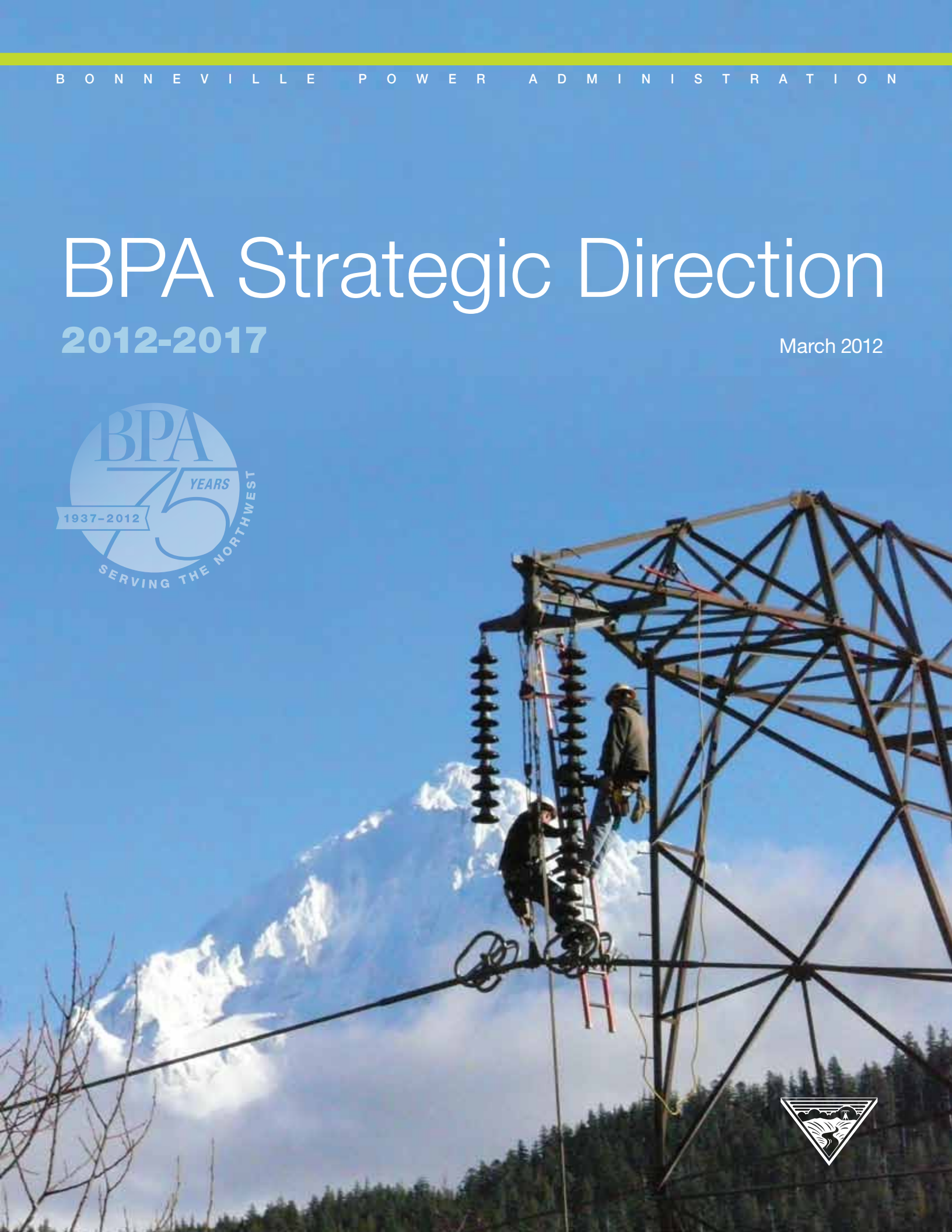


# BPA Strategic Direction

**2012-2017**

March 2012



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## Executive Summary

Our **mission\*** is to provide reliable and adequate power and transmission service at low rates for our customers and constituents in the Pacific Northwest and to mitigate impacts of the federal hydro system on fish and wildlife.

The four pillars of our **vision\*** to achieve this mission are system reliability, low rates, environmental stewardship and accountability to the region.

The major **drivers** of change that we face in our industry environment include:

- Difficult economic environment
- Climate change uncertainty
- Renewable energy growth
- Shifting resource conditions
- Compliance requirements (endangered species and reliability)

To fulfill our vision in this environment, and to sustain the satisfaction of the customer, constituent and tribal government stakeholders we serve, our **strategic priorities** for 2012-2017 are to:

### 1. Preserve and enhance generation and transmission system assets and value

Preserve and enhance federal generation and transmission assets and the economic, environmental and operational value they produce for the region, while anticipating and adapting to industry developments and regulatory changes.

### 2. Review Columbia River Treaty

Recommend a course of action to the U.S. Department of State so that a viable Treaty strategy can be developed with substantial support among basin sovereigns and stakeholders.

### 3. Advance energy efficiency

Meet 85 percent of the load growth of regional public utilities through energy efficiency and conservation over 20 years.

### 4. Expand balancing capabilities and resources

Expand BPA Balancing Authority capabilities and customer access to flexible balancing resources in order to support reliability and renewables.



### 5. Implement Endangered Species responsibilities

Implement hydro, habitat and hatchery actions that effectively and efficiently advance the recovery of fish, including salmon, steelhead, sturgeon and bull trout.

### 6. Increase operational excellence and employee engagement

Foster operational excellence and employee engagement to ensure that:

- a. BPA meets the demands of business operations efficiently and effectively through standardized, continuously-improved systems and processes, and
- b. BPA's employee-employer relationships produce high levels of employee commitment and enthusiasm toward our work and deliver better business outcomes for the region.

These strategic priorities support our ongoing strategic objectives, the long-term outcomes we pursue across our entire business to support our mission and vision. (See Appendix A for details.) These objectives underpin all of the agency's major initiatives and operations.

*\* Abridged version*



## Our Business

Headquartered in Portland, Oregon, BPA is a self-financed federal agency established in 1937 to market and transmit wholesale electricity to the utilities of the Pacific Northwest.

**BPA recovers all of its costs, and repays the U.S. Treasury in full with interest** for any money we borrow, through sales of electricity and transmission services.

**BPA is one of the largest providers of low cost, clean, carbon free energy in the nation.** We market power generated at 31 federal hydro-electric dams. These dams capture the power of the Columbia River and its tributaries and generate some of the most affordable electricity in the nation. Owned and operated by the U.S. Army Corps of Engineers and the Bureau of Reclamation, the dams have a capacity of over 22,000 megawatts.<sup>1</sup> BPA's power portfolio is emissions free. It also includes nonfederal wind output and the Columbia Generating Station nonfederal nuclear plant.

**BPA's transmission system includes more than 15,000 miles of high-voltage power lines,** a dependable network of transmission highways that deliver electricity across the Pacific Northwest and into California, Canada and Montana. We keep lights on and electricity flowing by managing the real-time operation of this system, ongoing maintenance of infrastructure, and expansion and upgrades of infrastructure to meet a range of customer needs for service and interconnection.

**BPA's customers** include public utility districts, cooperatives, municipalities, investor-owned utilities, tribal governments, power marketers, wind and other resource developers, federal agencies and some large industries. Public bodies and cooperatives in the Pacific Northwest are assured the first opportunity to buy BPA power — these are known as “public preference customers.”

**BPA funds and oversees the largest fish and wildlife program in the nation.** We directly invest over \$400 million every year to protect fish and wildlife affected by the development and operation of the Columbia River hydro system. These expenditures are in addition to foregone revenues of approximately \$300-\$400 million per year. BPA's investments are driven by biological performance and include dam modifications and flow and spill operations that make fish passage safer; land and water acquisition and restoration activities that improve fish and wildlife habitat; and funding that supports fish hatcheries and fish research and monitoring.



**Energy efficiency accounts for BPA's largest resource addition over the past 29 years.** The agency has acquired more than 1,200 average megawatts of energy efficiency savings — more than twice the energy the Bonneville Dam produces in an entire year.

**BPA employees enjoy a diverse and challenging work environment,** where talent is nurtured and professional goals are encouraged and met. We place a high value on demonstrating results and on supporting work-life balance for employees.

For more background information about BPA, please go to [www.bpa.gov/corporate/about\\_bpa/](http://www.bpa.gov/corporate/about_bpa/).

## Our Mission

The Bonneville Power Administration's mission as a public service organization is to create and deliver the best value for our customers and constituents as we act in concert with others to assure the Pacific Northwest:

- An adequate, efficient, economical and reliable power supply;
- A transmission system that is adequate to the task of integrating and transmitting power from federal and nonfederal generating units, providing service to BPA's customers, providing interregional interconnections and maintaining electrical reliability and stability; and
- Mitigation of the Federal Columbia River Power System's (FCRPS) impacts on fish and wildlife.

BPA is committed to cost-based rates and public and regional preference in its marketing of power. BPA will set its rates as low as possible consistent with sound business principles and the full recovery of all of its costs, including timely repayment of the federal investment in the system.

<sup>1</sup> 2012 FCRPS Hydro Asset Strategy

## Our Vision

BPA will be an engine of the Northwest's economic prosperity and environmental sustainability. BPA's actions advance a Northwest power and transmission system that is a national leader in providing:

- High reliability;
- Low rates consistent with sound business principles;
- Responsible environmental stewardship; and
- Accountability to the region.

We deliver on these public responsibilities through a commercially successful business.

## Our Objectives

Our ongoing strategic objectives are the 22 long-term outcomes we pursue to achieve our mission and vision. They direct all of our initiatives and operations and guide our balanced scorecard planning and target setting for each business unit. Objectives are referenced by their "balanced scorecard" perspective: "S" for Stakeholder, "F" for Financial, "I" for Internal Operations and "P" for People & Culture. See Appendix A for details.

## Our Values

### Trustworthy Stewardship

As stewards of the FCRPS, we are entrusted with the responsibility to manage resources of great value for the benefit of others. We are trusted when others believe in and are willing to rely upon our integrity and ability.

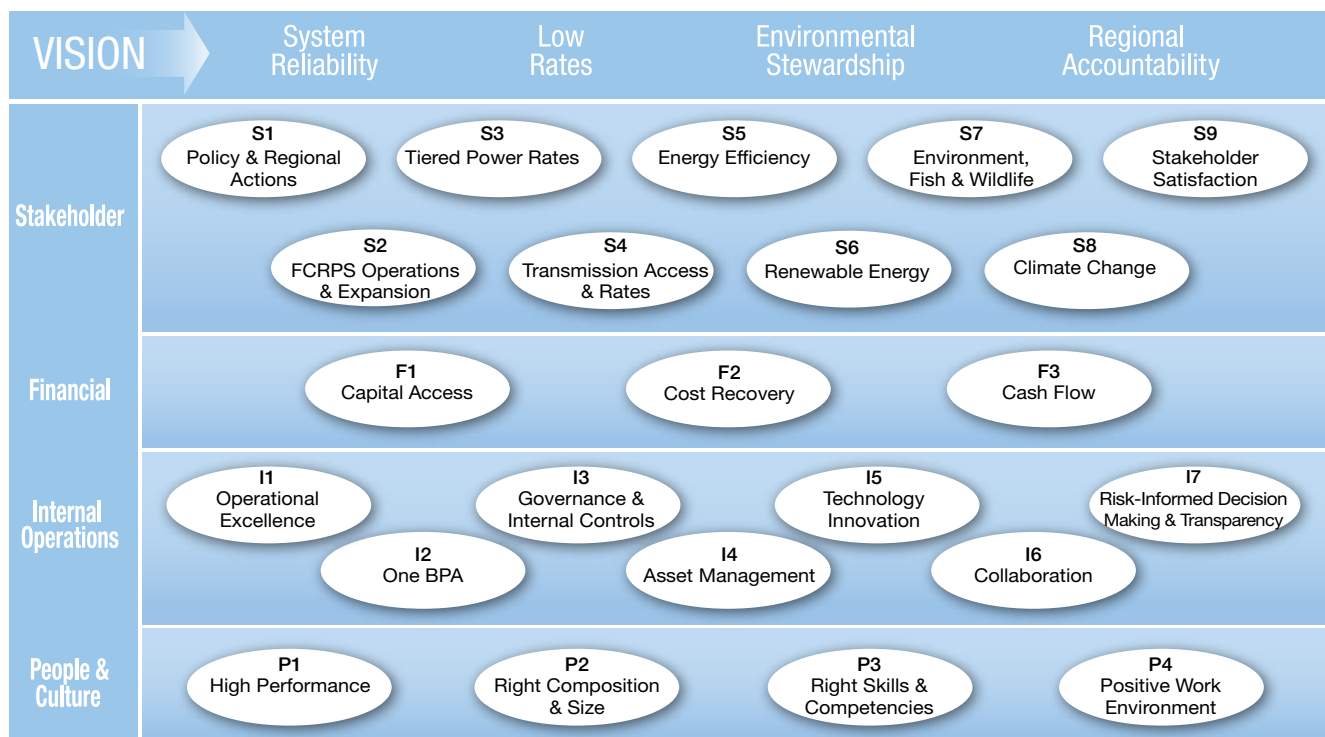
### Collaborative Relationships

Trustworthiness grows out of a collaborative approach to relationships. Internally we must collaborate across organizational lines to maximize the value we bring to the region. Externally we work with many stakeholders who have conflicting needs and interests. Through collaboration we discover and implement the best possible long-term solutions.

### Operational Excellence

Operational excellence is continuously improving the way we do business to produce more efficient and effective ways of delivering on BPA's mission and vision. Achieving operational excellence will place us among the best electric utilities in the nation.

## BPA Strategic Objectives 2012-2017



## Our Regional and Industry Environment

BPA faces a range of developments that are driving major changes in our industry and regional environment. Below is an overview of these “drivers.” For further details, see Appendix B.

### Difficult economic environment

In the wake of the recession, the region continues to experience high unemployment, elusive economic growth and cautious capital investment. Also, regional power loads dropped about 9 percent from 2008 to 2010, and growth is expected to be flat or slight until 2015. Given our economic environment and aging infrastructure, a continued focus on disciplined cost management, low rates, capital project prioritization and access to capital is exceedingly important.

### Climate change uncertainty

While the direction of federal climate change and energy legislation remains uncertain, neighboring California plans to launch a cap and trade platform to put a price on greenhouse gas emissions in January 2013. This will likely affect electricity prices and the types of new generation that are developed.

Also, recent studies suggest Northwest weather could continue to warm, resulting in increased river flows in winter and early spring, reduced flows in summer and potentially significant new challenges for future river operations and planning.

### Renewable energy growth

Renewable Portfolio Standards in the West continue to drive wind energy growth. In the Northwest, 6,500 MW of installed wind plant capacity was operating by the end of 2011 and forecasts indicate this could rise to as much as 10,000 MW in 2020. In the BPA Balancing Authority Area (BAA)<sup>2</sup>, 4,300 MW of installed wind plant capacity was operating by the end of 2011 and forecasts indicate this could rise to as much as 6,000 MW by the end of 2013. Most projects are concentrated in the Columbia River Plateau in the BPA BAA where there is inexpensive access to our transmission lines and the interties to California. This concentration produces large unexpected swings in aggregate generation output, which requires BPA to provide significant balancing reserves to preserve reliability. However, the ability of the federal hydro system to provide balancing reserves may be exhausted by 2013, and access to nonfederal resources may be needed.

<sup>2</sup> A Balancing Authority or “BA” is the responsible entity that maintains load-resource balance within a Balancing Authority Area or “BAA”. A BAA is the collection of generation, transmission and loads within the metered boundaries of a BA. These definitions are per the North American Electric Reliability Corporation (NERC).



## Shifting resource conditions

BPA's weather-dependent hydro resources create high supply uncertainty for power planning and marketing activities. High wind and high water events, combined with the need to avoid high total dissolved gas levels for fish, are adding to the complexity of operational and policy choices. Across the region, the impacts of planned and potential coal plant retirements and concerns about the long-term availability of gas-fired generators are also shifting fundamental assumptions about the region's generation and transmission needs.

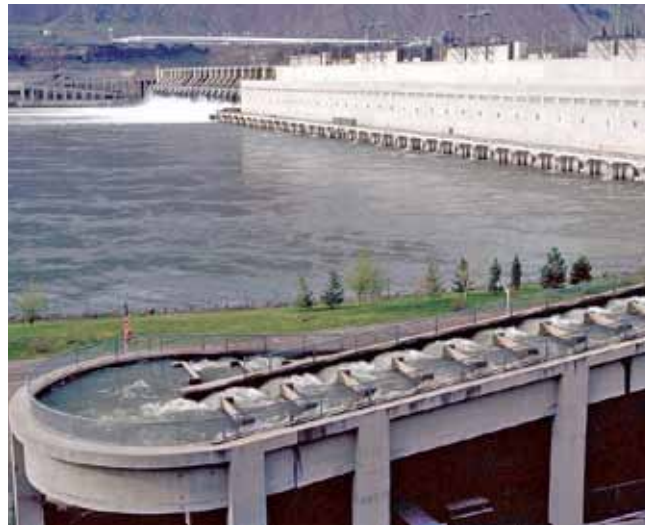
## Compliance requirements

- **Endangered Species responsibilities:** The federal plan for operating 13 mainstem hydroelectric dams while protecting salmon and steelhead on the Columbia and Snake rivers remains in litigation. Under the plan, flows, spills and dam operations are provided for fish spawning, rearing and migration. Uncertainty about future court action creates challenges for managing river operations and for planning future power production, cost and revenue levels.
- **Reliability standards:** BPA is subject to a wide range of reliability standards that have steadily increased since 2007. They are expected to continue to increase over the next several years, creating new capital and expense requirements for the agency.

## Our Strategic Priorities

Based on the range of significant industry changes ahead, for 2012-2017 we are placing a heightened focus on addressing six strategic priorities within the agency's broader set of ongoing business objectives:

- 1.** Preserving and enhancing the **assets and value of the generation and transmission system** are critical, especially given our aging system infrastructure, high operational demands from a new era of variable generation, and the potential for increasing carbon constraints and new market structures in the West.
- 2.** The results of the **2014/2024 Columbia River Treaty Review** will affect the future shape of flood control, power generation and the other multi-purpose benefits of the Columbia River. As such, recommending a course of action to the U.S. Department of State for a viable Treaty strategy that has substantial support among Columbia River Basin sovereigns and stakeholders is critical.



**3.** Advancing **energy efficiency** provides a wide range of economic and environmental benefits to the region. It is the most cost-effective solution for meeting load growth and for mitigating greenhouse gas emissions and costs.

**4.** Supporting system reliability and renewable energy are fundamental regional goals. To reliably integrate the output of a growing wind fleet, it is vital that BPA expand **balancing capabilities and resources**. This includes broadening customer access to flexible balancing resources, developing new products, enhancing operational tools and increasing collaboration to support the adequacy, reliability and cost-effectiveness of the regional system.

**5.** Meeting our **Endangered Species responsibilities** to protect salmon, steelhead, sturgeon and bull trout is central to BPA's environmental stewardship in the Columbia Basin. This is part of our overarching commitment to biologically effective and efficient mitigation for the impact of federal dams on fish, wildlife and tribal cultural resources.

**6.** To advance these priorities and accomplish the agency's ongoing business objectives, innovative approaches and solid execution will be crucial, so we are committed to deepening **operational excellence and employee engagement** in every aspect of our business.



## 1 ■ Generation and Transmission System Assets and Value

Preserve and enhance federal generation and transmission assets and the economic, environmental and operational value they produce for the region, while anticipating and adapting to industry developments and regulatory change.

We anticipate that the region will continue to rely on the federal power and transmission system to meet its clean energy and reliability objectives, and that BPA will need to find new ways to maximize the value of the system for the region. With these opportunities come a variety of challenges:

- The assets of the federal power and transmission system are aging and in need of substantial maintenance, replacement or upgrades.
- In recent years the traditional markets for the sale of BPA surplus power, which helps keep our power rates low, have been less lucrative and provided less value to the region than in the past. This is due in part to low natural gas prices, declining or dampened load growth and the abundant supply of wind.
- There are increasing and sometimes competing demands on the federal power and transmission system. For the hydro system, these include concurrent demands to conduct fish operations, ensure flood control and provide balancing reserves for renewable energy. For transmission, these include system congestion at new times of the year as a result of shifting runoff and wind patterns, which in turn narrows the timeframe in which we can conduct transmission maintenance.

### 1.1 Reliability, Asset Management and Access to Capital

To meet these challenges, BPA is preserving and enhancing the assets of the transmission and generation system and developing new approaches to capture the value of the system for the region. Three long-term objectives guide these efforts:

- “S2 FCRPS Operations and Expansion: FCRPS power and transmission facilities meet availability and reliability standards in the most regionally cost-effective manner.” Maintenance, replacements, upgrades and additions to aging infrastructure will continue to be a major investment priority.
- “I4 Asset Management: BPA maximizes the long-term value of FCRPS power and transmission assets through integrated asset management practices.” BPA decision making on investments will continue to be pursued with a comprehensive understanding of the long-term costs, benefits, risks and strategic opportunities the region faces. BPA employs a rigorous, risk-informed and transparent asset management program. The program applies leading practices in planning, prioritizing, investing, operating and disposing of assets across BPA’s portfolio of generation and transmission assets, which represent more than \$14 billion in historical investment.
- “F1 Capital Access: BPA has sustainable capital access.” BPA’s large increase in U.S. Treasury borrowing authority through the American Reinvestment and Recovery Act has helped us to meet our capital requirements. However, it does not assure adequate capital funding in perpetuity. Maintaining disciplined use of existing borrowing authority and exploring alternative sources of capital will continue to be essential in order to meet the capital investment priorities of the agency.

### 1.2 Transmission

The majority of the transmission system and its 15,000 miles of high-voltage power lines is more than 40 years old. To ensure transmission reliability, capacity and flexibility, significant investment is needed to sustain and expand the system.

**To sustain existing transmission assets**, we are investing in nine major areas: steel and wood lines, rights of way, alternating and direct current substations, power system control, system protection and control, control centers, and tools and equipment. These investments are based on asset criticality and health condition. This risk-based approach serves to reduce equipment failure, obsolescence and other risks while minimizing long-term costs.





**To expand transmission infrastructure** to address load growth, meet generation interconnection and customer service requests, and relieve congestion, we are investing in four major areas:

- **Area and Customer Service:** Provides facilities to support customer loads 230-kilovolts (kV) and lower.
- **Main Grid:** Expands the main grid to maintain reliability, such as the proposed 70-mile I-5 Corridor Project (500-kV), and to interconnect new wind generation. Also, expands the grid to provide new point-to-point service, like the recently completed 78-mile McNary-John Day 500-kV line, and the planned 28-mile Big Eddy-Knight 500-kV line and the 38-mile Little Goose-Lower Monumental 500-kV line.
- **Inter-regional Paths:** Provides lines and facilities that interconnect transmission providers and generating resources outside the Pacific Northwest (500-kV and lower), like the Celilo Converter Station and the Pacific Direct Current transmission line to the California-Oregon border.
- **Upgrades and Additions:** Upgrades substations, line capacity, control centers, telecommunications, hardware, software and other electrical equipment.

**To enhance the economic, environmental and operational value of the transmission system**, we will continue to apply innovative approaches to plan transmission development in the region. To support the load growth and marketing needs of our transmission customers, we are collaborating with stakeholders to revise and enhance our policies and processes in three areas:

- **Network Transmission (NT)**, continuing to strengthen NT planning processes to better anticipate the ongoing transmission needs of our network integration transmission service customers;
- **Network Open Season (NOS)**, the process for managing transmission service requests and identifying and subscribing new transmission infrastructure; and
- **Generation Interconnection (GI)**, the process for connecting new generation to the grid.

The objectives of these efforts include promoting more efficient and effective regional transmission planning processes and timelines, clarifying rights and responsibilities for BPA and its customers, ensuring equitable cost allocation, reducing financial risks to BPA and its ratepayers, and mitigating stranded investment exposure.

## Purpose of Network Open Season

The purpose of NOS is to secure commitments from transmission customers to purchase specific transmission services for their commercial needs and to appropriately plan and build out the federal transmission system to meet those needs. BPA relies on the commitments made in the NOS process to build needed infrastructure at the right time, in the right place and at the right scale to meet customer and regional needs at rolled-in rates and to make the best use of limited capital.

We delayed the NOS in 2011 and are engaging in dialogue with the region to reassess current policies. The accelerated development of variable generation in the region and the increasingly constrained operating conditions within the BPA BAA have highlighted the need to evaluate multiple system scenarios in NOS planning. A substantial number of NOS participants also recently expressed a desire to modify or terminate their NOS commitments.

To address these developments, and before launching a future NOS process, BPA is exploring revised approaches in the following areas to drive further transmission development in the Northwest:

- Customer source and sink information requirements, customer eligibility and security requirements, cluster study assumptions, transmission service deferrals, generation load balance, Network Integration Transmission Service planning, coordination with other regional transmission expansion efforts, and
- GI requests and credits – this includes reforming the GI process and Large Generation Interconnection Agreements to remove process barriers to requests that are ready to advance to subsequent stages in the GI process while ensuring appropriate sharing of financial risks.

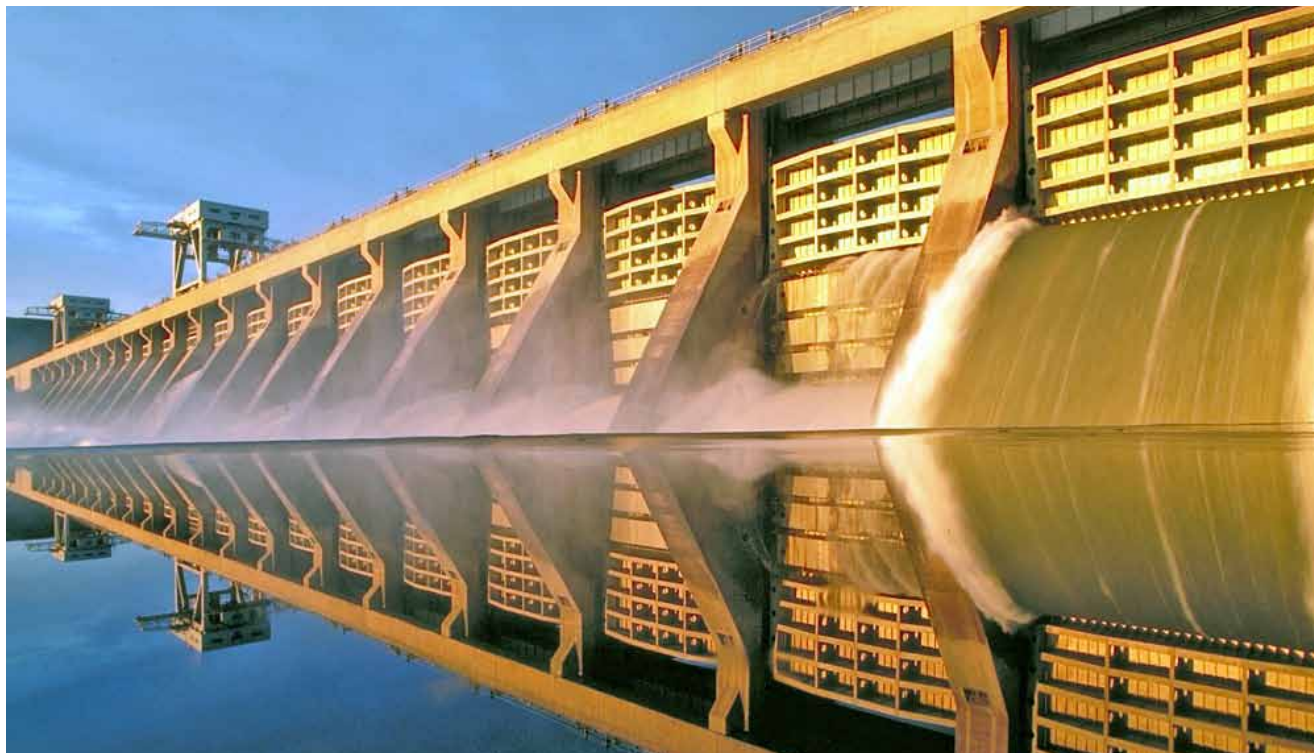
## 1.3 Generation

Federal hydro assets consist of 31 hydroelectric plants with an overall capacity of 22,060 MW. In an average water year these plants produce 76 million megawatt-hours of electricity.<sup>3</sup> These plants were placed in service between the late 1930s and early 1970s. Much of the critical infrastructure to support the reliability and operation of these units needs to be replaced or upgraded.

With the goals of providing low cost, reliable power and being a trusted steward of the FCRPS, BPA is making ongoing investments in FCRPS hydro assets in collaboration with the U.S. Army Corps of Engineers and Bureau of Reclamation. The purpose of these investments is to:

- supply reliable, low cost generation through proper operation, inspection and maintenance;
- mitigate risk of power generation failures by replacing or refurbishing equipment;
- increase the efficiency and/or capability of power facilities where economically feasible;
- ensure that safety and environmental requirements are met; and
- meet FCRPS commitments for fish and wildlife and cultural resource programs.

<sup>3</sup> 2012 FCRPS Hydro Asset Strategy



**To preserve and enhance federal generation assets to meet these objectives,** we are investing in six major areas: unit reliability, water control, station service, operations support, infrastructure and cranes. Unit reliability is by far the largest investment category, ensuring the full and reliable performance of equipment such as turbines, generators, transformers, exciters and governors. For example, we are replacing turbine runners at Chief Joseph Dam for a 2 to 3 percent improvement in generation output and working on a 10-year rehabilitation of powerhouse units at Grand Coulee Dam.

**To preserve the value of the generation system for the Pacific Northwest,** we are implementing Regional Dialogue contracts. Under the new tiered rate design of our 20-year Regional Dialogue contracts, preference customer utilities purchasing electricity from BPA pay a Tier 1 rate for a share of power from the FCRPS at historically embedded costs. Customers that need additional electricity to meet increased demand can purchase it on their own or from BPA at a Tier 2 rate reflecting BPA's acquisition cost. This price structure helps preserve the value and use of low cost federal hydro for the region by incentivizing utilities to first maximize the use of energy efficiency and conservation before turning to more costly sources of power.

## 1.4 New approaches

To anticipate and meet the changing demands of our industry and stakeholders, we are exploring new approaches to operating the federal generation and transmission system and to maximizing the value they produce for the region.

**Pumped storage, demand response, Smart Grid, and technology innovation.** Through initiatives in these areas we are evaluating and potentially applying cost-effective solutions that meet our business needs.

**Value of surplus hydro power.** We will seek new ways of capturing the value of surplus hydro power through surplus sales into the energy, ancillary service and emerging capacity markets, as well as through structured storage and shaping products with potential to better monetize federal hydro capacity.

**Transmission and power collaboration.** We will improve planning, coordination and practices in and between our transmission and power systems to improve their flexibility and alignment. Examples include coordinating hydro operational impacts on transmission line loadings and line outage planning, and exploring new technology applications for energized maintenance to increase transmission line availability.

## 2. Review Columbia River Treaty

**Recommend a course of action to the U.S. Department of State so that a viable Treaty strategy can be developed with substantial support among basin sovereigns and stakeholders.**

Since 1964, the Columbia River Treaty has brought benefits to both the U.S. and Canada by providing a cooperative way to regulate the waters of the Columbia River for power generation and flood control. With a minimum advance written notice of 10 years either Canada or the U.S. can terminate most of the provisions of the Treaty at any time on or after September 16, 2024. As such, the year 2014 is an important date for the Treaty. The U.S. Army Corps of Engineers and

BPA, collectively referred to as the U.S. Entity, are conducting a multi-year study to understand how the Treaty affects multiple interests in the Northwest region and to forge a recommendation to the State Department about what the United States' future course should be. This analytical effort is called the 2014/2024 Columbia River Treaty Review, or CRT 2014/2024 Review.

The world today is far different than it was in 1964 – power and flood control are not the only relevant issues when determining how to best manage the resources of the Columbia River for the common good. The U.S. Entity's overarching challenge in the Review will be to adequately consider the ecosystem, environmental, irrigation, navigation, and other issues that were not addressed in the original Treaty, and to balance those interests with the continuing need for flood control and power benefits.





Future policy and analytical challenges are substantial:

- Since the Treaty's signing, far reaching fish and wildlife statutory protections have been enacted that bear on BPA's and the U.S. Army Corps of Engineers' responsibilities for managing the Columbia River. Fourteen fish and wildlife species have been listed as "threatened" or "endangered." Current Biological Opinions will explicitly address river flows for fish migration and spawning. Under the current Treaty, annual agreements provide approximately one million acre feet of water for these fish flows.
- The implications of changes to flood control that automatically occur under the Treaty in 2024 are critical to understand, as is the need to assure that the amount of the Canadian Entitlement aligns with the power and flood control benefits received by the U.S. from Canadian storage. (Canadian Entitlement is the electrical energy and capacity that the U.S. returns through BPA to Canada.)
- In addition, the uncertainty associated with climate change will need to be studied and addressed.

These issues, or any other implications to Treaty storage operations, will require cooperation between the Northwest states, tribes and federal agencies, as well as between power, irrigation, fish and wildlife, recreation and other concerns.

Through the CRT 2014/2024 Review, the U.S. Entity will seek to accomplish the following objectives:

- Engage regional sovereigns and stakeholders to understand and consider their interests and to provide information about the Treaty and future options for the Treaty.
- Evaluate the benefits and costs associated with Treaty alternatives on power, flood control and ecosystem functions.
- Consider other contemporary issues including climate change and other relevant information in assessing the effects of alternatives on other uses, such as fisheries, wildlife, water quality, water supply, irrigation, navigation, cultural resources and recreation.
- Coordinate, as appropriate, with the Canadian Entity on critical technical, policy and outreach matters associated with the future of the Treaty.
- Recommend a course of action to the State Department so that a viable Treaty strategy can be developed that has substantial support among basin sovereigns and stakeholders.

For further details regarding the 2014/2024 Columbia River Treaty Review, go to: [www.crt2014-2024review.gov](http://www.crt2014-2024review.gov).



## 3. 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 the load growth for the customers we serve. It is the lowest cost and least risk resource in the Pacific Northwest. Energy efficiency reduces consumers' energy bills directly, by improvements that lower their energy consumption, and indirectly, by eliminating or deferring the need for new generation and transmission infrastructure. It supports U.S. energy independence by reducing the need for imported energy. Energy efficiency supports public health by avoiding the development and use of generation resources that emit nitrogen oxides, sulfur oxides and other harmful particulates. It contributes to climate change mitigation and adaptation efforts because it has no 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, consistent with the agency's long-term strategic objective for energy efficiency: "S5: BPA and public power cooperatively accomplish public power's

share of regionally cost-effective energy efficiency and demand management." Together, we aim to achieve 85 percent of public power's 20-year load growth from energy efficiency consistent with the Northwest Power and Conservation Council's Sixth Power Plan targets ([www.nwccouncil.org](http://www.nwccouncil.org)).

According to the plan, the population of the Pacific Northwest will increase from about 13 million in 2010 to 16.7 million by 2030. Load is projected to increase from 21,000 aMW 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.

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. To meet the 85 percent target, we are pursuing energy saving strategies in the following three areas:

### 3.1 Utility program savings

Utility programs will represent the bulk of savings accomplishments. Our efforts will emphasize:

- Infrastructure support, which includes developing policies to encourage EE; improving the region's ability to achieve



EE such as through regional programs and funds for utilities; reaching out and engaging with customers and other EE project implementation stakeholders; and providing technical support for project implementation.

- Acquisition funding and support, provided in the form of incentive dollars to help customers achieve cost-effective energy efficiency.
- Innovation in new technologies so we can continue to find new ways to save energy at the lowest possible cost.

## 3.2 Market transformation savings

Market transformation savings will leverage the regional market's power to accelerate innovation and adoption of 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.

## 3.3 Non-programmatic savings

Non-programmatic savings will target energy efficiency that occurs outside of utility programs or market transformation efforts. For instance, thousands of compact fluorescent light bulbs are purchased and installed in the region without the use of utility financial incentives, making these efforts extremely cost-effective. We will track and account for these savings in collaboration with our partners in public power.

# 4. Balancing Capabilities and Resources

## Expand BPA Balancing Authority capabilities and customer access to flexible balancing resources in order to support reliability and renewables.

Supporting renewable energy and ensuring system reliability are fundamental goals shared by the region and BPA, and they are consistent with our long-term strategic objective for renewable energy: "S6: BPA encourages renewables through sustainable, long-term, collaborative integration solutions, while ensuring reliability, equitable cost and risk allocation, and meeting legal obligations." Variable energy generators play an integral role in the regional power system, making significant clean energy contributions to the region's resource portfolio and providing significant economic value to some of the most financially distressed rural communities. Along with state renewable portfolio standards, innovative BPA transmission policies and processes for transmission service requests have helped spur the region's renewables growth.

The continued growth of wind also requires that BPA and the region jointly understand and manage the costs and risks that come with increased variability in the region's resource

portfolio, so that the reliability and cost-effectiveness of the system can be sustained. This is an especially critical focus now. The federal hydro system has been the principal source of balancing reserves for managing fluctuations in wind generation, but these supplies are limited and could be exhausted by 2013.

Accordingly, it is especially vital to broaden customer access to nonfederal balancing resources while enhancing the operational tools of the BPA BA, developing new products, and increasing coordination within and across the region's balancing authorities. To achieve this, BPA is pursuing several major strategies.

### BPA Balancing Authority Area (BAA)

As a Balancing Authority, the BPA Transmission Services organization is the entity responsible for maintaining a constant, moment-to-moment balance between generation entering the system and loads consuming energy.

For a map of BPA's BAA and surrounding BAA's in the region, see [www.bpa.gov/corporate/pubs/NW\\_Utility.pdf](http://www.bpa.gov/corporate/pubs/NW_Utility.pdf).



## 4.1 Oversupply

In collaboration with regional stakeholders, we are developing durable solutions to address occasional events where there is an oversupply of power. This can result from concurrent high wind and high water events, especially during the spring runoff season.

## 4.2 Balancing services

We are taking a systematic approach to leverage both federal and nonfederal resources to provide balancing services to meet our obligations as a Balancing Authority. This approach can act as a bridge to a possible regional imbalance market<sup>4</sup> or can function as a stand-alone approach should the region not pursue an imbalance market. This strategy has three major goals, each with a significant set of supporting technical and operational initiatives planned and underway:

### **Reduce generation imbalance demands on the BPA BA.**

Currently BPA carries reserves to balance deviations of variable generation from their planned schedules over one-hour periods. This requires that BPA set aside a significant quantity of reserve generation. To reduce the amount of reserves we must carry, BPA's intra-hour scheduling

<sup>4</sup> An imbalance market is a means of supplying and dispatching energy to balance fluctuations in generation and load (subject to transmission and reliability constraints). It effectively aggregates the variability of generation and load over multiple Balancing Authority Areas, thereby reducing the total amount of required reserves. It can also increase participants' access to the lowest cost generation in the market to balance loads and generation.

initiative is enabling schedules to be set in 30-minute increments and sending price signals to encourage improved accuracy in wind forecasts. We aim to incentivize the use of committed intra-hour scheduling by a majority of the wind generators on the BPA system by 2014. Wind generators that commit to submitting schedules every 30 minutes are eligible for a reduced balancing service rate. We have also initiated 30-minute scheduling of wind to the California Independent System Operator, which will allow California to help support the balancing needs of some of the Northwest wind resources serving California's utilities.

### **Expand the supply of generation imbalance resources.**

Given the finite availability of federal hydro system balancing reserves, we are developing additional market mechanisms to enable parties to buy and sell balancing reserves from nonfederal sources and to alleviate significant market and stranded cost exposure for BPA. Initiatives include short-term BPA acquisitions of supplemental balancing capacity<sup>5</sup> through bilateral transactions, the use of the region's new electronic bulletin board to accelerate intra-hour transactions, meeting spring federal hydro operating constraints by purchasing

<sup>5</sup> "Supplemental balancing capacity" refers to nonfederal resources used to minimize curtailments of transmission schedules under Dispatcher's Standing Order 216 (DSO 216) due to unscheduled reductions in wind generation. It is being offered by BPA as an optional service that allows wind project operators in the BPA BAA to purchase or ask BPA to purchase nonfederal balancing reserve capacity to help them avoid DSO 216 curtailments.

non-spinning balancing resources from third parties, and exploring new approaches to enable wind generators within our transmission footprint to supply their own balancing resources (known as “self-supply”).

## **Better manage generation imbalance reserve**

**deployment.** The growing variable generation fleet in the BPA BAA brings with it the need for a new suite of tools and technologies to increase state awareness and system visualization, manage voltage stability, and economically dispatch third-party resources, including demand response resources. A range of initiatives is in motion to keep pace with these operational and technological demands, including developing and deploying expertise to use wind forecasting and situational awareness technologies and integrating these tools more deeply into the heart of system operations. BPA is also playing a lead role in the Western Interconnection Synchrophasor Program, which will install over 300 phasor measurement units to identify and analyze system vulnerabilities in real time and detect and respond to evolving disturbances.

## 4.3 Regional imbalance market

In collaboration with other utilities and stakeholders within the Northwest Power Pool footprint, and with a strong focus on assessing the costs and benefits to BPA and the region, we are exploring the development of and potential participation in an imbalance market. An imbalance market is a means of supplying and dispatching energy to balance fluctuations in generation and load. It can aggregate the variability of generation and load over multiple Balancing Authority Areas, thereby reducing the total amount of required balancing reserves. It can also increase participants’ access to the lowest cost generation available in the market to balance loads and generation. BPA is exploring the potential for an imbalance market to reduce generation volatility, reduce reliability costs and risks, and to provide long-term access to nonfederal balancing reserves for variable generation. BPA will be evaluating the net benefits of an imbalance market against the net benefits of the region’s emerging bilateral tools such as intra-hour scheduling.

# 5. Endangered Species Responsibilities

## Implement hydro, habitat and hatchery actions that effectively and efficiently advance the recovery of fish, including salmon, steelhead, sturgeon and bull trout.

BPA’s long-term objective for Environment, Fish and Wildlife (S7) is that “BPA’s Endangered Species Act, Northwest Power Act, National Environmental Policy Act, Fish Accords and other environmental responsibilities are met using a performance-based approach.” Within this context, our strategic priority to implement our Endangered Species responsibilities has three main thrusts.

### 5.1 Biological performance

BPA is committed to a range of biological performance targets to guide its hydro and habitat mitigation. For example, improved fish passage for young salmon and steelhead migrating to the ocean each spring must achieve performance standards of 96% average survival per dam — a standard that

has been accomplished for some and is still being worked on for others. During 2012 to 2017, these performance targets will continue to drive BPA’s “on the ground” actions.

### 5.2 Regional partnerships

As environmental steward for the FCRPS, BPA implements its hydro, habitat and hatchery mitigation projects in close partnership with state and tribal governments and other federal agencies. BPA also collaborates with BPA customers, river users, conservation groups, and an array of stakeholders to meet its many environmental responsibilities. Perhaps most notable are the Columbia Basin Fish Accords with the Confederated Tribes of the Umatilla Indian Reservation, Confederated Tribes of Warm Springs, Confederated Tribes and Bands of the Yakama Nation, Columbia River Inter-Tribal Fish Commission, Confederated Tribes of the Colville Reservation, Shoshone-Bannock Tribes, State of Idaho, State of Montana and State of Washington. In addition, BPA has endorsed a number of important wildlife mitigation agreements, such as the Willamette Basin Wildlife Settlement with all agencies of the State of Oregon.





## 5.3 Ongoing litigation

The federal plan for Endangered Species compliance for the mainstem dams on the Columbia and Snake Rivers is one of the most extensive, complex and comprehensive Biological Opinions (BiOp) ever developed in the U.S. While the most recent Federal District Court decision left the current BiOp in place through 2013, the Court retained jurisdiction. The Court remanded the BiOp back to the Federal agencies (NOAA Fisheries, the U.S. Army Corps of Engineers, the Bureau of Reclamation and BPA) to produce a new BiOp in 2014 that evaluated actions that were “reasonably certain to occur” post-2013.

To meet this challenge, BPA and its partner agencies are expending significant resources to meet the performance requirements of the 2008/10 BiOp while also initiating an intensive effort with the region to specify actions to improve salmon habitat and evaluate their associated biological benefits. Habitat is a critical component of the mitigation offered by the FCRPS Agencies to meet the Endangered

Species Act requirements for the hydro system. In order for habitat to be recognized by the Court as an allowable means to meet the FCRPS Endangered Species Act obligations, the Agencies must demonstrate that the habitat actions and their associated benefits are “reasonably certain to occur.”

The uncertainty about whether the court will approve a new BiOp to be produced in 2014, and about the environmental requirements on hydro operations that could result, will continue to create challenges for managing FCRPS operations and planning for future power production, cost and revenue levels.

## 6. Operational Excellence and Employee Engagement

Foster operational excellence and employee engagement to ensure that:

- a. BPA meets the demands of business operations efficiently and effectively through standardized, continuously-improved systems and processes, and
- b. BPA's employee-employer relationships produce high levels of employee commitment and enthusiasm toward our work and deliver better business outcomes for the region.

Operational excellence and employee engagement are vital to BPA's success in the current environment of economic, legislative and technological change. They are also foundational to accomplishing the strategic priorities already noted, especially given that 40 percent of our workforce will be eligible to retire by 2015 and nearly one-third of our workforce has been at BPA for only five years or less. In the competition for talent, and with below average growth in the pool of degrees awarded in technical fields such as electrical, computer and mechanical engineering, it is critical that BPA attract and develop employees with the knowledge and experience needed to accomplish our business objectives.

### 6.1 Operational excellence

Operational excellence is continuous improvement that produces more efficient and effective ways to deliver on BPA's mission and vision. It is particularly important now, in a time of



economic difficulty and rapid industry change, that we deepen our commitment to operational excellence. Doing so will improve our ability to anticipate, adapt and respond to changing conditions, manage costs and deliver quality products and services. Consistent with BPA's strategic objective for Operational Excellence (I1), we will broaden the use of disciplined, repeatable, standardized business processes and measure and monitor our business results to deliver value in the most efficient and effective manner. We will also continually improve systems and processes to meet evolving business needs and deliver high value to customers and internal clients. As part of improving our processes, we will transfer knowledge from the retiring workforce to our newer workforce to ensure continuity in meeting our mission.

BPA will further grow our organizational capability by conducting operational excellence training, consultation and benchmarking to sharpen five core attributes of operational excellence:

- Customer focus, the ability to deliver high quality products and services that customers value;
- Innovation, the ability to tap the ingenuity of people through teamwork, innovation and problem solving;
- Standardized processes, the broader use of consistent and disciplined business processes;
- Accountability, taking individual ownership of results produced; and
- Targeted measurement, measuring performance to assess achievement of desired business results.

## 6.2 Employee engagement

Bolstering operational excellence at BPA requires an engaged workforce. Employee engagement is the level of commitment and enthusiasm employees feel toward the workplace and their work. BPA will foster an increasingly engaged workforce that produces direct, positive effects on business outcomes for the region through higher morale, increased productivity, improved safety, and other measures that support the agency's strategic objectives and operational excellence. Engaged employees take more pride in their work, take initiative, ask questions, offer innovative and creative ideas and solutions, act as team players and willing mentors, and go the extra mile. Increasing employee engagement will lead not only to increased job satisfaction for employees, but also to improved employee and work group performance, a healthier work environment, and an increased likelihood of meeting agency goals.

To foster the conditions that increase employee engagement and to ensure a workforce of committed and capable employees, we will pursue a range of initiatives to actively communicate and demonstrate what we expect from and offer to both existing and prospective employees.

Through our **talent management strategic initiatives**, we will focus on three priorities that are powerful tools for increasing employee engagement:

- Our initiative to advance the hiring process will increase engagement by attracting employees who are motivated by our "employee value proposition", that is, what we expect from employees, what we offer them, how that creates varying degrees of engagement in the employee-employer relationship, and how the resulting overall workplace experience distinguishes BPA from other organizations and enables us to deliver on our objectives.
- Our leadership skills and competencies initiative will increase engagement by helping leaders set clear expectations, develop and recognize their people for excellence, and foster a diverse and inclusive work environment.
- Our initiative to drive high performance will increase engagement by managing individual performance in a way that creates clear expectations and accountability, and shows the direct connection between individual work efforts and the agency mission.

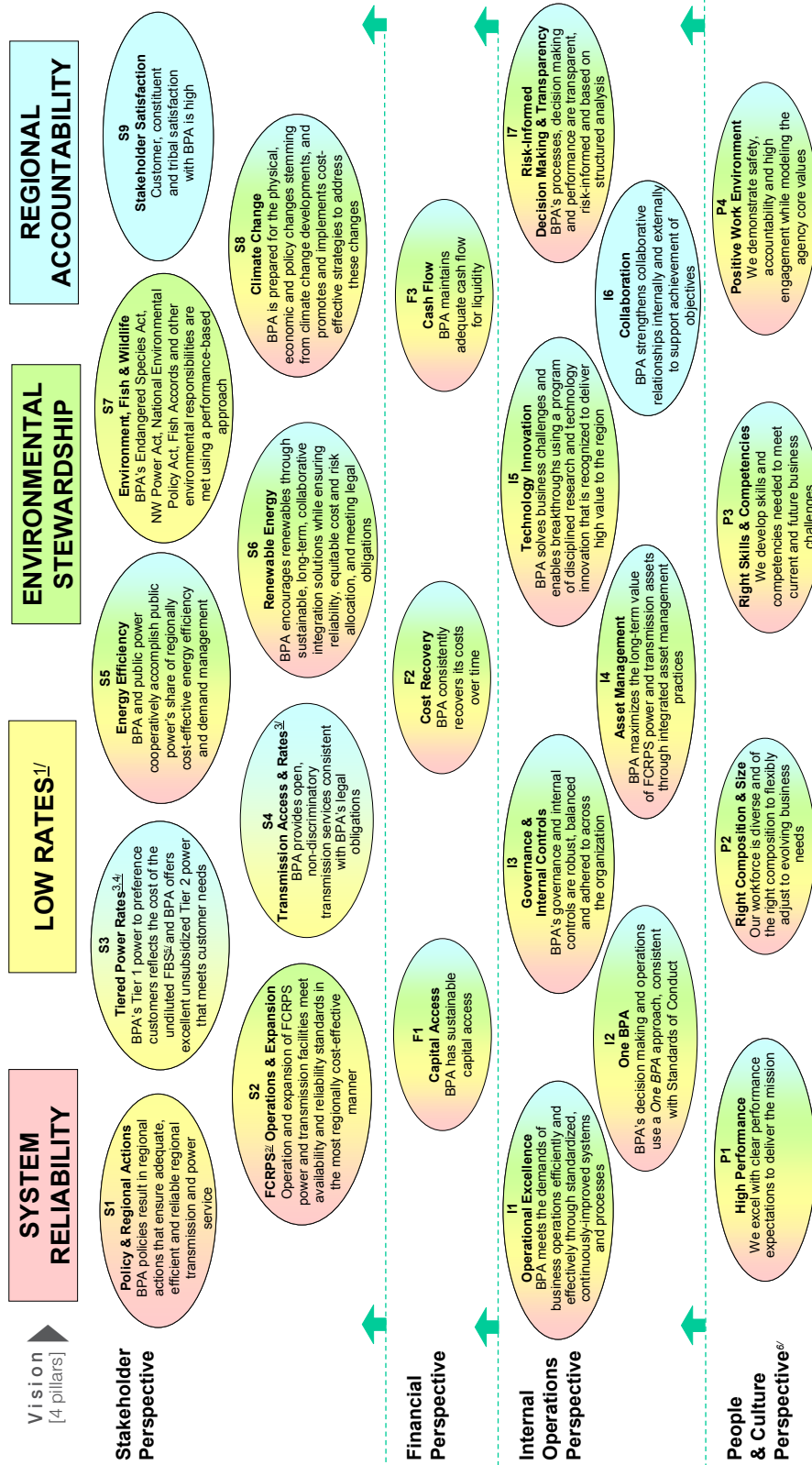
Through the **impact planning initiative**, on an ongoing basis managers and staff in all business units will jointly identify, act on and assess progress against improvement opportunities linked to key areas that have been independently identified as best practices of high performing organizations.

Our employee engagement initiatives fall primarily under our strategic objective of a positive work environment (P4), which includes safety, accountability and high engagement. But these initiatives are also aimed at creating a high performing workforce to deliver on BPA's mission (P1), that is diverse and of the right composition to flexibly adjust to evolving business needs (P2), and that has the right skills and competencies to meet our business challenges (P3).



## BPA Strategic Objectives 2012-2017

For details, see “BPA Strategic Objectives” at [www.bpa.gov/go/strategy](http://www.bpa.gov/go/strategy).



1/ Consistent with sound business principles.  
 2/ Federal Columbia River Power System (FCRPS). The transmission system constructed and operated by BPA, the hydroelectric dams constructed and operated by the U.S. Army Corps of Engineers and the Bureau of Reclamation in the Northwest, and nonfederal generation capability acquired by BPA under long-term arrangements. The transmission and power systems are separately managed and financed, but as much as possible, the facilities are operated as an integrated power system.  
 3/ Power and transmission rates are kept as low as possible consistent with sound business principles while achieving BPA's objectives.  
 4/ Tier 1 power rates are below market for comparable products.  
 5/ Federal Basin System.  
 6/ Refer to the BPA Talent Management Strategy for more information on P1-P4, P1, P3, and P4 reflect BPA's commitment as well as individual responsibility for achieving these objectives.



## Background – Regional and Industry Environment

For those who are new to the industry or to BPA, this section expands on the major drivers of change that we face in our regional and industry environment. BPA's environment is influenced by a wide range of interconnected developments, conditions and events. These “drivers” and their interdependencies at the regional, national and global levels have concrete implications for BPA. They affect the markets in which we participate, the types of generation resources that operate in the BPA Balancing Authority Area (BAA),<sup>6</sup> how dams and other resources are operated, streamflow volumes, revenues and how the workforce will manage the new demands of a rapidly evolving industry. The drivers described below have the potential to fundamentally alter the environment in which we operate. We monitor these drivers to better anticipate and navigate the challenges and opportunities that lie ahead.

### Difficult economic environment

The weak economy continues to pose difficult challenges for the nation, Pacific Northwest citizens, and customer, constituent and tribal stakeholders. Several years after the start of the “Great Recession,” the U.S. remains mired in record setting long-term unemployment. Slowing gross domestic product growth and concerns of a worsening debt crisis in euro-zone countries signal more difficulty ahead. Regionally, average annual unemployment more than doubled from 2007 to 2010 for Oregon, Washington, Idaho and Montana. Since 2010, regional unemployment indicators show only slight improvement and continue to trend at a level worse than the national average. Job growth will continue to be a major focus for the region.

The poor economy has depressed the growth of load (power demand) nationally and regionally. Recent Northwest Power and Conservation Council load analyses show that Northwest power loads declined 4 percent from 2008 to 2009 and dropped another 5 percent from 2009 to 2010. The two-year

<sup>6</sup> A Balancing Authority or “BA” is the responsible entity that maintains load-resource balance within a Balancing Authority Area or “BAA.” A BAA is the collection of generation, transmission and loads within the metered boundaries of a BA. These definitions are per the North American Electric Reliability Corporation (NERC).

decline was the largest non-weather adjusted load decrease since the rise in electricity prices caused by the West Coast energy crisis in 2001. The analyses forecast flat to slight load growth for the next few years with some load recovery after 2015. Declining or dampened load growth may contribute to continued low wholesale energy prices in the region.

Across the industry, the absence of a broader economic recovery continues to signal the need for caution, but a low interest rate environment is encouraging capital investment. For federal agencies like BPA, Congress is less likely to make additional capital available, particularly given the focus on federal budget reductions, federal borrowing oversight and the 2012 presidential election.

Overall, it is exceedingly important that BPA continue to focus on disciplined cost management, low rates, prioritizing capital investments and securing access to capital in order to maintain the reliability and cost-effectiveness of the power and transmission system.

### Climate change uncertainty

Evolving energy and climate change policies are significant drivers in the utility industry. At the federal level, uncertainty about the direction of energy and climate change legislation is expected to continue through the 2012 elections. There is a very wide range in the potential type, number and pace of federal legislative and policy outcomes. This uncertainty presents a challenge for how proactive or reactive utilities should be in positioning themselves for changes in areas like fuel prices, carbon reduction requirements or renewable energy production tax credits.

At the state level, the adoption of climate change policies is slowing, with some exceptions for jobs-focused clean energy policies. Many states are rethinking their participation in regional carbon cap and trade platforms. In contrast, neighboring California is not slowing down. Among other initiatives, California is scheduled to kick off a cap and trade platform for greenhouse gas (GHG) emissions in January 2013. The state will establish a price for GHG emissions by capping the amount of GHG that can be emitted and requiring GHG emitters to acquire an allowance for each ton of GHG emitted. California may be joined by several Canadian provinces through the Western Climate Initiative. Oregon and Washington could decide to join this GHG market as well. California cap and trade is likely to increase the cost of electricity in California and will likely impact Northwest electricity prices and the type of generation that is operated and developed here.

In addition, climate studies<sup>7</sup> developed by the University of Washington, the Bureau of Reclamation, the U.S. Army Corps of Engineers and BPA document that Pacific Northwest average annual temperatures have risen steadily over the last several decades and suggest that Northwest weather could continue on this warming trend in the decades ahead. The expected result of this temperature trend is less snow and more rain in the winter, thereby increasing river flows in the winter and early spring and reducing flows in the summer. Warming would change the timing of stream flows and make it much more difficult to plan for runoff. It is more difficult to predict runoff from volatile rain events than it is to predict runoff from melting snow. In-stream water temperatures could also increase by the end of the decade with possible implications for fish operations. Collectively, these new dynamics are likely to make the complex job of planning hydro system operations even more challenging.

## Renewable energy growth and RPS

Renewable Portfolio Standards (RPS) adopted by Pacific Northwest states and California have driven and will continue to drive wind energy growth in the region. Most Northwest wind generation is concentrated in the BPA BAA where there is favorable Columbia River Plateau wind topography and relatively inexpensive and easy access to the BPA transmission system and interties to California. BPA experienced a surge of wind energy growth on its system, from 500 MW of installed wind plant capacity in 2006 to 4,300 MW by the end of 2011. Planned coal plant shutdowns and other state renewable policy decisions and incentives are expected to contribute to continued growth in wind project development in the Northwest.

Nevertheless, the rapid pace of Northwest wind growth is expected to ease somewhat over the next two to four years. Contributing factors include a volatile global and national economic environment, tightened access to capital and uncertainty about whether production tax credits or other federal alternative energy incentives will be extended. In addition, California – which was once expected to meet a significant portion of its RPS needs with Northwest wind energy – is now expected to rely primarily on its own in-state resources, including wind, solar and distributed generation.

Even so, 6,500 MW of installed wind plant capacity was operating in the Northwest by the end of 2011, and by 2020, forecasts indicate that RPS standards in the Northwest and California could increase the amount of installed Northwest wind to as much as 10,000 MW. Current wind projects are heavily concentrated in the Columbia River Plateau within the BPA BAA, in part because there are insufficient incentives in place to diversify the geographic siting of wind projects. The aggregate output from this concentrated fleet can produce large increases and decreases in generation.

As the region adds more variable generation, the magnitude of generation volatility is likely to increase and will need to be matched by increased flexibility in our generation and transmission operations. However, the ability of the federal hydro system to supply balancing reserves to manage the fluctuations in wind generation is limited and may be exhausted by the end of 2013, when forecasts indicate that installed wind plant capacity in the BPA BAA could rise to as much as 6,000 MW. In order to support future renewable energy growth, significant additional access to nonfederal generation and demand-side resources for balancing may be needed.

In addition, the geographic concentration of the Northwest wind fleet enables it to make only a very small contribution to dispatchable capacity, the amount of power in the region that system operators can rely upon to turn on or off at any time in order to balance system generation and load. To ensure that the region has adequate and accessible resources for dispatchable capacity to meet load when the wind is not blowing, and to ensure that the siting of future variable generation results in less volatile aggregate wind output across the region, increased collaboration across the spectrum of related regional stakeholders and planning organizations is needed.

## Shifting resource conditions

### Hydro uncertainty

BPA's weather-dependent hydro resources will continue to create a high degree of supply uncertainty for BPA's power planning and marketing activities due to the unpredictability of water supply volumes and runoff timing within a given year and from year to year. The seasonal variability of the hydro system creates the potential for excess hydro supply in the spring and shortages in the summer, along with the generation and load imbalances that may result.

<sup>7</sup> (A) Climate and Hydrology Datasets for use in the River Management Joint Operating Committee Agencies' Longer-Term Planning Studies: Part III – Reservoir Operations Assessment: Columbia Basin Flood Control and Hydropower (BPA, Bureau of Reclamation, Army Corps of Engineers), 2011. (B) Managing Water in the West: West-wide Climate Risk Assessments: Bias-Corrected and Spatially Downscaled Surface Water Projections (Dept. of Interior, Bureau of Reclamation), 2011. (C) Effects of Projected Climate Change on Energy Supply and Demand in the Pacific Northwest and Washington State (Climate Impacts Group, University of Washington, Hamlet, et al.), 2009.

## High wind and high water

The amount, concentration and often simultaneous fluctuation of generation from wind projects in the Columbia River Plateau have contributed to new power oversupply events. Oversupply events can result when high water flows and high winds coincide. Because power generation and power demand must balance, large increases in both hydro and wind energy output can create a fundamental challenge of too much power generation and not enough demand. During high water conditions, certain federal hydroelectric plants must continue to generate to avoid creating high total dissolved gas levels that can harm fish protected under the Endangered Species Act (ESA) and other aquatic species. If these plants are in a “must-run” status to meet ESA requirements, their generation may not be reduced, unlike other times when their generation may be reduced to make room for variable generation outputs or to balance generation with demand.

## Regional thermal generation challenges

Gas-fired generation is second only to hydro generation as an efficient resource for balancing wind in the Pacific Northwest. It also plays a key role in providing power at times of peak energy demand during winter and summer weather extremes. In the future, gas generation could also play a pivotal role in providing ancillary services and balancing reserves to serve a growing Pacific Northwest wind fleet. However, there is concern about the long-term availability of regional gas-fired generating resources. Northwest thermal generators are finding it difficult to recover their costs due to the region’s low wholesale price energy environment, which is being driven by low natural gas prices, an abundance of wind power with near-zero variable operating costs, and dampened energy demand from a weak Northwest economy.

## Coal plant retirements

It is likely that the Northwest’s only coal plants – Boardman and Centralia – will be shut down by 2020 and 2025, respectively. Several other coal plants that serve the Northwest could be retired as well. In the process, questions about the need for, location and timing of replacement resources will need to be answered. Depending on the location of replacement resources, the impacts on the transmission system will vary. Risks include accelerated or delayed coal plant retirement, compromised reliability,

increased price volatility of natural gas and electricity if natural gas becomes the replacement resource of choice, increased system costs, and the potential for stranded investment costs.

## Compliance requirements

### Endangered Species

The Federal Columbia River Power System Biological Opinion/s (BiOp) is the federal plan for operating 13 mainstem hydroelectric dams while protecting Endangered Species Act (ESA) listed salmon and steelhead on the Columbia and Snake rivers. Since 2001, the FCRPS BiOps (2000, 2004, 2008 and 2010 Supplemental) have been in litigation. Under the plan, flows, spills and dam operations are provided for fish spawning, rearing and migration. While the most recent Federal District Court decision left the 2008/2010 BiOp in place through 2013, the Court remanded the BiOp back to the Federal agencies to produce a new Biological Opinion in 2014 that evaluates actions that are “reasonably certain to occur” post-2013. BPA and the other federal agencies (NOAA Fisheries, the U.S. Army Corps of Engineers and the Bureau of Reclamation) will expend significant resources to comply with the performance requirements of the current BiOp while also embarking on an intensive effort with the region to specify actions to improve salmon habitat and evaluate their associated biological benefits. However, the continued lack of clarity about what will be required of hydro power system operations in the future is a significant uncertainty and will continue to create challenges for planning future power production, cost and revenue levels for the agency.

### Reliability standards

BPA is subject to a wide range of North American Electric Reliability Corporation (NERC) reliability standards enforced by Western Electricity Coordinating Council (WECC), including NERC Critical Infrastructure Protection standards. The challenge that BPA and similar entities face is the amount and rate of change in reliability standards since their inception. Since 2007, new and revised reliability compliance standards have steadily increased and are expected to continue to increase over the next several years. These continued changes create capital and expense requirements for the agency and do not appear to be slowing.

# Bonneville Power Administration

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