.

9.4 ASSET MANAGEMENT OBJECTIVES

The Long-Term Regional Dialogue Policy sets BPA's overarching energy efficiency goal of acquiring public power's share of all cost-effective conservation using the Council's Power Plan as the basis for setting the conservation target. These savings are to be achieved at the lowest possible cost to BPA and the region. BPA collects enough in rates to achieve 75 percent of public power's share of the programmatic target. Customer utilities are expected to self-fund the other 25 percent of the target. This helps keep BPA's wholesale rate low while allowing for local control and flexibility in implementing local utility programs and providing more assurance that the target will be met.

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 energy efficiency incentives paid to utility customers and 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. The Energy Smart Grocer program is an example of capital funds paying for program implementation. The program 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.

Capital funds BPA uses to invest in electric energy savings are considered an investment in a "regulatory asset." Neither BPA nor the utilities owns the "asset," be it a new efficient heat pump or high efficiency commercial lighting, but the funds providing the equipment are considered an asset because of the regulatory requirements placed on BPA to acquire conservation. Only savings that are "cost effective" fall within the boundaries of being a regulatory asset. Cost effective is defined as having a benefit/cost ratio greater than 1.0, which means the present value of the benefits (energy savings plus non energy benefits) over the lifetime of a given measure is equal to or greater than the measure's total incremental cost. BPA works very closely with the Council's Regional Technical Forum, a technical advisory committee, to evaluate the savings and costs for specific measures. This independent/peer review and coordination provides a robust review of savings estimates. These savings and costs determine the cost effectiveness of specific measures/technologies.

Energy efficiency investments are amortized over 12 years, which is the average measure life as defined in the Sixth Power Plan.[13] The benefit of amortizing energy efficiency investments is to lessen the upward pressure on power rates while allowing public power to achieve its ambitious savings target. Amortization also allows energy efficiency to be evaluated and treated similarly to other capital investments. The Pacific Northwest Electric Power Planning and Conservation Act of 1980 established conservation as a resource, resulting in energy efficiency being funded similarly to other capitalized generating resources.

9.5 KEY DRIVERS

A host of drivers influences BPA's Energy Efficiency capital investments. First and foremost, the Northwest Power and Conservation Act considers energy efficiency a priority resource. The Act specifically calls for the Northwest Power and Conservation Council to create power plans and for BPA to act consistently with those plans. The most recent, the Sixth Power Plan, calls for the region to cover 85 percent of load growth with energy efficiency savings. Therefore, BPA's strategic objective is to act consistently with the plan and ensure public power's share of the regional target is met. 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

[13] Measure life is the median effective useful life of an energy savings technology.

lowest-cost resource, energy efficiency also reduces the load BPA is obligated to serve. Reducing load is a key driver behind energy efficiency investments.

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 generating electricity to serve load growth not otherwise reduced because of energy efficiency savings.

9.6 KEY RISKS

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

- *The costs of acquiring energy efficiency end up being more than the agency has planned*. Energy Efficiency estimates the cost of acquiring savings for each of the five years of the Sixth 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, costs are managed at both the measure and portfolio levels. BPA sets reimbursement rates at levels that represent the greatest 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.

- *Utility customers do not adequately self-fund.* BPA has planned to pay for 75 percent of public power's programmatic savings targets for FY 2012 through FY 2014. Utility customers are expected to pay directly for, or "self-fund," the remaining 25 percent. This self-funding provides customers with a degree of local control and autonomy. Although this self-funding split was agreed to during the post-2011 public process, it poses a risk to BPA's energy efficiency objective if customers do not self-fund enough efficiency to reach the 25 percent self-funding target. Inadequate self-funding could result from a variety of reasons, including customers facing flat or declining loads. In spite of low load growth, utilities indicate to BPA staff that they continue to be committed to self-funding 25 percent of the programmatic savings target.

  Customers in Washington that are subject to Initiative 937 have an additional incentive in the form of a financial penalty from the state if they do not meet all cost-effective energy efficiency targeted for their service territories. Customers subject to I-937 represent a significant portion of BPA's load, which creates a sizable opportunity to achieve energy efficiency and helps mitigate the self-funding risk.

- *The timing of BPA's energy efficiency target setting does not align with the Council's timing for regional target setting.* BPA's IPR and rate setting necessitate that Energy Efficiency's

proposed spending targets be set before regional savings targets stipulated by the Council are known. For example, the FY 2014-2015 IPR and rate case schedules will result in Energy Efficiency spending levels being set for the first year of the Seventh Power Plan prior to the FY 2015-2019 targets being available from the Council, estimated to be sometime around December 2014/January 2015. However, as was the case with the release of the Sixth Power Plan, BPA can revise out-year spending levels appropriately to meet the targets.

- Utility customers may be hampered in their ability to implement programs and acquire savings if contractor infrastructure is compromised during a "conservation roller coaster." The roller coaster refers to spending that fluctuates significantly from one year to the next.

9.7 STRATEGY

In March 2010, BPA closed out a two-year public process to lay out the foundational policies of BPA's energy efficiency program beginning Oct. 1, 2011 ("post-2011"). During this process, utility customers and regional stakeholders provided input on alternative energy efficiency program strategies that BPA could pursue post-2011. The resulting strategy, defined in the *"Post-2011 Policy Framework,"* supports allocating capital funding to customers on a Tier One Cost Allocator basis and assuming customers self-fund 25 percent of public power's programmatic savings target. More information relating to the post-2011 public process and resulting documents is available online.

BPA has pledged to stakeholders that, before the end of FY 2014, the agency will review the post-2011 policy framework, giving particular attention to the overall percentage of self-funding. During this review, BPA will analyze prior self-funding levels to determine if the 25 percent level should be increased, decreased or maintained. Until this review is complete, BPA will implement its post-2011 policy as it stands.

9.8 PRIORITIZATION PROCESS

More than two-thirds of the capital funding made available to Energy Efficiency for acquiring energy efficiency savings is allocated to utility customers via Energy Conservation Agreements. Therefore, customers, not BPA, have direct control over the timing and specific use of these funds, which are known as Energy Efficiency Incentive 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 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. 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 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 a successful program that captures available energy efficiency that was not being fully tapped.

9.9 Costs

BPA Energy Efficiency's cost of acquisition is based on a) the amount of savings from measures/projects (which is a function of the number of measures/projects) implemented by utilities and paid for by BPA and b) the amount that BPA offers in reimbursements for each measure/project.

The Action Plan determines how the public power savings target will be met. The Action Plan breaks down the overall savings target into programmatic, nonprogrammatic and market transformation savings goals. The programmatic target is further broken down into savings targets by sector (residential, commercial, industrial and agricultural). For example, over the five-year period of the Sixth Power Plan, the Action Plan (of March 2012) indicated that 143 aMW of savings would be achieved by the residential sector, which comprises a multitude of individual energy efficiency measures.

Figure 67 - Total Annually Reported Programmatic Savings (aMW)

	2010 Actual	2011 Estimated	2012 Projected	2013 Projected	2014 Projected	2010-2014 Total
Portfolio	**80**	**107**	**62**	**56**	**51**	**356**
By Sector						
Residential	31	39	28	25	21	**143**
Commercial	24	26	18	15	11	**94**
Industrial	14	30	7	7	8	**67**
Agriculture	8	9	5	5	5	**32**
DSEI	0	1	1	2	2	**5**
Federal	3	3	3	3	3	**15**

*DSEI – Distribution System Efficiency

For individual measures, BPA determines reimbursements individually based on four key factors.

- The incremental measure cost (as determined by the Regional Technical Forum).
- The levelized cost of the proposed reimbursement over the lifetime of the measure.
- the first-year cost per kilowatt-hour of the proposed reimbursement.
- The market situation of the measure (for example, the measure is new and needs additional incentives to encourage participation).

BPA pays up to the incremental cost for measures and does not allow the levelized cost of reimbursements to exceed the avoided cost of energy efficiency (defined in the Power Plan). In addition, the goal is to balance the portfolio's overall reimbursements to the budget-defined goal, which is stated in millions per first-year aMW. This is the budget-based cost metric and does not necessarily include the value of the savings over the lifetime of the measure. For custom projects, BPA pays a dollar-per-kWh value based on verified savings on completed projects.

As an example, calculating the total cost of the savings from the residential sector involves BPA multiplying a measure's reimbursement amount (for example, $100) by the number of that measure (for example, 1,000) expected to be installed and reported to BPA over the five years of the Council Plan. This calculation is then repeated for all the measures falling within the residential sector target. Rolling these costs up to the sector level provides the overall cost for the residential sector. This bottom-up calculation is then performed for the other sectors, including the costs of expected custom projects, and then rolled up to the programmatic level. This provides BPA with an overall cost estimate, expressed as a dollar figure per average megawatt ($/aMW) that represents the reimbursement amount divided by the first-year energy savings. Because energy efficiency is a regulatory asset, there are no maintenance costs. In addition, the capital cost includes payments to third-party program implementation contractors and performance payments to utilities.

The above analysis helps provide the agency with an understanding of the overall expected capital cost to achieve the savings target. It does not cover the total amount the agency will spend on energy efficiency, which also includes expenses such as research, market transformation costs and internal labor. The total capital planned spending for Energy Efficiency for FY 2010 through FY 2014 is $459 million.

Because the savings targets for the Seventh Power Plan are not yet known, BPA has made an assumption that the capital needs for FY 2015 through FY 2021 will be similar to those under the Sixth Power Plan. The capital forecasts for FY 2015 through FY 2021 were determined by taking the average annual capital spending from FY 2010 through FY 2014 and increasing it by an inflation factor. As the targets from the Seventh Plan are known, BPA expects forecast spending will be adjusted to meet the targets.

Figure 68 - 10-year Energy Efficiency Capital Costs ($ millions)

	Current rate period		Next rate period									
	FY 2012	FY 2013	FY 2014	FY 2015	4-Year Total	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	10-Year Total
Capital Investment (excluding AFUDC and Corporate Overheads)												
Energy Efficiency												
Energy Efficiency Incentive	73.3	56.3	52.6	64.4	246.6	66.3	68.3	70.4	72.5	74.7	76.9	675.8
BPA Managed Program Budget	15.7	18.9	22.6	27.6	84.8	28.4	29.3	30.2	31.1	32.0	33.0	268.7
Total	89.0	75.2	75.2	92.0	331.4	94.8	97.6	100.5	103.6	106.7	109.9	944.4

The investments made with capital funding for energy efficiency are used to acquire the most cost-effective resource in the Pacific Northwest. Additionally, energy efficiency significantly contributes to several critical policy goals that help keep the cost of electric power to end users as low as possible:

- Meet 85 percent of the load growth of regional public utilities through energy efficiency and conservation over 20 years.
- BPA and public power cooperatively accomplish public power's share of regionally cost-effective energy efficiency and demand management.