



## Issues '98

*June 1998*

### **Fact Sheet #5: Risk Management**

[\(return to keeping Current\)](#)

We are inviting you to participate in Issues '98. This is a public process designed to give you an overview of and a context for major policy issues surrounding BPA's future. Your input will help BPA develop planning assumptions for our power and transmission rate cases. With the exception of cost cutting recommendations, Issues '98 will not be a decision-making process by BPA. Instead, your comments will help inform decisions made in other forums, both within the region and by Congress. This fact sheet focuses on just one set of the broad issues that will be considered. To learn more about how to participate in Issues '98 or for more information on other issues, call (800) 622-4519.

### **Introduction**

Risk and uncertainty about the future have been and continue to be an inherent part of doing business and of fulfilling BPA's public responsibilities. Historically, we have faced the uncertainty associated with weather, streamflow and hydro conditions, resource performance, the effects of fuel prices on power prices in the short-term market, and other risks. We also have faced uncertainties associated with many of our program costs. Today, deregulation of the power industry has brought with it a host of new risks and challenges for managing those risks. In addition, managing costs, including our responsibilities for fish and wildlife funding, also pose significant uncertainty to our future costs.

Since the mid-1980s, BPA has worked to improve its ability to explicitly identify, measure and manage its risks. That effort has contributed significantly to our financial strength and success over the past 14 years – during which time we have met all of our obligations in full, including our annual payments to the Treasury. Effective risk management has proven to be a key factor in our ability to continue to sustain our financial strength and to enable us to deliver public benefits to the region and meet our commitments to the Treasury. As discussed further below, the primary barometer, or measure, that we use to evaluate how well BPA is positioned to manage uncertainty is our ability to make our payments to Treasury each year on time and in full, for Treasury is by law the last creditor in line for BPA payment. We call this measure the Treasury Payment Probability (TPP). As our risk environment continues to change, our plan for managing risk must accommodate the changing landscape. For Issues '98 and in preparing for the Power Subscription rate case that will cover the 2002-2006 [1](#) period, with

the region's input, we hope to build and improve upon our ability to effectively manage risk.

One of the key principles of BPA's risk management framework is to manage the total risks of the agency through a comprehensive plan. This involves identifying the full range of uncertainties associated with all of BPA's revenues and costs, and then establishing a set of mechanisms – or tools – to effectively manage those risks. The sufficiency of these tools to allow BPA to effectively manage risk is measured by the Treasury Payment Probability (TPP) – which allows us to evaluate whether we have achieved a sufficiently high level of assurance that BPA will meet all of its obligations, even in the face of significant uncertainty. For Issues '98, we have developed a set of draft planning assumptions that include estimates of the range of uncertainty we face and a set of tools for managing risk. This fact sheet discusses BPA's basic approach and framework for managing risk for the region's review in Issues '98.

### Assessing our risks

BPA faces a number of uncertainties in the 2002–2006 period that could significantly affect how it operates and whether or not it successfully meets all of its public responsibilities. BPA has prepared fact sheets covering Cost Management; Fish and Wildlife Funding; Power Markets, Revenues, and Subscription; and Transmission Issues. Among other things, each of these fact sheets discusses the chief sources of risk affecting BPA's mission. The most significant uncertainties are summarized below:

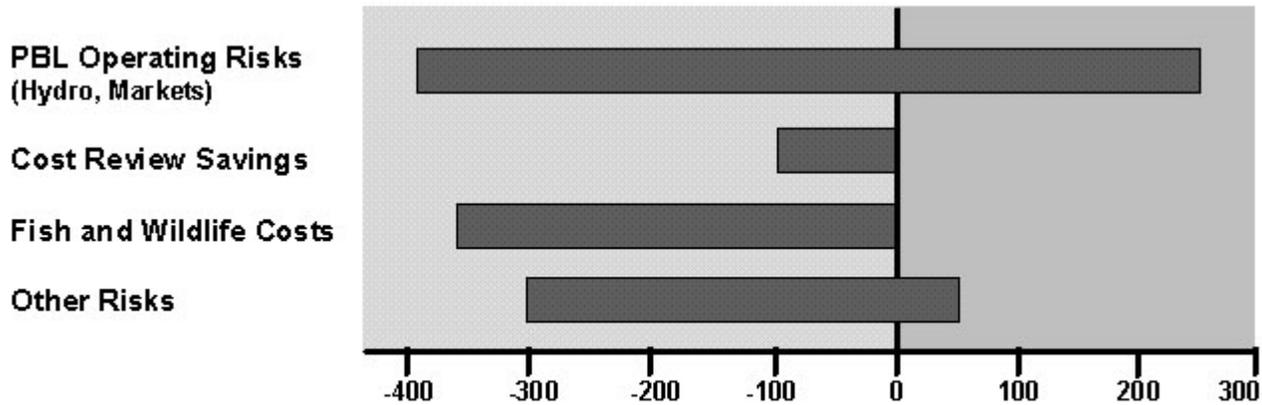
- **Hydro conditions** - The amount of power BPA has to sell directly depends on the available water supply.
- **Market prices** - Will market prices trend downward, remain about the same or go up? This question, in a nutshell, defines the uncertainty of the deregulated electricity market.
- **Fish and wildlife obligations** - A portion of BPA's revenues is used to finance fish and wildlife recovery measures within the Columbia River Basin. Representatives from state and tribal governments, federal and state agencies, environmental groups, utilities, industry associations, and public interest groups have worked to look at the range of possible future fish and wildlife costs for this period. Decisions on what measures should be implemented still lie in the future, and some will not be known until at least December 1999.
- **Reducing costs** – BPA has adopted virtually all of the Cost Review's recommendations. Many of these are "stretch goals" for BPA. The agency has set its targets for the maximum savings suggested by the Cost Review but, at the same time, must acknowledge the risk that not all of the targeted savings may be captured.
- **Other Uncertainties** – The separation of the transmission and power functions has introduced new requirements to separate and account for inter-business line purchase and sale of products, and transmission costs may have to be recovered differently in rates. The introduction of competition at retail for power services will create new volatility in power markets. And national and state regulatory changes may cause further restructuring in the industry. The radical makeover of the industry in California illustrates the potential magnitude of this. BPA also faces other significant uncertainties associated with potential costs of the Residential Exchange program and pending litigation involving the Tenaska project.

**Another significant factor that will determine BPA's ability to handle risk during the 2002-2006 period is the amount of financial reserves** that it will have on hand as it enters the period. We are managing reserves carefully, but the events of the next three years will be driven by still unknown market realities, hydro conditions, and other risk factors. Our Issues '98 risk analysis captures the possibility of both more and less favorable outcomes in the current rate period, and their potential impact on levels of financial reserves as we enter the 2002-2006 period.

The chart summarizes the estimated range of risk for major risk categories.

## Ranges of BPA Risks

(average annual effect on BPA net revenues in \$millions 2002-2006)



NOTE: Risks are measured in reference to BPA planning baselines.

These major uncertainties influence the probability of BPA realizing sufficient revenues to meet its obligations. BPA applied statistical techniques to combine all risks into a quantitative picture of the overall uncertainties it faces in the 2002–2006 period. We then developed a number of risk management tools that, depending on circumstances, could be used to reduce the chances of these risks having a negative effect on our ability to recover costs and make planned Treasury payments.

### Assuring the Treasury Payment

In making recommendations for BPA’s future regional role in the deregulated energy market, the Comprehensive Review of the Northwest Energy System recommended that BPA provide better assurance of meeting its obligations to Treasury than currently exists.

The U.S. Treasury has an important stake in BPA’s financial health. The Treasury is our banker. In effect, it holds the Federal mortgage that BPA pays each year. Statutes defining BPA’s priority of payments dictate that the Treasury is the last creditor in line to be paid by BPA. Expressed differently, the law says that, if BPA does not have enough revenues to meet all of its obligations, the agency pays the Washington Public Power Supply System bondholders, provides the required level of funding for Northwest fish and wildlife programs, and meets all other financial obligations before repaying the principal and interest it owes Treasury on the Federal facilities of the power and transmission system. This means that the probability that BPA can pay Treasury is an important indicator of our financial health, and captures all of the major sources of uncertainty we face in meeting the Administrator’s obligations to recover all of BPA’s costs. Thus, in the context of BPA’s

#### Treasury Payment Probability (TPP)

The Treasury Payment Probability is the estimated likelihood that BPA will be able to make its scheduled payment in full to the U.S. Treasury at the end of a fiscal year. In the 1993 Rate Case, BPA adopted its 10-Year Financial Plan which called for a 95 percent TPP for the two-year period 1994–1995, which translates to a one-year probability of 97.5 percent ( $0.975 \times 0.975 = 0.95$ ). Making all five

mission, the final measure of risk is the probability that it will be able to make its annual payment to the Treasury on time and in full. Our goal is to achieve a one-year Treasury Payment Probability of 97.5 percent, which translates to an 88 percent probability of meeting **all payments over the 2002-2006 period**. (See box on Treasury Payment Probability.)

payments in a row from 2002 to 2006 would be a five-year TPP of 88 percent ( $0.975 \times 0.975 \times 0.975 \times 0.975 \times 0.975$ ). The 1996 Rate Case settled on 80 percent for the current 5-year rate period (1997-2001).

## Risk Management Tools

With the region's help, BPA is working to develop a set of risk management tools. Risk management is not free – all of these tools have costs of one or more types. These tools are:

- **Financial Reserves (Planned net revenues for risk)** Financial reserves serve as a kind of self-insurance policy. This, like other forms of insurance, comes at a cost. In this case, a “planned net revenues for risk” component is included in rates to build BPA's financial reserves in order to handle higher-than-baseline cost situations or lower-than-baseline revenue situations. These reserves then provide the financial buffer needed when BPA experiences a risk “event,” such as a low water year with low power output and high purchased power expenses. In these circumstances, the agency's reserves can be drawn on to compensate for the shortfall in net revenues to ensure that BPA makes that year's Treasury payment.

## Contingent Funding Mechanisms

- **§4(h)(10)(C) Credits** – This section of the Northwest Power Act allows BPA to take a credit against its Treasury payment for approximately 27 percent of certain fish and wildlife expenditures that it makes each year. This credit is taken annually, and reflects the amount of BPA's fish and wildlife annual expenditures that are not attributable to or recoverable from the Federal Columbia River Power System. The amount of this credit varies from year to year, and depends on the level of power purchases BPA makes, the cost of BPA's direct fish and wildlife program, the details of the hydro operations for fish that BPA must follow, and the price of purchased power. BPA assumes that the §4(h)(10)(C) terms and conditions in effect today will continue during the 2002-2006 period.
- **Fish cost contingency fund (FCCF)** - Established in 1996, this \$325 million contingency fund represents money BPA had paid for fish and wildlife costs associated with the non-power uses of the region's federal dams, but for which BPA had not taken as §4(h)(10)(C) credits. BPA can access this limited fund only under certain strictly defined conditions, most primarily low-water years. BPA assumes that the FCCF terms and conditions in effect today will continue during the 2002-2006 period, and that if the non-renewable fund has not been exhausted, it will continue to be available to mitigate the risk associated with dry years.
- **Cost recovery adjustment clause (CRAC)** – Some power customers may prefer to have an adjustment mechanism in their rate that could be triggered by a low financial reserves level (threatening Treasury payment), rather than a somewhat higher basic rate initially. If triggered, this adjustment would increase their power rate and thereby increase revenues while in effect. Although BPA assumes it would need to discount its basic rate for any product having such an adjustment mechanism, the net effect would still increase the TPP.

- Emergency cost recovery mechanism (“stranded cost” recovery) – Federal legislation could be enacted to establish a conditional surcharge on BPA’s transmission services, which could be used to cover revenue shortfalls of the Power Business Line that could threaten BPA’s Treasury payment. Revenues derived from the surcharge could be repaid by the Power Business Line to the Transmission Business Line, with interest, at a later time.

The risk analyses conducted for Issues ‘98 assume that, in addition to the (“planned”) net revenues that result from the subscription rate and market price assumptions, a CRAC and an emergency cost recovery mechanism (as described above) are available as contingent funding tools, having a combined ability to provide up to an additional \$100 million in financial resources in a problem year. The §4(h)(10)(C) and FCCF credits are assumed to operate in the 2002-2006 period as they do today.

### **Potential Additional Tools**

There are other potential tools that have been under discussion within the region. These tools are included here for discussion purposes, but are not assumed to be used for purposes of the risk analysis prepared for Issues ’98.

- Range of contract durations - Some customers have expressed interest in buying power from BPA for shorter and longer periods of time than the 5-year period assumed for purposes of the revenue estimates presented here. A range of contract durations would avoid repeating the “cliff” of contract terminations BPA now faces in 2001. We believe that having a range of contract durations should be considered as part of the options offered in the subscription process.
- Hedging – This is a form of revenue risk management carried out by entering into transactions in the financial futures market in such a fashion as to protect against losses. BPA currently is using hedging on a very limited basis, primarily in short-term (less than one year) surplus firm power markets.
- Prepayment of Bills – Some power customers may agree to advance funds to BPA when Treasury payment is threatened in exchange for future deliveries of power at a discounted price.
- State Fees – A possible source of additional funding is fees assessed by the state governments in the region. State fees have been discussed primarily in the context of ensuring that the region can fund its needed fish recovery costs without exposing the Treasury to greater risk. Most likely, these fees would be assessed at the point of electricity consumption, perhaps through a meters charge.
- Federal Appropriations – Federal legislation could be passed that would provide non-reimbursable appropriations to offset very large increases in costs. Discussion of this funding mechanism has come up mainly in connection with the possibility of major hydro system reconfiguration such as removing one or more of the Federal dams, which would also require Congressional authorization.

### **Introduction to the Risk Analysis Results**

For discussion in Issues ’98, BPA has run a series of risk analysis scenarios for the 2002-2006 period using a draft set of planning assumptions for the major sources and ranges of uncertainties, combined with the possible use of one or more of the risk mitigation tools described

above. The analyses were conducted across a range of potential cost-based subscription rates for BPA power and across a range of potential future market prices for power sold in short-term markets (power that is not sold under subscription) that could be experienced in the 2002-2006 period.

Summary results of these analyses are depicted in Charts 1 through 3, which show colored “zones” that reflect whether BPA’s Treasury Payment Probability goal of 88 percent for the 2002-2006 period is met under different conditions and assumptions. The subscription rates are for a 5-year flat, undelivered power product (16.6, 18.6, and 20.6 mills), and the market rates are averages (over the 5-year period) for power sold in short-term markets (18 mills to 28.8 mills). (See box on Selection of Subscription Rates and Market Prices for use in Charts 1-3.)

An underlying assumption is that customers will subscribe for federal power well in advance of actually taking delivery in 2002, and will have a specific outlook on what market prices actually will be over the 2002-2006 period. For purposes of this analysis, BPA has assumed that if the subscription price for power is either 16.6 mills or 18.6 mills, customers’ views of future market prices will make that price so attractive enough that they will fully subscribe BPA’s available subscription power (although the make-up of the subscribers is different in the two scenarios). At a subscription rate of 20.6 mills, which is slightly above the current market price, BPA has prepared two alternative cases – one that assumes that BPA’s power is fully subscribed, and another that assumes that some customers will look to other suppliers, leaving BPA’s subscription power only 74 percent subscribed. This latter case subjects the remainder of BPA’s power from this inventory to market conditions. Actual views of future market prices will differ among customers and undoubtedly will change over time. The market prices shown on the charts correspond to what would actually materialize one to three years after customers have made their subscription decisions.

### **Selection of Subscription Rates and Market Prices for use in Charts 1-3.**

*Subscription rate:* We selected three different subscription rates for five-year, flat, undelivered products to use as examples for this analysis. The 20.6 mill rate is approximately .6 mills higher than BPA’s current PF rate; 18.6 mills approximates BPA’s goal of providing “2.0 cent” (delivered) power in 2002; and 16.6 mills is roughly equivalent to the lower end of price ranges considered by the Cost Review.

*Market prices:* We selected five different market price scenarios. These market prices represent the average price over the 2002-2006 period for power sold in short-term markets. BPA used the medium and low price ranges of 28.8 and 20.6 mills from the Northwest Power Planning Council’s “Analysis of the Bonneville Power Administration’s Potential Future Cost and Market Revenues” paper. In addition to these two market price scenarios, BPA developed 23 mill and 25 mill scenarios as intermediate points, and an 18 mill market price scenario, which is closer to the actual experience BPA’s customers have had in the Northwest for the past several years.

**Chart 1- Treasury Payment Probabilities with \$100M Higher Net Revenue**

Market Scenarios (average price for power sold in short-term markets)

	18 mills	Aurora Low/ Current Market 20.6 mills	23 mills	25 mills	Aurora Low/ medium 28.8 mills
<b>Subscription Rate Scenarios</b> (5-year, flat, undelivered product)	16.6 mills 100% subscribed				
	18.6 mills 100% subscribed				
	20.6 mills 100% subscribed				
	20.6 mills 74% subscribed				

**Chart 2 - Treasury Payment Probabilities based on BPA's planning baseline**

Market Scenarios (average price for power sold in short-term markets)

	18 mills	Aurora Low/ Current Market 20.6 mills	23 mills	25 mills	Aurora Low/ medium 28.8 mills	
<b>Subscription Rate Scenarios</b> (5-year, flat, undelivered product)	16.6 mills 100% subscribed					
	18.6 mills 100% subscribed					
	20.6 mills 100% subscribed					
	20.6 mills 74% subscribed					

**Chart 3 - Treasury Payment Probabilities with \$100M Lower Net Revenue**

Market Scenarios (average price for power sold in short-term markets)

	18 mills	Aurora Low/ Current Market 20.6 mills	23 mills	25 mills	Aurora Low/ medium 28.8 mills	
<b>Subscription Rate Scenarios</b> (5-year, flat, undelivered product)	16.6 mills 100% subscribed					
	18.6 mills 100% subscribed					
	20.6 mills 100% subscribed					
	20.6 mills 74% subscribed					

Note: Results are based on Total BPA revenue from power and transmission sales, less total BPA costs, with probabilistic incorporation of risks.

**Navigating the Charts**

Charts 1 through 3 share identical assumptions, with one exception. Chart 2 depicts results for BPA's baseline costs, revenues, and risks. Chart 1 illustrates how this picture would change if BPA's baselines

were improved by \$100 million per year compared to

Chart 2, due to some unspecified combination of cost decreases and revenue increases (i.e., \$100 million higher net revenue). Chart 3 portrays the converse – combinations of cost increases and revenue decreases totaling \$100 million (i.e., \$100 million lower net revenue) per year compared to Chart 2.

The *Green Zone* represents those combinations of subscription rate and future market price where BPA’s Treasury Payment Probability is 88 percent or better for the whole 2002-2006 period (97.5 percent one-year probabilities) **without** reliance on contingent financial mechanisms (other than §4(h)(10)(C) and FCCF).

The *Blue Zone* represents the area where it may be necessary for BPA to have available some form of contingent financial mechanisms in order to keep its Treasury Payment Probability from falling below 88 percent.

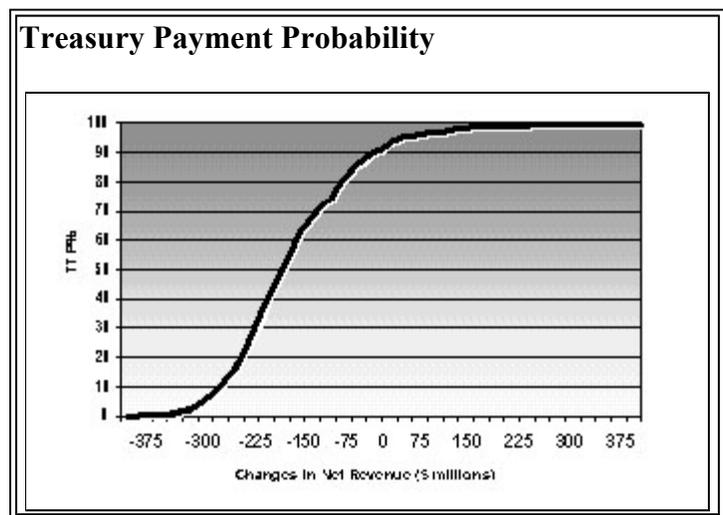
The *Red Zone* reflects combinations of subscription rate and future market price that would leave BPA unable to reach 88 percent Treasury Payment Probability, even with the availability of contingent financial mechanisms that could provide up to \$100 million of additional financial resources in a problem year.

**Implications**

Chart 2, reflecting BPA’s baseline costs, revenues and risks, shows results that span all three of the colored “zones.” Chart 2 shows that across a significantly large set of assumptions for subscription rate and average market price, an 88 percent Treasury payment probability for the 2002-2006 period can be met (blue and green zones), in some cases without the need for reliance on contingent funding mechanisms (green zones). The red zone that is dominant in the left-most column indicates that BPA’s Treasury Payment Probability would fall short of 88 percent if an 18 mill market prevails, even assuming the availability of contingent risk mitigation tools at the \$100 million level, with all but one subscription rate assumption. Across the top row (subscription price of 16.6 mills), the red changes to blue and then to green as the assumption for the average market price for short-term power is increased – indicating that the Treasury Payment Probability would be 88 percent or better in a 23-25 mill market if contingent funding mechanisms are available (blue zone), and in a 28.8 mill market without such mechanisms (green zone).

**What is the impact on TPP from variations in expected net revenue?**

The following chart shows the approximate TPP for an 18.6 mill subscription rate if cost or revenue assumptions are changed (increasing or decreasing net revenue). BPA’s target TPP is 88 percent for the 2002-2006 period.



## The risk focus

Managing risk means taking a realistic look at the probability of certain outcomes and then developing a strategy to be prepared in case those risks materialize. It also means looking for trade-offs so that, ideally, taking a greater risk in one area is likely to reduce the risk in another. In cooperation with customers and constituents, BPA is working to manage this uncertainty. But just as the interests of many Northwest stakeholders are linked by one of the world's greatest rivers, so also does the region share in the risks facing the Federal Columbia River Power System. This is a core consideration in virtually all of the issues being discussed in the Issues '98 process and is in keeping with the first goal of the Comprehensive Review to align the benefits of access to our federal power with its costs and risks.

Regardless of the uncertainties, BPA must meet its obligations. In a deregulated market, BPA cannot arbitrarily raise its power rates to cover any level of cost. But if the agency manages its costs and risks effectively, it can offer attractive, competitive contracts and rates. It is only through this competitiveness that BPA can meet its public responsibilities.

---

Page created June 4, 1998 by Katie Leonard, [keleonard@bpa.gov](mailto:keleonard@bpa.gov).

---