

United States Government

Department of Energy
Bonneville Power Administration

memorandum

DATE: April 26, 2007

REPLY TO
ATTN OF: KEC-4

SUBJECT: Supplement Analysis for the Business Plan EIS (DOE/EIS-0183)

TO: Stephen J. Wright – A-7
Administrator and Chief Executive Officer

This Supplement Analysis for the Business Plan Environmental Impact Statement (DOE/EIS-183, June 1995) was prepared to determine whether there have been any changes in BPA's business practices or in environmental conditions since publication of the Business Plan EIS that could trigger the need for a supplemental or new EIS. The attached analysis describes changes that have occurred in the electric utility market and the affected environment that are relevant to the major policy issues considered in the Business Plan EIS.

This Supplement Analysis finds that, while they have evolved over time, BPA's business practices are still consistent with the Market-Driven Alternative that was analyzed in the Business Plan EIS and adopted in the Business Plan ROD (August 15, 1995). In addition, because of its relationship-based structure and policy-level approach, the environmental analysis contained in the Business Plan EIS is still valid. Accordingly, I have determined that: (1) there are no substantial changes in the proposed action that are relevant to environmental concerns; and, (2) there are no significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts, within the meaning of 10 C.F.R. § 1021.314(c) and 40 C.F.R. § 1502.9(c). Therefore, preparation of a supplemental or new EIS is not required.

Katherine S. Pierce

Katherine S. Pierce
NEPA Compliance Officer – KEC-4

DATE: April 26, 2007

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**Supplement Analysis to the Business Plan
Environmental Impact Statement (DOE/EIS-0183)**

Bonneville Power Administration
Portland, Oregon

April 2007

Table of Contents

Preface	1
1. Introduction	1
Business Plan EIS	1
Policy Modules	3
Response Strategies	3
Business Plan EIS Environmental Impact Analysis	4
Market-Driven Alternative (Proposed Action).....	5
RODs Tiered to the Business Plan EIS	6
Fish and Wildlife Implementation Plan EIS	7
Columbia River System Operation Review EIS	8
2. Changes in the Proposed Action	9
The Market-Driven Alternative Policy Objectives.....	10
Business Practices Under the Market-Driven Alternative.....	12
Products and Services	13
Rates	18
Energy Services	22
Transmission.....	30
3. New Circumstances or Information	36
Changes in the Legal and Regulatory Setting.....	36
The Energy Policy Act of 1992 and FERC Orders 888 and 889.....	36
FERC Order 2000	37
FERC Order 2003	37
Energy Policy Act of 2005	37
Resource Adequacy	38
FERC Order 890	38
Mandatory Reliability Standards.....	39
Significant Energy-Related Events	39
Summer Blackout of 1996.....	39
West Coast Energy Crisis of 2001.....	39
Summer Blackout of 2003	41

Changes in the Affected Environment.....	41
Geography and Land Use	41
Existing Power System.....	41
Transmission System.....	43
BPA Marketing.....	45
Vegetation.....	46
Wildlife.....	46
Fish	46
Water	47
Air Quality.....	47
Global Warming	48
Cultural Resources.....	48
Socioeconomic Conditions	50
4. Public Comments.....	52
Changes in the Proposed Action.....	53
New Circumstances Or Information.....	55
Other Comments.....	56
5. Determination	57
6. Public Availability.....	58

Supplement Analysis to the Business Plan Environmental Impact Statement

Preface

This document provides an evaluation of changes in BPA's business practices and regional environmental conditions since publication of the Business Plan Environmental Impact Statement (EIS) in 1995 (DOE/EIS-183, June 1995). This evaluation is being conducted to assess whether the Business Plan EIS still provides an adequate analysis, at a policy level, of environmental impacts that may result from BPA's business practices, and whether these practices are still consistent with the Market-Driven Alternative from the Business Plan EIS adopted in the August 1995 Business Plan Record of Decision (ROD).

This document has been prepared as a Supplement Analysis under U.S Department of Energy (DOE) National Environmental Policy Act (NEPA) regulations. See 10 C.F.R. § 1021.314(c). The two factors to be considered in a Supplement Analysis, pursuant to the regulations, are:

- If there are substantial changes in the proposed action (BPA's business activities under the Market-Driven Alternative) that are relevant to environmental concerns; or
- If there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.

10 C.F.R. § 1021.314(c)(1); see also 40 C.F.R. § 1502.9(c). The consideration of these factors informs the determination by BPA of whether the agency needs to prepare a supplemental or new EIS, or whether no further NEPA documentation is required.

Section 1 of this document provides background information about BPA's Business Plan EIS and how it has been used since its publication in 1995. Section 2 considers the first component of the Supplement Analysis determination, whether there are substantial changes in the proposed action. Section 3, the second component of the determination, examines whether there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. The remaining sections are a discussion of public comments that were received, BPA's determination concerning the Business Plan EIS, and information about the public availability of this Supplement Analysis.

1. Introduction

Business Plan EIS

BPA's Business Plan EIS provides an analysis of the potential environmental effects that could result from BPA's policy-level business decisions. The Business Plan EIS was prepared in

response to BPA's need for an adaptive business policy that would allow BPA to be more responsive to the evolving and increasingly competitive wholesale electricity market, while still meeting its business and public service missions. BPA designed the Business Plan EIS to support a wide array of business decisions, including decisions about the following:

- an overall business direction, as well as response strategies for changing circumstances;
- power and transmission products and services BPA will market;
- rates for BPA products and services;
- policy direction for BPA's sales of power products to customers;
- contract terms BPA will offer for power sales;
- a strategy for administering BPA's fish and wildlife responsibilities;
- acquisition by BPA of energy resources including renewables, conservation, and thermal; and
- transmission system access and development.

BPA's Business Plan EIS evaluates six alternative business directions: Status Quo (No Action); BPA Influence; Market-Driven (Proposed Action); Maximize Financial Returns; Minimal BPA; and Short-Term Marketing. Each alternative provides policy direction for deciding 19 major policy issues that fall into five broad categories: Products and Services, Rates, Energy Resources, Transmission, and Fish and Wildlife Administration. Four policy options, or modules, were also developed in the EIS to allow variations of the alternatives in key areas such as rate design.

The environmental impacts of each alternative business direction are described in the Business Plan EIS. BPA used market responses as the foundation for the environmental analyses of alternatives. BPA's experience has shown that environmental impacts, including impacts to air, land, water, and socioeconomics, are determined by the market responses to BPA's business-related actions, rather than by the actions themselves.

In the August 1995 Business Plan ROD, the Administrator decided BPA would pursue the business direction outlined in the Market-Driven Alternative. Under the Market-Driven Alternative, BPA fully participates in the competitive market for power, transmission, and energy services, and uses success in the market to ensure the financial strength necessary to fulfill its mandates. BPA is more cost-conscious, customer-focused, and results-oriented. The focus is both short and long term. In being responsive to the market and influenced by the market, BPA offers more flexible products and services under both short- or long-term agreements.

In addition to describing and evaluating the Market-Driven Alternative that was selected by BPA, the Business Plan EIS contains several unique aspects essential to its policy level approach to evaluating and implementing business-related policy decisions. The following discussion describes these aspects of the Business Plan EIS.

Policy Modules

The Business Plan EIS identifies policy modules (options) that can be integrated with one or more of the business direction alternatives. Some modules are intrinsic to the concept that defines each alternative; other modules can be substituted as a variable element to an alternative. These modules are grouped, according to focus, in four areas: Fish and Wildlife, Rate Design, Direct Service Industry, and Conservation/Renewable Resources. It was expected that due to natural changes in the marketplace, future BPA actions might not correspond exactly to whichever business direction alternative (and its intrinsic modules) was adopted by BPA. The Business Plan EIS thus identifies modules that can replace or add to those that are intrinsic, which allow for variations in the adopted alternative while retaining consistency with the overall policy direction.

Response Strategies

BPA makes business decisions in accordance with the core concepts of the market-driven framework that it adopted in the Business Plan ROD. However, to compete successfully in the continually evolving marketplace, BPA may need to modify these actions in order to remain consistent with the market-driven approach. To help ensure that BPA remains a viable participant in the competitive electrical utility market and is able to continue adequate support for public benefits, the Business Plan EIS and ROD allow BPA to maintain the ability to implement certain mitigations, as necessary, to respond to changes in the market.

BPA needs to generate enough revenue to pay all of its costs. BPA's ability to generate revenue reflects the concept of maximum sustainable revenue, which recognizes that the market price for power sets a limit on BPA's potential firm power revenues. BPA mitigates revenue shortfalls through response strategies. Response strategies, as outlined in the Business Plan EIS, fall into three general categories, based on how they affect BPA's financial condition: increase BPA revenues; reduce spending for BPA activities; and transfer BPA spending to other entities. A detailed analysis of the market responses is found in Appendix B of the Business Plan EIS (see Section 5.3).

In the Business Plan ROD, BPA decided, consistent with the Market-Driven Alternative, to apply as many mitigation response strategies as are necessary when BPA's costs and revenues do not balance. These mitigation strategies, or equivalents, are implemented to enhance BPA's ability to balance revenues and costs and to meet its public service and environmental obligations while remaining competitive in the wholesale electric power market. These mitigations enhance BPA's ability to adapt to changing conditions under the Market-Driven Alternative.

As an example, the concept of a Safety-Net Cost Recovery Adjustment Clause (SN CRAC) was implemented as a mitigation response strategy for the 2002 wholesale power rates. The SN CRAC involved an annual contingent variable adjustment to power rates. BPA's 2002 wholesale power rate filing included base power rates and, among other rate features, three separate CRACs. These three CRACs included the following: 1) Load-Based (LB) CRAC designed to cover augmentation costs, 2) Financial-Based (FB) CRAC designed to help ensure sufficient net revenues, and 3) SN CRAC, which is available if the likelihood of missing a Treasury payment or payment to any other creditor is 50 percent or greater, despite the implementation of the LB and FB CRACs. These CRACs allowed BPA to keep base rates low and to address financial

shortfalls through the variable CRACs, rather than institute higher base rates for the entire rate period.

Similarly, although expanding BPA's scope of sales was identified as a component of the Market-Driven Alternative, BPA could decide to limit sales of firm power to public preference customers to meet their firm requirements loads at the lowest cost-based rate to approximately the firm capability of the existing federal system. This would limit BPA's costs, rates and risk by not diluting the lower-cost federal system with higher-cost power purchases, and help to ensure the full and timely Treasury repayment. This strategy would be employed in response to market changes that put BPA in the role of being the region's primary acquirer of new resources.

Business Plan EIS Environmental Impact Analysis

Market responses are at the core of the environmental analysis in the Business Plan EIS. Market responses determine the possible environmental impacts that could result from a business-related action by BPA. There are four types of market responses identified in the Business Plan EIS:

- Resource Development – what sort of energy generating resources would be developed in response to an action;
- Resource Operation – how new or existing energy generating resources would be operated in response to an action;
- Transmission Development and Operation – how facilities to transmit power from an energy generating resource to the point of use would be developed and operated in response to an action; and
- Consumer Behavior – how consumers might react to changes in the cost of electricity.

The expected market responses to policy issues under each alternative were examined in the Business Plan EIS and, based on these market responses, the expected environmental impacts can be discerned. It is this relationship analysis – the relationship between taking action on a policy issue under the Market-Driven Alternative, and predicting the market responses and their attendant environmental impacts – which has been the foundation for BPA's policy-level decision-making since completion of the Business Plan EIS.

Based on this relationship analysis, BPA's chosen direction on a specific policy issue causes BPA's customers to react in some way. These reactions, or market responses, then determine the possible environmental impacts resulting from BPA's actions within the region. Section 4.3 of the Business Plan EIS addresses the generic environmental impacts resulting from market responses. In Section 4.4.2, the cumulative market responses of each alternative are used to assess the environmental impacts of the alternatives. The alternatives and modules were analyzed against two widely differing "endpoint" scenarios for operation of the Columbia River system. (See the Columbia River System Operations Review EIS for more information.)

In the Business Plan EIS, BPA quantitatively and qualitatively evaluated relationships among variables in the short run, and assumed that these relationships would continue to hold true in the long term (see the discussion of RODs tiered to the Business Plan EIS for more information on the validity of this assumption).

Section 4.4.3 of the Business Plan EIS provides a numerical example of how the relationship analysis in the Business Plan EIS functions. This example was provided as an illustrative example only, and was not intended to be relied on for quantitative comparisons in the future. This limitation was based on a recognition that quantifying the multiple permutations of risk factors would provide information of dubious validity and usefulness because each element of risk has a degree of “fuzziness,” and multiplying these risk factors correspondingly multiplies the degree of uncertainty. As discussed in the EIS, “[a]lthough this EIS includes rough numerical estimates of the rate, load, resource, and environmental effects of the six alternatives, it is clear that these values, especially in relation to the dynamics of the market, are only a snapshot in time, an illustration of the relationships among the market influences; they are not conclusive as to the ultimate outcome.” *Id.*, Section 4.4.1.1. Accordingly, the essence of the environmental impact analysis in the Business Plan EIS is the relationship analysis, and not the illustrative example.

Market-Driven Alternative (Proposed Action)

In the Business Plan EIS ROD, BPA decided to pursue the basic business direction outlined in the Market-Driven Alternative, including certain response strategies to adapt quickly to the evolving marketplace. Under the Market-Driven Alternative, BPA fully participates in the competitive market for power, transmission, and energy services, and uses success in the market to ensure the financial strength necessary to fulfill its mandates under the Northwest Power Act and BPA’s other organic statutes. BPA also has become a more active participant in the West Coast electric power and transmission market. The agency can share power system development costs and risks with full requirements customers under long-term contracts through its obligation to meet their loads, but also can offer more flexible arrangements under either long-term or short-term agreements. This alternative presumed that a more competitive regional wholesale power market would develop than existed in the early 1990s, facilitated by greater transmission access under the Energy Policy Act of 1992.

To implement the Market-Driven Alternative, Section 2.2.3 of the Business Plan EIS states that BPA would undertake the following business-related actions:

- market competitively priced, unbundled power products and services;
- offer rebundled firm power service packages to all Pacific Northwest utility customers;
- continue to offer cost-based firm requirements power products that meet the Pacific Northwest Electric Power Planning and Conservation Act (Northwest Power Act) of 1980 obligations;
- in the short term, adopt new rates without using a tiered rate structure;
- in the long term, adopt tiered and seasonally differentiated rates for firm requirements power, with declining Tier 1 allocations to direct service industries (DSIs) over time;
- take a strategic approach to extraregional marketing, using the flexibility of the federal power system to supply products designed to meet the needs of extraregional customers where possible;

- expand extraregional marketing to include non-traditional business partners, such as Mexico, independent power producers (IPPs), brokers, and marketers outside the Pacific Northwest;
- acquire resources only to complement existing resources and satisfy market demand;
- undertake conservation reinvention by attaining planned energy conservation savings (under the Northwest Power and Conservation Council’s Power Plan)¹ through marketing of energy conservation services, BPA-sponsored market transformation efforts to remove obstacles to commercialization of cost-effective measures, utility-initiated demand-side management (DSM) efforts, and, in the long term, tiered-rate price incentives;
- rely to some extent on planned market purchases rather than on long-term acquisition of generating resource output to meet any increases in BPA loads;
- review planned and existing generation projects and terminate those that are more costly than power purchases or new resources;
- include in power rates the embedded transmission costs of delivering federal power to existing points of delivery;
- price wheeling rates consistent with national transmission pricing policy;
- plan and construct transmission facilities based on (1) federal system needs, (2) requests for non-federal power transmission, and (3) market opportunities;
- provide transmission access to wholesale power producers and purchasers, including DSIs;
- seek access to necessary transmission paths outside the region; and
- take cost-cutting measures to reduce revenue requirements.

RODs Tiered to the Business Plan EIS

Today, BPA continues to make business decisions based on the Business Plan EIS and the Market-Driven Alternative adopted in the Business Plan ROD. The Business Plan EIS and ROD document a decision strategy for tiering subsequent business decisions (see Business Plan EIS, Section 1.4; Business Plan ROD, Section 8). For each such decision as appropriate, the BPA Administrator reviews the Business Plan EIS and ROD to determine if the proposed subsequent action falls within the scope of the Market-Driven Alternative evaluated in the EIS and adopted in the ROD. If the action is found to be within the scope of this alternative, he may tier his decision for the proposed action under NEPA to the Business Plan ROD and thus issue a ROD *tiered* to the Business Plan EIS and ROD. Tiering a ROD to the Business Plan ROD helps BPA delineate decisions clearly, and provides a logical framework for connecting broad programmatic decisions to more specific actions (see Business Plan EIS, Section 1.4).

¹ Northwest Power and Conservation Council will be called the “Council” throughout the remainder of this document. In some instances, the Council may be referred to as the Northwest Power Planning Council, the name it held at the time of the 1995 Business Plan EIS, prior to a formal name change in 2003.

Since 1995, BPA has used the Business Plan EIS to support over 40 business decisions. RODs tiered to the Business Plan EIS and ROD have been completed for a broad array of BPA business decisions such as rates for products and services, power sales contracts, transmission agreements, power interconnection projects, power subscription, interconnection of energy development projects, and cost recovery adjustment clauses.

Each time a ROD tiered to the Business Plan EIS and ROD has been prepared for a proposed policy decision, BPA has inherently evaluated refinements and alterations to its business practices embodied in the decision to determine if these changes are consistent with the Market-Driven Alternative and the environmental analysis contained in the Business Plan EIS. Through its process of tiering RODs to the Business Plan EIS, BPA also has evaluated the accuracy of its assumption, made in the Business Plan EIS, that the short-term relationships among variables would hold true in the long term. BPA has found these relationships have stayed largely the same where relevant to environmental concerns. The assumption made in the Business Plan EIS has been proven to be correct for the purposes of a policy-level EIS, and the basic qualitative and quantitative relationships among variables still hold true.

Also through these RODs, BPA has found that, although business practices continue to evolve over time, BPA is still implementing actions and making policy decisions consistent with the market-driven framework. An example of this would be power delivery service to the DSIs, such as the region's aluminum companies. The Market-Driven Alternative lays out a policy for service to the DSIs, which includes declining service over time. Periodically, BPA has had to re-evaluate service to DSIs, with respect to the Market-Driven Alternative, to determine such issues as amount of power allocated for sale to the DSIs and benefits as a delivery of power or as a monetary transaction.

Fish and Wildlife Implementation Plan EIS

BPA's fish and wildlife responsibilities stem from several sources. The Northwest Power Act requires that BPA protect, mitigate, and enhance fish and wildlife adversely affected by the development and operation of the Federal Columbia River Power System (FCRPS). In addition, BPA must avoid jeopardizing federally-listed species, pursuant to the Endangered Species Act (ESA). The ESA also requires that BPA comply with incidental take statements, implementing reasonable and prudent alternatives to offset effects to protected species and aid in their recovery. Finally, BPA must uphold its tribal treaty and trust responsibilities to Columbia River Basin Indian Tribes, specifically as they pertain to Columbia River Basin fish and wildlife.

The Business Plan EIS brought to light, but was not intended to address in detail, issues and policies related to BPA's fish and wildlife function. Of major concern were issues related to:

- 1) the relationship between BPA's responsibility to implement its mandated fish and wildlife responsibilities, and its accountability for results;
- 2) BPA's financial position – its ability to predict and stabilize its fish and wildlife costs; and,
- 3) the administrative mechanisms for distributing the fish and wildlife dollars.

In 2003, BPA finalized the Fish and Wildlife Implementation Plan Environmental Impact Statement (DOE/EIS-0312, April 2003), known as the FWIP EIS. The FWIP EIS more specifically addresses the fish and wildlife administration issues that were identified in the Business Plan EIS. The goal of the FWIP EIS was to develop a comprehensive and consistent policy to guide the implementation and funding of BPA's fish and wildlife obligations under existing statutes and policies.

Through a Record of Decision to the FWIP EIS in October 2003, BPA adopted the Preferred Alternative (PA 2002) that characterizes the policy direction BPA is taking in funding and implementing its fish and wildlife obligations. PA 2002 focuses on enhancing fish and wildlife habitat, modifying hydroelectric power operations and structures, and reforming hatcheries to both increase populations of listed fish stocks and provide long-term harvest opportunities. The PA 2002 incorporates fish and wildlife policy guidance from a variety of sources from across the Pacific Northwest region. The PA 2002 also considers extensive public input.

The FWIP EIS incorporates by reference the Business Plan EIS, and includes an updated discussion of fish and wildlife administration, as well as some information relating to generation and the hydrosystem. The FWIP EIS and ROD will support future actions (through preparation of Supplement Analyses or Tiered RODs) that BPA determines are necessary to comply with its responsibilities, including the following:

- funding and implementing fish and wildlife mitigation and recovery efforts that support the selected policy direction;
- short- or long-term FCRPS recommendation in the United States Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration (NOAA Fisheries) biological opinions ;
- funding of the Council's Fish and Wildlife Program;
- capital improvements at FCRPS projects; and
- funding of cultural resource mitigation.

Columbia River System Operation Review EIS

The Business Plan EIS evaluates alternatives using two widely different hydro operation strategies that represent "endpoints." These hydro strategies were derived from the Columbia River System Operation Review (SOR) taking place as the Business Plan EIS was being developed. The system operation strategy "endpoints" that are used to evaluate alternatives in the Business Plan EIS include the SOR 1994-1998 Biological Opinion Hydro Operations System Operation Strategy (SOS) (SOS 2d) and the SOR Detailed Fishery Operating Plan Hydro Operations (SOS 9a). These operation strategies represent the low- and high-end operations possible for power production from the SOR process. The Business Plan EIS did not influence or limit the SOR, rather the SOR defines the power available to BPA from the FCRPS.

After the Business Plan EIS and ROD were issued, the Federal Hydrosystem Action Agencies (BPA, Corps of Engineers, and the Bureau of Reclamation) completed the Columbia River SOR EIS (DOE/EIS-0170, November 1995). This EIS assessed the potential impacts of adopting

different system operation strategies for 14 dams on the Columbia and Lower Snake rivers that are part of the FCRPS. The preferred alternative adopted operations recommended in the 1995 biological opinions issued by the USFWS and NOAA Fisheries. The SOS preferred alternative included storing water in reservoirs during the fall and winter to meet spring and summer flow targets that supported the recovery of endangered and threatened fish federally-listed under the Endangered Species Act; managing detrimental effects caused by operations for ESA-listed species by establishing minimum summer reservoir levels, providing public safety through flood protection and other actions; and providing reasonable power generation. In 1997, the Federal Hydrosystem Action Agencies released individual Records of Decision adopting the SOR's Preferred Alternative.

In December 2000, USFWS and NOAA Fisheries issued new biological opinions that dealt with the operation of major projects of the FCRPS. The 2000 Biological Opinions required modifications to hydro operations from what was described in the 1995 Biological Opinions. In 2001, BPA issued a decision document regarding its responsibilities under the ESA, as amended (16 U.S.C §§ 1536 et seq.), the Clean Water Act (33 U.S.C. §§ 1251 et seq.), and other laws. BPA's decision document adopted the hydro measures from the 2000 Biological Opinions, supplementing those adopted in the 1997 SOS ROD. BPA determined that these recent changes in hydro operations fall within the range of hydro operation alternatives considered in the SOR EIS and Business Plan EIS.

BPA recognizes that because of uncertainties (such as decreased generation at hydroelectric projects), changing conditions (such as water availability due to climate change), and new information (such as future ESA requirements), any proposed hydro operations are subject to change. It is expected however that shifts in operating conditions caused by these variables would be within the range of conditions caused by natural variability that BPA has operated the FCRPS under in the past. In addition, any resulting hydro operations will be within the range of alternatives evaluated in the SOR EIS (since these represent the possible low- and high-end operations).

2. Changes in the Proposed Action

One of the two factors to be considered in a Supplement Analysis is whether there are substantial changes in the proposed action that are relevant to environmental concerns. As described in Section 1 of this Supplement Analysis, the proposed action in the Business Plan EIS is the Market-Driven Alternative. Under the Market-Driven Alternative, BPA participates in the competitive market for power, transmission, and energy services, and uses success in the market to ensure the financial strength necessary to fulfill its mandates under the NW Power Act and other obligations. The following discussion shows that BPA continues to implement the policy objectives identified for the Market-Driven Alternative. In addition, BPA continues to engage in business activities consistent with the Market-Driven Alternative, and there have been no substantial changes in the proposed action relevant to environmental concerns.

The Market-Driven Alternative Policy Objectives

The Market-Driven Alternative is defined in the Business Plan EIS as BPA fully participating in the competitive market for power, transmission, and energy services, and using success in the market to ensure the financial strength necessary to fulfill its mandates under the Northwest Power Act and BPA's other organic statutes. This broad policy statement reflects the agency's goal of competing in the deregulated energy marketplace. More specifically, though, the Business Plan EIS identifies a number of business-related actions that the agency would undertake in order to implement the Market-Driven Alternative. These actions, which translate to the policy objectives for the adopted alternative, are listed in Section 1 of this Supplement Analysis. The following provides a brief explanation of the agency's activities related to each objective since 1995.

- *Market competitively priced, unbundled power products and services.* Currently, BPA offers a number of unbundled power and transmission products and services. For example, shaping services and storage products are now offered for developers of wind generation. Block and Slice of the System (Slice), offered under BPA's Power Subscription Strategy, are other power products currently available. For more information, see the section below on Bundling or Unbundling of BPA Power Products and Services.
- *Offer rebundled firm power service packages to all Pacific Northwest utility customers.* Subsequent to the 1995 Business Plan EIS and ROD, contracts offered to customers under BPA's Power Subscription Strategy included rebundled firm power services. For example, load following service products include the service costs of deploying system flexibility and balancing purchases/sales to meet hour-to-hour swings in customer loads. For more information, see the Bundling or Unbundling of BPA Power Products and Services section.
- *Continue to offer cost-based firm requirements power products that meet Northwest Power Act obligations.* Since 1995, BPA has continued to provide power products to its firm requirements customers that are cost based and meet BPA's obligations under the Northwest Power Act. For more information, see the Rates section.
- *In the short term, adopt new rates without using a tiered rate structure.* None of BPA's rate cases subsequent to the 1995 Business Plan EIS and ROD have included tiered rates. For more information, see the Power Pricing and Rate Attributes section.
- *In the long term, adopt tiered and seasonally differentiated rates for firm requirements power, with declining Tier 1 allocations to DSIs over time.* Tiered rates are being considered as part of an integrated long-term contract and rate solution that will implement the Long-Term Regional Dialogue Policy.² For more information on tiered rates, see the Power Pricing and Rate Attributes section.

² Regional Dialogue has been a regional public process on how BPA will market power and distribute the costs and benefits of the FCRPS in the Pacific Northwest after 2006. For more information, see the BPA Web site at <http://www.bpa.gov/power/pl/regionaldialogue/>.

- *Take a strategic approach to extraregional marketing, using the flexibility of the federal power system to supply products designed to meet the needs of extraregional customers where possible.* BPA markets and sells surplus power to extraregional entities consistent with the Excess Federal Power Policy outlined in the Record of Decision dated September 18, 1996. For more information, see the Surplus Products and Services section.
- *Expand extraregional marketing to include non-traditional business partners, such as Mexico, IPPs, brokers, and marketers outside the Pacific Northwest.* Consistent with Regional Preference and its Excess Federal Power Policy, BPA sells its surplus power on the market. The power is available to a variety of regional and extraregional entities. For more information, see the Surplus Products and Services and Scope of BPA Sales sections.
- *Acquire resources only to complement existing resources and satisfy market demand.* BPA acquires generating resources to meet its loads according to the resource priorities of the NW Power Act and consistent with the Council's Power Plan. The Power Plan contains a forecast of demand and a translation of that demand into the need for additional generation resources. The Plan assesses the resources available to the region and their costs, inherent risks and other characteristics that affect how they fit with the existing power system. For more information, see the Generation Acquisition section.
- *Undertake conservation reinvention by attaining planned energy conservation savings (under the Council's Power Plan) through marketing of energy conservation services, BPA-sponsored market transformation efforts to remove obstacles to commercialization of cost-effective measures, utility-initiated demand-side management (DSM) efforts, and, in the long term, tiered-rate price incentives.* After 1995, BPA took a number of steps to assist the region in achieving energy conservation savings. BPA marketed several energy conservation services, worked to increase the number and variety of cost-effective measures, and encouraged demand reduction efforts. Currently, BPA's conservation is achieved through a combination of incentive programs, research and development, and market development activities. Through 2011, BPA expects to continue efforts to attain planned energy conservation savings. For more information, see the Conservation Acquisition section.
- *Rely to some extent on planned market purchases rather than on long-term acquisition of generating resource output to meet any increases in BPA loads.* BPA frequently uses power purchases from interconnected systems to meet short-term operational needs (such as serving loads during severe cold weather with power from California). Within the region, according to the Council's Fifth Power Plan, independent power producers currently account for a significant amount of the generation that is not owned by, or under long-term contract to, regional load-serving entities. The Plan recommends future demand be met by some reliance on market purchases of this power as a lower-cost and lower-risk option to generation acquisition. For more information, see the Off-System Purchases and Generation Acquisition sections.
- *Review planned and existing generation projects and terminate those that are more costly than power purchases or new resources.* BPA acquires generating resources according to the resource priorities of the NW Power Act and consistent with the Council's Power Plan. The Power Plan assesses the resources available to the region and their costs,

inherent risks and other characteristics that affect how they fit with the existing and planned power system. For more information, see the Generation Acquisition section.

- *Include in power rates the embedded transmission costs of delivering federal power to existing points of delivery.* Because BPA has separated its transmission rates from its power rates and conducts separate ratemaking processes for each in response to the Federal Energy Regulatory Commission's (FERC's) Order 888 and 889, the cost of transmission is not currently embedded in BPA's power rates. Instead, these transmission costs are fully recovered in BPA's transmission rate cases and implementing actions. For more information, see the Transmission and Wheeling Pricing section.
- *Price wheeling rates consistent with national transmission pricing policy.* Since 1995, BPA has taken action to more closely align its rate structures and policies with FERC, including adoption of an Open Access Transmission Tariff. For more information, see the Transmission and Wheeling Pricing section.
- *Plan and construct transmission facilities based on (1) federal system needs, (2) requests for non-federal power transmission, and (3) market opportunities.* Federal system needs are determined by reliability standards, which continue to drive transmission planning and construction. BPA also plans and constructs transmission facilities based on request, such as requests for generation interconnection. For more information, see the Transmission System Development section.
- *Provide transmission access to wholesale power producers and purchasers, including DSIs.* BPA operates an open-access, nondiscriminatory transmission system, providing access to any available transmission capacity on a first come, first served basis. For more information, see the Transmission Access section.
- *Seek access to necessary transmission paths outside the region.* With a robust transmission system, including extraregional interties, BPA has access to a broader market for both buying and selling power. For more information, see the Surplus Products and Services, and Off-System Purchases sections.
- *Take cost-cutting measures to reduce revenue requirements.* Cost cutting measures, such as creative financial arrangements between BPA and its customers, have been employed since 1995. BPA has employed aggressive debt management and cost recovery initiatives to counteract upward adjustments to power rates. BPA has also used risk management and bond refinancing to help minimize rate increases.

Business Practices Under the Market-Driven Alternative

As discussed in Section 1 of this Supplement Analysis, the five categories of major policy issues addressed in the Business Plan EIS are: Products and Services, Rates, Energy Resources, Transmission, and Fish and Wildlife Administration. These same policy issues that faced BPA in 1995 still today represent the heart of the decisions BPA is making, and will likely continue to make, regarding how to conduct its business. The following discussion describes the changes that have occurred in BPA's business practices since 1995 under each of the major policy issues categories, except for Fish and Wildlife Administration. This policy issue category was subsumed into BPA's FWIP EIS, which now supports BPA decision making for fish and wildlife issues. For the remaining four policy issue categories, the changes that have occurred generally

include the development of new technologies, methodologies, terminology, industry standards, and regulatory/statutory requirements.

By and large, any changes in BPA's business practices since 1995 have been more of an evolution or refinement of a general business practice already identified and assessed in the Business Plan EIS, rather than a revision or redirection of BPA's business practices. As discussed above, even with these changes, BPA still operates today in a manner consistent with the Market-Driven Alternative. In addition, most of the changes that have occurred in BPA's business practices do not have environmental consequences and thus are not relevant to environmental concerns. For changes that could indirectly have possible environmental consequences, these consequences have already been evaluated in the Business Plan EIS.

Products and Services

Bundling and Unbundling of BPA Power Products and Services

In adopting the Market-Driven Alternative, BPA decided to offer more flexible products and services, and to be more responsive to customer needs. In addition, prompted by FERC Orders 888 and 889, BPA chose to establish separate power and transmission business units in 1996. Since that time, through terms outlined in individualized contracts, BPA offers its power customers a number of power products and services. BPA's products include energy and capacity, and its services include load shaping, load following, or (for generating customers) backup services to support generating resources. Before the Subscription contracts were implemented in 2001, BPA provided most of its power system products to firm requirements customers as a single 'bundle' sold at the priority firm (PF) rate.

Since then, to be more competitive in the market and enable BPA to maintain sales revenues, BPA's power products and services are "unbundled" and sold separately, consistent with the policy direction of the Market-Driven Alternative. Customers pay for the products and services they choose in proportion to the amounts they use. This "unbundling" arrangement provides more choices for the customers and provides the incentive for efficient use. Unbundled products may be "rebundled" into packages to meet the needs of particular groups of customers. Pricing products and services separately provides price signals to BPA's customers, reflecting the costs of services and allowing BPA to compete with other energy suppliers in the market. Through the Regional Dialogue process, BPA is pursuing 20-year contracts with its customers, offering individualized packages of unbundled products and services.

Over time, BPA may continue to develop and provide new power products and services for sale to customers. The Slice product, first offered to customers in the subscription contracts, is a power sale that is based upon a customer's annual net firm requirements load and is mapped to provide power in the shape of BPA's generation from federal system resources over the year. Slice has been developed so as to avoid a cost shift to or from other customers. Because these products and services are intended to allow BPA to remain competitive in the power marketplace while continuing to meet its statutory obligations, this approach is consistent with the Market-Driven Alternative.

Surplus Products and Services

In the Business Plan ROD, BPA decided to expand its surplus marketing and to do business with new partners, including IPPs and marketers. BPA also decided to offer more flexible products and terms for surplus sales to increase revenues and expand markets.

Over the last several years, the tentative nature of BPA power surpluses has made surplus power marketing, particularly to parties outside the Pacific Northwest, a function of opportunity rather than a predictable element of BPA's overall marketing. Currently, BPA sells surplus power products and services both long and short term. BPA offers prospective products and services first to its customers in the Pacific Northwest and then to purchasers outside the region, under the requirements of the Act of August 31, 1964, P.L. 88-552 (the Northwest Preference Act), and section 5(f) and 9(c) of P.L. 96-501, the Northwest Power Act. If surplus power is available, and terms and conditions are mutually agreed upon, BPA will meet customer requests in the following order: 1) Pacific Northwest public utilities and cooperatives, 2) Pacific Northwest investor-owned utilities (IOUs) and DSIs, and 3) Southwest public utilities. Thereafter, if additional power is available, BPA may also meet requests for power from non-preference customers. Currently, market price is determined at the time of the request.

BPA could also expand its choices of products for sale to extraregional parties, within the constraints of regional preference. The most valuable resources to support extraregional sales would be those that could enhance the flexibility of the hydrosystem. These measures could include non-transmission solutions (Non-Wires Solutions) such as peak-load management, demand-side management, distributed generation, technological advancements, and conservation. BPA might also develop or invest in some transmission to improve access to extraregional customers. BPA could invest the revenue from surplus sales into energy efficiency and renewables research and development, or supplement its fish and wildlife mitigation program.

Under medium forecasted load growth (from the Council's Fifth Power Plan), it is forecasted that the net requirement load of public utilities will roughly equal available, minimally augmented, firm capability of the existing federal system in 2012. However, the rate of load growth could alter the timing of when the federal system output balances with BPA's net requirement load, and thus when surplus sales are discontinued either temporarily or permanently.

In the last decade, BPA has received as much as \$500 million a year or more from these surplus market revenues. Revenue from surplus power sales fluctuates based on streamflows in the Columbia River Basin, because streamflows directly affect the amount of power that is generated, and therefore the amount of any surplus power available for sale. BPA may continue to realize surplus revenues of this magnitude in the coming years, assuming that there are high wholesale electric prices in the West and that streamflows are at least average. As stated in the Business Plan EIS, surplus power sales contribute to the financial success of the agency, which is one of the objectives of the Market-Driven Alternative.

Scope of BPA Sales

In the Business Plan ROD, BPA decided to consider expanding the scope of sales to other customers, including utility pools or cooperatives, IPPs/brokers/marketers, new federal agencies either within or outside the region, and retail consumers. In order to expand sales so broadly, some changes to statutes governing BPA's authority might need to be modified. Currently, BPA sells power products and services within the Pacific Northwest to public, cooperative, and investor-owned utilities; federal agencies, and DSIs; and to utilities outside the region. Although the precise mix of services provided to each of these entities can vary, this is the same customer set that existed in 1995 and was considered in the Business Plan EIS.

Determination of BPA Firm Loads

BPA firm loads are established under BPA's power sales contracts. The determination of BPA firm loads continues to be a critical element in BPA's operational and resource planning. The amount of load BPA is contractually obligated to serve its customers dominates decisions about resource acquisitions or the availability of short- or long-term surplus power. BPA's costs and risks, and therefore rates, are driven heavily by the load obligations BPA assumes. The amount of risk (market volatility and uncertainty) to be managed in the region's power system has grown in recent years, and the fraction of that risk that BPA can absorb has decreased.

BPA's firm loads are largely a function of customers' net requirements, which are defined as the amount of federal power that a public utility, cooperative, or investor-owned utility is entitled to purchase from BPA under sections 5(b) and 9(c) of the Northwest Power Act. As it did in 1995, BPA currently serves partial service customers and full service customers. For BPA's partial service customers, the firm load on BPA is the customer's actual load, minus the customer's firm resources (if any) dedicated to load.

To calculate the BPA load resource balance, each month BPA compares federal system firm energy loads with federal system energy outputs. The results of this comparison yield the monthly and annual firm energy surplus or deficit of the federal system. Currently, BPA projects that, although the region should have an energy surplus in the near term, firm power sales obligations can exceed firm federal resources at any time, if critical water conditions exist. Through an extensive public process called Regional Dialogue, BPA is currently considering, among other policy choices, different strategies for approaching the situation where firm load exceeds available energy. One of the strategies is a tiered rate structure, where a portfolio of power products could be developed, priced at an incremental rate based on market value, to meet customers' net requirements. This tiered rate structure, discussed more in the Rates section, was one of the policy issues described as a potential future business decision in the Business Plan EIS Market-Driven Alternative.

The Business Plan EIS discussed two major challenges in determining BPA firm loads, service to DSIs and delivery of power under the Residential Exchange Program. In each case, as discussed further below, BPA's approach to these two issues has been guided by the Business Plan EIS and ROD.

Direct Service Industries

In the Business Plan EIS and the Market-Driven Alternative adopted in the Business Plan ROD, BPA noted that service to DSIs was a matter of considerable contention, but that service to DSIs would decline over time (see Sections 2.2.3 and 2.3.1.3). In 1995, BPA had 10 industrial customers with nearly 3,000 aMW of load. In Bonneville Power Administration's Service to Direct Service Industrial (DSI) Customers for Fiscal Years 2007-2011 (June 2005), BPA decided that for the 2007-2011 period, it would continue to ramp-down service to the DSIs. Under the decision, BPA provides eligible DSI customers monetized benefits (or physical power delivery, if risk can be managed), at rates no lower than rates paid by BPA's public preference customers, and under contractual terms no better than those offered to other customers. These terms are a direct application of the Market-Driven Alternative because they continue the implementation of the DSI module intrinsic to the Market-Driven Alternative discussed in Section 2.2.3 of the Business Plan EIS.

Residential Exchange Program

The Residential Exchange Program was the second major issue identified in the Business Plan EIS as having an influence on the determination of BPA's firm load. In the past, BPA has exchanged power with certain customers under the Residential Exchange Program (REP). Both investor-owned utilities and public-agency utilities have participated in the REP by executing Residential Purchase and Sale Agreement (RPSA) contracts. Established in Section 5(c) of the Northwest Power Act, the REP program provides the benefits of federal low-cost power to residential and small farm consumers by exchanging power at BPA's Priority Firm (PF) rate for equal amounts of power at the participating utility's average system cost, which is typically higher than BPA's PF rate.

Under the REP, the amount of power exchanged equals the utility's residential and small farm load. In past practice, no actual power sales between BPA and customers have taken place. Instead, BPA provided monetary benefits to the utility based on the difference between the utility's average system cost (ASC) and the applicable PF Exchange rate multiplied by the utility's residential and small farm loads. Each exchanging utility ASC is determined by the Administrator according to the 1984 ASC Methodology, an administrative rule developed by BPA in consultation with its customers and regional parties. The monetary benefits under REP must be passed through directly to the utility's residential and small farm consumers.

Although REP benefits have previously been monetary, the Northwest Power Act also provides for the sale of actual power to exchanging utilities in specific circumstances. Pursuant to section 5(c)(5) of the Act, in lieu of purchasing any amount of electric power offered by an exchanging utility, BPA may acquire an equivalent amount of electric power from other sources to replace power sold to the utility as part of an exchange sale. However, the cost of the acquisition must be less than the cost of purchasing the electric power offered by the utility. In these circumstances, BPA acquires power from an in-lieu resource and sells actual power to the exchanging utility.

There have been disputes regarding implementation of the REP and the level of benefits provided to residential and small farm customers of IOUs, and to some public agencies. BPA

has worked to settle these disputes and asked the region to agree on an appropriate level of REP settlement benefits.

In the Business Plan EIS, no major changes in implementation of the REP were anticipated. As discussed above, implementation of the REP has continued to be through monetary benefits based on customers' ASC and applicable power rates. There is a continued potential for future power deliveries to customers in lieu of monetary benefits, and there have been no substantial changes in the implementation of REP under the Market-Driven Alternative.

Marketing to Support BPA System Stability and Power Quality

Quality of service is closely related to reliability. Except for the DSIs, BPA serves all of its firm power customers under the same electric utility industry standards of reliability, which are designed to minimize the chance of interruptions in service, either due to resource adequacy or transmission reliability. The reliability criteria set standards of performance for equipment and for quality of service.

In the Business Plan ROD, BPA decided that it might allow customers to choose among different levels of service quality where technically feasible, with corresponding variations in cost. This variability would lead to an expansion in the ability to obtain reserves from loads for system stability and resource outages. Although BPA has not yet offered this variable service product, the agency still considers different marketing scenarios to support BPA system stability.

Currently, BPA includes its costs to maintain system stability and power quality, such as costs for voltage support and harmonic control, in its prices for all customers. BPA could shift costs from its customers collectively to individual customers that impose stability costs on the system.

BPA's customer resource choices can affect transmission and power system reliability. The intermittency of some resources, such as wind power and distributed generation resources, add challenges to forecasting, scheduling and dispatching power. Intermittent resources also affect the flexibility and capacity value of the FCRPS. To increase, or maintain, stability and system reliability, while still ensuring BPA's interconnection capabilities for intermittent and/or renewable resources, BPA could offer integration, storage, and shaping products for intermittent resources.

BPA's customer loads can also affect power system stability and power quality due to electrical phenomena such as reactive power, which reduces the portion of a generator's output that can perform work, and harmonics, which disrupt alternating-current frequency control. The cost of measures to reduce these problems might be included in system costs paid by all customers, or addressed in billing adjustments that impose surcharges on customers whose loads place particular burdens on the power system. Alternatively, where BPA takes measures to correct such load effects, it could treat those measures as power system services which should be charged to the specific customer with the load problem.

To provide flexibility to customers and to expand the ability to obtain reserves from loads for system stability and resource outages, BPA could allow customers to choose among different levels of service quality, where technically feasible, with corresponding variations in cost. BPA could also offer incentives to address system reliability and power quality issues or impose adequacy and reliability standards into its contracts with customers.

Unbundling of Transmission and Wheeling Service

In the Business Plan EIS, BPA stated that most of the existing FCRTS was used to deliver power to full and partial requirements customers, while about one third was subscribed for wheeling. Most of the costs of transmission were at that time embedded in power rates, but some costs were recovered through the separate wheeling contracts. The Business Plan EIS noted that the agency could charge separately for its power and transmission services, for the use of specific new facilities, and also for separate transmission support services that at that time were embedded (such as harmonics control and reactive support). With the voluntary adoption of the Open Access Transmission Tariff (OATT) in 1996, the agency did unbundle its power and transmission products with the functional split of its two business units. In addition, based on FERC directives, ancillary services are now unbundled from transmission rates. Ancillary services, such as reactive supply, spinning reserves, supplemental reserves, energy imbalance, and others, are required to maintain system stability and reliability, and transmission customers must obtain these services from some supplier. Unbundling of services provides customers with a broader range of choices, consistent with the Market-Driven Alternative.

Other BPA Services

BPA has developed capabilities in areas closely related to power system services, such as financial management, environmental cleanups, communications, and other areas of specialized knowledge. BPA markets these services to its utility customers and others in the region. Consistent with the Market-Driven Alternative, these services help keep BPA competitive in the electric utility industry and increase revenues, and reduce overhead costs paid from power and transmission revenues. For example, BPA currently leases use of its fiber optic cables to customers in the region that are in excess of BPA's communication needs. BPA also provides wireless co-location services to customers, to the extent feasible, by sharing its sites and towers with wireless communication providers as a way of establishing a wireless communication infrastructure. In the near term, such services are not likely to produce great revenues in comparison to revenues from power and transmission products and services. However, revenue-producing services could potentially help to lower or stabilize BPA's rates.

Rates

BPA is a self-financed power marketing agency within the Department of Energy. Sales of electric power and transmission services provide BPA's primary source of revenue. In setting rates for the period beginning in October 1, 2001, BPA bifurcated its general rate proceedings into separate power and transmission rate proceedings. BPA decided on this approach because it voluntarily committed to marketing its power and transmission services in a manner modeled after the regulatory initiatives articulated by FERC in Orders 888 and 889. In these orders, FERC directed utilities regulated under the Federal Power Act to "functionally unbundle" power and transmission services and to establish separate rates for wholesale generation, transmission, and ancillary services. BPA needs to consider whether to voluntarily adopt any changes. The objective of FERC's new Order 890 (February 2007) is to ensure transmission service is provided on a non-discriminatory, just and reasonable basis, as well as to provide for more effective regulation and transparency in the operation of the transmission grid. In voluntarily adopting this new order, BPA will work with its customers to determine the impact of Order 890 on the region. BPA intends to file a new open access tariff and modify its OATT.

The Northwest Power Act directs BPA to establish and periodically review and revise rates for the sale and disposition of electric energy and capacity and for the transmission of non-federal power. Rates are to be set to recover the costs associated with the acquisition, conservation, and transmission of electric power; amortization of the federal investment in the FCRPS (including irrigation); and all other costs and expenses incurred as a result of the Act. BPA must recover its costs sufficiently to repay the Treasury after first meeting its other costs; set rates at the lowest possible level consistent with sound business principles to encourage widespread use of electricity (per the Transmission Act); and base rates on total system costs. The Act also contains directives describing how rates for individual customer groups are derived.

The Northwest Power Act outlines a public process BPA must follow when establishing rates. Steps in the process include: 1) publish notice of proposed rates in the federal Register; 2) conduct hearings; 3) reply to comments; 4) revise rates, as determined necessary, based on comments and hearings; and 5) make a final decision that includes a full and complete justification. BPA rates become effective upon confirmation and approval by FERC. In accordance with the Northwest Power Act, FERC reviews BPA's rates to determine whether they are: 1) sufficient to assure repayment of the federal investment in the FCRPS over a reasonable number of years after first meeting BPA's other costs; 2) based on BPA's total system costs; and 3) as to transmission rates, equitably allocate the cost of the federal transmission system between federal and non-federal power using the system. This limited review permits BPA substantial discretion in the design of rates, which is not subject to FERC jurisdiction.

BPA has broad discretion to interpret and implement statutory standards applicable to ratemaking for both power and transmission rates. These standards focus on cost recovery and do not restrict BPA to any particular rate design methodology or theory. Nothing in the Northwest Power Act prohibits BPA from establishing a uniform rate or rates for sale of peaking capacity, or from establishing time-of-day, seasonal rates, or other rate forms.

As part of the Business Plan EIS, BPA included a series of mitigation response strategies that would allow the agency to balance costs and revenues to address changing conditions. These strategies include measures that BPA could implement to increase revenues (including raising power and transmission rates), decrease spending, and/or transfer costs to other entities if its costs and revenues do not balance (see Business Plan EIS Section 2.5).

Power Pricing and Rate Attributes

As part of the ratemaking process for power generation, BPA must determine the level of revenue required to cover the total system costs of producing, acquiring, marketing and conserving electric power. Today those costs include the repayment of the federal investment in hydro generation, fish and wildlife recovery, and conservation; federal agencies' operations and maintenance expenses allocated to power; capitalized contract expenses associated with such non-federal power suppliers as Energy Northwest (formerly known as Washington Public Power Supply System); other purchase power expenses, such as system augmentation and balancing power purchases; power marketing expenses; cost to the Power Business Line, if necessary, of transmission services; and all other generation-related costs incurred by BPA pursuant to law.

The concept of Maximum Sustainable Revenues continues to be an important factor in power pricing and rates. In the competitive power market, when BPA's rates are close to the cost of alternative power supplies, there is a point at which an increase in rates will not increase

revenues, because customers will look elsewhere for cheaper power. This means that the amount of revenue BPA can generate from firm power is limited by the market price for power (see Business Plan EIS Section 4.4.1.2).

Many pricing and rate structure alternatives exist for BPA power products. The range of possible rate attributes and their market responses are addressed in detail in Appendix B of the Business Plan EIS. These attributes and their market responses still hold true today. Alternative BPA power pricing could include the following:

- tiered rates for power or power services, with an initial block of service at one price, and additional purchases at a different, presumably higher price related to the marginal cost of new power resources;
- streamflow-based rates, to provide an incentive for consumers to shift power consumption to better match stream flows on the hydrosystem;
- seasonal rates, to provide an incentive for consumers to shift power consumption to better match overall power availability and cost;
- elimination of existing discounts, to provide more uniform price information to customers and consumers;
- surcharges for customers not in compliance with the Council's Power Plan and Fish and Wildlife Program or other purpose; or
- market-based pricing, with BPA prices set using information about costs and prices of alternative suppliers.

Since the completion of the Business Plan EIS, BPA has continued to sell power without using a tiered rate structure. However, as part of its Long-Term Regional Dialogue Policy Proposal (July 2006), BPA is proposing a tiered rate structure in which rates that reflect the low-cost existing federal system (or "Tier 1") would be distinguished from rates that reflect the costs of power from incremental resources (or "Tier 2"). By establishing the amount of power available for customers priced at the cost of the existing federal system, BPA would minimize the dilution of the low-cost existing system with higher cost resource/power purchases. BPA would continue to sell firm requirements power at the average embedded cost of service, while sending price signals to its customers about the marginal cost of power from new resources.

Power pricing is the marketing manifestation of BPA's decisions on resource acquisitions, fish and wildlife activities, system operations, etc. The pricing structure for power services determines how costs are distributed among customers and which costs customers should consider when comparing BPA services to those of other suppliers. Together with the type of services BPA provides, BPA's rate level and design can affect its customers' purchase decisions. Rates, and conservation incentives offered, can indirectly affect resource use and operation in the region through customers' market responses to them. As an example, a tiered rate structure such as the one described above could provide an incentive for utility-sponsored conservation programs and generating resources, while the retail price resulting from BPA's second-tier price could stimulate price-induced energy conservation, fuel switching, and reduced electric energy use by consumers. The potential environmental consequences from customer responses to possible BPA rate designs were identified and evaluated in the Business Plan EIS. These relationships between BPA's actions and customer responses still hold true today.

Transmission and Wheeling Pricing

BPA's transmission system is used to deliver federal power to BPA's customers and to transmit, or “wheel,” non-federal power between resources and loads. As part of the ratemaking process for transmission and wheeling services, BPA must determine the level of revenue required to cover the agency's total transmission-related costs. Today those costs include the federal investment in transmission and transmission-supporting facilities; operations and maintenance expenses; transmission marketing and scheduling expenses; the cost of generation inputs for ancillary services and reliability; and all other transmission-related costs incurred by the agency.

Many pricing and rate structure alternatives exist for BPA transmission and wheeling services. The range of possible rate attributes and their market responses are addressed in detail in Appendix B of the 1995 Business Plan EIS. These attributes and their market responses still hold true today. Alternative BPA transmission and wheeling pricing could include the following:

- offering discounts or imposing surcharges for integrating specific resource types (such as renewables) or locations (e.g., west-side) for certain types of transactions (such as conservation transfers), or for other reasons;
- using opportunity cost pricing in rates, subject to statutory constraints;
- using incremental pricing for transmission or wheeling over specific facilities, as appropriate;
- pricing transmission services in tiers, on the basis of new facilities and capacity versus existing facilities and capacity; or
- instituting wheeling rates that have zonal components (i.e., a hybrid of distance and “postage-stamp” rates).

As described in the Business Plan EIS, BPA addresses potential revenue shortfalls through mitigation response strategies. For example, a two-year rate period was established as part of BPA's 2006 Final Transmission Proposal. The ability to revise rates after two years, or more frequently if necessary, serves as an important risk mitigation tool. A two-year rate period limits the effects of uncertainty. In addition, as part of the proposal, BPA explicitly retains the right to initiate a process to raise rates during the two-year rate period if necessary.

As previously noted, under the Northwest Power Act, FERC reviews BPA's rates. Prior to 1996, when most transmission of federal power was provided for in bundled power sales contracts, an allocation of costs in the rate case was needed to demonstrate equitable allocation of transmission costs between federal and non-federal power. Under BPA's current OATT, however, purchasers of transmission for federal power receive the same services (including terms and conditions) and pay the same rates as purchasers of transmission for non-federal power. An equitable allocation of transmission costs between federal and non-federal power is achieved through the application of the same rates to the two classes of users.

BPA, like most transmission providers, requires parties requesting transmission service that will require system expansion to fund those investments in advance in exchange for transmission credits. This practice protects existing transmission customers from the risk that the requestor will fail and increase transmission rates for other customers. On the other hand, this practice

makes it more difficult to develop new generation. Wind development, in particular, has been impacted by this situation. BPA has launched a public process to examine several policy alternatives, including continuing the status quo, not requiring any advance funding, or an intermediate alternative.

BPA's transmission rates do not affect the environment directly. Effects on the environment occur indirectly as a market response to transmission rates. For example, changes in BPA's transmission rates result in changes in the cost of transmission to utilities. In turn, the increased cost of transmission is compared to the cost of independent facility construction, which could ultimately lead to a utility decision to construct new transmission facilities. To the extent that BPA decides to charge for specific, more narrowly-defined transmission and wheeling services, or on the basis of incremental or opportunity costs, the transmission and generation system could be operated and developed more efficiently, because there would be clearer price signals that indicate the costs of delivering power. A detailed analysis of the market responses associated with various transmission and wheeling rate attributes is found in Appendix B of the Business Plan EIS (see Section 5.4). These relationships between BPA's actions and market responses still hold true today.

Energy Services

Conservation Acquisition

Since 1995, BPA has been actively involved in assisting the region in achieving energy conservation savings. BPA has taken numerous actions to further these efforts, including marketing energy conservation services, working to increase the number and variety of cost-effective measures, and encouraging demand reduction efforts. Currently, BPA's conservation is achieved through a combination of incentive programs, research and development efforts, and market development activities.

The Council's Fifth Power Plan identifies a regional conservation target over the 2005-2009 period of approximately 700 aMW. BPA's responsibility to achieve its share of this regional target is based on the amount of regional firm load that BPA supplies with federal power. BPA estimates that it is responsible for about 40 percent of the 700 aMW or 280 aMW.

The following five conservation principles were included in BPA's Final Record of Decision on the Short-Term Regional Dialogue Policy (February 2005). They provide the framework for future conservation program design.

- **Conservation Targets from Council's Plan:** BPA will use the Council's plan to identify the regional cost-effective conservation targets upon which the agency's share (approximately 40 percent) of cost-effective conservation is based.
- **Conservation Achieved at the Local Level:** The bulk of the conservation to be achieved is best pursued and achieved at the local level. There are some initiatives that are best served by regional approaches (for example, market transformation through the Northwest Energy Efficiency Alliance). However, the knowledge local utilities have of their consumers and their needs reinforces many of the successful energy efficiency programs being delivered today.

- **Achieve Conservation at Lowest Cost Possible to BPA:** BPA will seek to meet its conservation goals at the lowest possible cost to BPA. While only cost-effective measures and programs are a given, the region can benefit by working together to jointly drive down the cost of acquiring those resources.
- **Administrative Support:** BPA will continue to provide an appropriate level of funding for local administrative support to plan and implement conservation programs.
- **Funding for Education, Outreach and Low-Income Weatherization:** BPA will continue to provide an appropriate level of funding for education, outreach, and low-income weatherization such that these important initiatives complement a complete and effective conservation portfolio.

In addition to the five principles listed above, BPA’s Post-2006 Conservation Program structure is guided by the following key policy directives:

- **Benefits Must Flow to BPA:** BPA must realize directly the benefit of the savings achieved from the conservation acquisition programs it funds.
- **Cost-Effective Measures:** BPA will only pay for cost-effective measures as defined in the Council’s Power Plan.
- **Accountability:** BPA needs to be sure it is getting what it pays for – incremental, reliable and verifiable conservation savings. Measurement and verification will be included in all program mechanisms. This will include managing performance risks upfront such that BPA will avoid any need to “backstop” underachievement.
- **Tracking Progress:** BPA will monitor and report, on a regular basis, how our utilities and other parties are spending the conservation funds it provides across all components of the conservation portfolio.
- **Flexibility:** BPA will retain flexibility to shift budgets and targets across all program elements of the conservation portfolio and across program years so that the Council’s target is met at the lowest cost possible.
- **Leveraging and Coordination:** BPA will coordinate and synchronize its efforts with those of others as part of an effective and efficient regional effort to achieve cost-effective conservation.
- **Local Control:** BPA will foster local utility initiative and control of conservation efforts to the maximum extent it can, consistent with meeting cost and verification goals.

While BPA remains committed to achieving the energy conservation goals of the Northwest Power Act and the Council’s Power Plan, other mechanisms may achieve the directives above more efficiently and effectively. The Program portfolio that BPA will offer during the 2007 through 2009 timeframe and through 2011 (pending the outcome of post-2009 rate case decisions and/or future long-term power sales contract requirements) includes the following: (1) a rate credit program; (2) utility and federal agency customer acquisition program; (3) third-

party acquisition initiatives; and (4) support for regional infrastructure necessary to effectively carry out the other portfolio elements (Final Post-2006 Conservation Program Structure, June 28, 2005).

As described in BPA's Long-Term Regional Dialogue Policy Proposal (July 2006), BPA proposes that its fundamental approach to conservation in the post-2011 period should be the same as it is today – ensuring the development of cost-effective conservation in the load it serves, while keeping costs and rate impacts of doing so as low as possible. In the post-2011 period, there may be further developments in BPA's role in encouraging conservation, since BPA's overall resource acquisition responsibility may be reduced, and customers may have greater incentive to conserve if they face a higher BPA rate or market price for load growth (rates that reflect the low-cost existing federal system, "Tier 1," would be distinguished from rates that reflect the costs of power from incremental resources, "Tier 2").

Generation Acquisition

Under the Northwest Power Act, BPA can acquire the output or capability of an electric generating facility, but cannot own the facility. BPA is required to acquire generating resources according to the resource priorities of the Northwest Power Act and consistent with the Council's Power Plan. The Plan gives priority to resources that the Council determines to be cost-effective. If no Plan is in effect, BPA may acquire resources such that priority is given: first, to conservation; second, to renewable resources; third, to generating resources utilizing waste heat or generating resources of high fuel conversion efficiency; and fourth, to all other resources (Northwest Power Act 839b(e)(1)).

BPA's Resource Program EIS (DOE/EIS-0162, February 1993) is a programmatic document that evaluates the environmental impacts of conservation and generation resources on a per-MW basis and describes potential mitigation measures for each. The resource types evaluated include conservation (commercial, residential, industrial, irrigation, and agriculture), renewable resources (hydropower, geothermal, wind, and solar), cogeneration, combustion turbines, nuclear, coal (both conventional and clean coal technologies), fuel switching, energy imports, and efficiency improvements. The impact analysis in the Resource Program EIS was updated as part of BPA's Business Plan EIS (see Section 4.3) and then again in BPA's FWIP EIS (see Section 5.3). BPA continues to evaluate proposals to acquire conservation and/or generation resources on a site-specific basis using these analyses.

Since 1995, BPA has primarily relied on market purchases to meet power demand at times when demand exceeds FCRPS capability. However, the agency also has in limited circumstances acquired generation resources to assist in meeting load. These resources have typically been renewable resources, such as portions of the Klondike and Stateline Wind Projects and the Condon Wind Project. Both the Resource Program EIS and the Business Plan EIS discuss the possibility of acquiring renewable energy to meet load growth.

As part of BPA's Long-Term Regional Dialogue Policy Proposal (July 2006), under a "most likely" load forecast, the net requirement load of public customers is expected to roughly equal the available firm capability of the existing federal system by FY 2012. BPA proposes to establish, for every existing customer, a contractually-defined level of access to power service limited to the output of the existing system that is priced based on the low-cost federal system.

BPA proposes to establish a long-term tiered rates structure whereby rates that reflect the low-cost existing federal system (or “Tier 1”) would be distinguished from rates that reflect the costs of power from incremental resource acquisition (or “Tier 2”). It is expected that the amount of generation that BPA will acquire in the future under such a proposal will be limited. Instead, BPA customers would potentially take on the responsibility for new resource development to meet load growth. However, the new resource adequacy standards established by the Pacific Northwest Resource Adequacy Forum and adopted by the Council may require BPA to procure capacity products to meet capacity adequacy standards.

This proposal is consistent with the Council’s Fifth Power Plan, which contains a forecast of demand and a translation of that demand into the need for additional conservation and generation resources from 2005 through the 20-year planning period. The plan assesses the resource alternatives available to the region and their costs, inherent risks, and other characteristics that affect how they fit with the existing power system. Inherent uncertainties/risks considered in the plan include demand for electricity, hydroelectric generation, fuel price, environmental regulation, and electricity market price.

Absent extremely high growth in demand during the next several years, substantial loss of existing resources, or the failure to develop cost-effective conservation, the Council’s Plan does not call for substantial development of new generating resources before the end of the decade, beyond those resources already committed to development. An important factor driving this finding is the current regional surplus of generating capacity. This surplus is, to a large extent, a result of the price excursions of 2000 and 2001. High prices led to a substantial loss of regional load and to construction of over 4,200 MW of new generating capacity in the region. Loads have yet to recover, leaving much generating capacity underutilized. Even at forecasted rates of load growth, current resources appear sufficient to maintain a regional load-resource balance at least through 2016.

The Council’s Plan calls for the development of 700 aMW of cost-effective conservation over the next 5 years. Investment in cost-effective conservation is beneficial because it reduces the need to build more expensive new resources and it reduces the region’s exposure to periods of high market prices, fuel-price volatility, and possible future carbon penalties. In addition to conservation, the Plan recommends developing 500 MW of demand response during the next 5 years. Demand response involves temporary reductions or shifts in the timing of some uses of electricity during periods of high prices and limited supply. In addition, the Council recommends the development of up to 2,000 MW (total, not average) of wind capacity during the next 20 years.

The Council’s Plan describes wind as playing a much-expanded role in the region beginning in about 2010. This is the result of a number of factors: possible future policies to reduce the emissions of carbon dioxide by making the use of carbon-intensive fuels more expensive; adoption of Renewable Portfolio Standards; the forecast of significant wind turbine technology improvement and cost reductions; higher gas prices and price volatility; and relatively low integration costs. BPA has made a commitment to the region to support the development of wind as a renewable energy resource. BPA believes that a portfolio of facilitation activities with its public power customers has the best chance of meeting the renewables target at the least cost:

- Cost effective renewable resource acquisitions (for Tier 2)
- Integration services
- Coordinated planning
- Research, development and demonstration
- Targeted financial support.

BPA's Transmission Services (TS, formerly the Transmission Business Line) and Power Services (PS, formerly the Power Business Line) have sought innovative ways to engage the region in efforts to support wind. In 2001, TS conducted a special rate case to exempt wind generation from third tier generation scheduling imbalance penalty charges. As part of the 2002 transmission rate case settlement, TS created a work group within its Business Practices Technical Forum to focus on many of the issues related to ancillary service and scheduling wind. BPA's PS has created a wind integration product and a storage and shaping product that uses the flexibility of the hydrosystem to better enable integration of new wind resources.

In 2006, BPA and the Council announced a joint effort to study options for effective integration of future wind development in the region. The draft study reported findings regarding the ability of the Pacific Northwest, and specifically the federal hydropower system, to accommodate future wind power development of as much as 6,000 MW (total, not average). The study recommends 16 actions intended to help resolve wind integration issues, specifically challenges associated with transmission marketing, planning and expansion. The study also calls for the formation of a Northwest Wind Integration Forum to facilitate implementation of the recommendations.

The Council's Plan also calls for being fully prepared to begin construction, if needed, of coal resources by the beginning of 2012. Being ready to begin construction means that the siting and licensing of the necessary projects have been accomplished and, if necessary, longer lead-time activities, such as construction of transmission upgrades, have been initiated so that resources can be brought on-line as needed. The Council has analyzed both conventional coal-fired and coal-gasification generation.

The Council's Plan calls for being prepared to bring 425 MW of gasified coal into service by 2016. Construction lead-time requirements are such that the region should be prepared to begin construction of this capacity by the beginning of 2012. However, if commercialization of coal-gasification technology fails to advance as forecast, and other estimates underlying the plan do not change significantly, 400 MW of conventional coal-fired capacity could be needed by mid-2013. This would require preconstruction development to commence by mid-2007 so construction could begin as early as 2010.

While the Council's Plan does not call for generation resource development prior to 2010, opportunities for development of cost-effective smaller-scale renewable or high-efficiency generating projects that might otherwise become "lost opportunities" will likely surface prior to 2010. Examples include industrial or commercial cogeneration projects; landfill, animal waste or wastewater treatment plant energy recovery; hydropower renovations; forest residue energy recovery, and photovoltaics serving small isolated loads. The opportunity to economically develop these projects is often created by needs not directly related to electric power production, such as, waste disposal, process or equipment upgrading, or new commercial and industrial

development. BPA will monitor these opportunities and may participate in proposed projects when cost-effective.

Other strategies for resource acquisition could include short-term (spot market) purchases in place of long-term firm resource acquisitions (both in-region and extra-regional), joint ventures with other entities, lesser amounts of contingency resources, or research and development strategies. In-region IPPs currently account for an increasing amount of the generation in the region. There are approximately 3,000 aMW of IPP generation in the region that is not owned by, or under long-term contract to, regional load-serving entities. Most of this generation comes from new, gas-fired combined-cycle combustion turbines, but an existing coal-fired plant produces about 1,100 aMW. This IPP generation does not have firm transmission access to markets outside the region, and it is available to meet regional needs. See Off-System Purchases for a discussion of extra-regional resource acquisition.

Location and transmission system integration are important issues associated with generation resource development. Generally, resources located farther from load centers require more transmission. But dispersed generation has the potential to improve the operational efficiency of transmission and distribution systems. Distributed generation is the production of power at or near electrical loads. Siting of generation at or near loads may be desirable for any of the following purposes:

- Standby power for critical loads such as hospitals, water supply, elevators and other services (generally required by codes).
- Standby power for high value or uninterruptible production processes.
- Regulation of voltage beyond grid standards (premium power).
- Cogeneration service to industrial or commercial thermal loads conducive to supply by cogeneration.
- Power generation using an on-site byproduct suitable for use as a fuel.
- Local voltage support during periods of high demand (grid support).
- Reliability upgrades for systems served by transmission or distribution susceptible to outages.
- Alternative to the expansion of transmission or distribution system capacity.
- Service to small or remote loads where more economic than line extension.
- Peak shaving to reduce demand charges or power purchase costs when prices are high.

Distributed generation installations tend to be smaller than central-station plants, ranging from tens of kilowatts to about 50 MW in capacity. The benefits of distributed generation can best be secured with resources that are flexible in location and sizing such as smaller fossil fuel technologies, technologies using transportable biomass fuels, and solar photovoltaics. Established distributed generation technologies include small gas turbine generators,

reciprocating engine-generators, boiler-steam turbines, and solar photovoltaics. Because of the typically small size of distributed generation applications, the higher unit cost and lower efficiency of the equipment compared to central-station generation, and frequently higher fuel costs, distributed generation is rarely able to compete with the energy cost of grid-supplied electricity. It is the additional value imparted by the benefits listed above that could make distributed generation attractive for specific applications.

Off-System Purchases

In the Business Plan ROD, BPA decided to strategically use short-term economy purchases of off-system power to meet part of its firm load obligations when necessary or desirable. Interconnections among regional power systems facilitate such power transactions where resources on one system are available to supply demands on another system. The availability of power for both short- and long-term purchase has increased with open transmission access, as developers construct resources for sale to the market. Supplying a portion of firm loads with off-system purchases reduces long-term firm resource acquisitions and may shift generation from planned new resources to existing generation in other regions.

Since 1995, BPA has frequently used power purchases from other interconnected systems to meet short-term operational needs, consistent with the Market-Driven Alternative. Already existing and operating resources outside of the Pacific Northwest region typically supply the power for these off-system purchases, and BPA's purchases do not require a change in the operations of these resources. BPA has used these spot market transactions to meet loads during severe cold weather, to displace more expensive resources economically, and to permit storage of water for fish flow augmentation. It is expected that BPA will continue to primarily use within system market purchases and acquire firm resource output where necessary to meet forecasted firm loads, using off-system purchases to respond to short-term needs and opportunities during the operating year. Transmission capability might limit the extent to which BPA could rely on off-system purchases.

Least-Cost Planning

The two most influential factors in least-cost power resource planning are environmental costs and the discount rate, which indicates the emphasis given to future costs. Environmental costs particularly add to the costs of combustion-type energy resources. Fossil fuels also have environmental costs related to extraction. Of major concern with these energy technologies is carbon dioxide and its relation to global warming. The discount rate applied in calculating the costs of resources can also alter the relative costs of different resource types. A low discount rate favors capital-intensive resources, while a high discount rate favors resources with low financing costs and relatively higher operating costs. With current resource options, a higher discount rate would make resources with lower early-year costs (e.g., combustion turbines) more attractive and resources with high up-front costs (e.g., conservation or renewables) less attractive. Although the Council's Fifth Power Plan uses a discount rate of 4 percent, individual utilities and resource developers generally apply higher rates.

In the Business Plan ROD, BPA decided to adopt a least-cost planning approach that involved continued cooperation with the Council while allowing for customer choice as regulated. Today, BPA resource acquisitions continue to conform to the Council's direction on planning. In 1995,

the Council's Power Plan used least-cost planning to identify a resource plan for BPA to meet the Pacific Northwest demand for electricity. In the Council's Fifth Power Plan, their approach to resource planning is referred to as "risk-constrained least-cost planning." Given any level of risk tolerance, there should be a least-cost way to achieve that level of risk protection. Generally speaking, lower risk means higher average cost. This is due to the cost of adding resources to mitigate potential future market-price spikes, and as a hedge against the risks of fuel price volatility and possible future carbon dioxide control measures. The increase in expected cost can be thought of as an insurance premium paid to reduce the exposure to much higher costs that could occur in some futures (combinations of sources of uncertainty, specified over the entire 20-year planning period).

Given a particular future, the primary measure of a resource plan is its net-present value total system costs. These costs include all variable costs, such as those for fuel, variable operation and maintenance, certain short-term purchases, and fixed costs associated with future capital investment and operations and maintenance. The Council's present value calculation discounts future costs to constant 2004 dollars using a real discount rate of 4 percent. This method treats current and future costs on a comparable basis. If the future were certain, net present value system cost would be the only measure of a resource plan's performance. Because the future is uncertain plans are evaluated over a large number of possible futures. Expected net present value cost, however, does not give a picture of the risk associated with the plan. There are a number of possible risk measures that could be used. The Council's analysis used a summary measure of risk called "TailVaR90."

In their Fifth Power Plan, the Council selected a resource plan that entails somewhat more cost on average, but considerably less risk, than the absolute least-cost plan. This plan reflects concerns about the adverse effects that very high-cost outcomes can have on the power system; the social and "non-power" economic costs not included in the Council's risk measures; judgments regarding the value of improved reliability and reductions in price volatility, and the desire for a diverse and orderly development pattern. However, depending on the characteristics of a particular future, the Council's Plan might manifest itself quite differently than described in the Fifth Power Plan. Resource development could occur somewhat earlier or later, at higher levels or lower, or not at all, depending on load growth, fuel prices, and carbon penalties, to name a few variables.

Regulated utilities continue to be subject to least-cost requirements of public utility commissions. For resources that fall under state siting processes, resource developers also would be subject to least-cost planning requirements of siting authorities. State public utility commissions and facility siting authorities also require the utilities they regulate to use least-cost planning in their energy resource development plans. Energy resources developed by regulated utilities, and resources above the size threshold for permit approval by siting authorities (e.g., 250 MW in the state of Washington), are subject to some type of state-level least-cost planning requirements.

Transmission

Transmission System Development

In the Business Plan EIS and ROD, BPA evaluated and chose a process in which the agency would develop its transmission system based on system load and requested service using a “one utility” approach, and reliability criteria and planning would set the direction for regional transmission system development. The development of BPA's transmission system is still based on one utility least-cost planning and reliability. These criteria came about from a number of legal and discretionary standards. Under the Federal Columbia River Transmission System (FCRTS) Act, BPA must “integrate and transmit electric power from existing or additional federal and non-federal generating units and BPA customers” along with maintaining “the electrical stability and electrical reliability of the federal system.” Planning for development must be consistent with North American Electric Reliability Corporation (NERC) and Western Electricity Coordinating Council (WECC) criteria.

Since 1995, transmission adequacy has become more of an issue as demand for transmission services has continued to increase while only limited infrastructure has been added to BPA's aging transmission system. During this time, portions of the Pacific Northwest's transmission grid system have occasionally operated at or near capacity to meet demand. Critical paths on the Pacific Northwest transmission grid are occasionally congested and near or at capacity. As demand increases, there is an increased risk that BPA's system may no longer be able to consistently operate to national and regional reliability standards. Some parts of the Pacific Northwest transmission system are currently operating so close to the edge of reliability standards that contingency plans have been put in place.

The aftermath of the August 1996 West Coast outage further complicates transmission reliability. This outage started on BPA's transmission system near Portland, Oregon, when high temperatures and line loading caused one of BPA's transmission lines to sag and make contact with trees. This contact caused the line to go out of service, resulting in a series of cascading outages, first on BPA's transmission system and then on transmission systems all along the West Coast. After this outage, BPA recognized that it needed to take immediate steps to provide some additional margins of safety. One of these steps was to derate portions of its transmission system, which effectively lowered the capacity of this system.

Prior to 2001, BPA addressed transmission capacity issues primarily through reinforcement of its existing transmission system. These reinforcements typically involved relatively small-scale fixes such as adding voltage support devices. These fixes to the aging infrastructure, meant to forestall the costs of constructing new lines, could not continue to provide the necessary transmission capacity for a growing region. One initiative BPA used to bolster the transmission system was to create the Infrastructure Technical Review Committee (ITRC), formed in 2001 at the behest of some of BPA's customers to support BPA's efforts to secure increased federal funding for BPA's infrastructure proposals. The ITRC annually reviews BPA's proposed improvement projects in a manner that will provide the most cost-effective, reliable service for the region's consumers. The committee draws mainly on individuals who are also members of the Northwest Power Pool (NWPP) Transmission Planning Committee (TPC). The committee's review is one of several reviews for BPA's proposals.

On December 31, 2003, BPA energized the new Kangley-Echo Lake 500-kV transmission line in the Puget Sound area, the first major transmission line built by BPA since 1987. Along with Kangley-Echo Lake, the agency has recently invested more than \$1 billion in transmission projects. Other recent major transmission projects include Grand Coulee-Bell and Schultz-Wautoma, both 500-kV lines in Washington. A number of transmission line rebuild projects have been completed throughout BPA's service territory.

In conjunction with infrastructure development, BPA has also investigated other initiatives to maximize the efficient use of the transmission system, including recalculating Available Transfer Capacity (ATC), adequacy standards, new and improved technologies, efficiency in ancillary services, maintenance, and demand side management and other Non-Wires Solutions. BPA has also experimented with the use of third-party financing to fund transmission system development.

In 1996, BPA adopted an OATT for its transmission system, consistent with FERC's pro forma open access tariff. Under its tariff, BPA offers transmission interconnection to the FCRTS to all eligible customers on a first-come, first-served basis. Although BPA is not subject to FERC's jurisdiction, BPA follows the open access tariff as a matter of national policy. This course of action demonstrates BPA's commitment to non-discriminatory access to its transmission system and ensures that BPA will receive non-discriminatory access to the transmission systems of utilities that are subject to FERC's jurisdiction. As noted in the Business Plan EIS, open access to the federal transmission system does affect the development of the system, but planning for transmission development continues to be consistent with the same reliability and efficiency criteria.

The OATT provides that BPA will post an ATC Methodology. ATC is a measure of the electric transfer capability remaining for sale in the physical transmission network over and above already committed uses. The TS has, in consultation with regional stakeholders, developed methodologies for calculating its ATC, consistent with NERC and WECC criteria, for both long-term and short-term transmission service. The principles for the ATC methodology included optimizing the use of existing BPA transmission assets, being consistent with BPA's OATT, minimizing impacts to existing obligations, and offering transmission service at the lowest possible cost to the region.

The fundamental aspects of transmission system development have not changed since the 1995 Business Plan EIS. Without significant changes in the legal framework under which the agency operates, development will continue to be based on loads and resources, using a one utility approach based on reliability. Although BPA is executing the ColumbiaGrid Planning and Expansion Functional Agreement to have ColumbiaGrid coordinate the members' planning process (described later), providing a reliable transmission system to connect resources to loads will continue to drive development, as was described in the Business Plan EIS (see Section 2.4.4.1).

Transmission Access

BPA's transmission system was constructed primarily to deliver power from the FCRPS to the customers that purchase power from BPA. On occasion, BPA has added capacity specifically to wheel non-federal power. In the Business Plan ROD, BPA decided to treat non-federal power on

a basis that is generally comparable to federal power. BPA has provided requested transmission services since 1996, in accordance with this decision and BPA's voluntary adoption in 1996 of an OATT for its transmission system. BPA designed its OATT to be largely consistent with the FERC's pro forma open access tariff. Under BPA's tariff, BPA offers transmission interconnection to the FCRTS to all eligible customers on a first-come, first-served basis. Although BPA is not subject to FERC's jurisdiction, BPA voluntarily complies with the open access tariff as a matter of national policy. This course of action demonstrates BPA's commitment to non-discriminatory access to its transmission system and ensures that BPA will receive reciprocity in non-discriminatory access to the transmission systems of utilities that are subject to FERC's jurisdiction.

BPA's OATT has also resulted in a program of customers requesting transmission services or interconnection into the FCRTS. In response to FERC's Orders No. 2003 and 2003-A, Standardization of Large Generator Interconnection Agreement and Procedures, BPA voluntarily incorporated much of the standard large generator interconnection procedures and standard large generator interconnection agreement into the OATT.

One of the ways that BPA accesses transmission systems of other utilities is through General Transfer Agreement (GTA) services. These services enable BPA to deliver federal power to BPA power customers not directly connected to the FCRTS or to those portions of the FCRTS that are non-contiguous. BPA pays the cost of wheeling federal power over facilities owned and operated by third-party transmission providers. Approximately 80 BPA power customers are served, in whole or in part, through the use of GTA services. BPA has relied extensively on third-party transmission owners for delivery of federal power for over 50 years. GTA services have been an economical and practical alternative to federally-constructed transmission facilities to deliver federal power to customers' service areas. The cost of this service has been about \$50 million annually in recent years. This expense has been borne by BPA and rolled into rates.

Assignability of Rights under BPA Wheeling Contracts

In the Business Plan EIS, BPA proposed that it would allow assignment of wheeling rights or the use of contract wheeling rights by third parties. Not only would the party holding the wheeling contract with BPA reduce its costs and its financial risk under the contract, but the flexibility provided to customers by allowing assignment was expected to expedite BPA's negotiations of wheeling agreements. It was anticipated that allowing reassignment would mean that the BPA transmission system would be operated at higher load factors, leading to additional flexibility in the use of the BPA transmission system, and fostering increased efficiency in the operation and development of generation resources so that fewer generation and transmission resources might be developed. Given these benefits, under the Market Driven Alternative, BPA decided to allow assignment of rights or third-party wheeling. Accordingly, since 1996, BPA has allowed assignability of rights in BPA wheeling contracts, within the parameters of the OATT.

Retail or DSI Wheeling

Prior to the Business Plan EIS and its ROD, the agency had only short-term agreements to provide wheeling to DSIs, and the industries relied on BPA to serve their loads. Under the Market-Driven Alternative, BPA participates actively in the more competitive energy industry. Under its OATT, BPA allows long-term wheeling contracts with DSIs, but is not required to

provide transmission service to retail loads. In addition, in August 1995, the agency issued a Record of Decision tiered to the Business Plan EIS and ROD, called the Long-Term Extension of Current General (Integration of Resources) Transmission Agreement With Bonneville Power Administration's Direct Service Industrial Customers, which allowed the agency to enter into 15-year agreements with the DSIs.

Customer Service Policy and Subtransmission

From 1984, up through the issuance of the Business Plan ROD, BPA had a Customer Service Policy (CSP) that set standards under which BPA would plan and construct facilities to deliver power to full and partial requirements customers, including subtransmission such as fringe and delivery systems. Providing these facilities was considered a formidable cost to the agency. In the 1996 Power and Transmission Rate Case, BPA proposed to recover the costs involved in providing these facilities, establish charges that recover BPA's costs from the customers that benefit from the facilities, or encourage customers to develop or maintain their own facilities. Under the Market-Driven Alternative, BPA decided to narrow its role to providing bulk power transmission to its power customers. Although the Customer Service Policy still exists, many portions of the policy have been modified through development of Business Practices and other more specific policy documents.

Operations, Maintenance, and Replacement

Transmission system maintenance (including replacement of facilities) continues to be a critical function in the reliable delivery of power and services. Prior to the Business Plan EIS and ROD, BPA employed a time-based maintenance schedule for facilities. Under the Market-Driven Alternative, the agency moved to reliability-centered maintenance – that is, maintaining the equipment when it gives signs that maintenance is needed. Accordingly, priority is now given to facilities not meeting outage duration and frequency criteria.

Regardless of the maintenance policy adopted, a predictable level of dollars is needed to sustain system reliability. If budgets are insufficient to meet the need, maintenance and replacements could be further prioritized, and some maintenance and replacement would not occur when needed. Consequently, some equipment might fail, resulting in lower system reliability because of the unplanned nature of the outages. This would also mean higher maintenance and replacement costs per unit because of both the unplanned nature of the work and the damage sustained to the equipment as a result of the failure. At the extreme, operating below industry standards would increase the risks of losses or hazards to people, property, and the environment.

If BPA were unable to devote enough funds to operations and maintenance, alternative priority-setting schemes for transmission system maintenance and replacement would affect how outage risks are distributed among customers. Customers served by facilities with higher priority for maintenance would experience fewer and shorter outages than customers served by lower-priority facilities. Outages would be more likely if necessary maintenance activities could not be sustained by available funds. Constricted budgets increase the potential that BPA would be unable to meet all maintenance needs.

The effect of outages would depend on the capabilities and options available to the customer. For those facilities with lower priority for BPA-supplied maintenance, BPA could transfer

ownership, along with responsibility for maintenance, to the customer, or arrange for the customer to perform maintenance on those facilities. Another option would be for the customer to reduce reliance on low-priority facilities by arranging for load-shedding measures, acquiring reserve power supplies to substitute for service lost to outages, or constructing additional transmission facilities. Finally, a customer could choose to abandon BPA service, either by substituting service from another supplier, or by developing generation and reserves that eliminate reliance on BPA facilities.

For customers without financial or technical resources to construct or maintain their own facilities, the effects of outages on low-priority facilities would be passed along to consumers. At the retail level, some consumers might be able to mitigate the impacts of outages – for example, by using backup generation. Others would have to bear the costs of outages. For some consumers, such as commercial or industrial enterprises, outage costs might determine the viability of the business, so that longer or more frequent outages would cause the consumer to cease operation. As a result, loads served by customers with lower priority for maintenance could decline.

Reliability and Adequacy

BPA's transmission system is planned to meet WECC, NERC, and BPA reliability criteria for service quality. In 2002, BPA announced its Non-Wires Solutions initiative, and formed a Non-Wires Solutions Round Table in early 2003. BPA defines non-wires solutions as the broad array of alternatives, including but not limited to demand response, distributed generation, conservation measures, generation siting, and pricing strategies that individually or in combination delay or eliminate the need for upgrades to the transmission system. Among other things, the Non-Wires Solutions effort established for BPA a set of criteria to help determine, in a project's planning stages, when non-wires solutions are feasible.

BPA defines resource adequacy as sufficiency of generation/demand-side management resources to reliably serve loads and meet operating reserve requirements within the constraints of the transmission system and the operation of the generating resources. The Council and BPA initiated the Pacific Northwest Resource Adequacy Forum (Forum) in 2005. In 2006, the Forum developed, and the Council adopted, energy and pilot capacity adequacy standards and a regional implementation plan.

BPA is simultaneously participating in a separate regional effort, hosted by the Northwest Power Pool, to develop transmission adequacy guidelines that would voluntarily be adopted by Pacific Northwest utilities. This transmission adequacy guideline effort is concentrating on supplementing the existing NERC/WECC planning standards, providing more clarity in specific, targeted areas. Transmission adequacy standards would establish criteria by which BPA, or the region, would determine how much transmission it needs, ascertain the appropriate solutions to be deployed, and guide prudent future investment decisions consistent with BPA's obligations. BPA remains committed to coordinated regional planning through the recently signed ColumbiaGrid Planning and Expansion Functional Agreement.

Industry Restructuring

BPA has an obligation to provide a reliable transmission system to the region. In recent years, however, meeting that obligation has become more challenging as use of the Pacific Northwest transmission grid has increased dramatically and the system has become stressed. As with the rest of the nation, the expected rate of load growth in the Pacific Northwest exceeds the anticipated rate of infrastructure development. Given that the Pacific Northwest transmission grid is used by 20 generators and managed by 17 operators, it is widely recognized that alleviation of this stress will require a good deal of regional cooperation.

As anticipated by the BPEIS, BPA has engaged in various efforts to coordinate regional transmission planning and operation – commonly referred to as “industry restructuring.” These efforts reflect BPA’s commitment to pursuing a “one utility” approach to grid planning and operations. The “one utility” approach would treat the entire Pacific Northwest Grid as one and allow for grid operation and planning processes that minimize costs, maximize benefits, and ensure reliability as assessed from a regional perspective.

BPA has pursued this ideal by engaging in discussions of various proposals to coordinate regional transmission. In the past, these efforts have included IndeGo, RTO West, Grid West, and the Transmission Issues Group (TIG). These efforts culminated in BPA’s support of ColumbiaGrid – an organization formed in early 2006 by BPA and five other regional transmission operators. More recently, BPA signed ColumbiaGrid’s Planning and Expansion Functional Agreement and is considering participation in other functional agreements that support regionally coordinated reliability efforts.

ColumbiaGrid is a Washington state non-profit corporation incorporated on March 31, 2006, by a group of Pacific Northwest control area operators. Its purpose includes improving the operational efficiency and reliability and providing cost-effective planning and expansion of the region’s transmission grid. ColumbiaGrid is authorized to fulfill its mission through the development of functional agreements that define the organization’s roles and responsibilities in regional transmission management. Its independent ColumbiaGrid Board will provide policy guidance to its staff and formally approve its Biennial Plan.

BPA’s support of ColumbiaGrid is a step toward one-utility coordinated planning and operation of the region’s transmission system. This regionally coordinated transmission activity was anticipated in the Business Plan EIS (see Section 4.2.4.1), where this type of organization was broadly referred to as a Regional Transmission Group (RTG). BPA anticipates that it will actively participate in the ColumbiaGrid planning process to independently analyze system needs and to facilitate agreement on projects to resolve those needs. For any projects BPA is responsible for, BPA will be required to fulfill its legal requirements under NEPA. BPA cannot be compelled to undertake any projects under the Planning and Expansion Functional Agreement.

3. New Circumstances or Information

The second of the two factors to be considered in a Supplement Analysis is whether there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. Accordingly, this section identifies circumstances and information that may have arisen or evolved since the Business Plan EIS was issued in 1995. New circumstances discussed in this section include changes in the legal and regulatory setting, certain energy-related events that have occurred since 1995, and changes in the affected environment, including biological and socioeconomic conditions.

In a typical site-specific EIS, this Supplement Analysis factor is used to analyze very specific new or changed environmental conditions. An example could be the discovery of a previously undetected sensitive species in the project area that that may be significantly impacted by the proposed action. The analysis is different for a policy-level EIS such as the Business Plan EIS. As noted above, the Business Plan EIS examines the relationship between taking action on a policy issue and predicting the market responses and their attendant environmental impacts. Some of the changes that have occurred since 1995 either are not relevant to environmental concerns, or have no bearing on BPA's business-related actions or their impacts. For changes that are relevant to environmental concerns and do have a bearing on BPA's business-related actions or their impacts, these changes do not paint a seriously different picture of the environmental impact of the Market-Driven Alternative from the policy-level evaluation contained in the Business Plan EIS. In addition, no new circumstances or information relevant to environmental concerns have arisen that significantly alter the relationship between policy choices under the proposed action and the environmental impacts associated with the expected market responses.

Changes in the Legal and Regulatory Setting

This section describes changes that have occurred in energy-related legislation since 1995, as well as the energy-related regulatory environment. As expected in the Business Plan EIS, and reflected in the Market-Driven Alternative, a more competitive regional wholesale market has developed, facilitated in part by greater transmission access requirements and other factors.

The Energy Policy Act of 1992 and FERC Orders 888 and 889

In 1992, Congress passed the Energy Policy Act (EPA-92), which gave FERC new powers to order electric utilities to provide wholesale transmission service, kicking off a new era in the electric industry. FERC, an independent federal agency in the Department of Energy, regulates price, terms, and conditions of power and transmission services sold by entities subject to its jurisdiction. FERC issued orders 888 and 889 on April 24, 1996. The orders required public utilities to file open access tariffs, and to functionally unbundle their generation and transmission operations. These orders also allowed public utilities to recover stranded costs. The purposes of the regulations were to bring low-cost power to consumers by allowing competition among power suppliers, and to provide for open and non-discriminatory transmission services by public utilities.

FERC Orders 888 and 889 contributed to the development of increased competition and volatility of a deregulated energy market. Although FERC does not have jurisdiction, BPA chose to voluntarily comply with the Commission's orders to the extent practical. The changes in the policy environment as a result of Orders 888 and 889 were consistent with BPA's business activities under the Market-Driven Alternative.

FERC Order 2000

In December 2000, FERC issued Order 2000, which called for, but did not mandate, the formation of Regional Transmission Organizations (RTOs). In the order, FERC expressed concerns that "traditional management of the transmission grid by vertically integrated electric utilities was inadequate to support the efficient and reliable operation that is needed for the continued development of competitive electricity markets." FERC Order 2000 codified minimum characteristics and functions that a transmission entity must satisfy to be considered an RTO. FERC's goal in issuing Order 2000 was to promote efficiency in wholesale electricity markets, to eliminate monopolies, and to ensure that electricity consumers pay the lowest price possible for reliable service. Again, these policy changes were consistent with BPA's business practices.

FERC Order 2003

In response to the FERC's Order No. 2003 and 2003-A, Standardization of Large Generator Interconnection Agreement and Procedures, BPA made a voluntary compliance filing and incorporated most of the standard large generator interconnection procedures and standard large generator interconnection agreement into the OATT.

Among the most common interconnection and transmission service requests considered by the agency and relevant to the Business Plan EIS are for renewable energy generators, particularly wind developers. The Business Plan EIS contemplated offering transmission interconnection services, consistent with the agency's commitment to support renewable energy development.

Energy Policy Act of 2005

On August 8, 2005, Congress passed a major energy bill for the first time since 1992. While the bill has many major provisions that will have a significant impact on energy policy in the country, only a few provisions affect BPA and the Pacific Northwest directly. BPA and the Pacific Northwest are singled out in two important provisions of the bill that deal with FERC. The bill also contains general provisions that provide FERC and the Department of Energy with new powers and obligations:

- FERC was granted broad new authority over reliability, as well as limited authority over the transmission service of unregulated utilities (such as BPA).
- The bill prohibits FERC from converting the physical transmission rights of Pacific Northwest utilities to financial rights. This prohibition is important to Pacific Northwest utilities that believe a system of financial rights would result in increased costs and restricted access to transmission.

- The bill authorizes BPA and the other power marketing administrations to join regional transmission organizations. Although BPA believes it already has the authority to do so, the bill helps to clarify that authority and makes explicit that BPA will not subject its power marketing activities to FERC jurisdiction by joining a transmission organization.
- The bill provides for annual studies of how utilities perform economic dispatch.

Resource Adequacy

The Energy Policy Act of 2005 also mandates the Electric Reliability Organization, i.e., the North American Reliability Corporation (NERC), perform adequacy assessments under FERC oversight. NERC has initiated a resource adequacy assessment standard, which would require each of the eight regions to establish resource adequacy assessment criteria. WECC, as one of the eight regions, is in the process of developing resource adequacy assessment guidelines. In the Pacific Northwest, the Resource Adequacy Forum developed and the Council adopted energy and pilot capacity adequacy standards and an implementation plan. The Forum is scheduled to finalize the capacity adequacy standard and develop utility-specific guidance for applying the regional standards by the end of 2007. These standards will provide clarity regarding the magnitude of resources needed to satisfy specific load obligations and should result in the addition of power system infrastructure in a timely fashion to avoid a repeat of such past crises as the 2001 West Coast energy crisis.

FERC Order 890

On February 15, 2007, in Order 890 FERC adopted amendments to its pro forma Open Access Transmission Tariff. FERC's fact sheet regarding Order 890 states that the purpose of these tariff amendments is to further remedy opportunities for undue discrimination in transmission access and to address deficiencies in the pro forma OATT that have become apparent since the issuance of Orders 888 and 889. Order 890 provides for the following:

- Greater consistency and transparency in ATC calculation.
- Open, coordinated and transparent planning on both a local and regional level.
- Reform of energy and generator imbalance penalties.
- Adoption of a "conditional firm" component to long-term point-to-point service and reform of existing requirements for the provision of redispatch service.
- Reform of rollover rights policy.
- Reform and greater clarity in areas that have generated recurring disputes over the past 10 years, such as rollover rights, "redirects," and generation redispatch.
- Clarity in some other tariff ambiguities.
- Increased transparency and customer access to information.

While BPA is still evaluating the implications/applicability of this order for the agency and its customers, Order 890's provisions seem consistent with the market-driven approach to operations anticipated by the original Business Plan EIS.

Mandatory Reliability Standards

To implement provisions of Energy Policy act of 2005, FERC promulgated Order 672-Reliability Rules, and Order 693-Mandatory Reliability Standards for the Bulk-Power System. Issued in February 2006, Order 672 initiated a process for FERC to certify a single Electric Reliability Organization (ERO) that would propose and enforce (with FERC oversight) mandatory reliability standards. Several processes would be put in place to ensure that reliability standards were no longer voluntary and unenforceable, which FERC has suggested is the underlying cause of recent reliability crises affecting transmission systems. In its April 2007 Order 693, FERC approved the first set of 83 mandatory and enforceable reliability standards. Another 24 standards are still undergoing review and pending approval. Although both of these orders are voluntary for BPA, they nevertheless have the potential to lead to changes in the development, operation, and maintenance of the FCRTS and other non-federal transmission systems in the Pacific Northwest and across the country. Consistent with the Market-Driven Alternative, BPA continues its commitment to one-utility regional transmission planning and NERC and WECC reliability standards.

Significant Energy-Related Events

Summer Blackout of 1996

On August 10, 1996 an outage on the transmission grid that started when a transmission line near Hillsboro, Oregon sagged into a tree, causing an outage that cascaded until more than 7 million people across the west lost power. The outage took out 28,000 MW of load (roughly half of California's summer peak load at the time) at an estimated economic cost of at least \$2 billion. The degree to which this disturbance spread ("cascaded") was cause for alarm – it called attention to increasing stresses on the region's transmission system and the need to better coordinate a multi-operator, multi-state electricity grid. Enhanced communication policies, national discussions on electric reliability, the creation of "remedial action schemes," improved system modeling, and network upgrades resulted from the 1996 blackout.

West Coast Energy Crisis of 2001

Between 1990 and 1999, electric generation in California decreased by 1.7 percent, while, simultaneously, the economy boomed and electricity load increased 11.3 percent. Relying heavily on hydropower imports from the Pacific Northwest, California's energy import dependence grew to roughly 11,000 MW in 2000. In the summer of 2000, amidst a heat wave in California, the Pacific Northwest experienced unusually low water levels, leading to low energy supply and high demand. Tight electric supplies coupled with limited transmission capacity led to rolling blackouts in California and skyrocketing prices for wholesale power.

Normally the Pacific Northwest can avoid wide-ranging price fluctuations, while still participating in the energy market. But the drought in 2000-01, and energy deregulation in

California, made that more difficult and the Pacific Northwest faced higher prices to obtain energy on the short-term market.

From the early 1990s to 2000, growth in energy demand on the West Coast averaged 1 percent annually, without any significant increase in generation or transmission capacity. The pending deregulation of the utility market dampened infrastructure investment both by utilities and independent developers. Utilities saw uncertain future loads and independent developers did not know when they could begin competing for retail customers. Also, between October 1994 and September 1999, the Pacific Northwest experienced water conditions that were 26 percent higher than average of the last 61 years on record, masking the gap between available power supply and growing demand. In fall/winter 2000, water conditions abruptly reversed, and 2001 was the second driest water year on record. The region's heavy reliance on hydropower and the dearth of generation was obvious.

In 1996, California was the first state to approve energy deregulation. By 1998, deregulation was implemented. Capacity shortages and increased volatility in West Coast electric power markets from the summer of 2000 through the summer of 2001 resulted in unprecedented price levels throughout the western United States. The 2000 drought in the Pacific Northwest forced utilities to buy power on the open market. Shortages in Pacific Northwest energy were exacerbated by major energy traders overstating power demand while simultaneously withholding blocks of power from entering the market for sale. As a result, the perceived severity of the power shortage was inflamed. In late 2000, wholesale prices of energy rose to over \$300 per megawatt hour from just \$30 earlier in 2000. In California, high wholesale power prices, in conflict with statutory limits on retail prices, left IOUs with billions of dollars in unrecovered costs. These deficits led to defaults by those IOUs on payments due the California Power Exchange and the California Independent System Operator, which in turn were unable to make full payments to power marketers, including BPA.

The lack of creditworthy buyers to purchase power for California loads during the market crisis in later 2000 and early 2001 amplified the financial and operational crisis. The State of California intervened to authorize the California Department of Water Resources (CDWR) to purchase power on behalf of the insolvent IOUs starting in January 2001. Short- and long-term purchases by CDWR secured power supplies for California consumers, but at the same time created billions of dollars in power costs that ratepayers or taxpayers must ultimately pay. During the winter of 2000-2001, one of the driest winter periods on record, BPA was called upon to provide power to California. As a result, when the weather was coldest in the Pacific Northwest, requirements for Columbia River flows or elevations of FCRPS hydro projects were modified under the terms of the biological opinion. To the extent that these modifications conflicted with achieving the goals of fish and wildlife implementation, they were a consequence of market conditions arising from the breakdown of the California restructured electric power market.

Early in 2001, BPA declared several power emergencies when the agency was unable to purchase enough power to meet demand. Water normally stored for spring fish migration was used for power. On March 29, 2001, the Acting BPA Administrator sent a letter to the region about the extreme conditions facing the agency: a near-record low water year, a tight West Coast power supply, and an extreme market. In April 2001, extraordinary weather and market conditions forced BPA to declare a power system emergency under the terms of the

2000 Biological Opinion. That emergency was called based on the Council's estimates of power system reliability problems for spring and summer of 2001 and the impact of spill for fish passage on West Coast prices and reliability. There was simply not enough water available to meet both regional power needs and fish spill. BPA, working with other federal agencies, drafted principles that described the circumstances for emergency FCRPS power operations through 2001, as well as actions that must be taken before declaring an emergency.

Summer Blackout of 2003

On August 15, 2003, rolling outages affected an area of about 50 million people and 61,000 MW of electric load throughout Ohio, Michigan, Pennsylvania, New York, Vermont, Massachusetts, Connecticut, New Jersey and the Canadian province of Ontario. Across the United States, the need for new transmission investment is estimated to be in the range of \$30-60 billion over the next decade. Yet during the 2003 Northeast power outage alone, the nation's economy suffered costs estimated between \$6.8 and \$10.3 billion.

Changes in the Affected Environment

This section describes changes in the affected environment that have occurred since 1995. The discussion follows the same general order as the description of the affected environment presented in Chapter 3 of the Business Plan EIS.

Geography and Land Use

The overall geography and land use types and patterns of the Pacific Northwest have not changed significantly since 1995. The general geography has not been altered, and the largest urban and industrial concentrations continue to be in the Interstate 5 corridor from Puget Sound to the southern Willamette Valley. However, there has been some change in land use patterns at the local level, mainly due to population growth in the region. This growth and the associated demand for rural amenity land (rural land with urban services close by) have resulted in the conversion of forest and farm lands to residential and commercial developments. Developed lands (urban and transportation uses) increased by approximately 12 percent in the Pacific Northwest. As a percentage of total land use, however, urban uses currently make up only about 2 percent of the regional land base. Large areas of the Pacific Northwest remain unsettled or at very low settlement densities. Forest lands account for about 47 percent of the land cover in the Pacific Northwest followed by rangelands at about 32 percent, and agriculture lands at about 16 percent.

Existing Power System

Hydroelectric projects produce from 50-65 percent of the electricity used in the Pacific Northwest. The number of dams is static – no new major federal projects have been constructed since 1977 – so the proportion of the Pacific Northwest energy need that is met by hydroelectricity decreases as increasing demands for energy are met by other sources. Of the 40,000 aMW of resources in the Pacific Northwest, 24,400 aMW are hydroelectric energy produced by the 60 major dams in the region (as well as dozens of smaller projects). California continues to experience high rates of population growth, and the demand for energy increases

accordingly. Consequently, California imports over 20 percent of its power from outside the state – nearly half of this amount, or about 10 percent of its power, from the Pacific Northwest.

The FCRPS includes 31 multipurpose hydroelectric facilities constructed and operated by the U.S. Army Corps of Engineers and the Bureau of Reclamation in the Pacific Northwest, and the FCRTS used to market and deliver electric power and whose costs are funded and repaid through BPA power and transmission rates.

BPA also has entered into long-term contracts to purchase wind energy from some of the projects that have been developed in the Pacific Northwest. These include portions of the Klondike and Stateline Wind Projects in Oregon, the Foote Creek I, II, and IV Wind Projects in Wyoming, as well as the Condon Wind Project in Oregon. BPA also has long-term contracts for other resources, including the Columbia Generating Station (nuclear) and Georgia Pacific Paper's Wauna facility (thermal cogeneration), a geothermal project at Fourmile Hill, the Ashland Solar Project, and a number of hydro projects (Cowlitz Falls, Dworshak/Clearwater small hydro, Glines Canyon, Elwah, and Boise River Diversion).

In recent years, a number of wind energy projects have been developed in the Pacific Northwest. Many of the developers of these wind energy projects have sought and received interconnection into the FCRTS. Wind energy projects that have been interconnected to the FCRTS include:

- Big Horn Wind Energy Project, 2005, 200 MW
- Leaning Juniper Wind Project, 2005, 200 MW
- Arlington CEP Wind Project, 2005, 200 MW
- Hopkins Ridge Wind Energy Project, 2004, 150 MW.

Additionally, BPA has offered interconnection service for the following gas-fired, combined cycle generating facilities:

- Summit/Westward Project, 2004, 520 MW
- Cliffs Energy Project, 2002, 300 MW
- Mint Farm Project, 2002, 319 MW
- TransAlta Centralia Generation LLC Big Hanaford Project, 2001, 248 MW
- Longview Energy Project, 2001, 290 MW
- Goldendale Energy Project, 2001, 248 MW.

Various regional generation projects are planned into the future. One in particular harnesses the supply of natural gas located in Canada. The British Petroleum (BP) Cherry Point Refinery is proposing to build a 720 MW natural gas-fired combined-cycle combustion turbine power facility in Whatcom County, Washington. Natural gas would be supplied through an existing BP-owned natural gas pipeline that runs directly from Canada to the refinery.

Canadian natural gas production levels are much higher than their domestic consumption, which is the opposite of the U.S situation. The U.S. imports roughly 16 percent of its natural gas supply from Canada. Between 1986 and 2001, Canadian natural gas production grew steadily. However, between 2001 and 2005, production from western Canada flattened out, despite record levels of drilling activity. Producers drilled the largest and highest-quality reservoirs first and are now having to drill into smaller and lower-quality reservoirs. The “tar sands” of Alberta, Canada are the largest petroleum deposit outside the Arabian Peninsula. Developing this deposit of heavy oil requires laborious and expensive extraction and refinery processes, but the resource holds huge potential.

BPA plays a major role in prioritizing and funding energy conservation efforts throughout the Northwest, as mandated by the Northwest Power Act. BPA sponsors and/or funds conservation programs in the following sectors: commercial, industrial, residential, and agricultural. From approximately 1980 through 2000, BPA invested over \$1.79 billion in conservation efforts. These investments acquired about 775 aMW of power through a variety of conservation acquisition programs, improved building codes, and the modernization of aluminum smelters. Due to the magnitude some have described this conservation savings as equivalent to a clean, inexpensive “conservation power plant.”

While saving the 775 aMW was a major accomplishment, the nature of conservation efforts in the region changed in the early 1990s because of deregulation at the wholesale level and the development of a new generation of gas turbines. Utilities were competing to keep their rates low and any additional costs attributable to conservation were difficult to absorb.

The governors of the four Pacific Northwest states created the Comprehensive Review of the Northwest Energy System in 1996 to assess the impact of deregulation on the utilities in the region and to find ways to retain the benefits of the hydrosystem in the Pacific Northwest. The Comprehensive Review recommended that BPA not be responsible for meeting any of the region's load growth and, therefore, not acquire any new resources. This shift away from BPA's centralized conservation purchasing programs led to the Comprehensive Review's recommendation that the region's utilities take up any slack by investing 3 percent of their retail energy service revenues in conservation and renewables.

Conservation has, in many cases, been the least-cost resource for the region. BPA has an obligation to acquire the least cost resource and, therefore, will continue to pursue cost-effective conservation to meet its load obligations. If BPA's overall resource acquisition responsibility is reduced in the future, customers will have a greater incentive to conserve when they face higher rates for energy to meet their load growth. In such a situation, BPA may pursue cost-effective conservation that will complement development of regional infrastructure and extend the time in which the existing system is sufficient to meet public utility loads.

Transmission System

BPA continues to own and operate approximately three-quarters of the region's high voltage grid, which includes major transmission links with other regions. With this system, BPA delivers power to its customers with long-term contracts, and makes excess transmission capacity available to other power marketers/generators subject to open access requirements.

BPA's Transmission System	
Operating voltage	Circuit miles
1,000 KV	264
500 KV	4,719
345 KV	570
287 KV	227
230 KV	5,326
161 KV	46
138 KV	56
115 KV	3,756
below 115 KV	435
Total	15,399
Source: BPA Facts, 2005.	

In 1995, the federal transmission system consisted of about 14,800 circuit miles of high-voltage transmission lines, about 390 substations, and other related facilities. The federal transmission system is now comprised of about 15,399 circuit miles of high-voltage transmission lines, about 250 substations, and other related facilities. BPA's service area is about 300,000 square miles.

In addition to the transmission network within the Pacific Northwest, BPA operates high-voltage inter-regional transmission lines that connect to Canada, California, and the inland Southwest. Included in this system are BPA's portions of the Pacific Northwest/Pacific Southwest Intertie. This Intertie has a combined north-south capacity, on five high-voltage lines, of about 7,900 MW. (Capacity is somewhat less south to north.) BPA owns about 80 percent of the portions of the Intertie north of California and Nevada. The Pacific Northwest/Pacific Southwest Intertie provides the primary bulk transmission link between the two regions.

BPA's transmission system also includes interconnections with British Columbia at the U.S.-Canada international border. One of these interconnections is at the U.S.-Canada border near Blaine, Washington. This line, which is referred to as the Northern Intertie, has a total north-to-south transfer capability of 2,300 MW. The interconnections allow the Pacific Northwest and BC to undertake many mutually beneficial arrangements.

BPA's transmission system contains approximately 8,000 miles of transmission line rights-of-way. About 66 percent of BPA's right-of way cross private lands, 23 percent cross federal lands, 6 percent cross state/city/county lands, and 5 percent cross tribally-owned lands or lands on tribal

reservations. BPA maintains perpetual and long-term easements on some of these rights-of-way, while others have been acquired in fee.

Prior to 1994, BPA's operational telecommunication system consisted of analog radios and microwave stations. In 1994, BPA began upgrading this system through a combination of digital radios and fiber optic equipment. All fiber optic cable and equipment is installed within BPA's existing transmission line rights-of-way and substations. To date, BPA has strung over 2,500 miles of fiber optic cables along its transmission lines. Addressing its NEPA obligation for fiber optics, BPA completed a programmatic Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) in 1994 (DOE-EA-0951).

In 2000, BPA implemented a Transmission System Vegetation Management Program for maintenance of vegetation on rights-of-way (transmission lines and access roads), electric yards (such as substations), and non-electric facilities (such as maintenance headquarters) throughout the service area. Vegetation can interfere with electric power flow, pose safety problems for BPA and neighboring members of the public, and interfere with BPA's ability to carry out routine and emergency maintenance on the transmission system. BPA employs an Integrated Vegetation Management strategy to control vegetation cost-effectively with the most benign overall long-term effect on public health and safety and the environment. Methods are chosen based on the vegetation needing control and the environmental conditions present. Addressing its NEPA obligation for transmission system vegetation management, BPA completed an EIS and ROD for the program in 2000 (DOE-EIS-0285, May 2000).

In the Energy Policy Act of 2005 (Public Law 109-58), Congress mandated that the Department of Energy, the Bureau of Land Management, and the U.S. Forest Service, in cooperation with the Departments of Commerce and Defense, designate national energy corridors. Section 368 of the Energy Policy Act of 2005 outlines requisite actions needed to designate a corridor for oil, gas, and hydrogen pipelines, and electricity transmission and distribution facilities on federal lands in the 11 western states. Section 368 also mandates a Programmatic EIS be prepared for the Western States Energy Corridor. The corridor, and the ongoing responsibilities associated with it, would expedite applications to construct or modify facilities within the corridors, which could potentially affect BPA's power and transmission services in the future.

BPA Marketing

The Business Plan EIS describes several emerging developments in the electricity business that were influencing the market within which BPA was operating. These developments included an increasingly competitive power industry post-deregulation, low natural gas prices and technological advances in combustion turbines (which both contributed to a drop in the cost of developing some natural gas power plants), and a surplus of energy in California. All these factors had an influence on the way that BPA marketed power. But none were permanent. As a result of the 2001 energy crisis, 4,000 MW of new generating resources were added to the region, many of them based on natural gas. In 2005, natural gas resources comprised over 20 percent of the region's energy capacity, even while the price of natural gas exhibited great volatility. Renewable resources also are increasingly influential. Wind generation was an emerging technology in 1995, now there are over 1,000 MW of wind generation capacity in the region, with much more in various stages of construction or permitting. BPA acquired a small amount of California's surplus power in 1995, but currently the energy surplus balance favors the Pacific Northwest.

Supported by analysis of the Business Plan EIS, BPA adopted a new short-term power rate policy through its Regional Dialogue process in February 2005. The Bonneville Power Administration's Policy for Power Supply Role for Fiscal Years 2007-2011 (Short-Term Regional Dialogue Policy) decision established a 2007-2011 rate period that is aligned with BPA's Strategic Direction and maintains lowest-cost priority firm rates for its public agency customers whose contracts contain a lowest-cost rate guarantee.

The second phase, addressing long-term Regional Dialogue policy direction, will determine how BPA will market federal power and distribute the costs and benefits of the FCRPS for 20 years, with the objective of implementing new 20-year contracts well before current power contracts expire in Fiscal Year 2011.

Vegetation

While there have been some localized changes in vegetation since 1995 in various portions of the Pacific Northwest, the region has changed little as a whole, and trends known in 1995 have largely continued. Localized changes west of the Cascade mountain crest include a shift to more deciduous forest types dominated by big leaf maple and alder as the fir and spruce forests are harvested. These effects are intended to be short-lived as many of the areas are replanted. The spread of non-native plant species has continued and is increasing, including on lands controlled by BPA, such as transmission line rights-of-way. Many areas are being colonized by Scotch broom (*Cytisus scoparius*), cheatgrass (*Bromus tectorum*) and secondary weedy species such as knapweed (*Centaurea* sp.), yellow starthistle (*Centaurea solstitialis*), and medusahead (*Taeniatherum caputmedusae*).

A number of plant species have been protected on government property at both the state and federal levels. For example, Oregon has protected approximately 61 of 3500 taxa of plants. The federal Endangered Species Act protects approximately 746 plants species across the United States, including 35 species of plants in the Pacific Northwest. It is likely that more species will become listed in the future due to adverse pressures on species such as economic growth and development.

Wildlife

Since the completion of the Business Plan EIS, additional wildlife species have been protected at state and federal levels. In addition, other species have increased to population levels so that protection is no longer needed. Critical habitat has been designated for several wildlife species in the Pacific Northwest, including the northern spotted owl and the marbled murrelet. The gray wolf has been reintroduced as experimental populations to areas of Idaho and Wyoming. More common species like the invasive nutria have increased in numbers, and historically uncommon species like the barred owl have expanded their ranges and populations. A recent discussion of the region's wildlife resources is included in BPA's FWIP EIS (DOE/EIS-0312).

Fish

There have been many changes regarding fish species since the completion of the Business Plan EIS; however, most have been increased state and federal protection of stocks that were already in decline in 1995. Currently, there are 26 Evolutionarily Significant Units of anadromous fish

listed under the Endangered Species Act along the West Coast of the U.S.; 17 are found within BPA's four-state service territory. Once abundant resident fish species have also been included under federal protection, including bull trout and the Kootenai River white sturgeon. Other resident fish species such as the northern pikeminnow, identified as a major predator of juvenile salmonids, have experienced increased harvest as a result of bounty programs. An enormous effort, guided by biological opinions and the Council's Fish and Wildlife Program, continues to mitigate for lost fish habitat throughout the region and provide increased fish production through using hatcheries. Critical habitat has been designated for some listed fish species, with more possible in the near future. A recent discussion of the region's fish resources is included in BPA's FWIP EIS (DOE/EIS-0312).

Water

The primary uses of the rivers have not changed since the Business Plan EIS was completed, and water quality issues remain largely the same. The Columbia and Snake rivers are still managed for multiple purposes including power, flood control, navigation, irrigation, and recreation. Hydro operations are within those considered in the SOR EIS and further constrained by contractual obligations (e.g., water shaping agreements) and biological opinions pursuant to the Endangered Species Act. The effects of FCRPS operations are fully considered in the 1995 System Operations Review Environmental Impact Statement (DOE/EIS-0170).

A more recent discussion of river uses and water quality is included in BPA's FWIP EIS (DOE/EIS-0312).

Air Quality

Air quality in the U.S. continues to be characterized as in the Business Plan EIS. However, some areas once in non-attainment under the Clean Air Act for air pollutants have come into attainment. An updated list of pollutants and areas of non-attainment follows:

- Carbon Monoxide (CO) (Portions of northwest Oregon, eastern Washington, western Montana, northwest Nevada, central Utah, southern California, and south-central Arizona).
- Nitrogen Dioxide (NO₂) (There are currently no non-attainment areas listed. Previously included the South Coast Air Basin in California).
- Ozone (O₃) (Portions of California, Nevada, and Arizona).
- Particulate Matter (PM₁₀) (Portions of Washington, Oregon, Idaho, Montana, California, Nevada, Arizona, Utah, and New Mexico).
- Sulfur Dioxide (SO₂) (Portions of Montana, Utah, and Arizona).
- Lead (Portions of western Montana)

There have been several more recent air quality assessments conducted in the region since the Business Plan EIS was finalized. In 2002, BPA conducted a regional air quality modeling study for Oregon, Washington, and Idaho. This study examined potential air quality impacts associated with proposed power projects in BPA's service area. In addition, the U.S. Army Corps of Engineers assessed air quality in its Lower Snake River Juvenile Salmon Migration Feasibility

Study/Final EIS (February 2002). Impacts as a result of reduced visibility have also become an issue of discussion in the Pacific Northwest. In 1999, the EPA released a Regional Haze Rule to improve visibility in and around 156 national parks and wilderness areas. However, this rule has been the subject of legal challenges and has not been implemented. Other air quality legislation has also been proposed that would replace or eliminate sections of the Clean Air Act.

Air quality in British Columbia is similar to what was characterized in the Business Plan EIS. Air quality is typically still in the “good” and “fair” ranges over 98 percent of the time. However, poor air quality is a problem in parts of British Columbia, with increasing levels of ground-level ozone and particulate matter.

Global Warming

Since the completion of the Business Plan EIS, there has been an increased focus on global climate change. The scientific evidence continues to mount that climate change (global warming) is occurring, and that an increase in greenhouse gases in the atmosphere from burning fossil fuels and other sources is contributing to the problem. In February 2007, the Intergovernmental Panel on Climate Change (IPCC) issued a report titled “Climate Change 2007: The Physical Science, Summary for Policymakers.” The report assesses the current scientific knowledge of the natural and human drivers of climate change, observed changes in climate, the ability of science to attribute changes to different causes, and projections for future climate change.

According to the IPCC report, global atmospheric concentration of carbon dioxide, methane and nitrous oxide have increased markedly as a result of human activities since 1750 and now far exceed pre-industrial values. The global increases in carbon dioxide concentrations are due primarily to fossil fuel use and land-use changes, while those of methane and nitrous oxide are primarily due to agriculture. The report also states that there is a very high confidence that the globally averaged net effect of human activities since 1750 has been one of warming, which has resulted in numerous long-term changes in climate at the continental, regional and ocean basin scales.

In the United States, discussions on global climate change are occurring in many policy forums, and a number of legislative initiatives to regulate greenhouse gas emissions have been proposed at the state, regional and national levels. The Pacific Northwest has a long history of climate-friendly generation, energy efficiency efforts and conservation programs. As a result energy generation in the Pacific Northwest produces less carbon dioxide per megawatt-hour than any other region in the United States. However, as load grows, the Pacific Northwest may be challenged to maintain its low-emissions profile. BPA and the region will be faced with environmental constraints related to fuel-source choices and potential emission abatement costs for electric generation.

Cultural Resources

The affected environment related to cultural resources remains much the same as it was in 1995. Federal agency responsibilities regarding cultural and historic resources are defined by law, primarily the National Historic Preservation Act (NHPA), Archaeological Resources Protection Act (ARPA), Native American Graves Protection and Repatriation Act (NAGPRA), and American Indian Religious Freedom Act (AIRFA). These acts protect prehistoric, historic, and

cultural resources from actions that would otherwise damage them. Some of the acts also ensure access to sites, especially those of cultural or spiritual value.

Archaeological sites in the Pacific Northwest are typically represented by open campsites; pit-house villages; rock shelters; pottery; rock cemeteries; and isolated rock cairns, pits, and alignments. To gain protection under the ARPA, archaeological sites must be over 100 years old. According to NHPA, historic properties or resources include any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places as well as artifacts, records, and material remains related to these properties. Except under rare circumstances, a property must be at least 50 years old to be eligible for National Register nomination. In the Pacific Northwest, historic resources can include the remains of farms, towns, trading posts, villages, mining sites, military forts, burial sites, abandoned settlements, and transportation and industrial facilities.

Contemporary Native Americans recognize archaeological sites, but they also consider traditional cultural properties (TCPs) – a much broader range of features from the natural environment and the sacred world – to be cultural resources. Traditional cultural properties pertain to cultural sites and natural features and resources important in traditional social and religious practices that tend to preserve cultural identity. Traditional cultural properties encompass such things as distinctive shapes in the natural landscape, named features in local geography, natural habitats for important subsistence or medical plants, traditional usual and accustomed fisheries, sacred religious sites, and places of spiritual renewal.

There are many cultural and historic resources within the Pacific Northwest. The locations of many resources are unrecorded. Often states lack accurate information about site locations, characteristics, densities, and depths of deposits. Losses of cultural and historic resources in the region have been extensive. Around the FCRPS, there is evidence that both archaeological and historic sites are more numerous, generally larger, and more complex along former riverbanks. Many sites have been inundated by reservoirs or covered by sediment as a result of the construction of the FCRPS. Losses involve social and cultural resources and include some of the remaining permanently and intermittently-occupied settlements and places where ceremonial traditions were practiced. Modifications to hydrosystem operations that cause changes in reservoir levels can also affect cultural resources and expose unrecorded sites. Impacts on cultural and historic resources can occur from high water flows, wave action, and human activities (e.g., vandalism).

Current efforts related to cultural and historic resources in the Pacific Northwest include funding of resource mitigation, and recording of TCPs, oral histories, and place names. Recorded sites continue to be formally evaluated for inclusion in the National Register of Historic Places. Local, state, and federal regulations for cultural and historic resources provide some further protection. Even with this protection, additional losses of historic and cultural resources continue to occur.

Socioeconomic Conditions

Population

The population in the Pacific Northwest was about 11.39 million in 2003, which is 2.2 million more than in 1995. This 2003 population is very close to the 11.2 million that was predicted for 2003 in the 1995 Business Plan EIS. The Pacific Northwest population is projected to increase to about 13.03 million by 2015, a net increase of 14.4 percent and an average annual rate of growth of 1.2 percent. The population of the larger West Coast region, which includes the Pacific Northwest, British Columbia, California, and the Inland Southwest, was approximately 63 million in 2003. The West Coast region's population is projected to increase to about 73 million by 2015, a net increase of 16.2 percent and an average annual rate of growth of 1.4 percent.

Industry and Economy

The economy of the Pacific Northwest underwent a substantial change in the late 1980s and early 1990s. This change reflected the shift in the region away from economic growth fueled by natural resource industries such as agriculture, fishing, mining, and forestry. Consistent with national trends, the regional economy has developed a more diverse base, with notable growth in technology, transportation, trade and service sectors. Most rural communities remain economically tied to natural resource industries, however, especially agriculture. The region's location on the Pacific Rim and its relative proximity to Asian markets provides a continuing advantage that has also influenced present day economic development. This general economic structure has remained largely the same since publication of the Business Plan EIS in 1995.

Almost 6.5 million people were employed in the Pacific Northwest in 2000. Service industry employment was the largest component of the regional economy accounting for 63 percent of total employment. Service industries have been the source of most new jobs in the region in recent years and this trend is expected to continue over the next decade. In 2000, government accounted for 14 percent and manufacturing accounted for 11 percent of total regional employment. Primary sectors (farming, forestry, fishing, and mining) accounted for 5 percent and construction accounted for 6 percent of total employment.

The Pacific Northwest gained over 1.4 million jobs between 1990 and 2000, an increase of 28 percent. This growth rate was well above the national average (20 percent) for the same time period. However, this growth rate has been uneven, both among industries and geographically. The bulk of this employment gain was in the various service industries, while manufacturing grew slowly. Idaho had much stronger growth in manufacturing than Oregon, while Washington manufacturing employment has fallen in the last few years largely because of downturns in the aerospace sector. Wood and forest products are important in the Pacific Northwest, but wood product employment has suffered a decline of 18 percent regionally between 1987 and 1997, while food production employment has grown across the region. The wood products downturn has been particularly sharp in Oregon, having been overtaken by high-technology employment.

In recent years the unemployment rate in the Pacific Northwest has increased, particularly in the states of Oregon and Washington. Between 2000 and 2001, unemployment rates in Oregon increased from 5.0 percent to 7.3 percent, climbing to 7.9 percent in 2003 (rates from October,

seasonally adjusted). In Washington unemployment rates rose from 5.5 percent in 2000 to 6.9 percent in 2001, climbing to 7.5 percent in 2003 (rates from October, seasonally adjusted). However, both states have recently shown a reduction in their unemployment rates. In late 2006, the unemployment rate in Oregon was 5.2 percent, and in Washington it was 5.0 percent.

One factor that has been discussed in relation to unemployment is a decline in the aluminum industry, particularly during the high energy prices in 2001. BPA service to DSIs has been steadily declining since the pre-1995 period when contracts totaled over 3,000 aMW, to 1995 when contracts were reduced to 2,000 aMW, to 2002 when contracts were reduced to 1,500 aMW (with much less power actually delivered in the 2002-2006 period). Service to DSIs is one of the issues being discussed in the Regional Dialogue, and one of the short-term decisions resulting from that process regards the level of benefits to the DSIs. The Business Plan EIS included a policy module focused on service to DSIs, with analysis of many potential levels of service. However, as noted in that document, the amount of service to DSIs was expected to decline through time.

The economy of the Pacific Northwest is expected to continue to grow and diversify as the human population increases. The population in the Pacific Northwest is projected to grow about 14 percent between 2003 and 2015. Despite periodic downturns, employment is projected to increase significantly over this period. Information-based technologies and services are expected to grow fastest, followed by trade, government, and manufacturing. Resource-based industries such as farming, durable goods manufacturing (timber and plywood), and nondurable goods will likely continue to decline as a share of total employment. However, agriculture and timber production will remain important parts of the Pacific Northwest economic base in rural communities.

California has a large number of jobs in many different industries. The largest industry is services; over one-half of the nearly 2.4 million new jobs created in California over the past decade have been in the service sector. This industry includes such diverse sectors as computer and software design, motion picture production, engineering, legal, and health care. The next largest industries are finance, trade, and manufacturing, which encompass elements such as banking, retail, import-export activities, and the manufacturing and sale of high-technology goods. Manufacturing employment in California has fallen over the past decade, reflecting continued losses in the aerospace sector and recent declines in the commercial high-technology sector. California continues to be the number one food and agricultural producer in the United States; commodities include fruit, nuts, vegetables and dairy. Agriculture is a vital part of California's economy accounting for nearly one in ten jobs.

The economy of the Inland Southwest is based on mining and ore processing, manufacturing, agriculture, and services. Much of its income is derived from its considerable mineral wealth. Leading minerals today are copper, gold, uranium, magnesium, coal, and mercury. Manufacturing in the Inland Southwest includes foods, machinery, fabricated metals, and petroleum products. High-technology manufacturing is increasingly important, much of it in the defense industry. The federal government is a large employer in the Inland Southwest for jobs related to federal facilities including military bases. The bulk of agricultural income is derived from livestock and livestock products, including sheep, cattle, dairy, and an expanding poultry industry. In addition, tourism has also become increasingly important to the Inland Southwest economy.

Natural resource extraction and processing industries are still the dominant industries in many rural areas and smaller centers of British Columbia. However, in the larger urban centers, these industries have given way to the service sector and manufacturing industries that have no direct connection with natural resources. Employment is being created in urban centers faster than forestry, mining, fishing or agricultural jobs are becoming available in the rest of the province.

Lumber, pulp and natural gas continue to be the province's three main exports, but there has been a considerable diversification of the export mix since the 1990s. In 2001, agriculture, fishing, forestry and mining products accounted for 78 percent of total exports, down from 88 percent in 1990. Although its manufacturing sector still relies heavily on resource-based products, British Columbia can no longer be characterized as a resource economy. In 2002, only 14 percent of the province's Gross Domestic Product (GDP) originated in industries involved in the extraction and processing of natural resources, and these industries employed just 9 percent of the workforce. This compares to 17 percent of GDP, and 12 percent of employment, in 1991. Today, three quarters of British Columbia's GDP and 80 percent of total employment originates in the service sector.

Petroleum and natural gas production continue to be important to the British Columbia economy. British Columbia has abundant hydroelectricity, natural gas, and coal to serve the needs of both domestic and export customers. Over the past three decades, mineral products production in British Columbia, including oil and natural gas, have significantly increased due to technological advances in exploration and mining and new domestic and foreign markets.

4. Public Comments

To assist BPA in identifying potential changes relevant to the preparation of this Supplement Analysis, the public was invited to provide comments. BPA sent a letter to interested parties throughout the region on December 17, 2004 announcing that BPA intended to prepare a Supplement Analysis to assist the agency in determining a need for a new or supplemental EIS for its business decisions, and inviting public input on information that should be considered by BPA in the Supplement Analysis. The comment period closed on March 1, 2005. Comments were received from three private citizens and three interest groups. BPA also has considered comments relevant to its review of the Business Plan EIS that the agency received through other forums, such as the scoping process for the terminated Transmission Business Policy EIS and the more recent public comment periods for both the short-term and long-term Regional Dialogue processes.

The substantive comments relevant to this Supplement Analysis are all identified and addressed below.³ As in the rest of this Supplement Analysis, the comments are primarily separated into categories based on the two factors that are addressed in the analysis, relating either to

³ The text of all comments is posted at http://www.efw.bpa.gov/environmental_services/Document_Library/bpsa/.

substantial changes to the proposed action or to significant new circumstances or information relevant to environmental concerns. Other comments received that did not necessarily fit into one these two categories but nonetheless meriting consideration are identified and addressed as well.

Changes in the Proposed Action

There were several comments suggesting that there have been substantial changes in the proposed action relevant to environmental concerns.

Comment: BPA's new preferred alternative is no longer the Market-Driven Alternative, but is rather the alternative described in the ongoing Regional Dialogue. BPA should complete a supplemental or new EIS to examine Regional Dialogue as the agency's new preferred alternative. This change would be consistent with the intent of the "Regional Act" (Pacific NW Power Planning and Conservation Act of 1980).

Response: These comments were submitted both as a result of the solicitation for comments on the Supplement Analysis, and in response to the public process that has taken place as a result of the ongoing Regional Dialogue. This comment has often been connected to another comment regarding the Business Plan EIS being obsolete (see Other Comments, below).

Part of the purpose of this Supplement Analysis is to assist BPA in determining whether developments in BPA's overall policy direction, such as Regional Dialogue, constitute changes that are so substantial and relevant to environmental concerns such that they trigger the need for a supplemental or new EIS. BPA thus is using the Supplement Analysis as intended under the DOE NEPA regulations to make the kind of determination regarding business direction developments that the commenter suggests.

Based on the evaluation provided in Section 2 of this Supplement Analysis, BPA believes that, while changes in its business direction have occurred, there have been no substantial changes in the proposed action relevant to environmental concerns. As shown in Section 2, BPA is still operating consistently with the Market-Driven Alternative that was adopted in the Business Plan ROD. The business decisions made as part of the Short-Term Regional Dialogue have been considered in reaching this conclusion. In addition, the NEPA ROD that was prepared for the Short-Term Regional Dialogue found that the short-term policy directions were consistent with the Business Plan EIS and ROD.

Regarding the proposed Long-Term Regional Dialogue, BPA is still in the process of preparing its NEPA analysis for that proposal. However, given the possible business directions described in the July 2006 Policy Proposal, it is expected that the ultimate Long-Term Regional Dialogue Policy decision will fit within the scope of the Market-Driven Alternative, as indicated in the Policy Proposal. Regional Dialogue is a process related to the agency's power business activities, and is therefore narrower than the Market-Driven Alternative (which discussed all of the agency's business activities). While the final Long-Term Regional Dialogue Policy will likely include developments in

BPA's business direction, the nature and extent of these developments likely will fit within the parameters of the Market-Driven Alternative. The NEPA documentation for the Long-Term Regional Dialogue Policy that BPA will prepare separately from this Supplement Analysis will provide the analysis under NEPA of the business directions associated with the Policy.

Comment: In the Business Plan EIS, BPA assumed that gas-fired combustion turbines would comprise the majority of new generation resources. This incorrect assumption can lead to inappropriate BPA marketing policies.

Response: In 1995, gas-fired combustion turbines were thought likely to comprise the majority of new generation resources because of the low cost of the fuel. As conditions have changed, there has been a relative shift in costs leading to a different composition of new resources than that predicted in the Business Plan EIS. However, this shift does not affect the relationship analysis that is the basis of the environmental analysis contained in the Business Plan EIS, and the relationship between BPA's business decisions and market responses still holds true today. In addition, the relative environmental impacts of different generation resources were identified in the Business Plan EIS, and these have generally remained the same or have in fact lessened due to improved control technologies. Furthermore, under the Market-Driven Alternative, BPA participates fully in the competitive market for energy, and there have been no substantial changes in this proposed action as a result of changing natural gas prices. For more information, see the discussion of the Market-Driven Alternative in Section 2 of this Supplement Analysis.

Comment: BPA decisions about transmission marketing, namely a decision about whether to join a Regional Transmission Organization and a decision to adopt adequacy standards, cannot be made with the support of the Business Plan EIS because that document considered transmission only as an offshoot of power marketing decisions.

Response: This comment and similar comments were submitted for this Supplement Analysis, and also for the withdrawn Transmission Business Policy EIS. In 1995, BPA's power and transmission functions were integrated, but these two business units were subsequently separated as a result of FERC Orders 888 and 889, which are described in more detail in the Legal and Regulatory Setting discussion in Section 3 of this Supplement Analysis. However, transmission business activities were discussed independently and comprehensively throughout the Business Plan EIS, and this distinction is maintained in this Supplement Analysis. Regardless of this distinction, however, any decision about BPA joining a Regional Transmission Organization is a decision that is made separately from this Supplement Analysis. If in the future the agency considers joining such an organization, that action will be analyzed for consistency with the Business Plan EIS at that time.

Adequacy standards are discussed in the Business Plan EIS and are also noted in this Supplement Analysis (see the Transmission Adequacy and Reliability discussion in Section 2 of this Supplement Analysis). As discussed in Section 2 of this Supplement Analysis, there have been no substantial changes to the proposed action related to either a Regional Transmission Organization or adequacy standards.

Comment: In the Business Plan EIS, BPA assumed it would continue to provide service to Direct Service Industrial customers. This assumption is incorrect and the consequences to resource development and transmission system operation are not adequately considered.

Response: See the discussion of Service to DSIs in Section 2 of this Supplement Analysis. The Business Plan EIS considered different scenarios for service to DSIs. Some of those scenarios, including one of the facets of the Market-Driven Alternative, were based on declining service to DSIs. Service to DSIs was also one of the Policy Modules explored extensively in the Business Plan EIS. And, as noted above in the Business Practices section of this Supplement Analysis, one of the short-term policy directions of Regional Dialogue discussed service to DSIs, and a recent Record of Decision on this topic found that BPA's activities remain consistent with the Market-Driven Alternative of the Business Plan EIS.

New Circumstances Or Information

Several comments were related to BPA's analysis of whether there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action.

Comment: The impacts of transmission rate design are not considered in the Business Plan EIS.

Response: The impacts of all rates are discussed in the Business Plan EIS. Transmission and wheeling rate attributes are discussed at depth in Appendix B to the 1995 Business Plan EIS. As described in this Supplement Analysis (see section on Transmission and Wheeling Pricing in Section 2), the market responses and attendant environmental consequences of transmission rates are thoroughly discussed in the Business Plan EIS.

Comment: Much more information is now known about global warming, and the Business Plan EIS seriously underestimated the costs of global warming and its effect on potential policy choices facing the agency. The alternatives considered in the Business Plan EIS do not reflect the current knowledge of different energy resources and their emissions.

Response: Global warming was already an important issue in 1995, evidenced by the numerous discussions of the issue in the Business Plan EIS (see Sections 3.6.3, 4.2.3.4, 4.3.1, 4.3.3.5, 4.4.5.4, and 4.7). The Business Plan EIS also incorporated an extensive analysis from the Resource Program EIS regarding different energy resources and their greenhouse gas emissions (see particularly Section 5.11 of the Resource Program EIS). This Supplement Analysis acknowledges that additional information is available today about trends in global warming (see section above on Global Warming under Changes in the Affected Environment). However, the amount of information currently available about global warming does not have a bearing on the proposed action, and does not result in a seriously different picture of potential global warming impacts from BPA's business decisions than was described in the Business Plan EIS.

Comment: Natural gas prices have tripled since the early 1990s.

Response: This Supplement Analysis has discussed the increase in natural gas prices since the early 1990s. (See the Industry and the Economy discussions in Section 3 of this Supplement Analysis.) The increase in natural gas prices influences resource operation and development. However, the increase in natural gas prices does not affect the relationship analysis that is the basis of the environmental analysis contained in the Business Plan EIS, and the relationship between BPA's business decisions and market responses still holds true today. Accordingly, although there have been increases in natural gas prices, such increases do not bear on the Market-Driven Alternative or its impacts.

Comment: In the 1990s there were resource surpluses, but today the region is much closer to a load/resource balance.

Response: This Supplement Analysis has discussed the changes in the load/resource balance since 1995. (See the West Coast Energy Crisis of 2001 and the Existing Power System discussions in Section 3 of this Supplement Analysis and the Resource Adequacy section under Changes in Legal and Regulatory Setting.) These drivers should prompt the construction of new resources before the load/resource balance indicates that the region is deficient when considering the new resource adequacy standards. The decrease in energy surpluses has an influence on resource operation and development. However, the decrease in energy surpluses does not affect the relationship analysis that is the basis of the environmental analysis contained in the Business Plan EIS, and the relationship between BPA's business decisions and market responses still holds true today. The load/resource ratio has no bearing on the proposed action or its impacts.

Other Comments

Some comments, although not directly related to either of the two determinations above, were nevertheless considered to merit consideration and a response in this Supplement Analysis.

Comment: BPA uses the 1995 Business Plan EIS for everything, and it appears as though the agency will never have to perform another EIS. A broad EIS does not obviate the need to perform additional EISs for new proposed actions.

Response: BPA has completed approximately 40 EISs and EAs in the past 10 years, and currently has at least 10 active EISs and EAs. The value of these environmental documents for agency decisionmaking and public participation are recognized by BPA. A policy- or program-level EIS is used as another important decisionmaking and public involvement tool, and is not intended to obviate the need for appropriate environmental review of new proposed actions.

Comment: BPA did a "book-end" analysis when considering potential hydrosystem operations, but the book ends may have changed based on new requirements for fish-

friendly operations. In other words, there is a new “worst-case scenario” for hydro operations not previously considered in the Business Plan EIS.

Response: BPA did not analyze the potential hydrosystem operations in the Business Plan EIS. Rather, potential hydrosystem operations were analyzed in the Columbia River System Operation Review (SOR) EIS (see Section 1 of this Supplement Analysis). The discussion of hydrosystem operations in the Business Plan EIS was based on information from the Draft SOR EIS, which was incorporated by reference into the Business Plan EIS. The “book-ends” referenced by the commentor represented the endpoints of likely hydrosystem operations for fish purposes and compliance with legal obligations, including biological opinions issued for the protection of anadromous fish, from among the spectrum of potential hydrosystem operations in the SOR EIS. Even with changes in requirements for fish operations, the hydrosystem is operating within the spectrum analyzed in the SOR EIS and considered in the Business Plan EIS. Thus, operation of the hydrosystem modified to reflect current fish-related requirements does not present a serious different picture of potential impacts from BPA’s business decisions than was described in the Business Plan EIS.

Comment: The Business Plan EIS is over 10 years old, and is “stale,” out-of-date, or obsolete.

Response: This comment has been submitted as a response to the solicitation for public comment on this Supplement Analysis, in Regional Dialogue public forums, and also in prior public involvement opportunities for the withdrawn Transmission Business Policy EIS. The purpose of this Supplement Analysis is to assess this question through consideration of two triggers for a supplemental or new EIS – whether there have been substantial changes to the proposed action or significant new circumstances or information relevant to environmental concerns – consistent with DOE NEPA regulations. The mere passage of time alone does not dictate that a new or supplemental EIS be prepared, particularly for a policy-level EIS intended to cover long-term policy decisions and business directions, such as the Business Plan EIS. If there are no substantial changes in the proposed action relevant to environmental concerns, and no significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts, then the Business Plan EIS and its ROD are not properly considered stale or obsolete.

5. Determination

As discussed in this Supplement Analysis, BPA’s business practices have evolved but are still largely consistent with BPA’s Market-Driven approach analyzed in the Business Plan EIS and adopted in the Business Plan ROD. In addition, because of its relationship-based structure and policy-level approach, the environmental analysis contained in the Business Plan EIS still holds true. Accordingly, there have not been substantial changes in the proposed action that are relevant to environmental concerns and there are no significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts

within the meaning of 10 C.F.R. § 1021.314(c) and 40 C.F.R. § 1502.9(c). Therefore, BPA finds that preparation of a supplemental or new EIS is not required.

6. Public Availability

The availability of this Supplement Analysis will be noticed in the BPA Journal. For copies of the Business Plan EIS, Business Plan ROD, or additional copies of this document, please call 1-800-622-4520 and ask for the document by name. These documents are also available at the BPA Public Information Room at 905 NE 11th, Portland, Oregon. Copies may also be viewed at the U.S. Department of Energy Reading Room, 1000 Independence Avenue, SW, Room 1E-190, Washington, DC 20585.

These documents are also available on the BPA Web site:

http://www.efw.bpa.gov/environmental_services/Document_Library/Business_Plan_EIS/.