



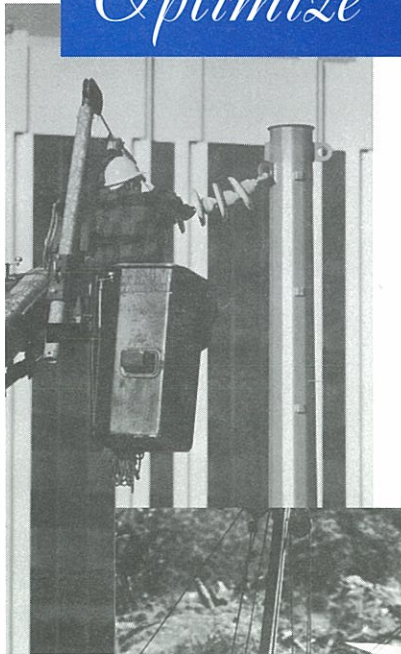
Washington Water Power

# Appendices

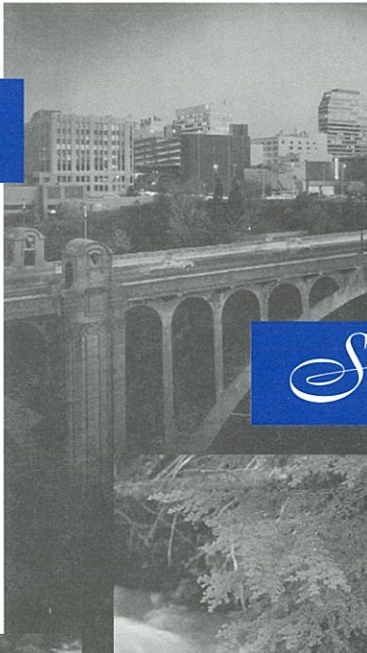
## Washington Water Power's 1997 Electric Integrated Resource Plan

*Optimize*

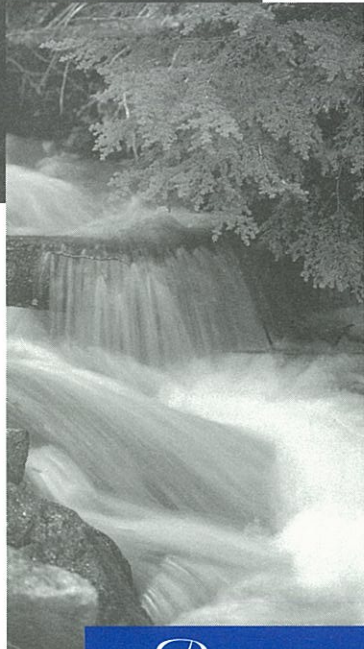
*Business challenges are met with creativity and innovation*



*Energy is only the beginning*



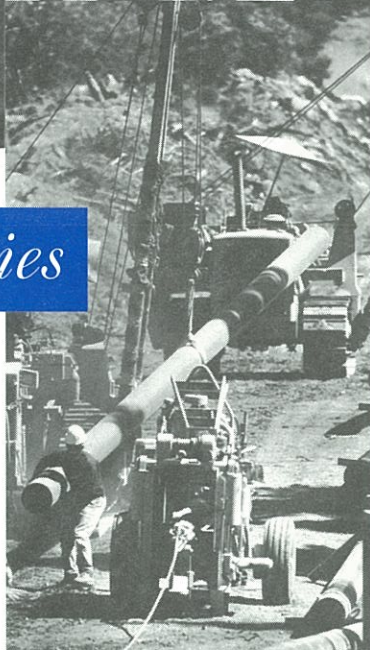
*Strategy*



*Balancing energy needs with the needs of the environment*

*Opportunities*

*Meeting competitive challenges in a changing industry*



*Responsibility*

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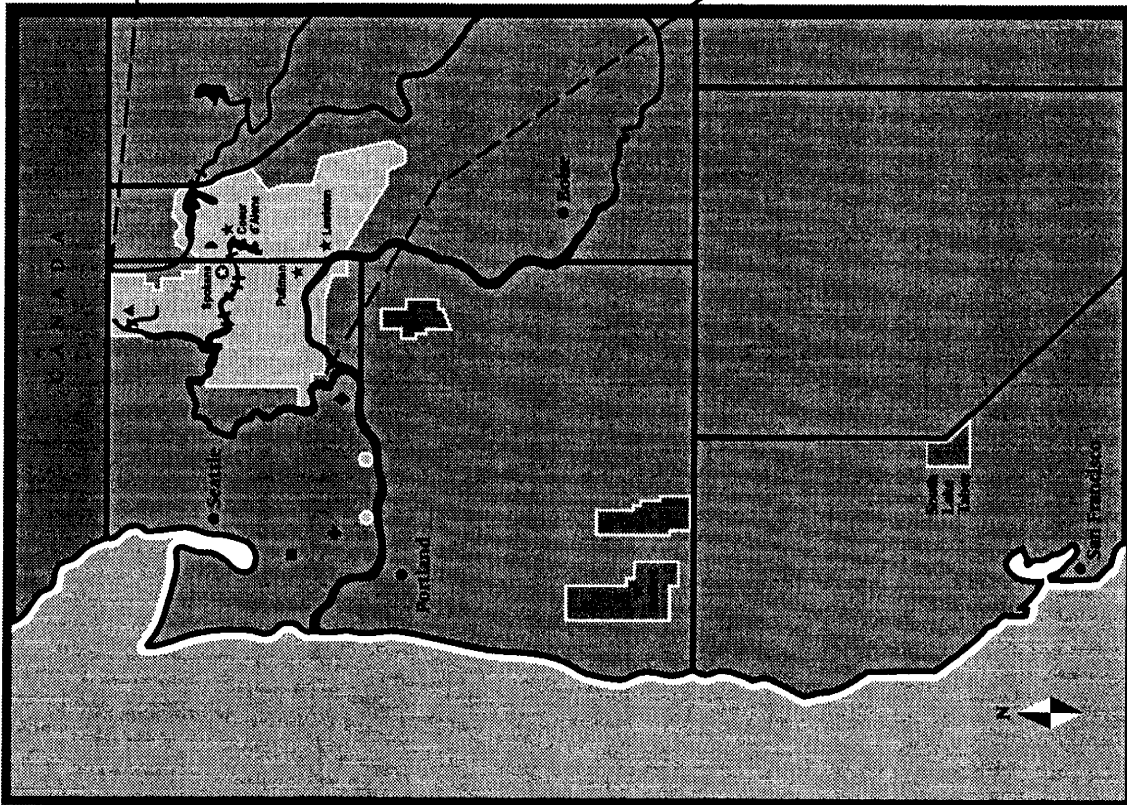
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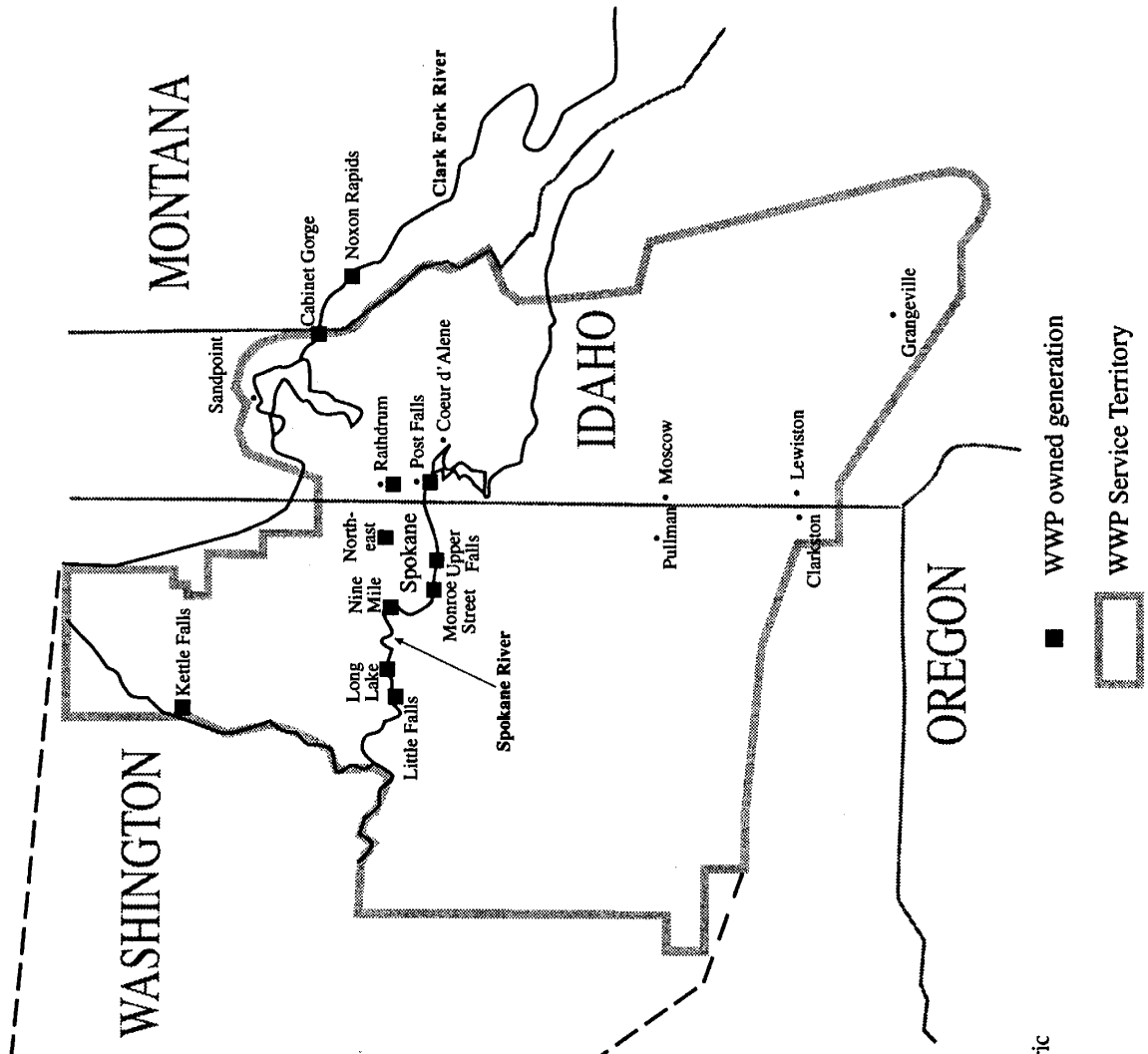
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- Corporate Headquarters
- ★ Division Offices
- WWP Hydroelectric Projects
- WP Natural Gas, a WWP Operating Division
- ▲ Kettle Falls Wood-Waste-Fueled Generating Station
- Rathdrum Combustion Turbine Generating Station
- ◆ Plymouth Liquefied Natural Gas Facility
- Centralia Steam Electric Generating Station
- ⊕ Jackson Prairie Underground Gas Storage Project



- WWP owned generation
- WWP Service Territory

# Benchmarks

WWP's last IRP was published in April 1995. Since that time, WWP has been involved in many activities which support the company's commitment as a low-cost provider of energy services. This 1997 IRP updates the company's resource and business planning activities. As the reader may be interested in specific topics, the following "benchmarks" provide a reference to some key information contained in this report.

<b>Benchmark</b>	<b>Page</b>	<b>Appendix</b>	<b>Summary</b>
Achievements--Two Years in Review	7	A	Since the 1993 IRP, highlights include increasing wholesale sales, Avista Energy, Avista Advantage, DADS Tariff, TOSCO and IndeGo
Action Plan for 1997	31	E	The company's near term action plan outlines the activities that will support our business strategy
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# Introduction—Meeting Our Goals

The electric industry in the United States is undergoing some fundamental changes in the way business is transacted, the structure of the companies, and the degree of regulation. WWP's 1997 IRP has incorporated several changes to become a bridge report between the current state of regulation and the less regulated future utility business. Least cost planning, which represents the utility's responsibility to meet customer demand for energy services at the least total cost, evolved into an effort to fully integrate all resource management activities.

For the 1995 IRP, WWP used the concepts of least cost planning in conjunction with the additions and strategies of integrated resource planning. Now for the 1997 IRP report, WWP has incorporated further changes that are reflective of the ongoing events facing the electric power industry. Some of these changes are:

- a split between retail and wholesale activities,
- relying on wholesale markets for short-term resource needs,
- business units for distribution, transmission, and generation, and
- evaluating all business and resource decisions against market prices.

WWP and the word company are interchangeable in this IRP report. References are made to the non-regulated business called Avista in order to keep the reader informed. This evolution of planning and business decisions is reflected in the following report.

## Appendix A

Company  
Overview

# A Brief History

A mere dozen street lights—signs of progress in Spokane Falls in 1889—were a large part of the system of the infant Washington Water Power Company. When fire swept the downtown on a sultry August day, the four-month-old company's arc light system went down in flames. Crews quickly scoured up every scrap of wire that could carry a current, even barbed wire, and using half-burnt poles, trees, and the sides of remaining buildings, rewired the system. When darkness fell, the lights came on. A tradition of exceeding customer expectations had begun.

Ten partners founded the company on March 13, 1889, when Edison's invention was not a decade old. As Spokane rebuilt, power demand accelerated. WWP stepped up construction on the lower falls of the Spokane River. On November 12, 1890, the Monroe Street Station whirled into action, the first of WWP's nine hydroelectric projects.

Bold and innovative from the start, the company saw opportunity in the Idaho mines, and in 1900 undertook to build a transmission line from Spokane to Burke, Idaho. Completed in 1903, the 100-mile, 60,000-volt line was then the longest high-voltage line in the world.

Homes were just being electrified, and households were buying their first electrical appliances, which the company enthusiastically marketed. It cost \$10.50 to have a complete house wired.

Through the '20's and '30's, the company built 1,500 miles of transmission lines and constantly added generation capacity. By 1940, electric use in WWP's area was more than twice the national average. World War II brought a focus on conservation, and the company initiated war bond sales and scrap drives, donating two million tons of metal itself.

In the '50's, Cabinet Gorge and Noxon Rapids dams went on-line, and WWP acquired Spokane Natural Gas Co., providing customers a second energy service option. In 1960, WWP began developing Spokane Industrial Park. The park, which recently was sold, is now home to 80 businesses and 3,000 employees. Thermal power generation was the focus of the '70's and '80's with projects at Centralia, Washington; Kettle Falls, Washington; and Colstrip, Montana.

Today, the company's stock is owned by 34,000 shareholders in 50 states and 22 countries. Beginning its second century, WWP continues to focus on enhancing shareholder value, maintaining competitive prices and providing excellent customer service.

For the first time in its history, WWP in 1996 sold more power in wholesale markets than it did to retail customers. During 1996, the company added 13,400 new natural gas customers, for a growth rate of almost 6 percent and 7,100 new electric customers, for a growth rate of 2.0 percent. At the end of 1996, WWP had 296,496 electric customers and 237,687 gas customers.

**A 100-mile, 60,000-volt line from Spokane to Burke, Idaho, completed in 1903, was then the longest high-voltage line in the world.**

Appendix A

Company  
Overview  
(continued)

## WWP - An Overview

The Washington Water Power Company is continuing to evolve and improve to meet the challenges of winning and keeping customers in a rapidly changing marketplace. The themes of de-regulation, re-regulation, competition, restructuring and change continue to be sounded again and again.

1996 was an eventful year for the company. WWP's proposed merger with Sierra Pacific ended after a two year effort. The company conducted a strategic review of its operations and then reorganized into three separate business units: the energy delivery business, generation and resources, and non-regulated businesses.

The company entered into a marketing alliance with Mock Energy Services, a California natural gas marketer, launched WWP Energy Solutions nationally, and had major progress on the steam plant oil spill. WWP piloted competitive choice tariffs with Direct Access Delivery Service (DADS) and followed with More Options for Power Service (MOPS). Washington Water Power had a record year for hydro production and sales, and responded to a destructive storm affecting 100,000 customers which became known as Ice Storm '96.

WWP's changes are also being reflected in the electric industry during the last two years. Officials in all but 12 states are working to implement some form of electric retail competition and three states have adopted laws. A federal electric industry restructuring law was introduced to Congress. Nine new utility mergers were announced in 1996 and three hostile utility takeovers were attempted in the last 18 months.

Energy marketers are being very aggressive, taking thin margins to gain market share. New combinations of services are being tried (e.g., telecommunications, merchandising, home security, audit/billing). Dozens of marketing alliances were announced in 1996. The convergence of natural gas and electric companies is increasing.

Some WWP insights and observations:

- Industry change is inescapable
- There are many paths of opportunity to choose from
- Winners will be those:
  - best at delivering what the customer will buy, in ways that they'll buy again and again,
  - who challenge the status quo and quickly align people, things, and money to build value
- Success factors for maintaining our self-destiny:
  - favorable customer relations and reputation,
  - focus and adaptability,
  - well managed assets and efficient operations,
  - marketing, trading, and financing skills,
  - an openness to opportunity



**Appendix A****Company  
Overview  
(continued)**

WWP is pursuing a specific direction for the future. The company's overriding goal remains the health of its business, to survive and prosper with strong balance sheet and growth in profits. WWP will remain an energy services company providing a wide-range of services to energy consumers. Expansion of its business enterprises is purposeful, playing to strengths and seeking opportunities.

The company's energy delivery system is the foundation for a stable base of earnings, strong cash flow, and modest growth in profitability. Energy trading and services is WWP's primary growth engine for new business growth and expanding profit opportunities. Within the energy trading business units is the Resource Optimization Department. They have the responsibility to manage the hydro and thermal resources and gas acquisitions and planning. In addition, they will be responsible for wholesale marketing and power scheduling/trading.

WWP is building business by responding to customers needs and taking advantage of opportunities. For example, WWP Energy Solutions developed and began selling the consolidated billing system in record time, putting us ahead of competing providers in the market. Another example is what started as joint use work evolved into the value-added WSU fiber project in Pullman.

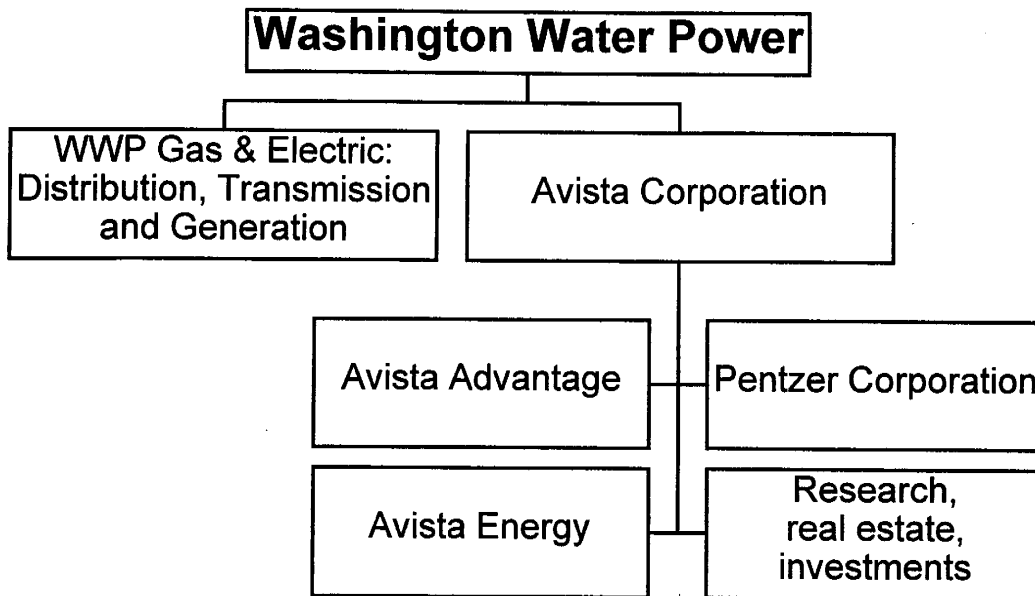
**It is our customers who drive our business success and add value to our shareholders' investment.**

The generation, resource and marketing side of the business has a multitude of functions. One function is to maximize the availability of the generation and minimize the cost of production. Another is to eliminate high cost contracts. On January 6, 1997 the company was successful in the buyout of a high cost purchase contract with Wood Power, a qualifying facility using wood waste for fuel. Another function is to be successful in the three arenas of trading, wholesale marketing and retail marketing. An additional function is that WWP Energy Solutions can provide a total package of products and services that can deal with residential and commercial customers energy/utility issues. On April 1, 1997 WWP Energy Solutions had a name change to Avista Advantage, and became a non-regulated business of WWP. In addition, a significant portion of the wholesale marketing group became Avista Energy, another non-regulated business.

Avista Energy took with them the strategic alliance in California of Mock Energy Services. When Avista Energy launched its national strategy in April, they also announced a unique alliance with Chelan County Public Utility District to market 557 MWs of the District's 2,000 MW capacity on a "real-time" basis and offer joint marketing of products and services. In June, 1997 another strategic partnership was announced with Energy West Inc. Energy West currently serves customers in Montana, Wyoming and Arizona. Energy West Resources, its marketing affiliate, is one of the largest natural gas markets in the state of Montana. The following chart shows WWP's Corporate Structure (Figure 1A).

# Figure 1A WWP's Corporate Structure

## Corporate Structure



## Appendix A

Company  
Overview  
(continued)

# Achievements--Two Years in Review

Since publication of the April 1995 IRP, WWP has recorded many significant achievements, some of which are listed below. The company is proud of these results and the positive impact they will bring to the company and its customers.

## 1. Wholesale Energy Business

WWP wholesale power marketing efforts have delivered 11.2 billion kilowatt-hours with revenue of \$231 million for the period running January through December, 1996. Only four power marketers in the nation sold more wholesale megawatts in the first half of 1996 than WWP. During 1996, WWP sold more megawatt-hours of electricity through wholesale transactions than through the retail delivery side of the business. WWP was the first utility to sign a BPA direct service industry customer to a long term power supply contract, and during 1995, the company captured approximately 50 percent of the public agency and DSI load released by Bonneville.

## 2. Marketer Status

On September 11, 1996, WWP was awarded national power marketer certification by the Federal Energy Regulatory Commission. In the latter part of 1996, WWP joined the growing ranks of FERC approved national power marketers by launching a subsidiary company, WWP Resource Services (Avista Energy).

## 3. Merger Status

On June 28, 1996, WWP terminated efforts to merge with Sierra Pacific Power Company. One of the factors affecting this decision was the growing uncertainty of obtaining approval of the proposed merger from all the regulatory commissions on terms consistent with the principles adopted by the companies. Also cited were the potential risk of inconsistent regulation in the future, the significant decrease in the amount of net savings expected, and the recent and ongoing structural, economic, and regulatory changes in the electric utility industry.

## 4. WWP Energy Solutions (Avista Advantage)

WWP Energy Solutions, an energy services business of WWP, provides energy management consulting services to retail customers both inside and outside its service territory. The customer focused approach is centered around working with customers to ensure energy savings through the development of cost effective energy management and energy procurement strategies. Some customers already contracted for include:

1. US Bank
2. NW Mining Association
3. SharePlus Health Services Solutions (hospitals in California)

## 5. Hydro Relicensing

WWP is in the middle of its relicensing process for the Clark Fork River hydro facilities. To help in this process WWP has enlisted several participants such as Trout Unlimited, an environmental group dedicated to the preservation of trout and salmon.

**Appendix A****Company  
Overview  
(continued)****6. Pentzer Corporation (a non-regulated business)**

Pentzer's business strategy is to acquire controlling interest in middle market companies that have strong management and significant advantages within their markets. In 1995, Pentzer added to its portfolio, the Decher Company, which specializes in the design and production of point-of-purchase displays. Its largest acquisition to date is Advanced Manufacturing and Development, a manufacturer of metal and wood products for the computer, video arcade, medical equipment, and point-of-purchase industries. WWP's non-regulated business contributed 38 cents per share to earnings in 1996.

**7. Direct Access and Delivery Service (DADS)**

WWP now has in place a tariff that allows Extra Large General Service Schedule 25 customers the opportunity to choose their own electric capacity and energy provider for up to one-third of their electric load. This tariff represents an innovative, timely response to increasing customer demand for retail energy choices. This trial, voluntary tariff will expire August 31, 1998. There are 37 Schedule 25 accounts and there are 16 accounts taking service under the DADS tariff, as of June, 1997.

**8. Steam Plant**

WWP entered into a negotiated settlement and indemnification offer that finalized the problem of the oil spill at the closed downtown steam plant. This settlement and offer will help everyone move forward toward the common goals of redevelopment of the area of downtown Spokane, renovation of the Davenport Hotel, and protection of the environment. WWP is a limited partner to develop the steam plant, where the oil spill originated, into the Steam Plant Square, a complex of retail shops and restaurants.

**9. Restructuring Plan - WWP**

The restructuring plan into lines of businesses, reinforces WWP's commitment to and advocacy of restructuring in the utility industry. The plan outlines strategies designed to further position the company to succeed regionally and nationally in a competitive utility marketplace. One significant strategy is to separate the company into two lines of business. The energy trading and market services line of business includes all wholesale marketing activities and generation, as well as retail marketing services and new product development. The energy delivery line of business includes retail electric and natural gas delivery and transmission services. Les Bryan was elected the company's president and chief operating officer, and as such will oversee these lines of business.

**10. Tosco Refining Company**

WWP signed an agreement to supply electricity to a Tosco Refining Co. plant near Bellingham, Washington. Under the proposal, Tosco will become a retail customer of WWP, located outside the company's service territory. Tosco is terminating its existing energy contract with the Public Utility District No. 1 of Whatcom County.

**Appendix A****Company  
Overview  
(continued)****11. The Nature of Water Power**

A new hands-on, minds-on science curriculum developed for sixth through eighth grade classrooms has received the 1996 Hydro Achievement Award in public education from the National Hydropower Association. The Nature of Water Power curriculum, developed by WWP with support from the foundation for Water & Energy Education in Salem, OR, provides an opportunity for students to explore the nature of water power through hands-on activities that require teamwork to solve problems through the scientific process.

**12. Independent Transmission Grid Proposal**

WWP has agreed to join with other Northwest electric companies (IOUs) to establish an independent operator for their electric transmission facilities. The new independent grid operator, to be called "IndeGO," will ensure non-discriminatory, open access for all who use the participating companies' electric transmission facilities. Since the conception of IndeGo BPA and other public agencies have agreed to sign the memorandum of understanding.

**Appendix B**

**Addressing  
a Changing  
Utility  
Environment**

# Addressing a Changing Utility Environment

Not long ago, the energy services business, as a regulated monopoly, seemed less complex. As restructuring forces utilities to become more competitive, utilities are offering more diversified services to stand out from the pack. WWP believes it will no longer have exclusive rights to its service territory. Deregulation and its accompanying regulatory and legislative changes are the keys to today's widespread innovations in the electric utility industry. As restructuring saturates the market, utilities eager to gain customers are lowering prices and offering diversified services. Technology will continue to be the enabling force that makes the energy system capable of meeting rising demands at declining real prices, increased efficiency and sharply reduced environmental impact. WWP is positioning itself to remain competitive by offering other services to its core customers besides energy deliveries of electricity and natural gas.

The following sections show how WWP is responding to some of the more critical issues facing the electric utility industry. At this time, the company feels these strategies are the most appropriate for the corporation's health and viability into the future; however, WWP will be open to adjustments as the industry is moving forward at a very rapid pace.

**This 1997 IRP report is a transition IRP that will bridge WWP between planning in a monopoly and a competitive environment. It has similarities to past reports but also has items and divisions that reflect the direction of the electrical industry. For example, the load and resource tabulation is split between retail and wholesale lines of business. WWP's planning will be in alignment with competition and also address the uncertainties and risks that are inherent in the market transformation.**

## WWP's Perspective On The Changing Utility Marketplace

WWP is facing significant changes in the way it does business. All the indicators point to the changes in the utility industry as remaining, and that the pace of change will accelerate. It's a fact that competition in our industry is increasing, and customers remind WWP daily that they expect more from their utility than ever before.

WWP focused its approach to meeting the challenges of change in three key areas: customer satisfaction through low rates and exceptional customer service, business growth and improvement in results. While all three are important initiatives, satisfying customers is WWP's primary concern.

## Appendix B

### Addressing a Changing Utility Environment (continued)

For WWP, focusing on the customer begins with delivering value for their energy dollar. That means keeping energy prices low. WWP believes that its success is inextricably linked to customers' success. As change continues, WWP's position as a low-cost energy provider will provide the company with the strength and flexibility needed to adjust to the increased demands of the marketplace.

But it will take more than just low prices to win customers. WWP intends to remain a leader in the industry by offering value in ways that extend beyond price. As competition increases, prices fall and profit margins are squeezed, requiring utilities to look for new earnings streams and new ways to satisfy the needs of their customers. The keys to WWP's future success will hinge on its ability to listen to customers, meet their specific needs, and deliver on every commitment it has made.

WWP now treats electricity as a commodity. The current price for available wholesale market power at the California-Oregon border is reported daily in the Wall Street Journal. In addition, the New York Mercantile Exchange (NYMEX) began trading electricity futures on March 29, 1996.

NYMEX launched the Palo Verde and California-Oregon border electricity futures with terms of the two contracts identical other than location. The contract unit is 736 MWh delivered over a monthly period. Eighteen consecutive months are listed with a delivery rate of 2 MW throughout every hour of the delivery period. The delivery period is 16 on peak hours, commencing 0600 and prevailing through the hour ending 2200.

On April 24, 1996 to encourage competition, the Federal Energy Regulatory Commission (FERC) issued its final rule addressing open access transmission and utility stranded costs. Order 888 requires public utilities owning, operating, or controlling transmission to file nondiscriminatory open access tariffs offering others the same transmission service they provide themselves, under comparable terms and conditions. In addition, the rule provides for full recovery of prudently incurred stranded costs related to wholesale requirements contracts signed before July 11, 1994. In addition to endorsing cost recovery, Order 888:

- Adopts functional unbundling and encourages independent system operators, but does not require corporate unbundling or divestiture;
- requires limited reciprocity from publicly owned utilities not directly subject to FERC's rule;
- clarifies important issues of state and federal jurisdiction while preserving substantial authority for states to address stranded costs and stranded benefits for all customers;
- permits wholesale sales from new power plants to be at market based rates, without requiring utilities to demonstrate a lack of market power in generation; and
- adopts the recommendations of the North American Electricity Reliability council for preserving reliability of the interconnected systems operations.

Order 889 adopts information requirements and technical standards for an open access same time information system (OASIS). Transmission providers are required to establish or participate in an OASIS and comply with prescribed standards of conduct. Order 889 also mandates the complete separation of companies' wholesale power marketing

**Appendix B****Addressing  
a Changing  
Utility  
Environment  
(continued)**

and transmission operation functions. Compliance was delayed two months from the original requirement of November 1, 1996. WWP now has in place an information wall between the marketing and transmission sections of the company.

There is a possibility that independent system operators (ISOs) will replace the regions of NERC. In the Northwest, we have formed Regional Transmission Grids (RTGs) and have proposed the creation of an independent grid operator called IndeGO. IndeGO would have control of the transmission systems and would sell transmission wheeling rights to parties that request that service including the investor owned utilities. Free markets in electricity will start stressing the whole transmission system in ways that its never been stressed before.

As a sign of more open markets, competitors have increased dramatically in the last two years. As of year end 1996, there were over 250 power marketers registered in the United States. Power marketers and brokers, independent power producers and unregulated subsidiaries of utility companies offer power supply alternatives in the wholesale market to other utilities and to large consumers of electrical power.

It all started with the 1992 National Energy Policy Act opening up transmission lines to other entities for wholesale transactions. Regulation is expected by many observers to evolve to the point in which all customers will be able to choose their power supplier. The utility that owns the line to the home or business will transmit power from the customer's chosen supplier for a usage fee.

One issue in this transition of the market is if and how utilities would be compensated for their high cost generating facilities if customers defect to lower cost providers. For WWP, this risk is reduced because the company has relatively low cost generating facilities. If regulation postpones competition until stranded costs are recovered, the customer's ability to choose will be delayed. Some customers (e.g. large industrials) won't be willing to wait for utilities to recover all their costs before being allowed more choices. One solution would have shareholders and customers share the burden of stranded costs.

Another issue to resolve is how some of the environmental and social responsibilities typically paid by regulated utilities will be handled in the future, while still allowing utilities to compete on an equal basis with new, unregulated entities.

The result is electric utility investors are now experiencing a new energy marketplace, which means they are exposed to an industry that has more risks than in the past, but also has the potential for higher returns. Relatively safe returns may no longer be a given for electric utilities.

Changes will continue and won't be easy to predict. The future will look different than what we expect today. The utilities that survive will be flexible enough to make business opportunities from future changes as they happen.

During the past two years (1995 and 1996), WWP has had in place a tariff rider that is applied to each kWh sold on the distribution system. The rider provides funding for the company's conservation and other DSM programs. This allows WWP to expense the DSM funding without accumulating a regulatory asset for the future. WWP has received permission from the Idaho and Washington Commissions to continue the program for another three years.



## Appendix B

### Addressing a Changing Utility Environment (continued)

The DSM Tariff Rider has four items that are important to WWP:

- First, customer service is one of several benefits brought by DSM.
- Second, removing DSM funding from the internal capital budgeting process has been viewed favorably by the financial community.
- Third, the stable funding and longevity brought by the tariff rider have greatly benefited the DSM implementation group.
- Fourth, the flexibility built into the target oriented tariffs has allowed DSM offerings to evolve to meet customer needs.

In addition, technology has and will continue to play an important part in the market transformations. Technology on both sides of the meter is reducing costs and providing the communication that will implement and facilitate these market changes.

Energy management systems will offer the customer the ability to monitor energy consumption, select billing dates, receive real time pricing information and budget their energy use. Some systems will allow customers to tailor their home services to meet their own needs for comfort or convenience, such as scheduling service turn-ons or turn-offs for vacations, programming use of home appliances, and long term services such as medical alerts and security. Utilities will also receive automatic meter readings, on-line payments and the ability to provide household energy tips.

The systems will detect power outages on the customer's premise and automatically place a telephone call to the utility. It will allow utilities to send a broadcast message to notify customers of special circumstances and estimated time of power restoration. These devices allow both the customer and utility to regulate power usage. As the electric utility industry is deregulated, more and more value-added services and products are expected to become available to utilities and their customers.

Technology advances on the generation side have also been impressive. Heat rates and costs have declined significantly on gas fired combustion turbines. Higher efficiencies and lower cost generating plants, along with lower cost natural gas, have resulted in marginal cost of generation being lower than many utilities' embedded cost of generation.

In addition, other supply side technologies will have impacts on the electric industry. Distributed generation (generation located by the loads) could be a near term hedge strategy, allowing companies to avoid future over commitment, financially or technologically, in uncertain times.

Energy storage could have the revolutionary effect of decoupling electricity use from electricity production. Storage can come in large blocks to support generation, or in smaller increments to supplement transmission and distribution. In the case of electric vehicles, customers' charged-up batteries represent energy storage for the distribution system, with the customers paying for the investment. Fuel cell and photocell technologies as dc devices could reshape the present ac power production and delivery systems.

Technology advances help provide customer choice. Retail wheeling, retail competition, customer choice, whatever it's called, the movement to let electric customers choose their utility is an issue in which everyone has a stake. WWP is running the company as

**Appendix B****Addressing  
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(continued)**

if its customers already have a choice of suppliers, because somewhere down the road, they will. The company has implemented Schedule 26 that allows our 30 largest customers to have the option in selecting different electric suppliers for up to one third of their load. This is a two year experiment to allow us and our customers to evaluate and assess the effects and benefits of competition.

For retail customers, especially large industrial facilities, having a choice of suppliers is a way of controlling costs in the global marketplace. A kilowatt-hour of electricity is virtually the same no matter where you are, but its price can vary greatly.

As the industry moves to a fully competitive retail market, resolving certain issues will allow all customers to benefit from competition and all utilities to compete in the future on a level playing field. Some of these issues in WWP's view are:

- All customers should have access to the benefits of competition, not just large users with market power who can negotiate special deals.
- Retail competition provisions must be in place to ensure that suppliers have equal access to customers and prevent "cherry picking" of a utility's largest customers by a supplier whose own customer base is not at risk.
- The roles of federal and state bodies must be clearly defined. State agencies should have the primary role relative to retail customers.
- Mechanisms must be put in place for utilities to recover prudent investments made to serve their once exclusive territories.
- Customers of public power agencies and electric co-ops must also have access to the competitive market.
- PURPA requires utilities to purchase the output of some power plants at rates that sometimes were higher than the power was actually worth. Although this law did bring into the industry many new players, with a growing competitive market for power generation, this provision should be repealed.
- Today's utility rates include costs for environmental enhancement, conservation initiatives, taxes, and other societal programs. These costs have been legitimately incurred to serve valid public purposes and if still valid should continue to be collected from all customers.

## **Corporate Restructuring**

In August 1996 Paul Redmond, WWP's Chairman and C.E.O., announced the reorganization of the company. WWP is now organized into business units in order to be prepared for the industry changes. The "Energy Delivery" business unit will be responsible for the retail delivery side of the business for both electricity and natural gas and the transmission functions. The "Energy Trading and Market Services" business unit will be responsible for production and generation, wholesale marketing, resource optimization, hydro licensing and safety.

## Appendix B

### Addressing a Changing Utility Environment (continued)

The company's strategic initiatives have been in place for most of 1996. These initiatives are as follows:

- **Merger**—WWP will continue to review merger and acquisition strategies and other business opportunities.
- **Business Development**—WWP must increase the size and financial strength of the company in order to meet the revenue requirements.
- **Retail Business**—WWP's redesign process is now fully implemented with the exception of reward and information systems.
- **Wholesale Expansion**—WWP will expand its market presence to a national level.
- **Generation and Production**—WWP will look at all of the generation and production facilities for continuous improvement and lowering fuel costs.
- **WWP Energy Solutions**—WWP will develop new contracts with customers and unique joint ventures.
- **Regulatory**—WWP will continue to work with regulators for innovations like the open access tariff, gas initiative and other competitive rates.
- **Business and Info Systems**—WWP is looking for greater efficiency internally with the data warehouse project and the human resource information system.
- **People and Organization Development**—WWP will focus on learning and providing employees with knowledge, skills and resources.

## Goals For Electric Industry Restructuring

Electric industry restructuring will likely lead to increased customer choice. Washington Water Power believes that a transition to a restructured industry can provide benefits to customers with no downside if the following goals are included in implementation of utility filings.

- Create a competitive retail market for electricity without diminishing system reliability, service quality, societal values, or state and local tax revenues.
- Allow all utility "full requirements" customers to choose an electricity supplier through a competitive retail market ("retail wheeling mandate"), but without unduly impacting those who decide to retain electricity service from their local distribution utility.
- Revise the state and local public utility tax structure to ensure that neither in-state, nor out-of-state electricity suppliers are competitively disadvantaged.
- Ensure that consumers have comparable opportunities and requirements for gaining direct access to the competitive retail market, whether they are currently served by an investor-owned utility, "public" utility, or cooperative or mutual association.
- Mandate that utilities separate generation, distribution, and transmission functions to provide proper cost allocation and accounting ("functional unbundling").

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- Establish a "distribution services tariff" to serve as the only means by which a local distribution utility may recover distribution-related expenses, and require that the tariff be applied in a non-discriminatory and non-preferential manner.
- Provide that electricity suppliers have non-discriminatory and non-preferential access to a local distribution utility's system ("comparability requirement").
- Require local distribution utilities to connect any requesting consumer to its distribution system ("obligation to connect").
- Preserve the diversified governance structure for local distribution utilities in the state.
- Ensure that a local distribution utility provide electricity and related (ancillary) services to any consumer connected to its distribution system upon request ("supplier of last resort").
- Provide legal recourse for "direct access" customers against unfair or deceptive business practices, and require full disclosure of contract terms and conditions to such consumers.
- Create a market-neutral funding mechanism for conservation and low-income weatherization and energy assistance programs ("public benefits"); this mechanism should provide for collection from the local distribution utility's system ("system benefits charge") and the allocation of proceeds to those connected to the system through a locally-controlled conduit.
- Allow for the recovery of "stranded assets" for a limited period of time and in a way that does not economically hinder consumer direct access to the competitive retail market; an appropriate level of cost-sharing between consumers and shareholders should be established.
- Require out-of-state utilities and power marketers to be certified by the Washington Utilities and Transportation Commission (WUTC) before they can offer products and services in the state, and authorize the WUTC to issue fines and revoke certifications. Provide similar certification from the IPUC.
- Adapt economic regulation of investor-owned utilities to a competitive retail market by deregulating generation assets, and providing for alternative forms of regulation so that consumers and shareholders benefit from operating efficiencies (i.e., "performance-based regulation").

## Appendix B

Addressing  
a Changing  
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Environment  
(continued)**WWP Energy Solutions (Avista Advantage)**

WWP Energy Solutions, an unregulated subsidiary of WWP, is a national leader in the development and implementation of customer-based non-traditional energy programs.

WWP Energy Solutions (now Avista Advantage) offers the following products and services:

- **Resource Accounting**—performing audits on energy usage and billing can prove to be a time consuming process but Resource Accounting can determine where the energy dollars are being spent.
- **Consolidated Billing**—aggregating the utility bills with Consolidated Billing can make bill paying hassle free with one statement and one payment.
- **Energy Information Systems**—knowing how efficiently energy is being used can help determine savings and Energy Information Systems can provide the tools to keep energy use, and waste, in check.
- **Lighting Concepts**—proper lighting is essential and through Lighting Concepts business' responsibilities can be simplified through lighting design and maintenance.
- **Technology Management**—through Technology Management a determination is made for the most efficient means which would allow the advantage of new technology.
- **Resource Management**—designed to assist in measuring the efficiency of resource usage, a Resource Management program can help to realize greater profits and streamline operations to decrease unnecessary resource usage, thus decreasing unnecessary resource costs.
- **Natural Gas Commodity Management**—as the energy supply manager, determinations will be made regarding the most cost efficient means to supply the business with reliable natural gas power.
- **Electric Commodity Management**—a cost efficient electric energy purchasing package will be set up to seek out the lowest cost, while maintaining reliable service of electric energy.

**Customer Needs and Satisfaction**

In order to provide a level of service quality that meets our customers' needs and expectations, WWP regularly and systematically surveys its customers to collect information. This information is collected at two levels: (1) research on customers-at-large, covering samples of our entire customer base including those that have, and those that have not, had recent contact with the company; and (2) point-of contact research that focuses on needs and satisfaction levels at each of several significant points of contact with the company. The company also estimates and tracks customer loyalty and likelihood of retention in a competitive environment.

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**Research on Customers at Large.** The company's Key Attribute surveys are conducted to measure customer needs and satisfaction levels of our customers at large. The Key Attribute surveys are conducted for residential and small commercial customers. Approximately thirty attributes, including the following examples, are covered on the survey:

- Treat Me as a Valued Customer
- Listen to Me
- Keep Rates Competitive
- Provide Me With Service Options
- Minimize Outages and Interruptions

On the surveys, customers are asked to rate both importance and performance on each of several key attributes or features of their experiences with the company. The comparative Importance/Performance ratings can then be reviewed to identify courses of action needed to improve customer satisfaction.

**Research at Point-of-Contact.** Conducted on an ongoing basis and reported at monthly and quarterly intervals, the Voice of the Customer research is undertaken to measure how well we are doing at meeting customers' needs at each of several points of contact between customers and the company. This work is conducted only with representative samples of customers that have had recent contact with the company (for natural gas service). Surveyed customers are asked to rate the company's performance at each of several service attributes on a four-point scale ranging from "poor" to "excellent".

Call center attributes include the following:

- The representative being informed and knowledgeable
- The representative being courteous
- The representative treating you as a valued customer
- The representative taking care of all your needs

Field service attributes include the following:

- Service crew basing their decisions and plans on your needs
- Notifying you of any changes to the work plans
- Service crew being courteous
- Leaving your property in the condition they found it

This information is reviewed on an ongoing basis and courses of action needed to improve customer satisfaction are identified and implemented.

## Appendix B

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## System Planning (Transmission)

WWP System Planning is actively engaged in two major projects:

- Working with Western Systems Coordinating Council (WSCC) Operating Capability Study Group (OCSG) to ensure reliability of the transmission grid (especially the Pacific AC and DC Interties)

The OCSG has spent the last six to eight months in a process to determine how to operate the Pacific AC and DC Interties in a safe and reliable manner. The OCSG has recommended changes in operating limits and procedures, and has had oversight on additions of new equipment. WWP is involved with this work to ensure that transfers of energy through Eastern Washington which can impact transfers on the Interties are prudently considered in the OCSG effort.

- The Proposed Independent Grip Operator (IndeGO)

The Company signed a Memorandum of Understanding ("MOU") on July 11, 1996 with various Northwest utilities for the purposes of jointly investigating the feasibility of transferring certain operating responsibilities associated with a regional transmission grid to an independent grid operator. It is conceivable that operation of the regional transmission by an independent grid operator may facilitate a competitive electric power market as such market evolves, and potentially increase the efficiency of the Northwest transmission system, as well as provide non-discriminatory open access to the regional transmission grid consistent with the Federal Power Act and Federal Energy Regulatory Commission requirements.

The Company is participating in various IndeGO committees addressing a number of issues (system operations, transmission pricing, regional planning, etc.) associated with the development of an independent grid operator. IndeGO parties are working cooperatively with all anticipated stakeholders during this initial development stage. The MOU is essentially non-binding in that any party to the MOU may withdraw at any time by providing written notice to each other party to the MOU. At such time as IndeGO may be formally proposed, the Company, pursuant to its ongoing internal evaluation of IndeGO, will determine whether it will participate in the formation of the Northwest independent grid operator.

IndeGO is proposed to be a truly independent operator of the transmission grid. As proposed, it would have two operations/control centers. The location of these centers is not yet known. Costs for the centers are estimated at \$50-100M each (depending on location and communication requirements). Staffing costs are expected to be in the range of \$15-20M per year.

IndeGo would control both the transmission scheduling and the transmission reliability functions for the system. In order for these processes to function smoothly, IndeGO will rely on several committees of users and interested parties:

- A Technical Advisory Board (TAB)
- A Planning Issues Committee (PIC)
- An Area Planning Issues Committee (APIC)

**Appendix B****Addressing  
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(continued)**

IndeGO intends to file tariffs with the FERC sometime in July . The following Washington State organizations are involved in this effort:

- Washington Water Power
- PacifiCorp
- Puget Sound Energy
- Chelan County PUD
- Grant County PUD
- The Bonneville Power Administration

**Relationship to Resource Planning**

WWP System Planning, which has responsibility for the transmission system, continues to respond to the requests from Resource Planning for integration of resources, although there has been little activity in this area during the past two years. System Planning will continue studies, such as those described below, in order to provide reliability and maximize the use of the transmission system.

**Expansion Possibilities**

Expansion of the transmission is typically tied directly to increases in either load or transfer across the system. WWP's transmission system occupies a strategic place in the Northwest grid in terms of opportunities for expansion. This is due to a transmission constraint which system planners refer to as the "West of Hatwai" constraint. To increase transfers across this transfer path, either the WWP system or BPA's transmission system will require reinforcement. Negotiations on this reinforcement should begin in 1998 or 1999.

**Loss Savings**

WWP System Planning is involved in a project to test actual system loss savings for operation of the system under different system topologies, linkages of various physical equipment. This testing involves opening of different circuit breakers to reconfigure the system. Results of this should be available some time late next year (1998).

**Reliability**

WWP's transmission system is planned, designed, constructed and operated to meet peak load demands, assure continuity of service during system disturbances, and to be consistent with sound economic planning principles. There are planning limits for both transmission lines and transformer capacities, which can be found in FERC Form 715. The Western Systems Coordinating Council "Reliability Criteria for System Design" is used to determine the performance of WWP's system in relation to interconnections with other Northwest regions and utilities.



**Appendix C****Resource  
Planning  
Integration**

# Resource Planning Integration

Resource and business planning today requires managers and planners to coordinate with and include a number of internal and external entities and interests. WWP was heavily involved in the communication of business activities during the past two years, some of which are described below.

## WWP's Outreach Program

WWP serves at the consent of its publics. It is only appropriate that the public be involved in business decisions that influence their lives. The company believes the most effective way to reach balanced business decisions is by working with the public, utility commission staffs and other key audiences, as early as issues permit. Effective public involvement creates the opportunity to build credibility and trust for the company. WWP expects public participation will play an increasingly important role in resource planning and other business decisions as it affects the retail delivery system.

WWP continues to expand its public involvement function to coordinate and provide resources for effective public involvement. Resources are made available to:

- provide guidance and support for public involvement efforts of various project teams and departments at WWP,
- identify planned intermediate and long-term WWP activities and projects and the level of public involvement each warrants,
- represent WWP customer interests in outside planning forums, e.g., growth management, downtown revitalization, economic development, city-county government collaborative efforts,
- provide guidance and support for public involvement efforts of outside planning forums,
- establish public involvement as an expected part of doing business rather than a function or responsibility belonging to a single group or function within the company.

Public meetings, open houses, facility tours, customer surveys and advisory groups are all being used today to help others understand the company's situation, receive input from constituency groups, gauge public concerns and accommodate group needs. WWP is firmly committed to the education of all its stakeholders. Communication, education and involvement are the foundation of WWP's internal and external relations.

## Public Meetings (All Issues)

There are dozens of utility company projects going on each day in our neighborhoods. Most of this work is low-impact, routine maintenance completed on existing facilities. Occasionally a more significant project with noticeable effects is required in order for the company to continue to provide safe and reliable service.

## **WWP Social Policy**

We strive to conduct our utility business in a socially responsible manner.

It is our belief that the success of our business relies on the goodwill and consent of society and we demonstrate our social responsibility by operating ethically and in harmony with the public interest.

We will address society's needs and concerns in a manner consistent with the financial interests of our company. We will encourage collaborative efforts to focus on the issues of mutual benefit to our communities and company.

We meet our commitment to social responsibility as advocates of efficient and safe use of electricity and natural gas; stewards of natural resources which we affect in the course of our business; leaders and partners in enhancing the prosperity of our communities.

It is these more complex projects with more community impact that an exchange of information between all parties is essential. WWP uses public meetings to educate the public about the need for the project and to solicit input and, when possible, obtain consensus on the preferred alternatives from the standpoint of impacts to the communities affected. WWP holds public meetings on an issue-specific basis throughout the year. Meetings are formatted to allow citizens to take in valuable information as well as ask questions of accountable WWP employees and provide inputs on preferred alternatives or community impacts that need to be taken into account.

The following summarizes the public meetings WWP has hosted since the publication of the 1995 Integrated Resource Plan. Each summary includes topic, meeting purpose, and attendance.

## **Technical Advisory Committee (TAC)**

Comprised of representatives from customer groups, government agencies and environmental organizations, the TAC reviews all of WWP's resource planning activities. WWP sponsored four TAC meetings during this latest two-year planning cycle, three in 1996 and one in 1997. Major resource management issues discussed included:

- merger status
- DSM tariff rider and activities
- load forecast
- models used in planning
- renewable resource study
- wholesale marketing
- capacity planning
- supply curves
- data inputs
- resource management issues
- externalities
- energy and capacity needs
- avoided cost
- strategic resource plan
- hydro relicensing
- DADS tariff
- fuel and CCCT price projections

## **Economic and Energy Outlook**

Washington Water Power develops its own econometric forecast for planning purposes. This forecast is highly sought-after by community developers, area chambers of commerce, and economic development councils and research committees. It not only allows WWP to communicate a forecast, but our approach to planning for the energy needs of people and businesses. It also allows the public insight into coming energy regulation as well as future generation resources. WWP has addressed over 950 persons in 16 presentations to groups ranging in size from 10 to 400.

**Appendix C****Resource  
Planning  
Integration  
(continued)**

In the past two years, the Spokane County inclusion into the Washington State Growth Management Acts planning requirements has also created a demand for this information and a great deal of time has been spent presenting to or serving on various county growth management committees. In the past two years, WWP has either presented or provided input in over 80 growth management committee meetings whose attendance ranges between 10 and 40 persons.

**Hydro Project Relicensing**

WWP is actively engaged in the second stage of consultation in the FERC relicensing of Cabinet Gorge and Noxon Rapids hydro projects on the Clark Fork River. In order to facilitate the process, public meetings have been held to develop understanding of the issues important to the public and to encourage public participation. During the past year almost 50 public meetings have been held which were attended by 150 people.

**DSM Filing**

The company has met with seven entities who have an interest in this area, represented by 10 individuals, to solicit information, input, and suggestions to shape the company's Demand Side Management (DSM) filing and tariff rider filing. Given background on our proposal through a preliminary draft, the parties provide input on the draft through several meetings and numerous teleconferences. Subsequent drafts allow the group to reach consensus on a filing that represents as many of the areas of interest and needs as can be accommodated.

**WWP Energy Efficiency Programs Outreach**

Washington Water Power has provided direct energy assistance to over 11,000 customers through energy efficiency programs. Of these customers, 9,584 residential and 351 non-residential customers have received direct incentives with the remaining customers receiving non-incentive direct assistance. It is impossible to estimate the number of customers that have been reached through general educational and awareness programs and one time customer questions that are a part of the energy efficiency program portfolio.

These programs assist the customer in identifying, designing, installing and monitoring energy efficiency measures ranging from residential washing machines through industrial processes. Customers requesting information concerning energy use and efficiency are never turned away, regardless of whether their immediate question fits into a specific program.

Customer reaction has been highly positive with regards to this assistance. Customers are particularly appreciative of having access to WWP staff, as it is an unbiased and technically competent resource. Those customers who pursue energy efficiency programs attribute much of the credit for their bill savings to WWP. Even those customers who do not come into direct contact with WWP programs benefit from general educational awareness programs and further recognize that WWP is acting as a responsible steward of our natural resources.

**Appendix C****Resource  
Planning  
Integration  
(continued)****Hydroelectric Project Tours**

The tours of the company's hydroelectric facilities are provided to give general information to the public and to create good will. The tours are useful in helping the public understand the importance of hydropower and aid in hydro relicensing settings. The general content covers historical background of the plants and a demonstration of how hydropower is produced (the hydrologic cycle), the benefits of hydropower, followed by a tour of the facility.

Approximately 60 facility tours are given each year. Plants toured include Noxon (the only facility with regularly-scheduled tours), Upper Falls, Nine Mile, Long Lake, and Little Falls. Of the approximately 1500 people who tour the plants each year, 75% are students.

Most of the people who tour are pleased to have the opportunity to be included and most comments are positive. The few negative questions/comments are centered around fish passage and fish mortality. Many people fail to understand that no power is generated from the water that goes over the spillways. In general, the public relations and educational benefits from the tours are very good.

**Emergency Action Plan Meetings**

The company also holds between 10 and 20 public and agency meetings each year to provide public information, test response in the event of an actual emergency, help the public and agencies become more familiar with the plan details, and to satisfy corporate compliance requirements with state and federal mandates. The meetings provide for a test of warning devices and offer an opportunity for an "annual drill." The public also becomes refamiliarized with the areas of potential inundation.

The meetings are held for the Long Lake/Little Falls, Nine Mile, Post Falls, Cabinet Gorge, and Noxon plants. The turnouts are generally less than 20 participants.

Most of the people attending are not overly concerned about living in an inundation area. The tabletop and functional exercises (five-year, in-depth tests of the EAPs) are considered the most valuable and have the largest attendance. Just less than 50 people attended the 1995 Noxon Functional Exercise.

**Interstate and County Fairs**

The Interstate and County Fairs in the WWP service area provide an excellent opportunity to meet the company's customers in a community setting. While the objectives are to listen to issues that concern customers, WWP also provides background on hydro relicensing, natural gas benefits, the use of lighting to enhance security, safety and convenience, and WWP efforts to include communities in energy and facility planning.

Of the 10,000 attending the Bonner County Fair, approximately 800 people were contacted. 500 contacts were made with the 22,000 attending the Nez Perce County Fair. The Spokane Interstate Fair had an attendance of 280,700 with 4400 contacted through the company's booth.

**Appendix C****Resource  
Planning  
Integration  
(continued)****Working Group Meetings**

The company contacts agencies and individual communities through a number of resource and working groups. During the last two years, the company has communicated with approximately 500 people through the various scoping, fish and wildlife, recreation, land and water resource meetings. Although more closely focused, these meetings are excellent opportunities to exchange information concerning agency and public interests and company directions.

**Steam Plant**

The Washington Water Power Company owns a steam plant in downtown Spokane. The plant used oil fuels, such as bunker C, to produce steam that served many of the downtown businesses. The facility was shut down in 1986. In 1982 it was discovered that some of the underground fuel tanks had been leaking. The extent of the leakage was determined and it was felt that the fuel was contained. Several years later it was discovered that the fuel spill was moving and threatened to contaminate several pieces of property. The proper local and state officials were notified, studies investigated, and remedial actions were proposed.

The Company is beginning cleanup activities specified in a Cleanup Action Plan approved by the Department of Ecology. Drilling of new test wells has already begun at the old underground oil spill site near the Central Steam Plant in downtown Spokane. Several public meetings were held and property owners notified of the remedial actions being taken and the progress being made.

Cleanup activities at the oil spill site will reduce the amount of oil in the ground while continuing to protect public health and the environment. The first stage of the cleanup is a specific design of the remediation methods. This work is being performed by AGI Technologies, a Bellevue Washington firm which specializes in environmental cleanups. The testing underway now will help AGI determine how to properly size pumps, piping and other equipment needed for the cleanup.

The cleanup plan calls for construction of an underground barrier which will ensure that the oil cannot spread further. Other actions include removal of soils near the surface which contain oil; recovery of oil product that is not bound up in the soil; paving and sealing areas above the remaining oil; and bioventing, a method used to encourage natural microbial action which decomposes the oil.

The public will have a chance to comment on the final remediation design before actual construction begins in 1997. Most major cleanup construction activities are expected to be completed by the end of 1997. Remediation and monitoring will continue for the next 15 years.

**Appendix C**

**Resource  
Planning  
Integration  
(continued)**

The Steam Plant, closed in 1986, has been nominated to the Spokane Register of Historic Places and to the national Historic Registry of Historic Places. Cleanup is underway with workers giving the old Central Steam Plant a facelift. Since June 1996, crews have been washing the outside walls and the imposing smoke stacks atop the 81 year old building. Inside, floors and walls are being scrubbed from top to bottom with some equipment being removed.

Developer Ron Wells of Wells and Company says the cleanup and repair of the equipment inside will help make the building attractive to potential tenants. "It's a very rare building to have so much of its historic industrial machinery still intact. Our work includes selective removal of machinery but enough retention of machinery to preserve the feeling of a steam plant." The equipment that is being left in place will be treated to prevent rust and will be painted to go along with the theme of the restored building. WWP's vision for the Steam Plant Square includes a variety of businesses such as restaurants, retail shops and art galleries. The development is expected to be a catalyst for development in the area that should extend beyond the walls of the Steam Plant Building. Additional retail demand and vitality should emerge in this part of the Davenport Arts and Entertainment district.

## Appendix D

Summary  
Report for  
1995 Action  
Plan

# Summary Report for 1995 Action Plan

In the 1995 Electric IRP, WWP listed specific action plan activities which were to be accomplished during the past two-year planning cycle. This appendix summarizes the company's progress on these individual action items. More detailed reports on these activities can be found in the other appendices. The 1995 Action Items appear in the left hand column in italics with a summary of the company's response in the right column.

## Public Process

*Continue to be involved with the public outreach programs in order to solicit meaningful public input and improve public education and support for resource planning.*

*Encourage participation of the TAC members and the Resource Clearinghouse members in resource acquisition plans.*

## Merger Activities

*Support the hearing process before FERC and state commissions.*

*Facilitate transition activities to ensure merger savings are realized.*

*Develop plans for the merged company that will allow joint planning activities, such as IRPs, to utilize the strengths of both Sierra and WWP.*

## Load Forecasting

*Continue to update historical data base with actual data. This new data will be used to calibrate the forecast.*

*Evaluate elasticity impacts by May 1996.*

WWP's public outreach core team has designed a clear mission and goals for effective communication with the public. The company has involved the public in many programs that affected resource planning and decision making. For example, the company has had two events that required and will continue to require considerable public involvement. These events are the oil spill at the Steam Heat plant and the Clark Fork hydro relicensing efforts.

WWP continues to maintain its TAC. The company sponsored four TAC meetings during this latest two-year planning cycle. Issues discussed ranged from DSM to solar applications. The Resource Clearinghouse during the past year has ceased to function. The company is presently not in a resource acquisition mode and therefore no decision regarding resources need to be made. Our DSM activities are based on funding from the tariff rider and are being provided predominately as a customer service.

After a two year effort to acquire various state and federal approvals, in June 1996 WWP and Sierra Pacific agreed to terminate the merger plans. Several factors contributed to this decision. One of the major factors was the likely possibility of being required to offer a single system transmission rate even though the two transmission systems were not physically connected.

The historical data base was updated with actual data and was used to calibrate the load forecast.

Elasticity evaluation was completed and is reported in the document.

**Appendix D**

**Summary  
Report for  
1995 Action  
Plan  
(continued)**

**1995 Action Items**

**Demand-Side  
Management**

*Implement the programs included in the December, 1994 DSM filing.*

*Develop and implement appropriate measurement and evaluation analyses for programs filed in December, 1994.*

*Evaluate options to participate in regional, market transformation DSM programs.*

*Develop plans for DSM program implementation beyond 1996 or post merger with Sierra Pacific.*

**Supply-Side Resource  
Options**

*Maintain updated analysis on potential hydro upgrade opportunities.*

*Negotiate a favorable long-term extension of the Wanapum and Priest Rapids power sale contracts.*

*Continue to evaluate renewable resources, e.g. wind, and new/distribution resources such as fuel cells.*

**Actions Taken**

During 1995 and 1996 WWP completed its two-year DSM trial programs that were funded by the innovative DSM tariff rider that was approved by both the Idaho and Washington Commissions. The DSM projected savings were realized under the budgeted moneys. The company feels that market transformation is being implemented and that the purpose of the DSM filing is being accomplished.

With help from outside entities the company completed a measurement and evaluation analyses for the programs done in the past two years. The results were presented to the Commissions during the application to continue this effort for another three years.

WWP has participated in the discussions regarding regional needs for DSM and has agreed to support an equitable region wide approach. About 20 percent of the funds collected under the DSM tariff would be used to pay for WWP's share of the regional programs.

WWP, as approved by the Washington and Idaho Commissions will continue DSM program implementation for a three year period, 1997 through 1999. Some of the pre 1996 DSM programs were either modified or eliminated and others were added. Market transformation efforts were continued. WWP believes that this additional three years will provide the stability needed to maintain the infra-structure for DSM programs.

The Engineering Department continues to update the hydro upgrade opportunities. None of this work has been budgeted due to several reasons some of which are the lack of need for resources and the low cost of wholesale power available on the marketplace.

These contracts with Grant County PUD are the first to be negotiated. The Idaho Co-ops have petitioned the FERC for a portion of the Wanapum and Priest Rapids power. This has complicated the issue and has delayed the process. Grant PUD has offered a settlement that is a compromise between what the IOUs wanted and what Grant wanted. WWP has agreed to the compromise along with nine other purchasers. Two other purchasers rejected the offer. If all parties can't finally agree to a settlement, WWP will petition the parties to enter into mediation.

WWP has contracted with JBS Energy, Inc. to do a renewable resource study for the company. This study will evaluate renewables as they relate to WWP's system and needs. The final report summary from JBS can be found in Appendix L.



## Appendix D

Summary  
Report for  
1995 Action  
Plan  
(continued)

## 1995 Action Items

*Finalize the transmission system loss savings study by December 1995.*

Resource Management  
Issues

*Continue efforts to evaluate the effects to hydroelectric system operation resulting from efforts to protect fish stocks listed under the ESA.*

*Implement plan for successful relicensing of the company's existing hydroelectric plants under FERC guidelines.*

*Actively participate in WUTC NOI activities.*

*Submit a RFP or alternative to the WUTC by June 1995.*

*Based on projected resource needs, file an updated avoided cost with both the WUTC and the IPUC by midsummer 1995.*

*Implement the best compliance strategy for the Centralia coal-fired plant.*

## Actions Taken

WWP is still actively involved in the development of prototype fuel cells through its subsidiary WPLabs (Avista Lab). WWP is also working with other developers of fuel cells and has to have one installed in a commercial establishment in its service territory by mid-1997. The company feels that fuel cells could become an important distribution type resource for the future.

The Transmission system loss savings study has not reached completion and is still under development.

WWP has been actively involved in the effort to reach a solution to the protection of selected fish species under the ESA and the need to maintain other river purposes. WWP is involved for two reasons, involvement with purchasing from the mid-Columbia hydro projects and regulation of the Columbia River system, which affects the company's own hydro projects.

WWP has underway a multi-year plan to successfully relicense our Noxon Rapids and Cabinet Gorge hydro facilities on the Clark Fork River. The company has involved as many people and organizations as possible in order to get a wide variety of concerns and inputs. The company's purpose is to get all the issues out on the table so that a reasonable agreement can be reached that will be the basis for the license application that will be submitted to FERC. Getting negotiated agreements with all parties involved should reduce contention and provide for an equitable settlement.

WWP submitted comments and participated in all the public hearings.

WWP asked that the RFP be deferred since the company had no need for additional resources and that the market price of power could serve as the benchmark for costing out resource alternatives and measuring cost effectiveness of in house programs such as DSM or hydro upgrades. The WUTC granted the deferral during 1995.

After the 1995 IRP was filed with both state Commissions, WWP submitted updated avoided cost data. The filing was accepted in Washington but was delayed in Idaho due to ongoing hearings regarding a new procedure in determining avoided cost. In 1996 the IPUC revised the criteria for determining avoided costs and accepted WWP's filing for projects under one megawatt in size.

After considerable discussion and analysis, Centralia owners determined that the installation of scrubbers was the best option for this coal fired generating station. WWP has been evaluating all of its generating assets and has determined that Centralia is one that should be sold if it can be done for a fair and reasonable price.

**Appendix D**

**Summary  
Report for  
1995 Action  
Plan  
(continued)**

**1995 Action Items**

*Continue to monitor and evaluate the effects of the 1992 Energy Policy Act, including the impact of transmission access legislation.*

*Continue to monitor and evaluate the effects of environmental externalities on new resource acquisition decisions.*

*Finalize the discussions on Canadian Entitlements by 1996.*

**Resource Plan Evaluation**

*Incorporate Prosym, an hourly production cost model, into the data/resource analysis used by the company.*

*Determine the capacity criteria for use in capacity planning by utilizing new capacity planning tools.*

**Wholesale Marketing**

*Use wholesale marketing activities to maintain short-term and long-term resource balance.*

*Identify and pursue those opportunities that add value to the existing system and provide a positive revenue benefit.*

**Actions Taken**

The 1992 Energy Policy Act has opened the door for retail competition. One result was Orders 888 and 889 from FERC that essentially opened up the transmission systems for retail and wholesale wheeling. WWP is supportive of these efforts because we feel that customer choice in the long run will reduce prices and provide more services for the customer.

The company continues to monitor new developments that affect resource decisions. Since WWP is not building new resources and expect this situation to continue for several more years, the effects of environmental externalities on new resource acquisitions decisions is not applicable.

After several years of discussions and negotiations, it appears that the Canadian Entitlement agreements are close to being finalized. These agreements include the contracts between the BPA and mid-Columbia hydro projects and the projects with the purchasers. WWP expects these agreements to be completed during 1997.

Prosym and its superset Multisym is being used by various departments within WWP. Currently, WWP uses these products to produce energy forward price curves on the wholesale market. As data bases are built and WWP becomes more familiar with the capability of these models, WWP will do other model analysis such as hourly modeling of power transactions/resources.

No further work was done on the internal capacity planning tools discussed in the last IRP report. This was the result of the lack of need for capacity resources and other models that can be used for optimization of our system operations. WaterWay, a superset of Prosym, simulates the operation of our hydro system. WaterWay can be used to optimize the hydro system and may be linked to Prosym to provide a complete hydro-thermal coordination solution.

The wholesale marketing activity has been very active during 1996. The company sold 11.2 billion kilowatt-hours of electricity to wholesale customers in 1996, compared with 7.8 billion to retail customers. WWP is continually buying and selling every hour of every day to maintain short and long-term resource balance.

The company's 1996 financial results were strengthened by significant contributions from the wholesale electric business. Wholesale electric revenues for the year were a record \$231 million, more than double 1995 wholesale electric sales of \$109 million. While making a strong contribution to earnings, the company's wholesale business has also played a key role in keeping WWP's energy prices among the very lowest in the nation, helping the company maintain its decade long record of energy price stability for retail customers.

**Appendix E****1997  
Near-Term  
Action Plan**

# 1997 Near-Term Action Plan

WWP's preferred energy strategy provides direction for the company's long-term activities. The company's near-term action plan outlines activities that will support this strategy and improve the planning process. This appendix describes action items planned for 1997 and 1998. Progress on these activities will be monitored over the two-year planning cycle and reported in the Company's next Integrated Resource Plan.

## Reduce Company Costs

1. Evaluate the benefits of selling off high cost generating resources by August 1997.
2. When feasible, buy out high cost energy purchase contracts.
3. Reduce operating costs at existing generating plants.
4. Develop strategies to renew low cost energy purchase contracts.

## Increase Company Revenues

1. Expand WWP's energy services and Avista Advantage into additional retail markets.
2. Increase wholesale sales through WWP's wholesale section and Avista Energy.
3. Increase customers through expansion of system infrastructure and acquisition, as opportunities become available.
4. Identify and pursue those opportunities that add value to the existing system and provide a positive resource benefit.

## Public Process

1. Continue to be involved with the public outreach programs through 1998 and beyond.
2. Continue free flowing exchange of information with TAC members.
3. Propose changes to the IRP process that will be useful in the competitive market era.

## Demand-Side Management

1. Continue to pursue energy savings through the DSM filing for the next three years (1997-1999) with funding from the tariff rider.
2. Evaluate options to participate in regional, market transformation DSM programs.

**Appendix E**

**1997  
Near-Term  
Action Plan  
(continued)**

**Supply-Side Resource Options**

1. Continue to pursue the most cost effective options in the hydro relicensing process.
2. Negotiate a favorable long-term extension of the Wanapum and Priest Rapids power sales contracts by December 1997.
3. Develop joint ventures with other companies to market fuel cell technology.

**Resource Management Issues**

1. Evaluate all resource options against wholesale market price of power.
2. Continue to evaluate the effects to hydroelectric system operation resulting from efforts to protect fish stocks listed under the ESA.
3. Implement the best compliance strategy for the Centralia coal-fired plant.
4. Implement FERC Orders 888 and 889 during 1997.
5. Finalize the discussions on Canadian Entitlements and PNCA by year end 1997.
6. Continue to utilize and incorporate Prosym, an hourly production cost model, into the data/resource analysis used by the company.
7. Use Wholesale Marketing activities to maintain short-term and long-term resource balance.
8. Identify through surveys customer acceptance of a green power tariff and if feasible implement by June 1998.

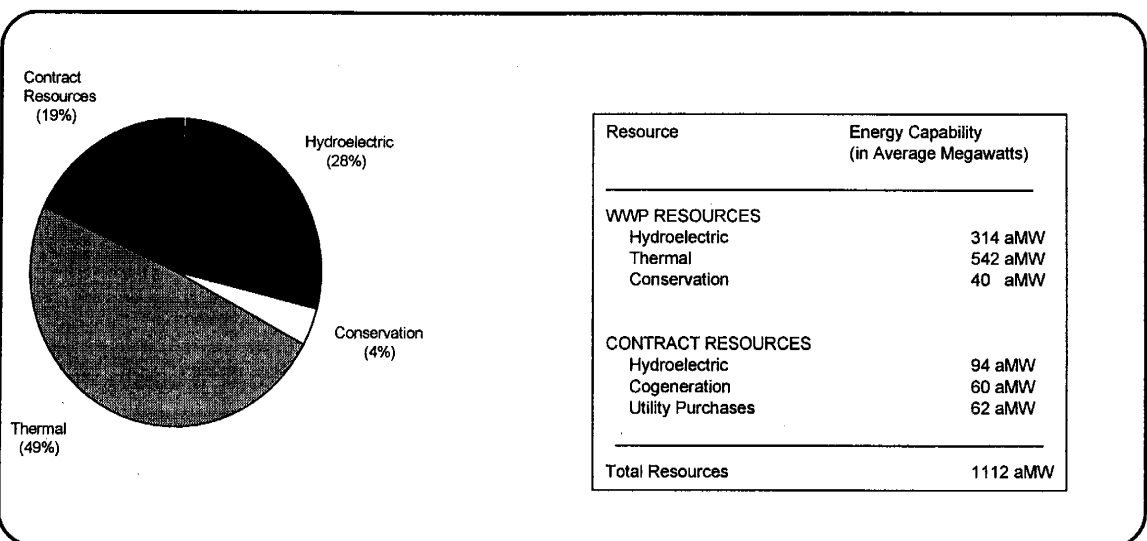
## Appendix F

Resource &  
Contract  
Information

# Resource & Contract Information

The primary objective of the IRP is to develop a long-term plan for meeting WWP's energy requirements. Although WWP still reviews its twenty year situation, the company's long-term planning horizon has become five years. The markets for the purchase and selling of energy have dictated that five years is a long-term commitment. Most deals are in the range of one to two years. Therefore the company's main focus is less than five years. For this 1997 IRP, WWP has looked at its situation for the next twenty years but with planning efforts focused on the next ten years. Table 1F is a breakdown of WWP's existing resources.

Table 1F

**1996  
Existing  
Resources**


This appendix discusses the resources and contracts that are coordinated to achieve the IRP objective. Specifically, WWP's current need for resources is described followed by an outline of the power sales agreements WWP holds with utilities and power producers throughout the region.

## Resource Need

Based on current customer requirements and contractual arrangements, WWP has no need for new firm electric resources for at least the next ten years. The company's programs will be geared toward increasing revenues. This will be done by adding value to our products and services while decreasing costs and maintaining reliable service. Since WWP doesn't have to make decisions now on additional resources, future plant costs and fuel prices aren't critical to the company's planning.

However, WWP will continue to assess resource opportunities—focusing on those that return benefits to the company and its customers. This continual assessment of available resource alternatives helps WWP respond to constantly changing conditions. Some of these alternatives include:

## Appendix F

### Resource & Contract Information (continued)

- Hydroelectric plan upgrades that support FERC relicensing, improve efficiency and reduce long-term maintenance costs.
- Qualifying facilities under the Public Utilities Regulatory Policies Act (PURPA) of 1978.
- Unsolicited proposals for new resource development or utility power purchase agreements.
- DSM that provides energy efficiency and customer service value.
- Short-term and seasonal purchases that preserve operating reliability margins.
- Cooperative regional efforts to develop new conservation, supply-side resources or transmission opportunities.
- Emerging resource technologies (fuel cell, etc.)
- Purchase and sales agreements that satisfy the company's wholesale marketing criteria.
- Cogeneration opportunities within the WWP service territory.
- Electric transmission and distribution loss savings.

WWP's retail surpluses extend for several years. The capacity surplus extends until the year 2010 and the energy surplus until 2012. Without any new supply resources, programmatic conservation or extension of existing purchase contracts (such as the Mid-Columbia hydro purchase agreements) WWP's deficits by the year 2015 are 278 MW on peak and 62 aMW of annual energy.

WWP's low load growth and corresponding surplus situation has resulted in the pursuit of additional wholesale sale opportunities in order to utilize the surplus and create additional revenues. In addition, the company has several years to determine future needs and to evaluate future resource options. If conditions in the future change, WWP has the time to manage those changes in a way that will be beneficial to itself and its customers. If conditions remain as forecasted, WWP does not need any additional resource for several years and will not need to commit itself to expensive resources or purchases. The result will be a continuation of stable electric rates for WWP's customers, at least for several more years. WWP will also continue to offer some conservation programs in order to maintain the DSM infrastructure already in place and to provide energy services to our customers as a part of our continuing commitment to be a total service company responsive to their needs.

## Tabulation of Firm Requirements and Resources

WWP's 20-year tabulation of firm requirements and resources split into retail and wholesale shows by line item the various loads, resources and contracts the company holds by year. The peak column shows the maximum capability and requirements of the company during the year—this peak normally occurs in January. The average column shows the 12-month average energy numbers for the company. An additional page was added this year which shows ten years of energy expressed in gigawatt hours (GWhs). This tabulation is shown in Figure 1F.

The retail section shows the core load that the company is obligated to serve. The redistributed load line item is the retail load that WWP estimates will be served by other energy suppliers. All resources are included in the retail section. The contracts that have been executed for retail needs are also shown. The remainder of the contracts are

**Appendix F****Resource &  
Contract  
Information  
(continued)**

listed in the wholesale section. Any surpluses from the retail side is shown going to the wholesale side to support sale opportunities. Reserves are still a function of the retail side of the business.

**Capacity Need**

The primary objective of least cost planning is to develop a long-term plan for meeting WWP's energy requirements. In the past, WWP and other Pacific Northwest utilities have added resources to meet energy needs and relied on the region's excess hydroelectric resources to meet the capacity needs. These planning criteria are starting to change due to increasing peak requirements and reduced resource flexibility. In contrast, there are technology advances and competitive forces that will reduce the capacity requirements of the region. WWP's current annual projections show no capacity need until the year 2010.

Capacity requirements include a forecast of the company's native peak load, contract obligations and reserve requirements. The peak load forecast is produced for the medium growth scenario only. The company's highest peak load typically occurs during the winter months of November through February. This peak, one hour demand, which is forecast to occur sometime during this period, is based on an average daily temperature of eight degrees Fahrenheit. Although WWP's service territory may experience colder temperatures, the company forecast needs are determined by the eight degree day.

Weather has a significant effect on peak loads. Based on recent analysis of historical temperature data for the Spokane area, the forecast temperature falls in the 97<sup>th</sup> percentile. In other words, 97 percent of the winter days are expected to average eight degrees or warmer. This cold spell analysis also indicates that Spokane experiences about three days per year when daily temperatures average eight degrees or colder. An average daily temperature of 32 degrees corresponds to the 50<sup>th</sup> percentile. This weather information is used to determine a relationship between temperature and peak loads. As average temperatures drop below eight degrees, peak loads are expected to increase at a rate of about 11 MW per degree.

A reasonable level of planning reserves helps the company ensure adequate generating capacity during periods of extreme weather or unexpected plant outages. WWP's capacity reserves include components for cold weather, generator forced outages and contingencies such as river freeze-up at hydroelectric plants. Although they vary by year, capacity reserves for planning purposes are approximately 12 percent of the company's total resources. Operating reserves are determined from the Pacific Northwest Coordination Agreement, of which WWP is a participant. The operating reserves are less than the planning reserves, with the difference being sold on the wholesale market for that current operating year.

Figure 1F  
Tabulation of Firm Requirements & Resources

The Washington Water Power Company											
Figures in GWh											
Line No.	1996	1997	1998	1989	2000	2001	2002	2003	2004	2005	
<b>RETAIL REQUIREMENTS and Resources</b>											
<b>RETAIL REQUIREMENTS</b>											
1	8024	8129	8252	8471	8602	8734	8839	8935	9023	9119	
2	-44	-350	-350	-526	-526	-701	-701	-701	-701	-701	
3	26	26	26	26	26	26	26	26	26	26	
4	201	0	0	0	0	0	0	0	0	0	
5	0	0	0	0	0	0	0	0	0	0	
6	8207	7805	7928	7971	8102	8059	8164	8260	8348	8444	
<b>RETAIL RESOURCES</b>											
7	2751	2751	2751	2751	2751	2751	2751	2751	2751	2751	
8	762	762	762	762	762	762	762	762	762	762	
9	-18	-18	-18	-35	-44	-44	-44	-44	-44	-35	
10	79	79	79	79	79	79	79	79	79	79	
11	482	482	482	482	482	482	482	482	482	482	
12	473	473	473	473	473	473	473	473	473	473	
13	718	718	718	718	718	718	718	718	718	718	
14	26	26	26	26	26	26	26	26	26	26	
15	96	228	254	254	105	0	0	0	0	0	
16	0	0	0	0	0	0	0	0	0	0	
17	245	0	0	0	0	0	0	0	0	0	
18	289	307	342	342	342	342	342	342	342	342	
19	114	105	96	70	44	44	44	9	0	0	
20	0	0	0	0	0	0	0	0	0	0	
21	1551	1551	1551	1551	1551	1551	1551	1551	1551	1551	
22	394	394	394	394	394	394	394	394	394	394	
23	1612	1673	1673	1673	1673	1673	1673	1673	1673	1673	
24	9574	9531	9583	9540	9356	9251	9251	9216	9189	9111	
25	1367	1726	1655	1569	1254	1192	1087	956	841	667	
<b>WHOLESALE REQUIREMENTS and Resources</b>											
<b>WHOLESALE SALES</b>											
26	657	657	657	657	657	438	219	0	0	0	
27	79	79	79	79	79	79	79	79	0	0	
28	0	0	0	0	0	0	0	0	0	0	
29	0	254	359	359	359	359	96	0	0	0	
30	79	359	438	438	438	438	438	438	438	438	
31	0	745	1174	876	876	657	0	0	0	0	
32	981	1016	289	0	0	0	0	0	0	0	
33	0	0	0	0	0	0	0	0	0	0	
34	61	61	61	61	44	0	0	0	0	0	
35	70	70	70	70	70	70	70	70	70	70	
36	35	35	35	35	35	35	35	35	35	35	
37	289	149	0	0	0	0	0	0	0	0	
38	1148	675	0	0	0	0	0	0	0	0	
39	158	727	999	999	999	552	0	0	0	0	
40	9	18	18	18	18	18	0	0	0	0	
41	3566	4845	4179	3592	3575	2646	937	622	543	508	
<b>WHOLESALE PURCHASES</b>											
42	1148	675	0	0	0	0	0	0	0	0	
43	254	1007	1007	1007	1007	753	0	0	0	0	
44	26	26	26	26	26	26	26	26	26	26	
45	0	0	0	0	0	0	0	0	0	0	
46	0	368	368	368	0	0	0	0	0	0	
47	0	0	0	123	123	123	0	0	0	0	
48	0	219	438	438	438	219	0	0	0	0	
49	771	823	683	0	0	0	0	0	0	0	
50	2199	3118	2522	1952	1594	1121	26	26	26	26	
51	1367	1726	1655	1569	1254	1192	1087	956	841	667	
<b>ADJUSTED RESOURCES</b>											
52	3566	4844	4177	3531	2848	2313	1113	982	867	693	
53	0	-1	-2	-61	-727	-333	176	360	324	185	



Figure 1F  
 Tabulation of Firm Requirements & Resources

The Washington Water Power Company

Retail Requirements and Resources		-1996-		-1997-		-1998-		-1999-		-2000-		-2001-		-2002-		-2003-		-2004-		-2005-	
Line No.	Figures in MWh	Ek	AVG	Ek	AVG	Ek	AVG	Ek	AVG	Ek	AVG	Ek	AVG	Ek	AVG	Ek	AVG	Ek	AVG	Ek	AVG
1	System Load	1534	928	1598	942	1558	942	1598	942	1626	982	1652	997	1675	1009	1694	1020	1713	1030	1731	1041
2	Redistributed Load	0	-5	-66	-40	-66	-40	-100	-60	-100	-60	-130	-80	-130	-80	-130	-80	-130	-80	-130	-80
3	PacificCorp Exchange	0	3	0	3	0	3	0	3	0	3	0	3	0	3	0	3	0	3	0	3
4	BPA/WWP Exchange	68	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Reserves	242	0	243	0	246	0	250	0	259	0	255	0	258	0	259	0	261	0	263	0
6	TOTAL REQUIREMENTS	1831	937	1711	891	1738	905	1748	910	1779	925	1777	920	1803	932	1823	943	1844	953	1864	964
<b>RETAIL RESOURCES</b>																					
7	System Hydro	938	314	938	314	938	314	938	314	938	314	938	314	938	314	938	314	938	314	938	314
8	Contract Hydro	198	87	198	87	198	87	198	87	198	87	198	87	198	87	198	87	198	87	198	87
9	Can Ent Rtn	-7	-2	-6	-2	-6	-2	-6	-4	-10	-5	-10	-5	-10	-5	-10	-5	-10	-5	-10	-5
10	Small Hydro	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
11	Cogeneration	59	55	59	55	59	55	59	55	59	55	59	55	59	55	59	55	59	55	59	55
12	Northeast CTs	69	54	69	54	69	54	69	54	69	54	69	54	69	54	69	54	69	54	69	54
13	Raindum CTs	176	82	176	82	176	82	176	82	176	82	176	82	176	82	176	82	176	82	176	82
14	PacificCorp Exchange	50	3	50	3	50	3	50	3	50	3	50	3	50	3	50	3	50	3	50	3
15	BPA/WWP Exchange	0	11	29	26	32	29	32	29	32	12	0	0	0	0	0	0	0	0	0	0
16	Entitlement & Supplement	14	0	12	0	11	0	10	0	5	0	4	0	4	0	4	0	4	0	4	0
17	BPA #39216	79	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	BPA-WNP #3	82	33	82	35	90	39	90	39	90	39	90	39	90	39	90	39	90	39	90	39
19	CSFE	28	13	23	12	23	11	20	8	10	5	9	5	9	5	8	1	0	0	0	0
20	Short-term purchases	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	Thermal- Centra	201	177	201	177	201	177	201	177	201	177	201	177	201	177	201	177	201	177	201	177
22	Kettle Falls	48	45	48	45	48	45	48	45	48	45	48	45	48	45	48	45	48	45	48	45
23	Colstrip	216	184	225	191	225	191	225	191	225	191	225	191	225	191	225	191	225	191	225	191
24	TOTAL RESOURCES	2160	1093	2113	1088	2123	1094	2119	1089	2100	1068	2066	1056	2066	1056	2065	1052	2048	1049	2040	1040
25	RETAL SURPLUS/DEFICIT	329	156	402	197	385	189	371	179	321	143	289	136	264	124	242	109	204	96	176	76
<b>Wholesale Requirements and Resources:</b>																					
<b>WHOLESALE SALES</b>																					
26	Puget #2	100	75	100	75	100	75	100	75	100	75	67	50	33	25	0	0	0	0	0	0
27	PacificCorp 1994	0	9	0	9	0	9	0	9	0	9	0	9	0	9	0	9	0	9	0	9
28	PGE #1	150	0	150	0	150	0	150	0	150	0	150	0	150	0	150	0	150	0	150	0
29	NW Aluminum	0	0	29	0	41	0	41	0	41	0	41	0	41	0	41	0	41	0	41	0
30	Snohomish 10-yr	0	9	75	41	100	50	100	50	100	50	100	50	100	50	100	50	100	50	100	50
31	Cogentrix 57 mo	0	0	47	85	162	134	100	100	100	100	100	75	0	0	0	0	0	0	0	0
32	West Koolenay	120	0	115	0	115	0	125	0	125	0	0	0	0	0	0	0	0	0	0	0
33	Eugene Water & Electric	10	7	10	7	10	7	10	7	10	5	0	0	0	0	0	0	0	0	0	0
34	Arizona Public Svc 10-yr	0	8	0	8	0	8	0	8	0	8	0	8	0	8	0	8	0	8	0	8
35	Riverside	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4
36	PP&L 1989	100	33	50	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Clark1 PUD	250	131	250	77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	Clark2 PUD	0	18	115	83	230	114	230	114	230	114	230	63	0	0	0	0	0	0	0	0
39	City of Cheney	0	1	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0
40	TOTAL REQUIREMENTS	730	407	1064	553	919	477	817	410	817	408	649	302	283	107	250	71	250	62	250	58
<b>WHOLESALE PURCHASES</b>																					
41	BPA 2-yr	250	131	250	77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42	BPA 5-yr Purchase	0	29	115	115	115	115	115	115	115	115	115	86	0	0	0	0	0	0	0	0
43	BPA-summer	0	3	0	3	0	3	0	3	0	3	0	3	0	3	0	3	0	3	0	3
44	BPA Capacity	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0
45	Enron 3 yr	0	0	42	0	42	0	42	0	42	0	25	14	0	0	0	0	0	0	0	0
46	Energy Services, Inc.*	0	0	25	0	25	14	25	14	25	14	25	14	25	14	25	14	25	14	25	14
47	Energy Services, Inc.*	0	0	25	0	25	14	25	14	25	14	25	14	25	14	25	14	25	14	25	14
48	Short-Term Purchases	101	88	247	94	319	78	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49	TOTAL RESOURCES	401	251	662	356	534	288	240	224	240	182	240	128	0	3	0	3	0	3	0	3
50	RETAL SURPLUS/DEFICIT	329	156	402	197	385	189	371	179	321	143	289	136	264	124	242	109	204	96	176	76
51	ADJUSTED RESOURCES	730	407	1064	553	919	477	817	410	817	408	649	302	283	107	250	71	250	62	250	58
52	WHOLESALE SURPLUS/DEFICIT	0	0	0	0	0	0	-208	-7	-256	-83	-120	-38	-20	20	-8	41	-46	37	-74	21

\*Percent purchases not included in financial forecast

Figure 1F

Tabulation of Firm Requirements & Resources

The Washington Water Power Company

Line No.	RETAIL REQUIREMENTS	-2006-		-2007-		-2008-		-2009-		-2010-		-2011-		-2012-		-2013-		-2014-		-2015-	
		Figures in Mw		Figures in Mw		Figures in Mw		Figures in Mw		Figures in Mw		Figures in Mw		Figures in Mw		Figures in Mw		Figures in Mw		Figures in Mw	
		Ek.	Avg	Ek.	Avg	Ek.	Avg	Ek.	Avg	Ek.	Avg	Ek.	Avg	Ek.	Avg	Ek.	Avg	Ek.	Avg	Ek.	Avg
1	System Load	1752	1053	1774	1065	1798	1077	1819	1098	1840	1099	1862	1111	1885	1123	1907	1135	1931	1148	1956	1162
2	Redistributed Load	-130	-80	-130	-80	-130	-80	-130	-80	-130	-80	-130	-80	-130	-80	-130	-80	-130	-80	-130	-80
3	PacificCorp Exchange	0	3	0	3	0	3	0	3	0	3	0	3	0	3	0	3	0	3	0	3
4	BPA/WWP Exchange	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	Reserves	285	0	267	0	270	0	272	0	274	0	276	0	279	0	281	0	283	0	286	0
6	<b>TOTAL REQUIREMENTS</b>	<b>1887</b>	<b>976</b>	<b>1911</b>	<b>988</b>	<b>1938</b>	<b>1000</b>	<b>1961</b>	<b>1008</b>	<b>1984</b>	<b>1019</b>	<b>2008</b>	<b>1031</b>	<b>2034</b>	<b>1043</b>	<b>2058</b>	<b>1055</b>	<b>2084</b>	<b>1068</b>	<b>2112</b>	<b>1082</b>
<b>RETAIL RESOURCES</b>																					
7	System Hydro	938	314	938	314	938	314	938	314	938	314	938	314	938	314	938	314	938	314	938	314
8	Contract Hydro	143	61	143	61	143	61	143	61	143	61	143	61	143	61	143	61	143	61	143	61
9	Can Ent Rtn	-11	-4	-10	-4	-10	-4	-10	-4	-10	-4	-10	-4	-10	-4	-10	-4	-10	-4	-10	-4
10	Small Hydro	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
11	Cogeneration	59	55	59	55	59	55	59	55	59	55	59	55	59	55	59	55	59	55	59	55
12	Northeast CTS	69	54	69	54	69	54	69	54	69	54	69	54	69	54	69	54	69	54	69	54
13	Randium CTS	176	82	176	82	176	82	176	82	176	82	176	82	176	82	176	82	176	82	176	82
14	PacificCorp Exchange	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	BPA/WWP Exchange	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	Entitlement & Supplement	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	BPA #39216	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	BPA-WWP #3	90	39	90	39	90	39	90	39	90	39	90	39	90	39	90	39	90	39	90	39
19	CSPE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	Short-term purchases	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	Thermal- Centralia	201	177	201	177	201	177	201	177	201	177	201	177	201	177	201	177	201	177	201	177
22	Kettle Falls	48	45	48	45	48	45	48	45	48	45	48	45	48	45	48	45	48	45	48	45
23	Colstrip	225	191	225	191	225	191	225	191	225	191	225	191	225	191	225	191	225	191	225	191
24	<b>TOTAL RESOURCES</b>	<b>1989</b>	<b>1019</b>	<b>1990</b>	<b>1019</b>	<b>1990</b>	<b>1014</b>	<b>1990</b>	<b>1014</b>	<b>1872</b>	<b>1019</b>	<b>1834</b>	<b>1031</b>	<b>1834</b>	<b>1020</b>	<b>1834</b>	<b>1020</b>	<b>1834</b>	<b>1020</b>	<b>1834</b>	<b>1020</b>
25	<b>RETAIL SURPLUS/DEFICIT</b>	<b>102</b>	<b>43</b>	<b>79</b>	<b>31</b>	<b>52</b>	<b>19</b>	<b>29</b>	<b>6</b>	<b>-112</b>	<b>0</b>	<b>-174</b>	<b>0</b>	<b>-200</b>	<b>-23</b>	<b>-224</b>	<b>-35</b>	<b>-250</b>	<b>-48</b>	<b>-278</b>	<b>-62</b>
<b>Wholesale Requirements and Resources:</b>																					
26	Puget #2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	PacificCorp 1994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	PGE #1	150	0	150	0	150	0	150	0	150	0	150	0	150	0	150	0	150	0	150	0
29	NW Aluminum	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	Snohomishi, 10-yr	10	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	Cogentrix 57 month	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	Cogentrix 150	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	West Kootenay	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	Eugene Water & Electric	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	Arizona Public Svc 10-yr	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	Riverside	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	PP&L 1989	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	Clark PUD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	Clark2 PUD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	City of Cheney	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	<b>TOTAL REQUIREMENTS</b>	<b>160</b>	<b>45</b>	<b>150</b>	<b>0</b>	<b>150</b>	<b>0</b>	<b>150</b>	<b>0</b>	<b>150</b>	<b>0</b>	<b>150</b>	<b>0</b>	<b>150</b>	<b>0</b>	<b>150</b>	<b>0</b>	<b>150</b>	<b>0</b>	<b>150</b>	<b>0</b>
<b>WHOLESALE PURCHASES</b>																					
42	BPA 2-yr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43	BPA 5-yr Purchase	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
44	BPA-summer	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45	BPA Capacity	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
46	Enron 3 yr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
47	Cherry Services, Inc.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	Energy Services, Inc.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49	Short-Term Purchases	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	<b>TOTAL RESOURCES</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
51	<b>RETAIL SURPLUS/DEFICIT</b>	<b>102</b>	<b>43</b>	<b>79</b>	<b>31</b>	<b>52</b>	<b>19</b>	<b>29</b>	<b>6</b>	<b>-112</b>	<b>0</b>	<b>-174</b>	<b>0</b>	<b>-200</b>	<b>-23</b>	<b>-224</b>	<b>-35</b>	<b>-250</b>	<b>-48</b>	<b>-278</b>	<b>-62</b>
52	<b>ADJUSTED RESOURCES</b>	<b>102</b>	<b>43</b>	<b>79</b>	<b>31</b>	<b>52</b>	<b>19</b>	<b>29</b>	<b>6</b>	<b>-112</b>	<b>0</b>	<b>-174</b>	<b>0</b>	<b>-200</b>	<b>-23</b>	<b>-224</b>	<b>-35</b>	<b>-250</b>	<b>-48</b>	<b>-278</b>	<b>-62</b>
53	<b>WHOLESALE SURPLUS/DEFICIT</b>	<b>-2</b>	<b>-71</b>	<b>-31</b>	<b>-88</b>	<b>19</b>	<b>-121</b>	<b>6</b>	<b>-262</b>	<b>0</b>	<b>-324</b>	<b>0</b>	<b>-350</b>	<b>-23</b>	<b>-374</b>	<b>-35</b>	<b>-400</b>	<b>-48</b>	<b>-428</b>	<b>-48</b>	<b>-428</b>

Notes: 1. All figures are in megawatts (Mw). 2. All figures are based on the financial forecast.

**Appendix F****Resource &  
Contract  
Information  
(continued)**

The combination of the forecast peak loads, contract obligations and reserve requirements represents the company's long term capacity requirements. These total capacity requirements are compared with WWP's existing peak resource capability and contract rights to determine a capacity surplus or deficit for each year. The numbers correlating to these items can be found in this appendix as the Requirements and Resources tabulation.

WWP's Requirements and Resources tabulations indicate that the company's retail system will experience a capacity deficit situation in the year 2010, with a deficit of 112 MW. These peak deficits increase thereafter until reaching 278 MW in the year 2015. As energy resources are added to the system, they will also contribute to the capacity needs of the company. Other resources that can contribute capacity are demand-side resource, e.g. fuel switching, hydroelectric upgrades and improvements, combustion turbines, purchases (QF's, IPPs, utilities etc.) , load control, time-of-use rates, and hydroelectric pumped storage.

As the company adds programmatic DSM measures to the system, WWP will receive a capacity component. This means by the year 1999, WWP will have a capacity saving on its system equal to about a 24 MW capacity resource. The company will also receive a capacity contribution from any improvements done to the hydroelectric system. In addition, the Mid-Columbia hydroelectric purchase agreements will be renegotiated and will contribute a significant block of capacity to WWP's system.

## Appendix F

Resource &  
Contract  
Information  
(continued)**Existing WWP Generating Capability**

The following is a tabulation of the maximum generating capability (the amount of energy the plant is capable of producing during peak conditions) and the nameplate capability (the amount of energy the equipment within the plant was designed to produce) for each of WWP's generating plants. WWP has no resource scheduled for retirement in the next 20 years.

<u>Year</u>	<u>Plant</u>	<u>Maximum Capability (kW)</u>	<u>Nameplate Capability (kW)</u>
1890	Monroe Street	13,000	14,800
1906	Post Falls	18,000	14,750
1908	Nine Mile	29,000	26,400
1910	Little Falls	36,000	32,000
1915	Long Lake	72,800	70,000
1922	Upper Falls	10,200	10,000
1952	Cabinet Gorge	236,000	221,900
1959	Noxon Rapids	554,000	466,720
1961	Meyers Falls	1,300	1,200
1974 <sup>1</sup>	Centralia <sup>2</sup> (15% ownership coal-fired)	201,000	199,469
1978	Northeast (gas/oil)	69,000	61,200
1983	Kettle Falls (wood waste)	47,000	50,700
1984	Colstrip <sup>3</sup> (15% ownership coal-fired)	216,000	233,400
1995	Rathdrum <sup>4</sup> (gas)	176,000	166,500

- <sup>1</sup> The Centralia Plant became operational in 1971; the power was surplus to the company and was sold to other utilities for three years. WWP took delivery of Centralia generation starting in 1974.
- <sup>2</sup> The Centralia coal-fired plant has a 24-hour state certified test capability of 1,313 MW. At 15%, WWP's share is 196.95 MW. The plant has operated consistently above that number. For load and resource tabulations, WWP's share of Centralia is listed as 201 MW, a realistic figure based on past operations.
- <sup>3</sup> The Colstrip coal-fired plant has test capability of 1,400 MW (total for units No. 3 and No. 4). At 15%, WWP's share of the project is 210 MW. The plant operator (Montana Power) operated the units in an over pressure mode that results in the plant exceeding its tested capability. Recent history indicates the plant operates consistently above 1,400 MW and for load and resource tabulations is shown as 225 MW.
- <sup>4</sup> The Rathdrum gas-fired, simple-cycle combustion turbines (two units) were declared available for commercial operation on January 1, 1995. The January rating capability for these units was 176 MW.

## Appendix F

Resource &  
Contract  
Information  
(continued)**Contracts With Utilities****Arizona Public Service 10-yr Sale**

The term is 10 years, 1997-2006, June 15 to September 15 of each year. The amount is 100 MW, 33-58% weekly load factor. The capacity rates and firm energy prices escalate through the term of the contract.

**Bonneville Power Administration (BPA)**

BPA is selling to the company long-term capacity of 50 MW for the period starting as early as May 1, 1993 (based on the availability of the California-Oregon Transmission Project) through September 30, 2010. There is a provision for termination upon five years' notice by either party. BPA shall make the capacity available ten hours a day and fifty hours a week. The company shall return the energy associated with the capacity deliveries the following day.

**WNP No. 1 (Contract No. 39216)**

The private utilities, Washington Public Power Supply System (WPPSS), and BPA entered into an agreement to replace the present Hanford NPR with a new nuclear steam supply and generating facility. This agreement resulted from the company's rights to power from the debt service portion of WPPSS costs on the Hanford NPR. The new plant was called WNP No. 1 and was to have a capability of 1,250 megawatts. The company received 80 megawatts at 85 percent plant factor for the period July 1980 through June 1996. For the first ten-year period, power was purchased at BPA rates, and for the balance of the contract the company paid a fixed rate negotiated by the parties.

**WNP No. 3 SETTLEMENT**

On September 17, 1985, the company signed settlement agreements with BPA and the WPPSS in which the company agreed not to proceed further on the construction delay claims. In addition to settling the construction delay litigation, the BPA Settlement includes agreements for an exchange of energy, an agreement to reimburse the company for certain WNP No. 3 preservation costs and an irrevocable offer of WNP No. 3 capability for acquisition under the Regional Power Act.

Under the energy exchange portion of the BPA Settlement, the company expects to receive from BPA approximately 32 average megawatts for a period of up to 32.5 years, subject to a contract minimum of 5.8 million MWh. The company is obligated to pay BPA operating and maintenance costs associated with the energy exchange, determined by a formula in an amount not less than 1.6 cents per kWh nor more than 2.9 cents per kWh expressed in 1987 dollars, unless WNP No. 3 is completed in which case, under certain circumstances, the operating and maintenance costs may be measured by actual WNP No. 3 costs. The company began receiving power from BPA on January 1, 1987.

**Appendix F**  
**Resource & Contract Information (continued)**

With the BPA Settlement, the company continues as an owner of WNP No. 3 under the Ownership Agreement and will continue to pay its ownership share of preservation costs. BPA is required to reimburse the company for the preservation costs and other costs of WNP No. 3 paid on or after February 1, 1985 through the date that WNP No. 3 is restarted or terminated. The reimbursement will be applied against the operating and maintenance costs which the company will pay BPA under the energy exchange portion of the BPA Settlement.

**BPA/WWP Exchange**

The company and BPA entered into an exchange agreement for the term July 6, 1994 through June 30, 2000. WWP will deliver to BPA capacity and energy each month July 6, 1994 through June 30, 1996 and BPA will deliver to WWP an equivalent amount of power July 1, 1996 through June 30, 2000.

<u>CALENDAR YEAR</u>	<u>JANUARY CAPACITY-MW</u>	<u>ANNUAL ENERGY-Amw</u>
1994	0	28.3
1995	67	56.5
1996	68	23.2/11.2
1997	29	26.4
1998	32	29.2
1999	32	29.2
2000	32	12.0

**Bonneville Power Administration (BPA) Summer Purchase**

WWP will purchase from BPA during the months May through July, beginning May 1995 to support a sale to the City of Riverside. WWP will purchase 25 MW demand at a minimum 40% monthly load factor up to a maximum 100% monthly load factor. The agreement terminates October 31, 2004. The May deliveries have been terminated in conjunction with the notice from the City of Riverside.

**Bonneville Power Administration (BPA) Purchase for Clark Sale**

WWP shall purchase from BPA 100 MW of firm energy delivered at a flat rate all hours during the months commencing August 1, 1995 and continuing for a period of thirty-six months. Also, during the months of November through March WWP shall purchase 150 MW of winter capacity at a 50% monthly load factor.

**Bonneville Power Administration (BPA) 5-Year Purchase**

WWP will purchase 115 MW of annual firm energy delivered at a flat rate of delivery during all hours. This agreement begins October 1996 and continues until September 30, 2001. The rate is flat for the contract term.

**Cinergy Services**

WWP is purchasing from Cinergy Services a three year on peak purchase of 25 MW, starting January 1999.

**Appendix F****Resource &  
Contract  
Information  
(continued)****City of Cheney**

This sale is a five year firm sale of 2 MW of capacity at 100% load factor, commencing October 1996 through September 2001, to the City of Cheney.

**Clark County PUD Sale**

Clark shall purchase 100 MW of firm energy delivered at a flat rate all hours during the months commencing August 1, 1995 and continuing for a period of thirty-six months. Also, during the months of November through March, Clark shall purchase 150 MW of winter capacity at a 50% monthly load factor. Clark may extend the agreement for a period of up to seven years.

**Clark 5-year Sale**

This sale commences October 1996 and continues through July 2001. On or before January 1 of each year of the term, Clark will provide to WWP the monthly contract demands it will purchase for that Operating Year. The nomination shall not be greater than 250 MW in any month, or less than 100 MW in any month. The average annual contract demand shall not be less than 175 MW. The total amount of firm energy scheduled by Clark shall equate to a weekly load factor of between 50% and 65%.

No earlier than July 1998 and not later than July 1999, Clark may convert the firm energy rates to a firm energy index rate.

As part of this agreement WWP is required to pay the Bonneville Power Administration an exit fee equal to \$6.9 million on October 1, 1996 and \$2.25 million on October 1, 1997. This payment is being made contingent upon WWP obtaining an acceptable firm transmission agreement from BPA.

**Cogentrix Energy Power Marketing, Inc. Sale (Kaiser)**

Commencing April 1996 and continuing through August 1997, Cogentrix shall purchase on behalf of Kaiser, 150 MW of firm capacity and energy ranging from 98-100% load factor. September 1997 through August 1998 the capacity ramps down to 50 MW at 98-100% load factor.

**Cogentrix Interruptible Sale/Restructure to Firm (Kaiser)**

A 5 year interruptible sale commenced October 1, 1995 and terminates September 30, 2000. Cogentrix shall purchase from 46 to 50 MW of capacity between 98% - 100% monthly load factor on behalf of Kaiser.

The interruptible product will be replaced with firm energy and capacity. This contract has been restructured to a 57-month sale. Starting January 1997 through August the capacity sale is 47 MW between 98% to 100% load factor, on September 1997 the capacity increases to 162 MW through March 1998, on April it decreases to 137 MW and decreases again on October 1998 to 100 MW where it remains through the end of the contract, September 30, 2001.

## Appendix F

Resource &  
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(continued)**Cogentrix 13-Mo. Sale (Kaiser)**

A 115 MW sale at 100% load factor begins September 1997 through March 1998, ramping down to 90 MW at 100% load factor effective April 1998 through September 1998.

**Columbia Storage Power Exchange**

In 1968, the company was entitled to receive power from the Columbia Storage Power Exchange (CSPE), a nonprofit Washington corporation, which purchased Canada's share of the downstream benefits resulting from the Columbia River Treaty. The company's share of the power is five percent. It is obligated to pay five percent of CSPE's costs which are almost entirely debt interest and repayment charges. This contract will be in effect until the year 2003.

In conjunction with CSPE arrangements, the company has purchased Entitlement and Supplemental Capacity commencing April 1977. This is strictly a capacity purchase with the amount decreasing until 2003 when the Agreement terminates.

## Deliveries to WWP

	Capacity (MW)		Energy (Average MW) CSPE	
	Gross	Net	Gross	Net
April 1, 1994 - March 31, 1995	33	32	14	14
April 1, 1995 - March 31, 1996	29	28	13	13
April 1, 1996 - March 31, 1997	24	23	13	12
April 1, 1997 - March 31, 1998	24	23	12	11
<b><u>Entitlement and Supplemental Capacity</u></b>				
April 1, 1994 - March 31, 1995	17	17	0	0
April 1, 1995 - March 31, 1996	14	14	0	0
April 1, 1996 - March 31, 1997	12	12	0	0
April 1, 1997 - March 31, 1998	11	11	0	0

**Electric Services Inc.**

This four year purchase from ESI starts July 1997 and is for 50 MW at 100% load factor.

**Enron**

This purchase from Enron is a seasonal purchase for 3 years. The season is August through December and starts August 1, 1997 and ends December 31, 1999. The purchase is 100 MW at 100% load factor.

**Eugene Water and Electric Board Sale**

Eugene shall purchase 10 MW of capacity with a minimum load factor of 70% up to a maximum of 100%. This is a 5-year agreement which commenced October 1, 1995 and continues through September 30, 2000. Rates are fixed by contract.



**Appendix F**  
**Resource & Contract Information (continued)**

**Mid-Columbia Purchases**

**Chelan County PUD**

**Rocky Reach Plant**

The company has been receiving 3.9 percent or 32 megawatts of capacity from Rocky Reach Hydro Plant since 1961, but the debt interest and repayment charges were not a cost factor until 1963. The contract is in effect until 2011, and WWP's participation was reduced to 2.9 percent on July 1, 1977, for the remainder of the contract.

The company signed an amendment to the Rocky Reach Power Sales Contract June 1, 1968, which provides for company participation in the power output of four additional units in the fall of 1971. The company's percentage share in these additional units will be the same as the initial seven units and currently is 2.9 percent or 14 megawatts.

	Capacity - WWP Share <u>(MW)</u>
July 1, 1977 - November 1, 2011	37

**Douglas County PUD**

**Wells Plant**

The company has a 50-year contract for 5.6 percent of the Wells Hydro Plant power. The power became available in 1967; however, it was assigned to other utilities until September 1, 1972, at which time the company started receiving this power. The PUD may withdraw, within certain limits, a portion of the plant output but cannot reduce the company's share below 3.5 percent. WWP's participation reduced to 3.5 percent on September 1, 1997, for the remainder of the contract. The contract is in effect until August 31, 2018.

	Capacity - WWP Share <u>(MW-Based on 840 Total)</u>
September 1, 1996 - August 31, 1997	31
September 1, 1997 - August 31, 2018	29

## Appendix F

Resource &  
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(continued)**Grant County PUD****Priest Rapids Plant**

The company first received power from Priest Rapids Hydro Plant in 1959, but debt interest and repayment charges didn't become a factor until 1961. The company's share of this plant's power was initially 11 percent or 98 megawatts of capacity. Reductions in the company's share were made by the PUD in pre-determined maximum amounts on five years' notice. The company's share was reduced to 6.1 percent on September 1, 1983 and will remain 6.1 percent until the end of the contract. The contract is in effect until 2005.

	Capacity - WWP Share (MW)
September 1, 1983 - October 31, 2005	55

**Wanapum Plant**

The company received 13.1 percent or 118 megawatts of capacity commencing in 1964 but paid only its share of the operating charges. However, debt interest and repayment charges commenced January 1, 1965. Similar to the Priest Rapids Contract, the company's share was reduced to 8.2 percent on September 1, 1983 until the end of the contract. The contract is in effect until 2009.

	Capacity - WWP Share (MW)
September 1, 1983 - October 31, 2009	75

**Northwest Aluminum Company Interruptible Sale**

A 5-year interruptible sale will commence February 1, 1997 in the amount of 70 MW during the months of August through February each year. Monthly load factor will be 100% during the months service is provided.

**Pacific Power & Light Company (PacifiCorp)**

The company will sell power to PacifiCorp company for the period February 13, 1989 through December 31, 1995. PacifiCorp has elected to extend the agreement through 1997. The amounts of capacity and energy sold to PacifiCorp are shown below:

<u>Year</u>	<u>Capacity-MW</u>	<u>Energy-aMW</u>
1992	150	50
1993	150	50
1994	150	50
1995	150	50
1996	100	33
1997	50	

**Appendix F****Resource &  
Contract  
Information  
(continued)****PacifiCorp 1994**

The company and PacifiCorp entered into a ten year summer capacity sale for the period June 16, 1994 through September 15, 2003 (with PacifiCorp option to extend for up to five years). Delivery to PacifiCorp is June 16 through September 15, with PacifiCorp option to change the term to June 1 through September 30 by giving prior notice. The company will deliver 100 MW in 1994 and 1995 and 150 MW in 1996 and thereafter. Energy will be purchased at 33 percent load factor if they take the fixed prices but at 25 percent if they take variable prices.

**PacifiCorp Exchange**

The company and PacifiCorp entered into a 15 year, 50 MW exchange, from June 16, 1994 through March 31, 2009. Delivery season is June 16 through September 15 in the summer to PacifiCorp and December 1 through February 28 in the winter to WWP. The energy exchanged is 27,600 MWh per season and the monthly load factor can vary between 0 to 50 percent. Either party may terminate the exchange with three years notice, after March 31, 2004.

**Portland General Electric (PGE)**

The company is selling to PGE 100 MW of capacity, ten hours per day, fifty heavy load hours per week for the term March 1, 1992 through October 31, 1994. Within 168 hours the energy associated with the capacity deliveries shall be returned. In June 1992 the Company signed a long-term capacity sale with PGE for an additional 50 MW beginning November 1992 through October 1994, and 150 MW for the period starting November 1, 1994 through December 31, 2016.

**Puget Sound Power & Light Company (PSP&L)**

The company, on January 1, 1988, entered into an agreement with PSP&L to sell a block of power for 15 years. The contract demand is 100 MW for contract years 1988 through 2000 and 67 MW for 2001 and 33 Mw for contract year 2002, unless the contract is extended for two years. The two-year extension is dependent on whether the company has minimal load growth. Energy will be delivered to PSP&L based on 75 percent annual load factor. Energy shall not be scheduled for any hour at a rate higher than 100 MW or less than 30 MW. The price for energy is the company's average power cost, but not to exceed BPA's new resource rate.

**City of Riverside Sale**

This sale is a 10-year firm sale of 25 MW during the months of May through October starting in May 1995. The load factor is between 40 and 100 percent monthly. The rates are fixed by contract. The City of Riverside gave notice to WWP in mid-1996 to terminate May deliveries effective May 1997.

## Appendix F

Resource &  
Contract  
Information  
(continued)**Seattle City Light (SCL)**

The company entered into a five-year Ross Reservoir Overdraft Protection Sales Agreement with SCL. SCL requires overdraft protection from January 1 through June 30 of each operating year 1990-1995. This energy is made available up to 130,000 MWh each year. The company entered into a new agreement for 1996 and 1997 with an option to extend. SCL shall pay \$2.5/MWh plus the incremental cost of the least costly thermal resource available. In 1996 the agreement was restructured to a 5-year term, 1996 through 2000.

**Snohomish PUD 10-year**

The contract begins October 1996 and ends September 2006. The agreement provides for the long-term sale of firm capacity and energy at fixed rates. In every month, Snohomish has the obligation to purchase the maximum amount of firm capacity (100 MW) and a minimum amount of firm energy at 50% load factor. Snohomish has the right to purchase a maximum amount of firm energy at 100% load factor.

**West Kootenay Power Sale**

Sale of winter capacity shall be provided beginning November 1, 1995 and ending February 29, 2000. West Kootenay will purchase the megawatt amounts shown below:

<u>Year</u>	<u>November</u>	<u>December</u>	<u>January</u>	<u>February</u>
1995-96	65 MW	90 MW	120 MW	70 MW
1996-97	65 MW	90 MW	115 MW	65 MW
1997-98	65 MW	85 MW	115 MW	65 MW
1998-99	65 MW	90 MW	125 MW	70 MW
1999-00	65 MW	85 MW	125 MW	70 MW

West Kootenay has the option to increase the capacity purchase amounts and to add purchase amounts for the months of October and March. West Kootenay may either purchase energy associated with the capacity or may elect to return the energy.

**Appendix F****Resource &  
Contract  
Information  
(continued)****Generation Performance Data**

This section includes five years of historical data relating to WWP's generation and power purchased from independent developers under PURPA regulations. It also includes a monthly summary of economy exchanges, purchases and sales. Resources are identified within one of the following categories:

1. Hydroelectric
  - Noxon Rapids
  - Cabinet Gorge
  - Post Falls
  - Upper Falls
  - Monroe Street
  - Nine Mile
  - Long Lake
  - Little Falls
  - Meyers Falls
2. Coal-Fired
  - Colstrip No. 3
  - Colstrip No. 4
  - Centralia No. 1
  - Centralia No. 2
3. Other
  - Kettle Falls
4. PURPA - Hydroelectric
  - Upriver Power Project
  - Big Sheep Creek
  - Jim Ford Creek
5. PURPA - Thermal
  - Wood Power Project
  - Potlatch Forest Industries
6. Economy Purchases/Sales
  - Based on hydro and load conditions at time of purchase or sale.

NOTE: PURPA facilities that produce less than 500 Mwh/year are not listed.

Appendix F

Resource &  
Contract  
Information  
(continued)

# Hydro Plants

## Noxon Rapids

FERC License Expiration Date: 4/30/2005

Rated Capacity: (Peak in MW)	Total	No. 1	No.2	No. 3	No. 4	No. 5
	554	107.5	107.5	107.5	107.5	107.5

<u>Year</u>	<u>Month</u>	<u>Forced Outage Rate</u>	<u>Equivalent Availability Factor</u>	<u>Year</u>	<u>Month</u>	<u>Forced Outage Rate</u>	<u>Equivalent Availability Factor</u>
1992	Jan	0.00	99.70	1995	Jan	0.00	100.00
	Feb	0.00	100.00		Feb	0.00	100.00
	Mar	0.00	90.20		Mar	0.00	92.63
	Apr	0.00	99.00		Apr	0.00	80.95
	May	0.00	100.00		May	0.00	97.82
	Jun	0.00	99.80		Jun	0.00	100.00
	Jul	23.00	69.00		Jul	0.00	100.00
	Aug	0.00	72.60		Aug	0.00	100.00
	Sep	0.00	91.50		Sep	0.00	100.00
	Oct	0.00	100.00		Oct	1.00	91.47
	Nov	0.00	100.00		Nov	0.00	99.99
	Dec	2.30	99.00		Dec	0.00	99.92
1993	Jan	0.00	86.40	1996	Jan	0.00	99.96
	Feb	1.00	79.95		Feb	0.00	100.00
	Mar	2.00	77.36		Mar	0.00	89.44
	Apr	3.00	74.64		Apr	0.00	100.00
	May	5.00	96.17		May	0.00	99.87
	Jun	0.00	100.00		Jun	0.00	100.00
	Jul	0.00	100.00		Jul	0.00	100.00
	Aug	0.00	100.00		Aug	3.00	98.77
	Sep	0.00	97.52		Sep	0.00	100.00
	Oct	0.00	100.00		Oct	0.00	99.95
	Nov	0.00	100.00		Nov	0.00	100.00
	Dec	0.00	100.00		Dec	1.00	99.33
1994	Jan	0.00	99.82				
	Feb	0.00	100.00				
	Mar	6.00	97.13				
	Apr	22.00	83.06				
	May	0.00	99.97				
	Jun	0.00	100.00				
	Jul	0.00	100.00				
	Aug	0.00	100.00				
	Sep	0.00	95.20				
	Oct	0.00	85.53				
	Nov.	0.00	99.84				
	Dec	0.00	97.77				

Equivalent Availability Factor=Availability Factor=(Available Unit Days/Period Unit Days)\*100.

Forced Outage Rate=(Forced Outage Unit Days/(Service Unit Days + Forced Outage Unit Days))\*100.

## Appendix F

Resource &  
Contract  
Information  
(continued)

## Hydro Plants

## Cabinet Gorge

FERC License Expiration Date: 1/9/2000

Rated Capacity: (Peak in MW)	Total 236	No. 1 63.50	No.2 57.50	No. 3 57.50	No. 4 57.50
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Year	Month	Forced Outage Rate	Equivalent Availability Factor	Year	Month	Forced Outage Rate	Equivalent Availability Factor
1992	Jan	0.00	100.00	1995	Jan	0.00	99.95
	Feb	0.00	100.00		Feb	1.00	97.40
	Mar	0.00	79.00		Mar	0.00	75.92
	Apr	0.00	99.00		Apr	1.00	95.70
	May	0.30	99.00		May	0.00	99.75
	Jun	0.50	99.70		Jun	0.00	100.00
	Jul	0.01	96.00		Jul	1.00	99.05
	Aug	0.00	76.00		Aug	2.00	99.06
	Sep	0.01	75.00		Sep	0.00	100.00
	Oct	0.02	75.00		Oct	0.00	99.60
	Nov	0.00	98.00		Nov	0.00	99.84
	Dec	0.00	100.00		Dec	0.00	100.00
1993	Jan	0.00	100.00	1996	Jan	0.17	99.85
	Feb	0.00	100.00		Feb	0.00	99.81
	Mar	0.00	95.00		Mar	0.00	100.00
	Apr	0.00	99.00		Apr	0.00	100.00
	May	0.00	100.00		May	1.00	99.00
	Jun	0.00	100.00		Jun	0.00	100.00
	Jul	0.00	83.00		Jul	0.00	100.00
	Aug	0.00	75.00		Aug	0.00	99.76
	Sep	0.00	75.00		Sep	0.00	82.00
	Oct	0.00	75.00		Oct	0.00	91.00
	Nov	0.00	75.00		Nov	1.00	99.40
	Dec	0.00	75.00		Dec	0.00	99.51
1994	Jan	0.00	74.00				
	Feb	0.00	75.00				
	Mar	0.00	75.00				
	Apr	0.00	83.00				
	May	0.00	100.00				
	Jun	0.00	100.00				
	Jul	0.00	99.00				
	Aug	0.00	99.00				
	Sep	0.00	100.00				
	Oct	4.00	97.75				
	Nov	1.00	99.34				
	Dec	0.00	99.67				

Equivalent Availability Factor=Availability Factor=(Available Unit Days/Period Unit Days)\*100.

Forced Outage Rate=(Forced Outage Unit Days/(Service Unit Days + Forced Outage Unit Days))\*100.

**Appendix F**

**Resource &  
Contract  
Information  
(continued)**

**Hydro Plants**

**Post Falls**

FERC License Expiration Date: 7/31/2007

Rated Capacity: (Peak in MW)	Total	No. 1	No.2	No. 3	No. 4	No. 5	No. 6
	236	63.50	57.50	57.50	57.50	2.9	3.5

**Upper Falls**

FERC License Expiration Date: 7/31/2007

Rated Capacity: (Peak in MW)	Total	No. 1
	10.2	10.2

**Monroe Street**

FERC License Expiration Date: 7/31/2007

Rated Capacity: (Peak in MW)	Total	No. 1
	13.0	13.0

**Nine Mile**

FERC License Expiration Date: 7/31/2007

Rated Capacity: (Peak in MW)	Total	No. 1	No. 2	No. 3	No. 4
	29.0	3.4	3.0	10.0	10.0

**Long Lake**

FERC License Expiration Date: 7/31/2007

Rated Capacity: (Peak in MW)	Total	No. 1	No. 2	No. 3	No. 4
	72.0	18.0	18.0	18.0	18.0

**Little Falls**

FERC License Expiration Date: NA (License not required)

Rated Capacity: (Peak in MW)	Total	No. 1	No. 2	No. 3	No. 4
	36.0	9.0	9.0	9.0	9.0

**Meyers Falls**

FERC License Expiration Date: 12/31/2023

Rated Capacity: (Peak in MW)	Total	No. 1	No. 2
	1.3	0.4	0.9

Maintenance and outage records for the above plants are not computerized and exist in log style handwritten form. It would take many man-hours to obtain the necessary data to determine accurate forced outage and availability data. Because of this, five years of data is not included. The data is available for inspection or recording at any time.



## Appendix F

Resource &  
Contract  
Information  
(continued)

## Coal-Fired Plants

## Colstrip No. 3

Rated Capacity = 700 MW

Service Date = 1/10/1984

Design Plant Life = 35 years

WWP's Share = 15%

Year	Month	Forced Outage Rate	Equivalent Availability Factor	Year	Month	Forced Outage Rate	Equivalent Availability Factor
1992	Jan	0.00	100.03	1995	Jan	2.92	87.70
	Feb	0.00	99.75		Feb	1.57	97.95
	Mar	0.00	99.00		Mar	0.09	95.09
	Apr	4.02	82.28		Apr	0.00	99.30
	May	5.30	42.82		May	3.31	58.86
	Jun	0.12	99.69		Jun	1.91	19.21
	Jul	0.16	90.79		Jul	10.10	77.05
	Aug	0.00	96.05		Aug	5.39	94.21
	Sep	1.24	97.35		Sep	0.09	99.55
	Oct	19.29	76.27		Oct	0.07	91.80
	Nov	0.00	100.44		Nov	0.00	94.16
	Dec	0.00	100.25		Dec	0.00	100.00
1993	Jan	0.00	98.78	1996	Jan	0.14	99.86
	Feb	0.00	100.34		Feb	0.93	99.49
	Mar	61.62	38.54		Mar	0.00	100.00
	Apr	100.00	0.00		Apr	0.00	99.31
	May	48.14	48.02		May	0.00	99.80
	Jun	21.59	76.74		Jun	16.41	83.51
	Jul	0.12	99.37		Jul	0.00	99.86
	Aug	0.00	100.50		Aug	7.56	92.17
	Sep	49.08	49.90		Sep	9.29	90.71
	Oct	52.13	46.35		Oct	0.91	98.91
	Nov	23.06	76.82		Nov	5.19	91.42
	Dec	69.86	29.55		Dec	9.43	90.71
1994	Jan	0.12	100.10				
	Feb	10.80	88.23				
	Mar	0.00	100.44				
	Apr	0.00	100.52				
	May	0.00	99.65				
	Jun	0.00	100.14				
	Jul	1.13	44.14				
	Aug	16.78	81.00				
	Sep	11.98	87.11				
	Oct	0.39	98.91				
	Nov.	0.00	99.93				
	Dec	0.00	100.05				

Note: WWP uses 108 MW/unit based on an over pressure mode of operation.

Forced Outage Rate:

Forced Outage Hours/(Service Hours + Forced Outage Hours)\*100 (%)

Equivalent Availability Factor:

$\frac{\text{Available Hours} - [(\text{Derated Hours} * \text{Size of Reduction})/\text{Maximum Capacity}]}{\text{Period Hours}} * 100 (\%)$

Period Hours

## Appendix F

Resource &  
Contract  
Information  
(continued)

## Coal-Fired Plants

Colstrip No. 4

Rated Capacity = 700 MW

Service Date = 4/6/1986

Design Plant Life = 35 years

WWP's Share = 15%

<u>Year</u>	<u>Month</u>	<u>Forced Outage Rate</u>	<u>Equivalent Availability Factor</u>	<u>Year</u>	<u>Month</u>	<u>Forced Outage Rate</u>	<u>Equivalent Availability Factor</u>
1992	Jan	6.89	92.41	1995	Jan	0.00	98.84
	Feb	0.00	100.00		Feb	0.00	99.99
	Mar	0.00	99.79		Mar	0.00	99.10
	Apr	0.00	99.43		Apr	33.01	23.86
	May	0.00	92.16		May	34.69	64.72
	Jun	0.00	0.00		Jun	8.04	92.20
	Jul	2.29	90.82		Jul	0.00	95.09
	Aug	0.39	99.52		Aug	1.21	97.86
	Sep	0.00	100.42		Sep	15.94	69.29
	Oct	0.00	100.53		Oct	9.98	90.00
	Nov	0.00	100.52		Nov	0.32	95.05
	Dec	0.33	99.65		Dec	0.00	100.00
1993	Jan	0.00	100.16	1996	Jan	0.32	99.68
	Feb	0.00	99.98		Feb	0.11	99.89
	Mar	39.80	59.35		Mar	31.43	79.72
	Apr	100.00	0.00		Apr	0.00	100.00
	May	100.00	0.00		May	100.00	77.42
	Jun	57.70	37.59		Jun	0.00	0.00
	Jul	0.00	100.17		Jul	32.62	52.93
	Aug	0.20	99.91		Aug	2.58	97.21
	Sep	10.93	87.51		Sep	16.85	83.15
	Oct	2.29	97.20		Oct	0.77	99.23
	Nov	0.00	99.80		Nov	0.00	73.92
	Dec	0.00	100.15		Dec	6.36	92.52
1994	Jan	0.00	100.19				
	Feb	6.56	93.25				
	Mar	0.00	100.27				
	Apr	70.30	29.43				
	May	96.69	0.11				
	Jun	5.44	91.47				
	Jul	7.07	92.56				
	Aug	7.69	91.44				
	Sep	0.00	100.14				
	Oct	3.65	94.30				
	Nov	0.00	99.48				
	Dec	0.18	99.50				

Note: WWP uses 108 MW/unit based on an over pressure mode of operation.

## Appendix F

Resource &  
Contract  
Information  
(continued)

## Coal-Fired Plants

Centralia No. 1

Rated Capacity = 700 MW

Service Date = 12/31/1972

Design Plant Life = 35 years

WWP's Share = 15%

<u>Year</u>	<u>Month</u>	<u>Forced Outage Rate</u>	<u>Equivalent Availability Factor</u>	<u>Year</u>	<u>Month</u>	<u>Forced Outage Rate</u>	<u>Equivalent Availability Factor</u>
1992	Jan	13.30	13.30	1995	Jan	1.12	98.84
	Feb	0.00	99.80		Feb	0.00	99.99
	Mar	0.00	100.00		Mar	0.00	99.10
	Apr	0.00	99.48		Apr	0.00	23.86
	May	0.00	48.30		May	0.00	64.72
	Jun	2.43	41.95		Jun	13.02	92.20
	Jul	0.13	99.27		Jul	0.00	95.09
	Aug	0.00	99.95		Aug	0.00	97.86
	Sep	3.05	96.95		Sep	0.00	69.29
	Oct	11.00	88.75		Oct	0.00	90.00
	Nov	0.00	99.99		Nov	0.00	95.05
	Dec	8.17	91.67		Dec	0.00	100.00
1993	Jan	0.00	99.88	1996	Jan	0.00	97.93
	Feb	0.00	99.73		Feb	5.83	90.12
	Mar	0.00	100.00		Mar	0.00	98.48
	Apr	0.23	99.77		Apr	0.00	100.00
	May	99.86	2.69		May	2.16	98.10
	Jun	44.96	55.10		Jun	5.70	95.10
	Jul	5.43	87.47		Jul	5.50	92.11
	Aug	18.22	81.51		Aug	0.00	95.37
	Sep	0.00	98.60		Sep	5.73	89.35
	Oct	0.00	97.83		Oct	0.00	95.82
	Nov	0.00	99.64		Nov	0.00	96.99
	Dec	0.00	99.75		Dec	0.00	95.93
1994	Jan	0.00	99.43				
	Feb	0.00	98.59				
	Mar	0.00	99.08				
	Apr	0.00	98.22				
	May	0.00	62.84				
	Jun	0.00	0.00				
	Jul	0.68	82.30				
	Aug	0.00	96.79				
	Sep	2.49	92.47				
	Oct	15.07	81.33				
	Nov	0.00	97.35				
	Dec	0.00	97.13				

Note: WWP uses 100.5 MW/unit based on actual operating experience.

Appendix F

Resource &  
Contract  
Information  
(continued)

**Coal-Fired Plants**

**Centralia No. 2**

Rated Capacity = 700 MW  
Service Date = 7/11/1973  
Design Plant Life = 35 years  
WWP's Share = 15%

<u>Year</u>	<u>Month</u>	<u>Forced Outage Rate</u>	<u>Equivalent Availability Factor</u>	<u>Year</u>	<u>Month</u>	<u>Forced Outage Rate</u>	<u>Equivalent Availability Factor</u>
1992	Jan	0.00	99.16	1995	Jan	1.06	92.20
	Feb	20.38	78.94		Feb	0.92	98.74
	Mar	0.00	100.00		Mar	0.86	91.85
	Apr	0.00	99.71		Apr	0.00	0.00
	May	0.00	99.90		May	0.00	0.00
	Jun	0.00	100.00		Jun	0.00	46.67
	Jul	0.00	99.91		Jul	0.00	95.72
	Aug	0.00	99.73		Aug	0.00	99.23
	Sep	0.00	99.39		Sep	0.00	99.46
	Oct	0.00	99.22		Oct	9.66	89.89
	Nov	7.99	91.77		Nov	24.69	73.46
	Dec	0.00	99.92		Dec	5.14	94.84
1993	Jan	0.00	99.99	1996	Jan	1.16	98.68
	Feb	2.49	96.75		Feb	3.53	92.75
	Mar	16.19	82.73		Mar	3.70	93.34
	Apr	0.00	98.94		Apr	0.00	100.00
	May	0.00	44.83		May	0.00	100.00
	Jun	0.00	5.44		Jun	1.19	98.67
	Jul	10.70	88.41		Jul	6.69	92.94
	Aug	39.38	60.08		Aug	0.00	98.92
	Sep	0.00	99.94		Sep	12.98	96.63
	Oct	7.68	91.66		Oct	23.99	75.22
	Nov	1.60	98.12		Nov	0.00	99.96
	Dec	5.38	94.42		Dec	0.00	99.47
1994	Jan	0.00	99.23				
	Feb	6.57	91.52				
	Mar	15.43	83.87				
	Apr	0.00	99.97				
	May	7.58	92.27				
	Jun	4.07	95.93				
	Jul	12.01	69.15				
	Aug	6.43	86.00				
	Sep	7.33	90.19				
	Oct	0.00	95.18				
	Nov	0.00	84.19				
	Dec	5.24	91.96				

Note: WWP uses 100.5 MW/unit based on actual operating experience.

## Appendix F

Resource &  
Contract  
Information  
(continued)

## Other Resources

Kettle Falls

Rated Capacity = 47 MW

Service Date = 12/1/1983

Design Plant Life = 35 years

<u>Year</u>	<u>Month</u>	<u>Forced Outage Rate</u>	<u>Availability Factor</u>	<u>Year</u>	<u>Month</u>	<u>Forced Outage Rate</u>	<u>Availability Factor</u>
1992	Jan	0.15	99.85	1995	Jan	0.00	100.00
	Feb	0.00	100.00		Feb	0.00	100.00
	Mar	0.00	100.00		Mar	9.07	90.64
	Apr	0.15	99.92		Apr	0.00	100.00
	May	0.00	16.94		May	0.00	29.03
	Jun	0.81	98.06		Jun	0.00	100.00
	Jul	0.07	99.93		Jul	0.00	100.00
	Aug	0.25	99.75		Aug	0.12	99.88
	Sep	0.04	99.96		Sep	2.04	97.94
	Oct	0.13	99.87		Oct	2.76	97.37
	Nov	0.00	100.00		Nov	4.07	97.34
	Dec	0.12	99.88		Dec	0.00	100.00
1993	Jan	1.87	98.13	1996	Jan	0.00	100.00
	Feb	0.13	99.87		Feb	0.00	100.00
	Mar	0.16	99.86		Mar	0.00	100.00
	Apr	0.00	100.00		Apr	0.00	100.00
	May	0.00	52.68		May	0.00	100.00
	Jun	0.00	84.93		Jun	0.00	60.69
	Jul	8.34	97.94		Jul	0.56	99.44
	Aug	0.82	99.18		Aug	3.39	96.61
	Sep	0.00	100.00		Sep	0.00	100.00
	Oct	0.00	100.00		Oct	0.00	100.00
	Nov	0.13	99.87		Nov	0.95	99.05
	Dec	0.00	100.00		Dec	0.81	99.19
1994	Jan	0.00	100.00				
	Feb	0.00	100.00				
	Mar	0.05	99.95				
	Apr	0.00	100.00				
	May	0.00	4.84				
	Jun	0.00	6.85				
	Jul	3.75	96.63				
	Aug	0.07	99.63				
	Sep	0.00	97.97				
	Oct	0.00	99.87				
	Nov.	0.46	99.54				
	Dec	0.06	99.95				

Availability Factor: (Available Hours/Period Hours)\*100 (%).

**Appendix F**

**Resource &  
Contract  
Information  
(continued)**

**PURPA Hydroelectric Plants**

**Upriver Power Project/City of Spokane**

Rated Capacity = 15,700 kW  
 Hours Connected to System = Not Available  
 Level of Dispatchability = none  
 Expiration Date = 7/1/2004

<u>Year</u>	<u>Month</u>	<u>Generation - kWh</u>	<u>Year</u>	<u>Month</u>	<u>Generation - KWh</u>
1992	Jan	4,984,000	1995	Jan	9,860,000
	Feb	9,198,000		Feb	8,391,000
	Mar	11,240,000		Mar	8,565,000
	Apr	9,421,000		Apr	10,280,000
	May	8,514,000		May	10,371,000
	Jun	3,677,000		Jun	7,801,000
	Jul	1,754,000		Jul	3,803,000
	Aug	955,000		Aug	2,449,000
	Sep	1,662,000		Sep	2,498,000
	Oct	3,374,000		Oct	5,004,000
	Nov	4,098,000		Nov	8,342,000
	Dec	5,126,000		Dec	7,645,000
1993	Jan	3,080,000	1996	Jan	10,915,000
	Feb	3,712,000		Feb	6,138,000
	Mar	7,172,000		Mar	9,755,000
	Apr	8,549,000		Apr	8,498,000
	May	8,501,000		May	8,159,000
	Jun	7,273,000		Jun	9,199,000
	Jul	6,043,000		Jul	3,945,000
	Aug	2,391,000		Aug	1,757,000
	Sep	2,849,000		Sep	2,727,000
	Oct	3,507,000		Oct	3,656,000
	Nov	2,632,000		Nov	4,955,000
	Dec	3,863,000		Dec	8,307,000
1994	Jan	5,261,000			
	Feb	3,251,000			
	Mar	7,814,000			
	Apr	10,311,000			
	May	8,947,000			
	Jun	4,299,000			
	Jul	1,266,000			
	Aug	316,000			
	Sep	1,298,000			
	Oct	2,279,000			
	Nov	4,065,000			
	Dec	7,507,000			

## Appendix F

Resource &  
Contract  
Information  
(continued)**PURPA Hydroelectric Plants****Big Sheep Hydroelectric Project/Sheep Creek Hydro, Inc.**

Rated Capacity = 1,500 kW

Hours Connected to System = Not Available

Level of Dispatchability = none

Expiration Date = 6/4/2021

<u>Year</u>	<u>Month</u>	<u>Generation - kWh</u>	<u>Year</u>	<u>Month</u>	<u>Generation - KWh</u>
1992	Jan	142,691	1995	Jan	173,795
	Feb	393,378		Feb	525,933
	Mar	1,143,057		Mar	1,173,376
	Apr	1,140,503		Apr	1,071,096
	May	1,153,699		May	1,264,706
	Jun	1,069,927		Jun	1,157,211
	Jul	1,063,276		Jul	841,211
	Aug	491,843		Aug	293,383
	Sep	175,118		Sep	134,116
	Oct	135,655		Oct	198,878
	Nov	181,269		Nov	374,362
	Dec	153,847		Dec	911,664
1993	Jan	126,819	1996	Jan	912,504
	Feb	141,187		Feb	673,719
	Mar	326,782		Mar	1,052,807
	Apr	1,148,223		Apr	1,138,588
	May	1,101,290		May	1,182,278
	Jun	1,244,124		Jun	1,045,379
	Jul	1,081,973		Jul	1,089,500
	Aug	816,617		Aug	406,179
	Sep	393,447		Sep	156,793
	Oct	185,344		Oct	139,468
	Nov	184,599		Nov	149,764
	Dec	152,583		Dec	103,718
1994	Jan	165,370			
	Feb	148,355			
	Mar	597,870			
	Apr	1,148,509			
	May	1,210,386			
	Jun	1,144,926			
	Jul	756,566			
	Aug	226,656			
	Sep	143,345			
	Oct	119,670			
	Nov	131,756			
	Dec	107,974			

**Appendix F**

**Resource &  
Contract  
Information  
(continued)**

**PURPA Hydroelectric Plants**

**Jim Ford Creek Power Project/Ford Hydro Limited Partnership**

Rated Capacity = 1,500 kW

Hours Connected to System = Not Available

Level of Dispatchability = none

Expiration Date = 4/14/2023

<u>Year</u>	<u>Month</u>	<u>Generation - kWh</u>	<u>Year</u>	<u>Month</u>	<u>Generation - KWh</u>
1992	Jan	145,958	1995	Jan	702,018
	Feb	728,647		Feb	826,429
	Mar	382,064		Mar	949,536
	Apr	496,072		Apr	679,152
	May	24,156		May	428,593
	Jun	0		Jun	227,102
	Jul	0		Jul	34,125
	Aug	0		Aug	698
	Sep	0		Sep	0
	Oct	745		Oct	146,735
	Nov	94,488		Nov	590,941
	Dec	12,352		Dec	613,090
1993	Jan	67,622	1996	Jan	857,450
	Feb	180,887		Feb	689,932
	Mar	529,719		Mar	696,451
	Apr	855,071		Apr	1,041,066
	May	494,367		May	881,349
	Jun	216,467		Jun	108,832
	Jul	150,380		Jul	0
	Aug	12,394		Aug	0
	Sep	0		Sep	0
	Oct	0		Oct	0
	Nov	0		Nov	68,281
	Dec	27,487		Dec	463,727
1994	Jan	418,341			
	Feb	61,727			
	Mar	916,850			
	Apr	719,671			
	May	211,038			
	Jun	292,244			
	Jul	289			
	Aug	0			
	Sep	0			
	Oct	0			
	Nov	15,667			
	Dec	251,395			



## Appendix F

Resource &  
Contract  
Information  
(continued)**PURPA Hydroelectric Plants****John Day Creek Hydroelectric Project/David Cereghino**

Rated Capacity = 900 kW

Hours Connected to System = Not Available

Level of Dispatchability = none

Expiration Date = 9/21/2022

<u>Year</u>	<u>Month</u>	<u>Generation - kWh</u>	<u>Year</u>	<u>Month</u>	<u>Generation - KWh</u>
1992	Jan	77,220	1995	Jan	60,120
	Feb	82,840		Feb	79,260
	Mar	122,800		Mar	154,250
	Apr	77,230		Apr	129,050
	May	261,980		May	367,210
	Jun	157,640		Jun	427,310
	Jul	94,050		Jul	440,500
	Aug	76,860		Aug	416,880
	Sep	42,420		Sep	245,100
	Oct	40,950		Oct	245,570
	Nov	44,460		Nov	208,510
	Dec	0		Dec	294,880
1993	Jan	0	1996	Jan	240,200
	Feb	0		Feb	273,200
	Mar	61,490		Mar	326,880
	Apr	88,820		Apr	406,790
	May	387,550		May	419,410
	Jun	418,580		Jun	428,510
	Jul	448,690		Jul	425,550
	Aug	421,440		Aug	393,700
	Sep	316,150		Sep	296,130
	Oct	222,600		Oct	223,830
	Nov	166,720		Nov	194,880
	Dec	135,010		Dec	183,500
1994	Jan	98,070			
	Feb	54,880			
	Mar	132,560			
	Apr	160,280			
	May	357,610			
	Jun	419,330			
	Jul	186,920			
	Aug	151,260			
	Sep	99,860			
	Oct	73,790			
	Nov	79,330			
	Dec	0			

**Appendix F****Resource &  
Contract  
Information  
(continued)****Wood Power Contract Buyout**

WWP has had for several years a purchase agreement with Wood Power, a 6.2 MW wood-fired cogenerator located near Plummer, Idaho. The sawmill and timber lands were recently sold to Rayonier. At the time of the sale Rayonier decided not to purchase the boiler and generator at the Wood Power Facility. Rayonier exchanged wood waste for steam that they used for drying operations. They also had with the purchase a two year option on the generator/boiler. After a year plus of operations they decided they needed more control of the boiler so the steam deliveries matched their wood products needs versus the need to maximize electric generation.

The company, Rayonier and Wood Power entered into a three way agreement that became effective January 6, 1997. The agreement provided a win situation for all three parties. Wood Power wanted to sell the facility as they were now out of the wood products business and did not have control of the fuel supply. Rayonier wanted control of the boiler so they could maximize production. WWP was desirous to terminate the high cost power purchase agreement with Wood Power, which had a January 26, 2019 expiration date.

WWP looked at the cost of the contract compared to market priced power and determined what price could be paid up front and still show positive revenue figures every year. The company agreed to pay \$9.5 million to Wood Power to terminate the long-term purchase power agreement. Rayonier made an arrangement with Wood Power which resulted in the purchase of the generating facility. If Rayonier should generate electricity in the future, they will sell it to WWP at market rates, as determined weekly at the mid-Columbia bus, less one mill per kilowatt-hour.

On April 10, 1997 Rayonier and WWP signed a power sale agreement. Rayonier's wood pile was becoming unmanageable with the result that electricity would need to be produced from the excess steam. Rayonier asked WWP to purchase the generation and WWP agreed under the conditions of the buyout agreement.

## Appendix F

Resource &  
Contract  
Information  
(continued)

## Economy Purchases and Sales

<u>Year</u>	<u>Month</u>	<u>Total Short-term Sales-MWh</u>	<u>Average Cost Mills/kWh</u>	<u>Total Short-term Purchases-MWh</u>	<u>Average Cost Mills/kWh</u>
1992	Jan	91,907	19.57	41,524	18.33
	Feb	72,536	24.90	54,391	18.05
	Mar	81,963	15.91	58,721	13.43
	Apr	88,518	19.34	20,332	18.18
	May	186,052	20.03	93,154	18.61
	Jun	67,872	17.68	167,727	13.90
	Jul	91,075	20.34	30,110	21.22
	Aug	34,538	22.36	79,098	26.95
	Sep	83,130	24.05	95,676	25.19
	Oct	131,361	24.64	74,702	26.36
	Nov	127,553	27.09	93,201	25.73
	Dec	89,461	30.14	53,414	26.54
1993	Jan	260,608	43.46	121,824	26.68
	Feb	244,675	47.86	210,201	30.22
	Mar	131,927	31.73	172,685	24.13
	Apr	24,032	21.25	133,802	21.40
	May	106,909	6.82	106,235	12.81
	Jun	117,996	11.29	58,362	10.67
	Jul	118,653	13.96	78,778	12.67
	Aug	49,757	22.15	142,229	21.48
	Sep	55,055	22.56	65,942	25.50
	Oct	80,537	22.15	53,981	22.41
	Nov	122,778	27.32	61,734	26.46
	Dec	147,353	31.79	80,684	30.50
1994	Jan	143,427	21.12	32,778	20.16
	Feb	157,084	22.82	137,934	24.58
	Mar	98,466	18.56	33,798	19.41
	Apr	121,421	18.29	34,652	17.86
	May	193,070	16.70	56,512	16.66
	Jun	80,420	16.76	112,088	17.41
	Jul	17,594	19.67	203,756	23.42
	Aug	41,385	22.49	250,756	23.42
	Sep	96,491	20.42	195,074	26.78
	Oct	138,151	19.38	159,988	26.92
	Nov	136,233	19.19	154,199	28.04
	Dec	130,783	20.74	157,703	28.04

## Appendix F

Resource &  
Contract  
Information  
(continued)

## Economy Purchases and Sales (continued)

<u>Year</u>	<u>Total Month</u>	<u>Average Short-term Sales-MWh</u>	<u>Total Cost Mills/kWh</u>	<u>Average Short-term Purchases-MWh</u>	<u>Cost Mills/kWh</u>
1995	Jan	64,792	18.20	156,753	14.60
	Feb	100,739	12.10	90,075	10.70
	Mar	73,745	12.70	170,578	11.10
	Apr	44,842	12.60	147,880	12.00
	May	63,761	9.60	130,030	9.40
	Jun	222,951	5.50	115,289	9.70
	Jul	146,089	10.80	154,864	12.60
	Aug	137,075	15.20	169,536	16.90
	Sep	202,050	16.20	216,556	16.50
	Oct	248,201	14.70	316,343	11.80
	Nov	266,197	14.50	338,703	11.60
	Dec	386,710	12.50	438,626	9.20
1996	Jan	454,848	14.10	506,752	10.80
	Feb	393,833	13.00	366,217	10.10
	Mar	472,178	11.60	444,631	8.10
	Apr	465,784	9.80	406,995	8.30
	May	505,355	9.80	449,308	8.10
	Jun	694,408	9.36	664,722	9.00
	Jul	903,221	11.20	1,024,820	10.20
	Aug	616,967	14.70	768,015	13.50
	Sep	715,523	15.00	811,316	14.30
	Oct	597,694	16.00	795,513	15.60
	Nov	681,831	18.50	1,187,814	20.10
	Dec	875,158	19.60	1,496,247	20.30

## Appendix G

Load  
Forecast

# Load Forecast

This narrative discusses the 1997 electric sales forecast for the medium (base) case. The high and low case alternatives were not developed. Instead, the forecast ranges from the 1995 plan were applied to the 1997 medium scenario to illustrate expected variation. The decision to forego alternative scenarios was based on extensive consultation with the Technical Advisory Committee, membership of which is described elsewhere in this document. Discussions follow which include assumptions, methodology and results, including a description of sales for the medium scenario.

The forecasts include firm sales to retail customers, usually referred to as residential (household) customers, commercial (non-manufacturing) customers, industrial (manufacturing) customers, and street & highway lighting. Interruptible sales to our single interruptible customer continues at 25 average megawatts.

## Electric Retail Sales Forecast

The Company's electric forecast is prepared with a forecast horizon of 20 years. The customer class and Washington/Idaho total electric sales forecasts are presented in Figure 1. The forecast provides the basis for company revenue budgeting, supply planning activities, and integrated resource planning efforts. WWP's natural gas forecast is prepared concurrently with the electric forecast, utilizing common assumptions, which produces forecasts of customer energy needs taking into account the interaction between these alternative sources of energy. The Company's use of end-use models covering all energy sources facilitates this process. Specific end-use attributes are discussed later in this Appendix. The results of the forecast are the planning forecast information used internally, as well as the official information supplied to external entities.

## Forecast Assumptions

### National Economic Assumptions

The Company contracts with a national economic forecasting company, Data Resources Inc./McGraw-Hill (DRI). The DRI Review of the U.S. Economy (Long-Range Focus), Winter 1995/96 is the source document for this plan.

The principal TREND projection assumes the economy suffers no major mishaps between now and 2018. In the TREND simulation, the economy follows a pattern of smooth growth, with actual output approximately paralleling the path of potential output. This projection is best described by DRI as depicting the mean of all possible paths the economy could follow if no major disruptions occur. The underlying rate of growth in TREND is consistent with history as well as conjecture about the economy's unfolding structure. DRI represents that it can therefore be regarded as the best unbiased projection of the economy. The TREND scenario is used to produce the economic, natural gas and electric forecasts for the medium case.

**Appendix G****Load  
Forecast  
(continued)****Service Area Economic Forecasts**

The Company has developed and maintained econometric forecasting models for both Spokane County, Washington, and Kootenai County, Idaho under contract with Tucson Economic Consulting (TEC), a specialized consultancy in regional economic modeling and forecasting. In consultation with Company staff, TEC prepared 20 year forecasts for the base (medium) case.

About ninety percent of the Company's service area economic activity occurs in the two-county area. Spokane County is used as the proxy for the Washington portion of the Company's service area, and Kootenai County is used as the proxy for the Idaho portion. Historical economic data for each area is obtained from official county and state sources.

Each county model produces separate detailed forecasts of population, employment, and income. The population forecasts are the result of net forecasted changes in births, deaths and net migration. Employment is segregated into manufacturing and non-manufacturing, and is forecasted by major two-digit standard industrial classification (SIC) code. The personal income forecast is composed of forecasts of labor and proprietor's income, transfer payments and dividends, interest, and rental income.

**Population**

WWP expects population growth to be the major driver of its economic and electric sales forecast, and as a consequence, the company has developed extensive studies of the population growth and its economic impacts for Spokane and Kootenai counties within its service area. For the medium case, the two-county population in 1996 is estimated to be 509,800, with 81% residing in Spokane and 19% in Kootenai. By 2006, population expands to 612,900, an increase of 103,100, or 20.2%. Kootenai County growth is faster than Spokane, resulting in population shares of 77% in Spokane and 23% in Kootenai in 2006. During the second decade of the forecast, population grows by the year 2016 to 691,500, an increase of 78,600. This smaller increase in population in this ten-year period is consistent with an overall slowing at the national level. Over the 20-year period, the two-county population growth rate averages 1.5% per year, compounded. The forecast two year's ago averaged 1.2%.

For historical perspective, in 1986 the two-county population was 421,100. Between 1986 and 1996, population increased by 88,700, or 15.5%, which averages 1.9% per year.

**Employment**

Non-agricultural employment is the sum of the components of manufacturing and non-manufacturing employment. Agricultural employment is small. Each of the available components of employment are forecasted separately for Spokane and Kootenai Counties. The combined employment level in the two-county area in 1996 is estimated to be 218,400, with 83% in Spokane County and 17% in Kootenai County. By 2006, employment grows by 68,500 jobs, to 286,900, a cumulative increase of 31%. The employment share in Spokane declines to 78%, but increases to 21% in Kootenai. By 2016, employment is forecasted to be 338,600, an increase of another 51,700 jobs. Over the 20-year

**Appendix G**  
**Load Forecast (continued)**

period, the two-county non-agricultural employment growth rate averages 2.2% per year, compounded. The forecast two year's ago averaged 2.1%.

In 1986, the two-county employment was 158,100. Between 1986 and 1996, employment increased by 60,300, or 3.3% per year, compounded.

**Income and Inflation**

The two-county nominal personal income in 1996 is estimated to be \$10.4 billion. It is forecast to increase to \$32.4 billion by 2016. Nominal personal income per capita in 1996 is estimated at \$20,500, and is forecast to increase to \$46,900 in 2016.

Inflation is expected to average 3.1%, as measured by the U.S. GDP Personal Consumption Deflator, compared to 3.5% two years ago. The following table indicates inflation adjusted personal income growth rates for the medium scenario, and compares them to the 1995 IRP forecasts.

<u>County Area</u>	<u>1997 IRP</u>	<u>1995 IRP</u>
Spokane	2.3%	
Kootenai	4.0%	
Combined	2.6%	2.2%

**Large Load Customer Forecasts**

A survey is conducted of all existing large general service customers, within which there are both commercial and industrial class customers. The Company asks these customers to indicate planned facility increases or decreases over the next five years. The customer responses are reviewed by Company account managers for accuracy and reasonability. No new customers have been explicitly added to these projected sales forecasts. Individual customer survey responses and forecasts are held confidential, so as to avoid revealing harmful information to competitors.

**Price**

The forecast of electric prices are incorporated in the use per customer econometric equations. The electric price forecast reflects 1) expected costs of electric power production consistent with Appendix J, 2) escalation at the rate of inflation for distribution O&M expense, and 3) no escalation on existing distribution plant and equipment due to off setting depreciation and new customer growth spreading fixed costs. In the medium case, residential and commercial retail electric rates are expected to grow at a 0.5% rate, before taking into account the effects of inflation. After taking inflation into account, rates are forecasted to decrease in the medium case at about 2.5% per year. These rates are nearly identical to the 1995 Integrated Resource Plan, and as such assume no changes in the structure of the energy delivery system, which may translate into somewhat lower prices for electricity.

The forecast of natural gas prices are incorporated in the use per customer econometric equations. The natural gas price forecast reflects 1) commodity cost escalation consis-

## Appendix G

### Load Forecast (continued)

tent with the escalation in the 1997 WWP Natural Gas IRP, 2) escalation at the rate of inflation for distribution O&M expense, and 3) no escalation on existing distribution plant and equipment due to off setting depreciation and new customer growth spreading fixed costs. In the medium case, residential and commercial retail gas rates are expected to grow at a 2.6% rate, before taking into account the effects of inflation. After taking inflation into account, rates are forecasted to decrease in the medium case at about 0.5% per year. Compared to the 1995 Integrated Resource Plan, forecasts for commodity costs for natural gas prices have been reduced considerably by DRI. Although natural gas prices are expected to increase at a somewhat faster rate than electricity prices, in the competitive fuel area of space and water heat, natural gas continues its competitive price advantage over electricity throughout the forecast period.

### Other

**Demand side management (DSM) activities:** These are handled as having been implemented through 1996, and are treated as a load reduction in the resource planning area beyond 1996. In other words, the forecast assumes no additional DSM implementation after 1995, even though we plan to obtain DSM savings.

**Weather:** Temperature, as measured by heating degree days (65 degree base), is assumed to be at the National Weather Service 30-year normal (1961-1990). The weather effect in the sales forecast is reflected in annual usage. Weather station data used for the Washington & Idaho properties is from Spokane.

### Forecast Methodology

The Company's sales forecasting methodology integrates econometric and end-use techniques. The econometric methodology produces monthly forecasts by state, by rate schedule, and by customer class (e.g. residential/commercial/industrial). The end-use methodology produces annual forecasts by state for the residential and commercial classes.

In 1992, WWP executed a contract with energy consultant Jerry Jackson & Associates to purchase and implement the Commercial Energy Demand Modeling System (CEDMS). CEDMS produces forecasts for natural gas, electricity, and other fuels by ten building types by specific end-use, like water heat, space heat, lighting, etc. During 1992, a series of four workshops were held in Seattle and Spokane describing the model, data, efficiency supply curves, and forecast results. In 1993, an additional contract was executed with Jerry Jackson & Associates to purchase and implement the Residential Energy Demand Modeling System (REDMS). REDMS produces forecasts for natural gas, electricity, and other fuels by three building types (single family, multi-family, and mobile home) by specific end-uses of homeowners and renters. These contracts were renewed in 1996 for the forecast production cycle.

CEDMS produces annual forecasts for 12 different building types plus a miscellaneous category for 12 different end uses for four fuels (electric, gas, oil, and other). The technology detail in CEDMS covers lighting, structure, HVAC, refrigeration, and water heat, including the interactions between these technologies. For example, more efficient lighting is accounted for in increased space heat requirements during winter periods and decreased air conditioning usage during summer periods.



## Appendix G

Load  
Forecast  
(continued)

REDMS produces annual forecasts for typical single-family, multi-family, and mobile homes by ten specific end uses plus an "other" category for four fuels (electric, gas, oil, and other). The technology detail in REDMS covers structures, heating technologies, efficient alternatives for air conditioning, refrigerators, freezers, various water heating technologies, electric and gas cooking appliances, and efficiency alternatives for lighting and dishwashers, including interaction effects.

Both CEDMS and REDMS utilize the aforementioned technology detail with a microsimulation process. By characterizing sample population parameters by payback requirements, operating hours, household income, etc., it selects alternatives with minimum payback period costs. The process is repeated for the rest of the representative decision-makers, producing a forecast of survey-determined market segments with their unique decision-making criteria. The principal benefit of this method is that it avoids the pitfall of assuming homogeneity, a common mistake when exclusively using econometric models, or by using conditional demand models for end-use forecasting.

The residential and commercial forecasts for the 1997 Plan were produced with REDMS and CEDMS, respectively.

Due to the fact that both REDMS and CEDMS produce forecasts at annual frequency, but the resource planners require monthly information, an econometric model primarily relating heating degree days to consumption by rate schedule was produced in parallel. The econometric model results were subsequently calibrated to sum to the totals of the end-use models on an annual frequency. Since the economic variables used in the end-use model and in the econometric model were the same, there were no large variations between the forecast trajectories.

### Forecast Results

Table 1 compares average twenty year compounded growth rates in percent from 1997 to 2017 by customer class. These forecast assumptions provide our supply planners with the baseline scenario forecast of demand for electricity on our Washington/Idaho system. The company's customer class sales forecasts are presented in Figure 1. The data charted from 1985 to 1995 are actual kWh values, unadjusted for weather. Figure 2 shows the load forecast (including transmission and distribution loss). Figure 3 shows the peak forecast.

Table 1G

Growth  
Rates by  
Customer  
Class

#### Growth Rates by Customer Class (in percent) for Washington/Idaho 1997 - 2017

Residential	1.48
Commercial	1.84
Firm Industrial	0.42
Interruptible	0.00
Street Lighting	0.00
Electric Retail Sales	1.37

Figure 1G

Electric Retail Sales

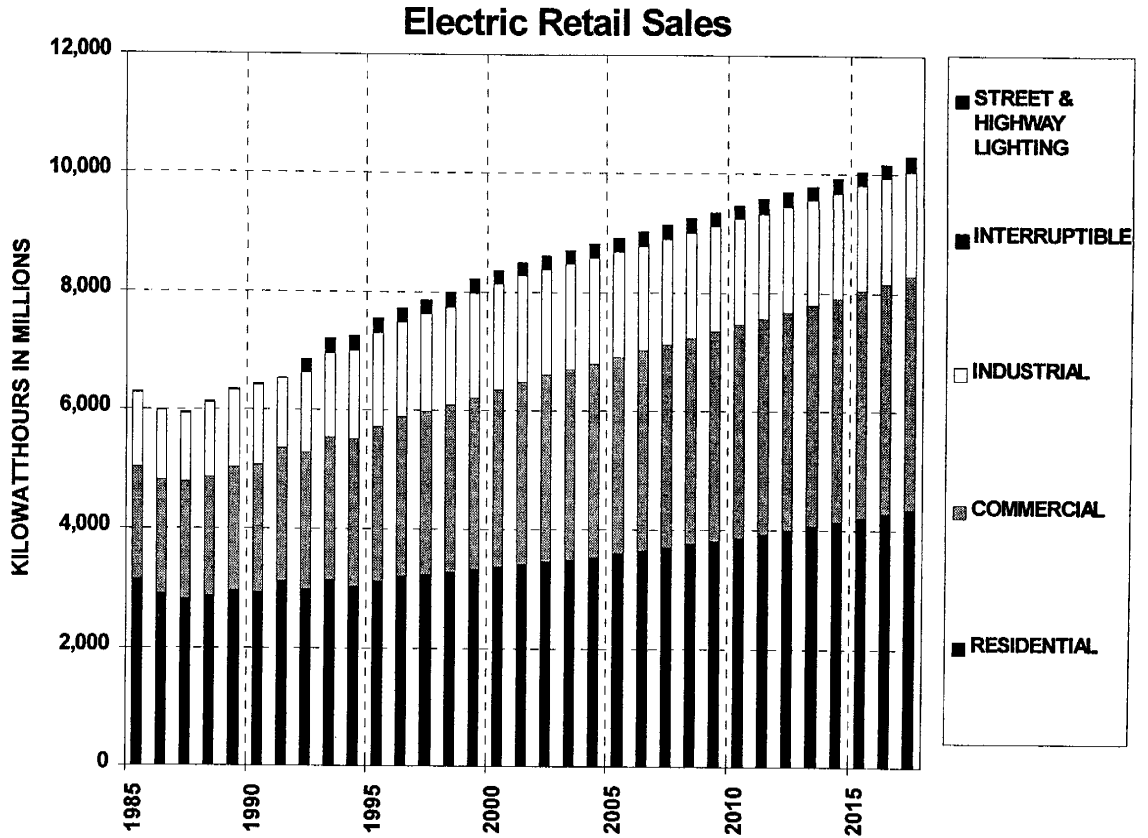


Figure 2G

Net System Load

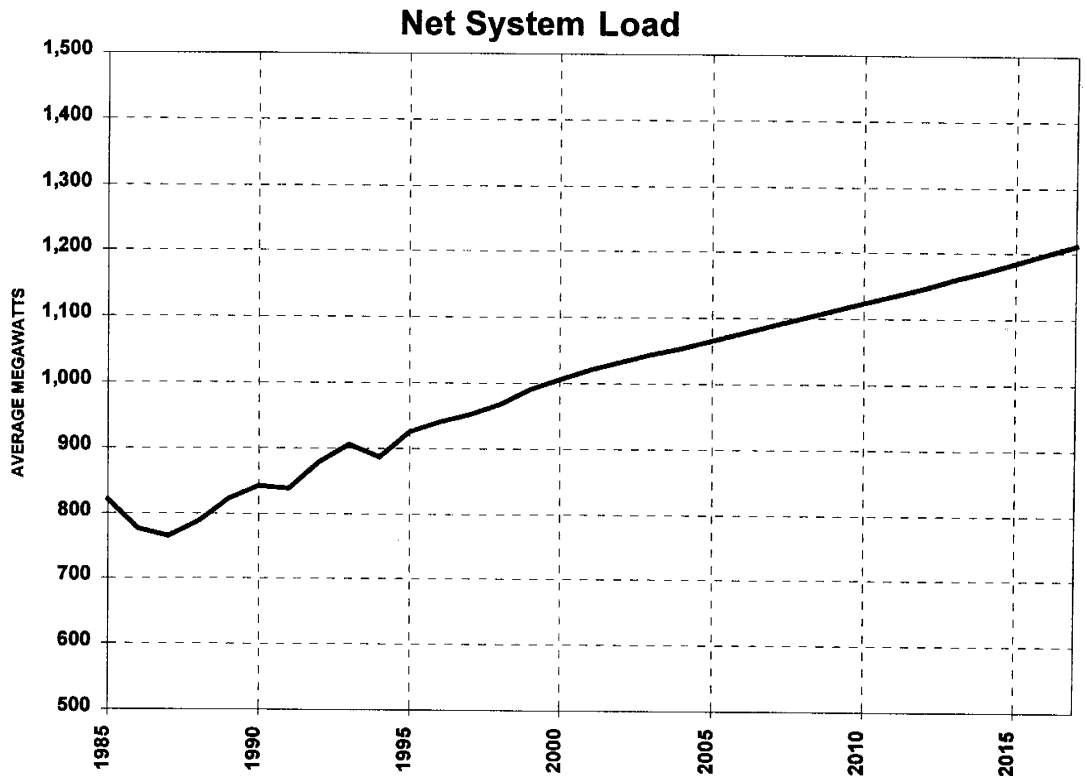
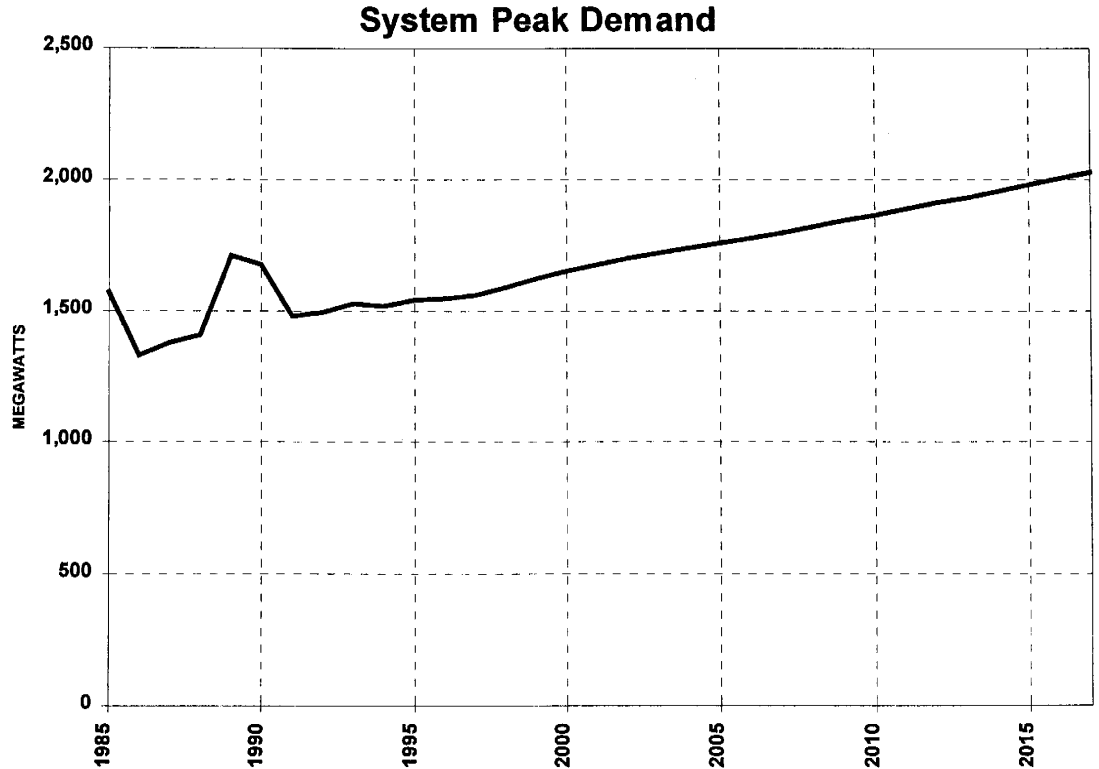


Figure 3G

System  
Peak Demand

## Appendix G

Load  
Forecast  
(continued)**Elasticities**

Both CEDMS and REDMS have price variables corresponding to schedules 1, 11, and 21 for both Washington and Idaho. Simulating the econometric model to estimate own-price elasticities produces a residential class elasticity range of -0.10 to -0.15, a small-commercial class elasticity of -0.20 to -0.30, and a medium-commercial class elasticity of -0.05 to -0.20. These levels are consistent with those reported in most elasticity studies. Cross price elasticities are modeled in CEDMS and REDMS. The number of new customers choosing natural gas space and water heat is calculated based on life-cycle present value lowest cost to consumers through the previously mentioned micro-simulation of customer payback distributions based on survey information from our customers. Presently, about 60 percent of all new customers are choosing natural gas, and that trend generally continues through the forecast period. The problem with elasticity estimates generally has been that it assumes homogeneity of customers, which we know is not the case. Small changes in prices as a test may not provide much useful information, since the alternative equipment costs tend to be lumpy, namely they are not smoothly distributed between or among customer's alternative choices. Our additional evaluation of elasticity impacts during this two-year action plan cycle had two expected results. The first relates to choice elasticity, and the second to utilization elasticity. The impact of dramatically falling prices of natural gas relative to electricity in this forecast, when compared to our 1995 Plan, produced virtually no shift in customer choice of natural gas. If gas is available, customers will choose it over higher-priced electricity when it is time to make an equipment decision.

**Appendix H****Wholesale  
Marketing**

# Wholesale Marketing

Pacific Northwest Electric utilities have actively participated in a robust wholesale market encouraged by an interconnected system developed to utilize seasonal load and resource diversity between the Northwest and California electric energy markets. Wholesale transactions between utilities occurring throughout the west coast have been important components in maintaining a cost efficient and reliable electric power system.

Northwest hydroelectric seasonal surpluses resulting from spring and summer runoffs found markets in California, rocky mountain and desert southwest utilities. In the winter when Northwest generation can be limited due to reduced natural flows and increased demand due to cold temperatures, California and other south west utilities transfer surplus energy to meet Northwest power demands by operating unused thermal generation.

The electric wholesale marketplace has grown over the last two years and the volume of wholesale electric transactions is expected to skyrocket into the future as recent FERC actions freed up transmission access and allowed new entrants into the wholesale electric business. With the introduction of NYMEX futures trading in March 1996, NYMEX futures activities has reached a point where a volume of 70,000 futures contracts was reached by December 1996. This rapid growth is just the tip of the iceberg of potential as the market matures and participants in the electric marketplace staff up to take advantage of these opportunities.

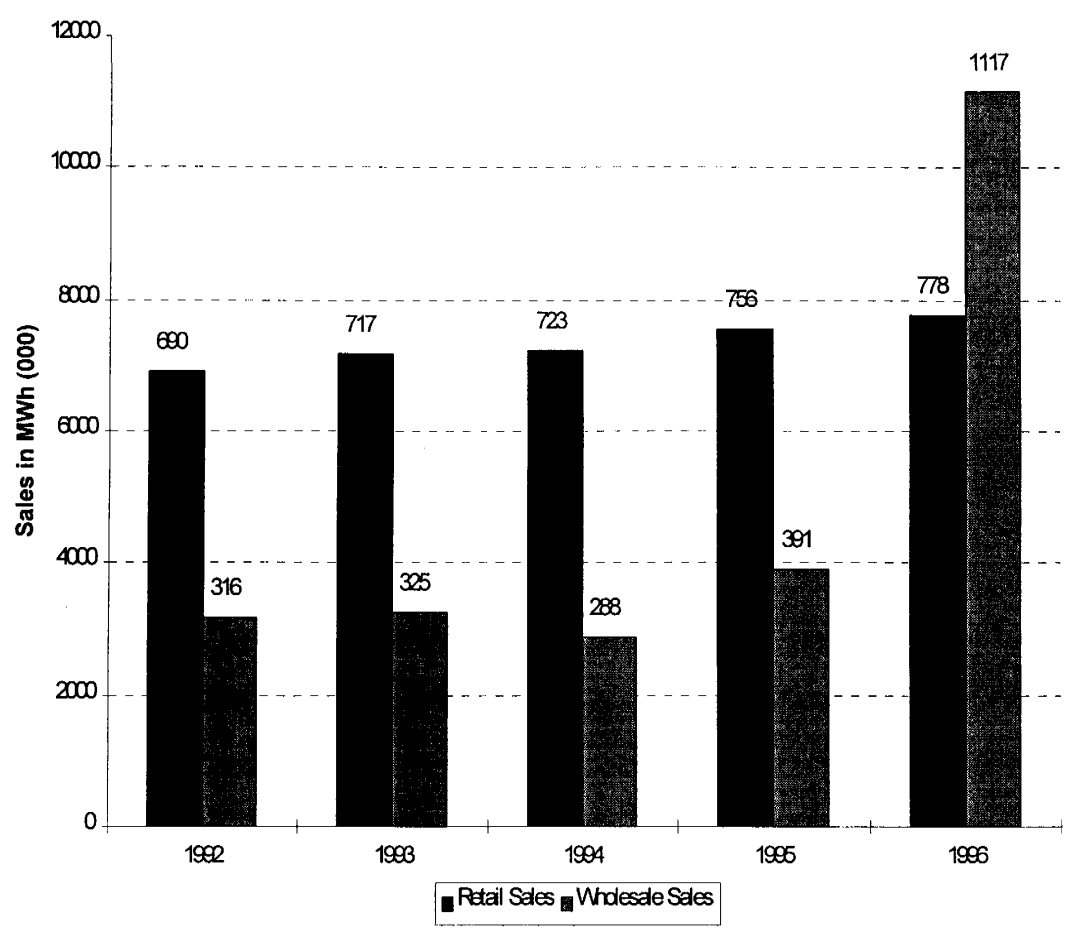
State utility commissions are now considering retail access, which if and when implemented will accelerate wholesale market activity and set the stage for non-utility businesses to directly serve retail customers. The benefits of expanding wholesale activity can then pass through directly to the end-use customer. End-use customers will be able to access and design electric energy products according to their needs. Menus of electric energy services developed to meet the risk reward profiles of the customer will be served by utilizing the creativity and risk management tools that only a healthy marketplace can provide.

WWP has and will be a major participant within the electric wholesale market place. Only by participating within this emerging market can WWP maintain cost effective, reliable sources of energy to service its customers. WWP by maintaining a presence in wholesale activities will be able to maximize revenues generated when there is surplus power available from its system and minimize expenses when power purchases are required to meet load requirements.

For the first time in the company's history, WWP during 1996 had more wholesale sales than retail sales. Figure 1H shows the relationship between wholesale and retail for the years 1992 through 1996.

**Figure 1H**  
**Retail and Wholesale Sales**

**Washington Water Power  
Retail and Wholesale Sales**



**Current Wholesale Activities**

WWP expects wholesale marketing activities to maximize the value resulting from WWP's generation resources when energy surpluses are available and minimize the cost of operation when wholesale purchases are required to meet system requirements while maintaining a stable and reliable power system. Wholesale transactions are divided into four time frames, long term, short term trading, pre-schedule and next hour dispatch. For each of these time increments wholesale activity can occur at each of these market hubs, Palo Verde (PV), California Oregon Boarder (COB) and Mid-Columbia(Mid-C). Table 1H summarizes activities occurring at each of these time frames and trading hubs.

**Appendix H**

**Wholesale Marketing  
(continued)**

**Table 1H**

**Current Wholesale Activities**

**Summary of Wholesale Activity**

Time Frame	Wholesale Activity
Long Term	<p>Long term wholesale transactions are wholesale service agreements greater than one year in length between WWP and wholesale customers. Past WWP's long term wholesale business has been focused in the Pacific Northwest with a few contracts in Northern California and desert southwest.</p>
Short Term	<p>Short term wholesale activity is defined as energy sales and purchases generally from one month to one year in length. Trading occurs at Mid-C, PV and COB trading hubs.</p>
Pre-Schedule	<p>Pre-Schedule transactions are defined as next day trades but can be as long as one month. Pre-schedule activity occurs primarily at the Mid-C and COB hubs.</p>
Next Hour Dispatch	<p>Next hour transactions are considered real time or dispatch wholesale transactions. These transactions occur at the Mid-C and COB trading hubs.</p>

WWP participates in each of the above described energy trading markets to stay abreast of wholesale marketing activity and looks to develop economic synergy that results by analyzing cross market opportunities.

Starting in January 1997, FERC mandated the separation of wholesale energy marketing activities from electric utility real time control area operations and transmission scheduling functions. As a result of this mandate, WWP created a "trading floor" that incorporated short term, pre-schedule, and hourly dispatch functions into one common area. The "trading floor" is a walled off area that prevents the incidental transfer of non-wholesale information to WWP's wholesale electric activities. This configuration offers the advantage of allowing these segments of the electric wholesale energy business to share knowledge on the state of the electric wholesale market and the information that drives these markets.

**Appendix H****Wholesale  
Marketing  
(continued)**

WWP uses many tools to assess market conditions and activity. On the trading floor, direct line feeds from Dow Jones Telerate transmits information on market conditions to trading floor staff. 24 hour weather information is available from TV direct cable channel hookups. Real time telemetry is available to hourly dispatchers on the state of WWP's power generation system. The combination of this real time hard data and with the open air environment that a trading floor offers, provides for an efficient and effective means to convert raw information into profitable wholesale electric trades.

**Risk Management**

Wholesale market trading is the opportunity for Washington Water Power to buy and sell surplus energy to wholesale customers all around the country. This aspect of our business helps increase our revenue streams and profitability. This profitability assists us in maintaining some of the lowest energy rates for our core customers.

For the sixth consecutive year, Washington Water Power's costs for new customer installations system-wide has remained below previously established targets. In the face of increasing equipment and labor costs, as well as inflation, all of WWP's Energy Delivery employees have partnered with new customers to strike balance of service, reliability and cost-effective market expansion.

**Managing risk for both short and long-term trades**

Washington Water Power is responsible for overseeing its traders to ensure that, when making deals for the company, they stay within risk range guidelines. Short-term traders are defined as those brokering trades for the company on hourly and daily trades but primarily, monthly "block" trades. The risk range guidelines are determined by the executive management team based on allowable risk limits for the company. The limits have not been published to protect market advantages.

A long-term trade is defined as a wholesale marketing contract that is greater than one year in length. In the past, long-term trades or contracts have been actualized for up to 20 years. But with the emerging competition, and fluctuation in market prices, the average "long-term" trade is now only one to five years.

WWP's long-term marketers are those employees who go out into the marketplace and sell to wholesale customers. Some of the entities that we sell to include other utilities, public utility districts, municipals, direct service industries (DSI's) such as Kaiser Aluminum, power marketers, and retail customers as those markets are deregulated.

Long-term trading is where the company faces the greatest competition from power marketers. Power marketing companies are those that buy and sell energy, but do not necessarily have the physical capability to generate and deliver energy. Some examples of power marketers are ENRON, Louis-Dryfus, and Electric Clearinghouse.

The increase of power marketers on the scene is evident in that several years ago there were only a few FERC licensed power marketing companies. Now there are over 250 FERC licensed power marketers in the country.

**Appendix H**

**Wholesale  
Marketing  
(continued)**

**Managing pricing for long-term contracts**

It is critical that the company not only price its product competitively, but also set pricing so the company makes a profit. How much of a profit is determined by the pricing levels that the company sets for sales. There are a number of factors in determining appropriate pricing. One way is by examining pricing models that have been developed by VWP's extensive research. Other important factors include understanding the market, what costs are to supply power to the market, and current market prices for resources.

**Managing system reliability**

The company is responsible for maintaining a reliable energy supply to our core retail customers and wholesale customers. The company makes sure it has adequate power supplies for its core customers, and determines the amount of energy available for wholesale marketing to meet all of the companies obligations.

One of the most exciting changes in the industry is the opportunity to sell power to retail consumers outside of the companys service territory. Beginning January 1, 1998, California is planning to open its markets for retail wheeling. Other states are expected to follow suit.



## Appendix I

Resource  
Assessment

# Resource Assessment

Events that affect WWP's long-term resource picture are numerous and sometimes unexpected. A continual assessment of available resource alternatives helps WWP respond to constantly changing conditions. Because of the availability of energy and the low prices, WWP is not planning on building resources to meet cyclical needs but to rely on the purchase of electrical energy as the most cost-effective option for meeting resource needs. Everything the company does will have its cost-effectiveness measured against prices in the marketplace. This appendix describes various activities that are affecting WWP's existing resources and programs and their impacts on the future power supply of the company.

## WWP's Preferred Energy Resource Strategy

Based on customer requirements and contractual arrangements, WWP has no need for new firm electric resources to serve retail needs for the next 10 to 15 years. While portions of WWP's service territory have experienced a surge in customer growth, long-term energy requirements are being restrained by the use of natural gas in conversions and new construction. Another factor restraining growth is increased energy efficiency through building codes and enhanced appliances.

WWP is committed to maintaining a DSM presence in its service territory for the next 3 years. After this period market transformation should be fairly well established and utility financing might not be needed. For the last two years the company has used a tariff rider to finance the DSM activities which has been extended for three years, through 1999. The tariff rider provides a way to expense the cost of the DSM programs so that a regulatory asset is not kept on the books. WWP collects between \$4 and 5 million which is used to fund energy savings of 4 to 5 aMW per year plus market transformation programs.

The preferred case also assumes that there will be no degradation of generation on the hydro system due to hydro relicensing. WWP expects that the new license will be more restrictive than in the past, but the annual energy production should remain the same, although a portion could be shaped into different periods. It also assumes that the air quality problems at Centralia will be solved to maintain the integrity of the resource although resulting in an increase in power production costs, see discussion under Centralia. WWP's resource related risks are only there if costs are not reduced so that the resources are price competitive. The preferred plan is what is needed at this time to prepare the company for the competitive future.

WWP currently has long-term purchase rights to power output from four mid-Columbia River hydroelectric plants owned by three Public Utility Districts. Each of the mid-Columbia contract purchases represents a very low cost and flexible resource for WWP. Contracts with Grant County PUD are the first to expire, with Priest Rapids terminating in 2005. WWP is actively pursuing a Grant County offer to extend

**Appendix I**

**Resource  
Assessment  
(continued)**

the sale of Priest Rapids and Wanapum output. Terms and conditions of a contract extension are currently being negotiated.

For planning purposes, WWP currently estimates that successful extension of the Grant County contracts will provide a resource with long-term availability, priced between current contract rates and new low-cost generating resources, but still priced at cost with a decline from the energy amount currently being received.

The level of DSM, re-negotiation of mid-Columbia power purchase contracts and some short-term market purchases provides more than adequate firm energy capability to serve WWP's expected needs through the planning horizon. If some retail load is lost to other energy suppliers, then these activities will result in a surplus situation for the company.

Because of the low cost of the resource acquisitions (DSM, mid-Columbia contracts, etc.), this resource strategy will provide a low cost resource plan for the company. The preferred plan will not be the least cost, which would be to rely on the wholesale market for all resource needs. But the preferred plan will be one of the lowest cost resource scenarios while still maintaining a balance and diversity of resources with DSM programs, supply-side resource additions and purchases.

## **Resources**

### **Fuel Cells**

Extensive development and demonstration are moving fuel cell technologies towards full commercialization within the next five to ten years. The Company is engaged in several fuel cell related activities designed to benefit our customers and stockholders alike. Within the regulated utility, WWP is participating in R&D, demonstration, and commercialization projects which will provide early access to fuel cell technologies in order to enhance our Energy Delivery line of business. In the unregulated business AVISTA Labs is investing in joint venture with wide scale domestic and international market appeal.

### **Vision**

Fuel cells will have broad impact to both stationary and transportation applications. Our Company is presently focused on stationary applications.

As commercialized power plants become available they will begin to have an impact within the power system infrastructure. Large fuel cell systems, providing both electricity and steam, will be used to replace old inefficient boiler systems of thermal power plants. Modular fuel cell plants with multi megawatt outputs will be utilized as distributed generators at distribution substations, and as cogenerators at industrial sites. Similar units will be configured with Flexible AC Transmission System (FACTS) controllers to inject power into the grid at strategic transmission switching stations thereby improving transfer capacities and system stability. Smaller fuel cell power plants in the 200-500kW range will be located at commercial sites to provide lower temperature thermal outputs (for hot

**Appendix I****Resource  
Assessment  
(continued)**

water use) and electricity for premium power applications. And finally, small fuel cell power plants in the 2-10kW output range will be available to provide reliable electricity at residential homes and at remote sites.

**Background**

Fuel cells convert hydrogen gas to electricity through an electrochemical process which does NOT involve combustion. These chemical reactions produce electricity, heat, and water, with absolutely ZERO emissions. Fuel cells, therefore, are inherently quiet, environmentally benign, and very efficient (approx, 60% electrical). In applications which use the exothermic energy in addition to the electrical energy, overall plant efficiency is approximately 85%.

There are five fuel cell technologies, named for their respective electrolytes, ranging in operating temperatures from 50 deg. C. to 1000 deg. C. These are: solid polymer or proton exchange membrane (PEM); alkaline; phosphoric acid; molten carbonate; and solid oxide.

Hydrogen is derived from hydrocarbon fuels by a process known as reforming. Natural gas provides this county's primary source of hydrogen through steam-methane reforming. Much research is being conducted to provide small scale reformers and units which can economically reform a variety of infrastructure hydrocarbon fuels.

Fuel Cell power plants include the following essential subsystems: Fuel processor; fuel cell stack; power conditioner; and system controller.

**WWP Projects**

On June 24, 1997 WWP and Double Tree Hotel Inc. dedicated the first fuel cell power plant installed in the Northwest U.S. Manufactured by ONSI, a division of International Fuel Cell Corporation of South Windsor Connecticut, this phosphoric acid fuel cell plant is rated at 200kW electrical output and 700,000 BTU/hr thermal output. It was installed at the downtown Spokane Double Tree Hotel complex adjacent to Riverfront Park. This demonstration plant, fueled by natural gas, will be operated by WWP's Energy Delivery group.

WWP is a member of the Fuel Cell Commercialization Group (FCCG) which is working on commercial designs for molten carbonate plants in the 2-3 MW range. Recently FCCG participated in a major demonstration of molten carbonate technology at Santa Clara, Calif. The direct sponsors of this demonstration included: the City of Santa Clara; the U.S. Dept. of Energy; EPRI; Energy Research Corporation; subcontractors; and various utilities. The role of the FCCG included providing plant specifications, reviewing operating procedures, and evaluating test data.

WWP's governmental relations group has been instrumental in working with State and Federal legislators regarding hydrogen programs and fuel cell technologies. In addition to creating awareness of energy technologies, these efforts will result in collaborative projects for industry and regional universities, as well as government supported R&D and demonstration projects within this area.

**Appendix I****Resource  
Assessment  
(continued)**

WWP currently supports a ceramic membrane reforming project conducted at Washington State University and Pacific Northwest Laboratories (PNL). This project involves partial oxidation reactions to provide hydrogen and carbon dioxide directly from natural gas. High temperature ceramic materials together with new catalysts are being combined to produce small scale reforming vessels. Such units are able to produce hydrogen, on demand, in relatively small geometries. PNL already has a laboratory demonstration unit.

WWP is working with Molecular Simulations, Inc. of San Diego, Calif. to better characterize methane at the molecular level. This research could lead to new uses for natural gas, and improvements in distribution and storage infrastructure. At present, some of the research has been devoted to study of gas hydrates, which could be a major source of natural gas in the future. The U.S. has huge deposits of gas hydrates in coastal ocean floor regions.

**AVISTA LABS Projects**

AVISTA LABS has an ongoing project jointly funded with Spokane Intercollegiate Research and Technology Institute (SIRTI) to commercialize a 2kW PEM hydrogen/air fuel cell. In addition, AVISTA is managing related development work at SIRTI to produce proprietary ionic (proton conducting) polymers, diffusion layer materials, electrodes, and novel new fuel cell components including current collectors, and modular housing assemblies.

AVISTA LABS is conducting marketing and joint venture business planning activities aimed at accelerating commercialization of small scale PEM fuel cell power plants.

AVISTA LABS, in conjunction with WWP, is developing a fuel cell kit which will be available as an educational unit for fuel cell technologies. The kit contains a working 10Watt PEM fuel cell, 2cu. ft. of hydrogen fuel, an electrical load, and a CD / ROM which tells the story of hydrogen and contains tutorials, lesson plans, and experiments for instructors and hobbyists. The educational kit will be available in the Fall of 1997.

**Avoided Cost**

Avoided costs are costs determined by a public utility commission process that is intended to represent the costs a utility would otherwise incur to generate or purchase power if not acquired from another source. These costs would apply to customer owned resources made available to WWP.

In general, avoided cost is meant to represent the incremental cost of new electric resources available to a utility. Avoided cost rates reflect the price of power from the avoided resource or resource mix. These rates are often applied to the purchase of energy from PURPA qualifying facilities. In some cases, the avoided cost is used to determine the cost-effectiveness of potential resource alternatives.

Presently, the avoided cost methodology used in the filed tariff for the purchase of qualifying facilities of less than one megawatt in size is the same in both Washington and Idaho. The avoided costs are based on market prices during the surplus period. A

## Appendix I

Resource  
Assessment  
(continued)

gas-fired combined cycle combustion turbine is used as the surrogate firm resource to determine costs of future power during the projected time period of resource need. The natural gas supply costs that WWP is presently using can be found in Table 11. Adjustments in the avoided cost may be made after the 1997 IRP is filed, if the company decides to make changes and seek approval from the state commissions.

Table 11

Natural Gas  
Prices

PGT assumptions: (same as found in WWP's 1997 gas IRP)  
Supply Contracts:

	Annual Firm <u>per therm</u>	Winter Firm <u>per therm</u>	Spot <u>per therm</u>
November, 1996	\$0.1061	\$0.1040	\$0.1204
December	\$0.1119	\$0.1109	\$0.1264
January, 1997	\$0.1133	\$0.1114	\$0.1279
February	\$0.1071	\$0.1092	\$0.1214
March	\$0.0999	\$0.1040	\$0.1139
April	\$0.0951		\$0.1094
May	\$0.0879		\$0.1019
June	\$0.0889		\$0.1029
July	\$0.0899		\$0.1039
August	\$0.0899		\$0.1039
September	\$0.0894		\$0.1034
October	\$0.0889		\$0.1029
November	\$0.1133	\$0.1083	\$0.1254
December	\$0.1194	\$0.1154	\$0.1316
January, 1998	\$0.1210	\$0.1160	\$0.1332
February	\$0.1143	\$0.1137	\$0.1264
March	\$0.1067	\$0.1083	\$0.1186
April	\$0.1015		\$0.1139

Natural gas supply costs are expected to rise at an annual rate of 4.13% in nominal terms.

**Appendix I**

**Resource  
Assessment  
(continued)**

WWP's approved avoided cost tariffs are:

Washington-	1997	18.90 mills		
	1998	19.60		
	1999	20.50		
	2000	21.50	20-year levelized	
	2001	22.40	1997	29.72 mills
	2002	23.40	1998	31.75
	2003	24.50	1999	33.96
	2004	25.60		
	2005	26.80		
	2006	28.00		
Idaho-	1997	21.68 mills		
	1998	22.66		
	1999	23.68		
	2000	24.74	20-year levelized	
	2001	25.86	1997	31.49 mills
	2002	27.02	1998	33.34
	2003	28.24	1999	35.33
	2004	29.51		
	2005	30.83		
	2006	32.22		

Avoided costs are one indicator of the incremental cost of new resources. Other indicators are model outputs and market prices.

In Idaho recently, the IPUC approved a methodology of using a company's IRP in determining the rate to be paid a qualifying facility (QF) over one megawatt. The methodology is based on the base or preferred resource plan as found in the company's current IRP. The avoided cost of the QF project is the difference in the present value of revenue requirements between the 20 year base case resource plan and a modified resource plan that includes the QF resource. All terms and conditions of the purchase contract are subject to negotiations.

In Washington for facilities over one megawatt, the WUTC has in place a bidding system that allows the company to compare the value of a QF to other resource alternatives. This then becomes the basis for determining the purchase price through contract negotiations.

With the publication of the 1997 IRP, WWP may again file revised avoided costs to match the parameters in the IRP, including the projected surplus period. WWP has 90 days after the IRP mailing to file revised numbers in Washington. The company could also file at about the same time updated avoided cost numbers in Idaho. This will allow the company to remain in compliance with the state's requirements in their management of the PURPA legislation. The movement of the states toward market pricing is a positive indication of the changes in the electrical industry as we move toward a more competitive market.

## Appendix I

Resource  
Assessment  
(continued)

## Hydro Project Relicensing

WWP is actively engaged in the second-stage of consultation in the FERC relicensing of its 790 MW Cabinet Gorge and Noxon Rapids hydro projects on the Clark Fork River in Northern Idaho and Western Montana. This period of the consultation process centers on the negotiation of requests for studies and information by agencies, tribes, and other participants, and concludes with the company preparing and filing an application for license by February, 1999.

WWP's Clark Fork relicensing not only represents a critically important effort to preserve the customer and company's most valuable generating assets and resource options in the future, but it has also become the best-recognized and hopeful "collaborative" relicensing process in the nation. Our effort to develop a unique and effective combination of strategic elements began with the strategic planning we launched in 1992. It has remained flexible and responsive to the needs of WWP and all participants, and remains leading-edge in its approach today. Some of our more notable modifications to the conventional FERC relicensing approach include:

- shortening of the Noxon Rapids license ending date to coincide with Cabinet Gorge;
- conducting early natural resource inventory studies;
- securing the active involvement of FERC staff three years ahead of schedule (first licensee in the country to do this);
- having FERC conduct EIS scoping three years early;
- creating the first partnership in the country with a nationally recognized river conservation organization, Trout Unlimited;
- establishing the first facilitated, and consensus-based relicensing consultation process in the country;
- involving staff from both the IPUC and WUTC in the consultation process to more effectively represent customer interests;
- development of a unique consultation approach with regional tribal governments;
- sponsoring a pre-license-filing application settlement agreement process;
- initiating the first of its kind, comprehensive, adaptive-management based framework for the new license, called the "living license". The living license will be a settlement agreement that encourages adaptive management throughout the term of the new Federal License.

WWP believes its licensing approach will do a much more effective job of meeting the needs of all participants than will a conventional relicensing, by facilitating the active and timely involvement of all interests. Washington Water Power's effort will create opportunities for early agreement among parties, preserve options for the company in the future, emphasize local problem solving and decision making, result in more durable license agreements, and create a much greater shared value for the unit cost than a conventional approach. WWP also believes a flexible and durable agreement with shared involvement will better protect the company's assets and its relicensing resource investment for the term of the FERC license, which WWP expects will be granted for a period of from 35 to 40 years.

## Appendix I

Resource  
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(continued)

WWP has not developed a formal projection of potential license implementation costs, which begin substantially in the year 2001, but the company has budgeted for the relicensing process costs for the period 1992 - 2001. That estimate is \$17.5 million in direct costs (\$22.00 per installed kW), which is largely capitalized, and totals \$24 million, including the accrual of AFUDC (\$30.00 per installed kW). The budget for 1997 is \$3.9 million.

### Colstrip Fuel

WWP burned 576,161 tons of fuel in 1996, which was 353,825 tons less than the budgeted 929,987 tons. The variance is primarily due to economic dispatch during the year and four outages lasting more than 100 hours each. Colstrip units 3 & 4 logged over 3,100 reserve shutdown (economic dispatch) hours in 1996 compared to only 216 hours in 1995 and no reserve shutdown hours from 1987 through 1994. WWP is actively engaged in reducing the fuel costs at Colstrip.

During 1995 and 1996, the Coal Supply Agreement was arbitrated with the supplier, Western Energy Company (WECO). The Arbitrator took the Buyers position that the language of the contract calls for the least cost coal to be mined for the Buyers. The Buyers are allowed to participate in the mine permitting process to enable WECO to acquire a permit to mine the reserves in a least cost mining method. The least cost mining method could result in annual savings to WWP amounting to \$450,000 to \$750,000. This saving is contingent upon successful permitting with the appropriate agencies, which is hopeful to be completed successfully in 1997.

The Buyers have the obligation to buy, from WECO, all the coal required to run Units 3 & 4 through the term of the contract, which is the end of the year 2019.

The Arbitrator took the Buyer's position on reclamation funding. WECO wanted to only deposit 66¢ on the dollar (net income tax charges) into a reclamation trust. WECO, as a result of the arbitration, is not allowed to charge the Buyers for income tax expenses. This is a savings to the Buyers of over \$36.8 million (17.5 cents per ton over the life of the contract, \$5.5 million to WWP), in current dollars, based on an estimate of final reclamation costs at \$108.3 million. The Buyers are able to earn interest on the whole dollar instead of just the 66¢. WECO was required to deposit approximately \$41 million into a trust account in which the minimum rate of interest the account must yield is the prime interest rate charged by the Chase Manhattan Bank minus two percent.

The Arbitrator denied a Coal Transportation Agreement Fee Operating Profit claim on tons sold over the annual amount of 6.0 million tons and a Coal Transportation Agreement credit claim on the first 66 million tons delivered.

The Buyers have given notice to WECO that a gross inequity clause has been triggered in 1996 by the doubling of the CPI from the base year of the Coal Supply Agreement. The parties are in the process of negotiating the profit calculation of the Coal Supply Agreement, which may result in another arbitration proceeding in 1997, if compromise is not possible.



**Appendix I****Resource  
Assessment  
(continued)****Centralia Fuel**

WWP burned 861,807.64 tons of fuel in 1996, which was 78,965.36 tons less than the budgeted 940,773 tons. The variance is primarily due to economic dispatch during the year and one outage lasting more than 100 hours. Centralia units 1 & 2 logged over 650 reserve shutdown hours in 1996 compared to 3,300 hours in 1995 and virtually no reserve shutdown hours for 1992, 1993 and 1994.

WWP budgeted 1,433,740 MWhs generation from Units 1 & 2 in 1996. WWP's actual generation was 1,267,152 MWhs resulting in a 0.680 tons per MWh conversion factor. WWP's 1995 actual generation was 770,753 MWhs from burning 502,455.82 tons, resulting in a 0.652 tons per MWh conversion factor. The conversion factor rose in 1996 because more Powder River Basin coal, containing higher BTU's per pound, was burned in 1995 than in 1996.

In 1996, the Buyers approved the opening of a new area in the Centralia Mine. The new area has low overburden ratios with slightly lower quality coal that will be blended with higher quality reserves located in the mine and external fuel sources from the Powder River Basin. Deliveries from the new reserve are scheduled to begin in the last quarter of 1997 and should noticeably reduce the cost per ton delivered from the Centralia Mine.

**Centralia Compliance With Clean Air Act**

Centralia has been identified as a contributor to air quality problems in the I-5 corridor, Mt. Rainier and nearby Forest Service wilderness areas. In 1995, The Southwest Washington Air Pollution Authority (SWAPCA) ordered the power plant to reduce its sulfur dioxide emissions by 50% beginning with the phase two implementation of the Clean Air Act (CAA) which takes place 2001. The National Park Service (NPS), Forest Service (USFS) and other groups felt that this was not a sufficient reduction even though this ruling met the limitations of the CAA.

Beginning in January of 1996, the NPS, USFS, Department of Ecology (DOE), Environmental Protection Agency (EPA), SWAPCA, Puget Sound Air Pollution Control Authority (PSAPCA) and representatives from the plant owners began a series of meetings called a Collaborative Decision Making (CDM) Group to attempt to bring all concerns to the table in a non-adversarial atmosphere. At a series of public meetings beginning in June, the CDM Group reported on its work and invited public review of and comment on the work in progress.

The product of the CDM Group was a "Target Solution" that was presented to SWAPCA in a public ceremony in Seattle with Secretary of Interior, Bruce Babbitt taking part in the presentation. The Target Solution, if implemented by the owners, would reduce the emissions of SO<sub>2</sub> by 90% by installing SO<sub>2</sub> removal equipment and reduce NOx through installation of low NOx burners. The SO<sub>2</sub> emissions will be reduced to 10,000 tons or less by 2003, well below the level required by the CAA but at a level that is acceptable given the proximity of Centralia to the Mt. Rainier Park and the problems with visibility impairment. Many different options were studied including fuel switching, outside coal, partial scrubbing, time sequenced scrubber installation and others with the target solution emerging as the most cost effective and resulting in the greatest reduction in SO<sub>2</sub> emissions.

**Appendix I**

**Resource  
Assessment  
(continued)**

The CDM process is unique because for the first time in the nation, regulators and federal land managers have come together with utilities to find consensus on achieving maximum sulfur dioxide controls outside of the traditional legal approach which in other cases has taken up to ten years to reach a decision.

In addition to maximizing the reduction of Centralia plant SO<sub>2</sub> emissions, the CDM group is interested in preserving jobs, the local economy, and tax revisions to state and local governments. In reviewing the two options that kept the plant open, it was decided the two scrubber option, was most desirable to meet these goals even though the full scrubbing option is a more expensive option to the owners than closing the mine and laying off 510 employees. Changes in tax law seem to be the most practical solution in reducing the funding gap between the two options and may provide the owners with the resource assistance necessary to choose the CDM target solution.

The owners received forgiveness of sales and use taxes on the construction of new scrubbers. This is consistent with laws passed in 1995 in the Washington State legislature that forgive sales and use taxes on new pollution control equipment that might be installed by a manufacturing industry. Owners also received a tax credit against their public utility tax obligation. This credit is equal to the sum of new property taxes that may be imposed on the new pollution control equipment and the sales and use taxes that are imposed on coal purchases.

The following Centralia Tables and Figures deal with the "Target Solution" which was the result of Centralia's compliance with the Clean Air Act.

Table 2I

**Summary of  
Proposed  
Emissions  
Limits For The  
Centralia  
Power Plant**

**SUMMARY OF PROPOSED  
EMISSIONS LIMITS  
FOR THE CENTRALIA POWER PLANT**

**1. Sulfur Dioxide (SO<sub>2</sub>) Emission Limits: Transition to CDM Target Solution**

Time	Hourly SO <sub>2</sub> Concentration (1-hour average)	Annual SO <sub>2</sub> Limit (tons/year)
Now to December 2001	1,000 ppm <sup>1</sup>	Not limited <sup>1</sup>
2002	250 ppm, new stack	10,000 ton/yr, new stack only <sup>2</sup>
January 2003 Onward	250 ppm	10,000 ton/yr plant-wide

<sup>1</sup>Previous and current regulatory standards

<sup>2</sup>Preferential use of controlled unit when operating below full capacity

**2. Comparison of Nitrogen Oxides (NO<sub>x</sub>) Emissions Limits**

Time	EPA Acid Rain NO <sub>x</sub> Concentration (annual avg.)	NO <sub>x</sub> Annual Limit (tons/year)
Starting 1997	0.45 lb/10 <sup>6</sup> Btu	Not limited
2002 (installation of low-NO <sub>x</sub> burners with scrubbers)	Subject to RACT	Potentially subject to RACT
2008	0.38 lb/10 <sup>6</sup> Btu	Potentially subject to RACT

RACT = Reasonably Available Control Technology; standard required under Washington Clean Air Act

**3. Comparison of Particulate Matter Emissions Limits and Requirements**

Time	Visible emissions	PM concentration	Particulate monitoring
Now to December 2001	20% opacity	0.1 grains/dry standard ft <sup>3</sup> of exhaust gas	Annual compliance source testing
2002 Onward	20% opacity; potentially subject to RACT review	Subject to RACT review	Annual compliance source testing

**Table 21****Summary of  
Proposed  
Emissions  
Limits For The  
Centralia  
Power Plant  
(continued)****4. Operational Conditions - After December 31, 2001**

- SO<sub>2</sub> Emissions Accounting
  - ◆ All emissions regardless of outages are included when comparing to annual limits.
  - ◆ The burden of proof for excusable scrubber outages and short-term excess emission is the responsibility of the plant operators
  - ◆ Exceedances of all annual emissions limitations and unexcused exceedances of short-term emissions limitations are violations.
- Forced scrubber outages are to be minimized in number and duration.
- Exceedances of the annual SO<sub>2</sub> emissions limit results in plant owners forfeiting Acid Rain Program SO<sub>2</sub> allowances to SWAPCA.

**5. Acid Rain Program Monitoring**

- Continuous monitors for SO<sub>2</sub>, NO<sub>x</sub>, CO<sub>2</sub>, and visible emissions and flow rate operate according to national guidelines.
- Stringent Quality Assurance and Quality Control requirements.
- Monitoring results reported quarterly to EPA, Ecology, and SWAPCA, and are available to the public.

**6. Penalties**

- Any 12-month period in which SO<sub>2</sub> emissions exceed 10,000 tons is equal to up to 30 days of violation (or the number of days in the last of the 12 months).
- Owners have burden of proof to demonstrate that fewer than 30 days of high emissions caused an exceedance of the 12-month total emissions limit.
- Each violation day is subject to penalty as allowed by state law, up to \$10,000 per day, or \$25,000 per violation for federal action.
- Penalties for exceedances of hourly limits will be determined according to SWAPCA regulations and the Washington Clean Air Act.

For more detailed information, see "Target Solution: Proposed SO<sub>2</sub> Emissions Limits for the Centralia Power Plant".

**Table 31**  
**CDM Target Solution - Centralia Power Plant**

**Centralia Power Plant**

<b>Compliance Strategy, Option 6g (\$1000)</b>	<b>Nominal \$\$\$'s</b>	<b>Net Present Value ('96\$\$s)</b>
--	-------------------------	-------------------------------------

W/O Tax Incentives, Before Federal Tax  
Capital

Scrubber Facility	\$ 214,278	\$ 140,204
Other Support Mods	\$ 30,843	\$ 19,593
Sales Tax on Equipment	\$ 18,629	\$ 12,145
	<u>\$ 263,750</u>	<u>\$ 171,942</u>

Operating & Maintenance  
Facility & Support  
Property Tax

Facility & Support	\$ 154,852	\$ 33,391
Property Tax	\$ 70,244	\$ 16,043
	<u>\$ 225,096</u>	<u>\$ 49,434</u>
	<u>\$ 488,846</u>	<u>\$ 221,376</u>

**W/Tax Incentives, Before Federal Tax**

Capital

Scrubber Facility	\$ 214,278	\$ 140,204
Other Support Mods	\$ 30,843	\$ 19,593
	<u>\$ 245,121</u>	<u>\$ 159,797</u>

Operating & Maintenance  
Facility & Support

Facility & Support	\$ 154,852	\$ 33,391
	<u>\$ 154,852</u>	<u>\$ 33,391</u>
	<u>\$ 399,973</u>	<u>\$ 193,188</u>

**State Tax Incentives (project)**

Intended to cancel future sales tax on new pollution control equipment

Intended to offset future property tax on new pollution control equipment w/credit against public utility tax

**Table 4I**

**Centralia  
Power Plant  
Compliance  
Strategy**

**Centralia Power Plant**

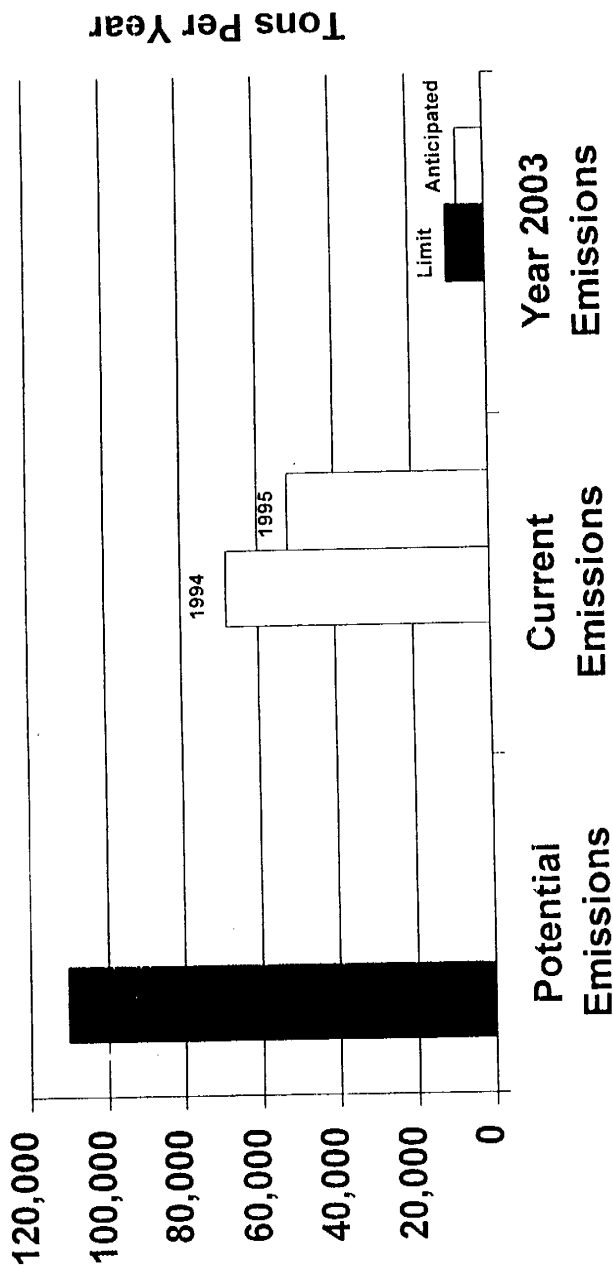
<b>Compliance Strategy, Option 6g (\$1000)</b>	<b>Nominal \$\$\$'s</b>	<b>Net Present Value ('96\$\$\$)</b>
<b>W/O Tax Incentives, Before Federal Tax</b>		
Capital		
Scrubber Facility	\$ 214,278	\$ 140,204
Other Support Mods	\$ 30,843	\$ 19,593
Sales Tax on Equipment	\$ 18,629	\$ 12,145
	<u>\$ 263,750</u>	<u>\$ 171,942</u>
Operating & Maintenance		
Facility & Support	\$ 154,852	\$ 33,391
Property Tax	\$ 70,244	\$ 16,043
	<u>\$ 225,096</u>	<u>\$ 49,434</u>
	<u>\$ 488,846</u>	<u>\$ 221,376</u>
<b>W/Tax Incentives, Before Federal Tax</b>		
Capital		
Scrubber Facility	\$ 214,278	\$ 140,204
Other Support Mods	\$ 30,843	\$ 19,593
	<u>\$ 245,121</u>	<u>\$ 159,797</u>
Operating & Maintenance		
Facility & Support	\$ 154,852	\$ 33,391
	<u>\$ 154,852</u>	<u>\$ 33,391</u>
	<u>\$ 399,973</u>	<u>\$ 193,188</u>
<b>State Tax Incentives (project)</b>		
Intended to cancel future sales tax on new pollution control equipment		
Intended to offset future property tax on new pollution control equipment w/credit against public utility tax		

**Figure 11**  
**Collaborative Decision Making (CDM) Outcome**

**Collaborative Decision Making (CDM) Outcome**

- ◆ Install full scrubbing to remove 90% of Sulfur Dioxide (SO<sub>2</sub>) from Centralia Plant's exhaust by end of 2002
- ◆ Limit annual SO<sub>2</sub> emissions to less than 10,000 tons/year beginning in 2003
- ◆ Install low Nitrogen Oxide (NO<sub>x</sub>) burners on both boilers by end of 2002
- ◆ Maintain viability of the power plant and viability of the coal mine
- ◆ Improve regional air quality to benefit public health and improve visibility at Mt. Rainier National Park and adjacent wilderness areas

**Centralia Power Plant  
 Sulfur Dioxide Emissions**



**Table 51**  
**Centralia Target Solution for Sulfur Dioxide (SO<sub>2</sub>)**

## Centralia Plant Target Solution for Sulfur Dioxide (SO<sub>2</sub>)

Members of the Collaborative Decision Making (CDM) group for the Centralia Power Plant have agreed on a phased-in approach to reduce emissions of SO<sub>2</sub> to less than 10,000 tons/year. The Centralia Plant owners would install two state-of-the-art scrubbers to remove 90% of the SO<sub>2</sub> from the plant's exhaust - one by December 31, 2001 and the other by December 31, 2002.

- ◆ Centralia Plant owners construct two 700 megawatt capacity scrubbers at the plant.
- ◆ The first scrubber will be in operation no later than December 31, 2001, and the second scrubber will be in operation no later than December 31, 2002.
- ◆ Costs for the scrubber will run between \$250 - \$260 million in capital costs over the period 1998 - 2003. Beginning in 2003 costs for annual operation and maintenance for both scrubbers will be \$5 - \$6 millions.
- ◆ Centralia Plant operation will continue to meet the current SO<sub>2</sub> emissions standard of 1000 parts per million, which will be reduced to 250 ppm in 2003.
- ◆ Beginning in 2003 the Centralia Plant will be limited to no more than 10,000 tons of SO<sub>2</sub> emissions per year.
- ◆ The emissions cap is a 90% reduction from current potential emissions. The actual total emissions from the Centralia Plant will be less than 10,000 tons each year.



**Appendix I****Resource  
Assessment  
(continued)**

## **WWP's Market Neutral Public Purposes Distribution Charge**

The DSM Tariff Rider is Washington Water Power's response to continue public purpose benefits as the industry transitions to a more competitive environment.

In 1995, Washington Water Power became the first energy utility in the country to implement a competitively-neutral distribution charge for conservation and limited-income weatherization. The DSM Tariff Rider is a 1.55% charge of retail electric revenue dedicated exclusively to demand-side management.

## **WWP Residential Energy Efficiency Programs**

### **Limited Income Energy Efficiency program**

This program provides incentives to qualifying limited income customers for residential energy efficiency improvements to include ceiling, wall and floor insulation, infiltration control, water heater wraps, set-back thermostats and conversion of electric space and/or water heating to natural gas. The program is a cooperative effort with limited income agencies within our service territory.

The program is budgeted for \$1.8 million over the 1997 - 1999 period with expected savings of 0.69 aMW.

### **HVAC System Efficiency Program**

This program was proposed and adopted as part of WWP's energy efficiency tariff. The proposed WWP program consisted of two components, one to improve HVAC duct efficiency and the other to improve residential customers HVAC maintenance behavior, particularly with regards to furnace filter changeouts.

Immediately following the approval of the WWP program, the Northwest Energy Efficiency Alliance (NEEA) began actively considering a regional duct efficiency program that would include a pilot in the WWP service territory. On June 9th the NEEA board of directors approved a pilot program for the regional duct program. Part of that regional pilot program will be conducted in WWP's service territory.

WWP has since been working with the NEEA program sponsors to develop a program that will meet WWP's commitment to provide an HVAC System Efficiency program as well as providing NEEA with meaningful pilot program experience.

Since the NEEA program does not presently encompass the entire WWP service territory, nor does it incorporate an HVAC maintenance program, it will be necessary for WWP to either operate an independent program to augment the regional pilot program or to offer to the regional program sponsor sufficient resources to enhance the program to meet all of WWP's commitments.

**Appendix I**

**Resource  
Assessment  
(continued)**

**Natural Gas Awareness program**

This is an informational program intended to provide the technical and economic information necessary for our customers to make the best fuel choice for their home. Most customer information focuses on space and water heating equipment, but the program also extends to other natural gas using appliances as well.

This program is not funded through tariff rider funds. Projected electric savings over the 1997 to 1999 period is 4.8 aMW.

**WWP Residential and Non-Residential Energy Efficiency Programs**

**Energy 2000**

This is a market transformation program focusing on the commercialization and demonstration of proven energy efficient technologies for residential and non-residential applications.

Since this program is targeted for emerging technologies, it is not possible to determine the specific technologies that will be involved over the next three years, but presently various home automation programs and an LED traffic light program are being considered.

Savings from the program are estimated at 0.34 aMW, which does not include indirect market transformation benefits. The program is budgeted for \$993,000 over three years.

**WWP Non-Residential Energy Efficiency Programs**

**Resource Management Partnership Program (RMPP)**

This program promotes resource savings, including but not limited to energy efficiency, resulting from improved facility operation and maintenance. Customers participating under this program receive the benefits of the expertise of WWP-funded personnel and in return agree to incorporate identified cost-effective resource management improvements into their resource policy guidelines.

This program has been operated by WWP quite successfully in primary education institutions throughout the service territory. The program is being expanded to customers with a minimum of \$1 million in total resource (energy and non-energy) expenditures.

The program cost is forecast at \$447,000 to obtain savings of 0.86 aMW over three years.

## Appendix I

Resource  
Assessment  
(continued)**Prescriptive Lighting Program**

This program provides customer incentives for the installation of lighting measures where the existing non-residential code does not apply or for installations which exceed the code or standard industry practices. The program is currently available only to customers receiving service under WWP schedule 11. Funding is limited to \$3,000 per site.

The program is expected to fund 420 projects savings 0.34 aMW at a cost of \$404,000.

**Prescriptive Fuel-Switching program**

This program offers low interest loans to customers converting space heating equipment from electric to natural gas. These loans are offered in cooperation with local financial institutions and buy down the interest rate for the installation by between \$210 and \$1,240 depending upon customer location and sizing of the heating equipment.

Presently this program is available only to schedule 11 customers. Projected savings over the three years are 0.68 aMW for 345 customer conversions at a cost of \$404,000.

**Trade Ally program**

The Trade Ally program provides our customers with access to energy expertise to identify, evaluate, design and pursue energy efficiency opportunities. The program has three components: Technical-Link, providing customers access to technical information, Financial-Link, providing for low cost financing and reviews of project economics, and Education-Link, which provides for on-line equipment information and do-it-yourself audits.

Portions of the program also provide for qualified customers and contractors to have access to energy management evaluation tools (dataloggers, lighting runtime meters, etc.) when they are not being used by WWP Energy Services staff.

The program may include funding of up to \$1500 of design review and/or up to \$500 in loan fees per customer. The program focuses on the all non-residential customer segments.

Three year funding for the program is presently budgeted at \$879,000. The projected savings from the Financial-Link and Technical-Link program are 1.3 aMW for approximately 150 customers. Savings and customer contacts through Trade Ally Education-Link and tool lending have not been estimated.

**Commercial/Industrial Site Specific program**

This program provides incentives for energy efficiency measures in non-residential applications. The measures include a variety of energy management and control systems, HVAC and chiller improvements, refrigeration improvements, heat recovery systems, variable speed drives and other motor efficiencies, conversion of process electric load to

**Appendix I****Resource  
Assessment  
(continued)**

natural gas and other efficiency measures deemed desirable by WWP. In order to facilitate the implementation of the program, there are prescriptive elements of this program targeting variable frequency drives for HVAC and lumber dry kiln fan applications.

Customers under schedules 21, 25, 26, 31 or certain special contracts qualify for service under this program. Funding is up to 5 cents per annual kWh saved or 50% of the project costs, whichever is less. Some of this funding can be advanced for the payment of engineering studies necessary for project design.

This program is budgeted for \$3.1 million over 1997 - 1999 and is anticipated to save over 3.4 aMW in 540 projects.

## **WWP Regional Programs**

### **Northwest Energy Efficiency Alliance (NEEA)**

WWP actively participated in the creation and is currently a funding member of the Northwest Energy Efficiency Alliance. The Alliance is a non-profit corporation funded by WWP, other investor-owned utilities and the Bonneville Power Administration. Funding amounts are in proportion to power sales to end-users.

WWP and all other Alliance funders have committed to an amount up to \$65 million over the 1997 to 1999 period. Funding beyond 1999 or in excess of the existing commitments to the Alliance are at the discretion of each funder.

The purpose of the Alliance, as stated in the Memorandum of Agreement, is to improve the efficiency of electric use and reduce the cost to Northwest consumers of energy efficiency products and services through market transformation. For purposes of the Alliance, market transformation is defined as activities intended to effect permanent changes in markets for targeted, cost-effective energy efficient products or services that will result in high and lasting market penetration in the Northwest.

To date, programs adopted by the NEEA board include LightWise (energy efficient residential lighting), WashWise (resource efficient washing machines), a commercial building operator certification program, an efficient motors program and a manufactured home transition program. Although each of these programs will require several years to effect their proposed market transformation, the initial funding is for one year or less. Several other energy efficiency programs are being actively considered by the Alliance.

Future funding will be based upon performance and subsequent review by the Alliance.

### **Manufactured Home Acquisition (MAP) program**

WWP has provided incentives to manufactured homes sited in WWP's electric service territory which meet the Bonneville Power Administrations MAP specifications. To be eligible under the program, homes must be sited on or before January 26<sup>th</sup>, 1997.

**Appendix I****Resource  
Assessment  
(continued)**

Approximately \$2.3 million will be expended in 1997 to close out this program. Anticipated savings will be 0.23 aMW from 965 sited units.

**Summary of WWP Energy Efficiency Programs**

Collectively, WWP's programs were estimated to result in 14.53 aMW of savings over the 1997 - 1999 program period. This estimate of savings is conservative in that it ignores the market transformation effect of WWP's non-regional programs and underestimates the likely impact of regional programs.

While cost-effectiveness is not the sole criteria in program development and implementation, it is useful that the programs are collectively cost-effective based upon a conservative estimate of savings. Individually all of the programs are cost-effective or very close to being cost-effective under conservative assumptions.

Total estimated tariff rider revenues during the three-year rider period forecast to be \$13.7 million. WWP expenditures on energy efficiency will slightly exceed rider revenue since some program, such as Natural Gas Awareness, are being funded from non-rider sources.

WWP will actively manage these programs over this three year period, making adjustments as necessary to make optimal use of the funds allotted to energy efficiency.

**Industrial Customer Pilot for Customer Choice**

Washington Water Power direct access industrial pilot was approved in Washington and Idaho in 1996. Under the Direct Access and Delivery Service ("DADS") tariff, all large industrial customers are given the opportunity to have up to one-third (37 accounts) of their load served by an alternate supplier. Approximately 28 customers, representing 120 average megawatts, may choose a supplier of their choice for a two year period. For this experiment, WWP would not compete with alternative suppliers for the available load.

The purpose of this experiment is to evaluate a transition from a traditional regulatory system to a more competitive system. This pilot is intended to provide insight into issues surrounding customer choice and customer needs. Industrial customers are generally knowledgeable about the electric industry, are aware of the multiple energy products and services available in the wholesale marketplace, and many are willing to take the risks associated with market-based energy products and services. Many of these customers have high load factors which are desirable loads for energy providers.

The customer would have to agree to get its power from alternate suppliers for at least one year. The customer could change suppliers as often as monthly but could only purchase from a single alternate supplier in each month.

Washington Water Power would provide transmission, distribution, and all ancillary services necessary for uninterrupted service, including scheduling, load following and balancing, and generating reserves. The total "delivery cost" for the DADS tariff was developed by adjusting the non-production related costs to include ancillary services

**Appendix I****Resource  
Assessment  
(continued)**

such as load following, reserves, etc. and to include Federally-mandated power purchase contracts in excess of the current market price for power, a component related to recovery of the existing investment in conservation, and a charge to reflect the Company's DSM tariff rider rate.

The impact of the DADS tariff is reflected on line 2 of Figure 1F called "redistributed load". This was an estimate made by the company and assumed that customer choice would expand after the initial two year trial period, either through extensions of the tariffs or open access legislation.

**Residential and Commercial Customer Pilot for Customer Choice**

On February 10, 1997 Washington Water Power filed proposed tariffs which were approved by Washington and Idaho allowing a portion of the Company's residential and commercial electric customers the opportunity to choose alternate energy providers for a two year period. The More Options for Power Service ("MOPS") pilot is WWP's response to a growing interest regionally and nationally for direct access by all customer classes to other suppliers of electricity.

The purpose of the pilot is to gain practical experience and information, through direct access by a limited number of residential and commercial customers, to prepare for full implementation of direct access for all customers. The MOPS pilot program will provide knowledge in the following five areas to prepare for "customer choice" for all customers.

- Factors considered by customers in choosing an alternate energy provider;
- The marketing techniques and practices of alternate energy providers;
- Customer protections to consider under full implementation of direct access;
- Implementation issues and costs;
- Other accounting, administrative, power operation, rate design and legal issues.

The pilot will gather information and experience related to hourly metering, determining load profiles for customers, billing for commodity and delivery service, billing settlements with suppliers, and power scheduling with small loads. The pilot should educate participating customers regarding retail direct access and gather information on customer preferences related to choice of suppliers.

The Company is proposing a random selection process involving customers across its entire service area to participate in the pilot. The Company would randomly select and contact customers until one percent (or 2,805) of its customers are identified. It may be necessary to contact, or involve 3% to 5% or more of the Company's customers in the pilot, depending on the acceptance rate, in order to identify the targeted number of customers. In addition, two small towns in Washington, Odessa and Harrington (representing approximately 950 customers) were selected in entirety so as to get experience with a geographic group of customers.

**Appendix I****Resource  
Assessment  
(continued)**

WWP has elected to not compete directly with alternate suppliers on the price of energy during the MOPS pilot. Although energy service from WWP would be presented to customers during the pilot as a choice, the Company's offer will be limited to non-price issues.

The proposed MOPS delivery service rates include bundled charges for transmission, distribution, ancillary services, administrative and general, Federally-required power purchases in excess of market, recovery of prior conservation, and one-half of the lost margins associated with the pilot. This pilot represents a "stepping stone" to full direct access for all customers.

On June 30, 1997 WWP deferred implementation of the random customer selection portion of the experiment. The deferral results from lack of supplier participation.

## Appendix J

Resource  
Analysis

# Resource Analysis

## Objective

WWP's generation side of the business currently serves as the sole agent to develop, operate and secure resources for WWP's retail customers. With the advent of retail wheeling, the company will likely become one of many agents providing power to customers. Outside power suppliers is already happening on an experimental basis for a small number of large customers and is proposed for residential customers. For the smaller commercial and residential customers, WWP may continue to be the power supply agent for a majority of customers. Based on the expectation that the company will remain the primary power supply agent for many customers, the goal is to provide power in a least cost manner.

The utility industry is rapidly changing. The current structure where vertically integrated utilities are the retail customers' sole source for power is unlikely to remain intact through the 10 year planning horizon of this IRP. There are several scenarios of how WWP's customers may secure their power resources in the future. One scenario is that utilities remain vertically integrated and secure power for all but the largest customers. Another scenario is that the generation business is separated from the wire business which, along with individual customers are free to shop for the best power deals. This second scenario may or may not include an obligation or opportunity for the generation business to provide power to the wire business of the formerly integrated company.

This report assumes that WWP will remain as the primary agent for securing power resources for the majority of WWP's retail customers. Larger retail customer, however, are likely to be in a position to choose other power suppliers, as they already are under WWP's experimental tariff. The company does not expect any changes in assumptions for loads under this tariff due to the potential for elimination of the DAD's sales tax loophole. These larger customers who will have an opportunity to seek out other power suppliers represent up to one-half of WWP's retail load. WWP will likely remain the primary power supplier for the remaining half of the company's retail load.

Based on the assumptions that WWP will not continue to be the only power supply agent for all of its retail customer loads during the next ten years, and that the company has sufficient resources for all retail loads through the planning horizon, resource planning in this IRP is based on two premises:

1. WWP does not anticipate acquiring new long-term resources to serve retail loads.
2. WWP's goal is to have its cost of production to be at the market rate by 2001 so that the potential amount of stranded generation investment is small or non-existent.



**Appendix J****Resource  
Analysis  
(continued)**

WWP has identified four primary objectives for its power production business. The primary focus is on having a cost of production that is at or below the competitive market price of power by the year 2001.

1. Minimize unit production cost from physical and contractual resources.
2. Drive the total unit production cost to be at or below competitive market rates by the year 2001.
3. Maximize revenues from generation and related value added services.
4. Operate generation facilities in a socially responsible manner.

**Significant Issues**

The company has several issues which will affect the cost of providing power over the next 10 years. Several of these issues have the potential to add to the cost of WWP's resources.

**Relicensing Hydroelectric Facilities**

The company's most important hydro plants, Cabinet Gorge and Noxon Rapids are currently in the relicensing process. Below is the license expiration dates for the company's hydro plants.

Cabinet Gorge	2001
Noxon Rapids	2001

(license expires 2005 but company is relicensing Cabinet and Noxon together)

Spokane River Plants	2007
----------------------	------

The likely outcome of the relicensing process is that there will be a cost for mitigation and that we will lose some of the flexibility of the resources as far as WWP's ability to shape the generation from the plants. It is less likely that the annual energy production from the plants will decrease significantly. The relicensing will probably not create the need for additional energy resources on an annual basis but will increase the cost of energy from our hydro facilities and decrease the value of the energy by restricting flexibility of the plants.

**Negotiating New Contracts with Mid-Columbia PUDs**

A ten year planning horizon would consider the effect of the expiration of one of the Mid-Columbia contracts in 2005 (Priest Rapids). The expiration of the contracts for the other project occur later in 2009 (Wanupum), 2011(Rocky Reach) and 2018 (Wells). WWP is actively working to reach new agreements on Grant County's projects, Priest Rapids and Wanupum, within the next year or two. The likely outcome of these new contracts is that the amount of power received from the Mid-Columbia projects will be less than under the current contracts, but that the power will still be priced at cost. The cost of this power

**Appendix J****Resource  
Analysis  
(continued)**

from these projects is expected to roughly double over the next 10 years, but would still be below market prices.

**Market Competitiveness of Existing Thermal Plants**

The company has three baseload thermal energy plants, Centralia, Colstrip and Kettle Falls. The total cost of power from all three plants is currently above the market rate for power. For the Centralia plant this is primarily due to relatively high fuel costs. For the Colstrip and Kettle Falls plants, above market costs are due to higher fixed capital costs. The company is investigating strategies to bring the cost of these plants closer to market rates. The company is also actively pursuing a sale of its share of the Centralia coal fired steam generating plant. See Table 1J "System Resources Unit Cost and Availability".

**Above Market Contracts**

The company has a number of contracts, both as purchasers and sellers, with rates that are significantly above market rates, in some cases up to five times market rates. The company has bought out one high cost PURPA contract and has accepted a buy out of a sales contract. In order to complete a buy out of an existing contract, both parties—purchaser and seller, need to feel the buyout is financially prudent at a mutually agreed payment. This can be affected by the remaining duration of the contract and the risks associated in continuing the contract as well as the uncertainties of the alternative arrangements for each party. WWP is actively working to re-negotiate above market contracts when the new arrangement has a strong likelihood of being financially beneficial to WWP's shareholders and customers.

**Retail Wheeling and Retail Load Obligation**

The company currently has an obligation to serve all retail electric loads and to plan for the resources to serve those loads. With retail wheeling already here in the form of experimental tariffs and likely to be here on a full scale within the time frame of this plan, the ability to forecast the company's load obligation becomes difficult. The company already anticipates that its load obligation will decrease around 33 average MW in 1997 due to Schedule 26, the experimental DADS tariff. As these kinds of options become permanent for customers, the core load requirements of WWP are likely to decrease. WWP believes it is possible that up to one-half of our current retail load will be free to choose their own power provider within the next ten years. WWP will be reducing costs and adding value services in order to remain competitive with other power providers. The effect this has is to push out WWP's resource surplus indefinitely. The emergence of retail wheeling will require any new resource acquisitions to be cost-competitive in the wholesale market in the event their output is not required for service to core retail customers.

**Appendix J****Resource  
Analysis  
(continued)****New Plant Investment**

The emergence of a vibrant, efficient wholesale market has eliminated the need to conduct resource planning with an "island approach", in which the company must secure long-term owned or contracted resources to provide for current and anticipated loads in the near term. Given the current resource surplus in the west, market purchases are the most cost-effective option for meeting resource needs in the next 5 years. At some point in the future, possibly in the 2000 to 2005 time frame, new resources will likely be developed in response to increasing market prices as the surplus of capacity in the western states is used up by both load growth and plant shutdowns. WWP will have to decide if and when it wants to develop a new resource alone or with partners, or would rather let others build resources whose output can be purchased.

**Renewable Resources**

There may be several advantages to renewable resources in the coming period of industry transition. These advantages include a higher market value for green power if some areas of the country mandate a portion of power should come from renewable resources. Some customers may prefer green resources and be willing to pay a higher cost for green power. WWP's resource that would most likely be defined as a renewable resource, for purposes of green power, would be the Kettle Falls wood fired plant. WWP has also signed a contract to purchase the output from a landfill gas project, but that project development is uncertain at this time. WWP is not currently pursuing other renewable energy projects, but may wish to be more active in this area if the advantages seem significant.

**Hydro System Changes**

The changing operation of the Northwest's hydro system, mostly in response to fish needs, has the potential to significantly affect WWP's operations. If more water is released in the spring from Hungry Horse reservoir to help flush fish downstream, then WWP both loses total annual energy production and has production shifted from high cost to low cost periods. WWP loses energy production because WWP's downstream projects on the Clark Fork River, which use water from Hungry Horse will have more water than can be run through the turbines in spring and energy production is lost. Releases of water from Hungry Horse in the spring also leaves less water for the Clark Fork River in late summer when energy prices are higher and WWP's system is more energy constrained.

**Production Cost Model Overview**

The production cost model projects the company's total cost of production over the next ten years. The model is consistent with the company's two year budgets and is used to determine cost allocations between business units inside the company. The production costs represent all of the company's cost to own and operate its generation facilities and also the cost and revenues from long term power purchases and contracts. Understanding the production costs of generating facilities is necessary in order to reduce operating costs, which is one of our action items.

## Appendix J

### Resource Analysis (continued)

The unit production cost is dependent on the overall level of production. Increasing or decreasing core retail loads doesn't change the production costs unless the change is so great that new resources are included in the calculations or resources are eliminated. The model is not a resource optimization or selection model. The model also does not include the cost or savings from demand side resources.

The primary component of WWP's total production costs are the revenue requirements associated with capital investments. These costs are determined outside the model based on existing book value of facilities, future capital expenditures and revenue requirements formulas for capital recovery.

## Production Cost Inputs

The primary inputs in the production cost estimates are:

### Projected Capital Cost

The annual revenue requirements to cover the depreciation and related expenses of capitalized generation plants and related equipment based on existing book value and projected capital additions.

### Projected O&M Costs

The operation and maintenance cost of each plant separated into fixed and variable components and escalated by a constant escalation rate.

### Projected Fuel Costs

The fuel cost of each plant separated into fixed and variable components and escalated by a constant escalation rate.

### Projected Wheeling Cost

The annual expense for the wheeling of power from company plants to the company's service territory escalated by a constant escalation rate.

### Projected Power Purchase Cost

The expected annual expense for long-term, firm power purchases used to meet system load.

### Projected Power Sales Revenues

The expected annual revenue from long-term power sales of surplus system resources.

### Projected Misc. Expenses

The expected annual expense of various misc. costs, with the largest cost being that of the overall company administrative and general cost allocation to production costs.

**Appendix J****Resource  
Analysis  
(continued)****Factors Not Affecting Production Cost**

Some of the factors that in past IRPs have been a factor in resource cost are not explicitly included in the current analysis. These include retail and wholesale load forecast, natural gas prices, wholesale market prices, and cost of new resources. The reasons these factors are not included are explained below:

**Load Forecasts**

In past IRP analysis, resource additions were driven by a forecast of loads and resources. The loads and resources determined a load/resource balance which, when loads exceeded resources, triggered an additional resource to be added to the resource portfolio. The lowest cost physical resource at the time was chosen by the model to be included in the resource portfolio. The load resource balance of other utilities and thus the potential for purchases to meet load requirements was not considered as an option. Load resource balance was the sole trigger mechanism for adding new resources. Now, the load resource balance of an individual utility is no longer the primary trigger mechanism for adding new resources. Because of the availability of wholesale energy, price is the primary mechanism in resource selection. If it is expected to be less expensive to buy than to build, then the build decision will likely be pushed further into the future.

WWP's production cost estimates are based on net system output. Changes in retail or wholesale loads do not affect the net system output unless new resources are added or existing resources are eliminated. Then total cost only changes to the extent that the new resource added or the existing resource eliminated differs in cost from the overall average.

**Natural Gas Prices**

While the future price of natural gas plays an important role in the market price of electricity, it doesn't affect WWP's production cost. WWP has two units that operate on natural gas, Rathdrum and Northeast combustion turbines. Both units are primarily capacity resources and only operate when they can do so profitably. Rathdrum, in particular, will operate if it can produce energy for less than the market price. This may occur during periods of low gas cost or high gas cost. Low gas costs doesn't necessarily mean the unit will operate more since market prices are also likely to be low in a low gas cost environment.

**Wholesale Market Prices**

Wholesale prices don't directly affect WWP's cost of production. Future resource costs may be capped by wholesale purchases prices, but those costs do not change the total cost of the current resources over the next 10 years. WWP's cost of production calculations do not include a resource deficit or surplus that must be balanced with purchases or sales at wholesale prices. Projected Northwest wholesale market prices are found in Figure 2J, and Mid-Columbia weekly index pricing is found in Figure 3J.

**Appendix J****Resource  
Analysis  
(continued)****Cost of New Resources**

WWP's projected production costs do not include any new resources. There is one generic resource, combined cycle combustion turbine, for which a future cost can be somewhat reliably projected. New combined cycle projects generally start in the mid 20 mills range for projects coming on line in the next 2 to 5 years. All other resources, particularly renewable resources, are highly site specific. Generic price projections of these resources can only be done with a very large range.

WWP signed a contract to purchase the output of a 800 kW landfill methane project at its standard under 1 megawatt avoided costs, which levelizes over 20 years at around 30 mills. This project is eligible to receive a 15 mill tax credit. The company has a number of hydro upgrades that could be developed at its existing plants. At this time these projects cannot be profitably developed, but may become feasible when the upgrades become necessary for maintenance or replacement reasons. See Table 2J, "New Resource Options" for levelized cost data.

**Production Cost Projections****Production Cost Output**

The model projects both total dollar and unit production costs for each generating plant and for the company as a whole. It represents the total cost to the company of owning, operating and securing resources for our retail customers. This cost includes the benefits of long-term off system sales that are served by surplus resources on WWP's system.

The production costs are also categorized into several functional categories including fixed capital costs, O&M costs, firm purchases and miscellaneous expenses, wheeling expenses and revenues from firm sales contracts. This division helps identify the driving forces in WWP's overall cost of production. The production cost scenarios are portrayed in Figure 1J, and the relative rate impacts over base case are shown in Figure 4J.

**Base Case**

In the Base Case, WWP does not anticipate acquiring any new resources during the next 10 years. The company's total resources, including contracts decreases by 131 aMW over the period, however, net system production available to serve core loads increases by 11.5 aMW due to the expiration of three large off system sales contracts.

The company's net cost of production is expected to increase less than 6% from 1997 to 2006. The cost of production from company owned resources is expected to increase less than 1% over the same period. The primary cause of the increase in the net cost is the reduced offset from long term wholesale revenues as some of the higher margin long-term sales expire.

The decrease in the cost of company owned resources is a result of decreased fixed capital costs as existing plant in place depreciates faster than the depreciation increase from new capital expenditures. This decrease in fixed costs is almost offset by increases in fuel and O&M costs which steadily increase over the period.

**Appendix J****Resource  
Analysis  
(continued)****Higher Coal Costs**

Two scenarios affect coal prices and one affects the level of production from the company's hydro system. The coal cost scenarios include a doubling of coal escalation rates and a \$25/ton of carbon dioxide tax on coal. Both scenarios assume equivalent availability from WWP's coal plants, Colstrip and Centralia, do not change. While the energy availability from the plants would not change, the actual operating time of the plants would probably decrease as there would be more economic dispatch of the plants due to their higher incremental cost. This would tend to lessen the increase in total unit production cost from higher coal costs.

The two scenarios with higher coal costs increase net cost of production by 3% and 11% in the year 2006 for the doubling of coal cost escalation and carbon tax scenarios respectively. These are increases of 0.83 mills/kWh and 2.83 mills/kWh in the production of electrical power from coal plants. This represents cost increases of roughly \$6.5 million and \$22.5 million in 2006.

**Reduced Hydro Generation**

The third scenario is a decrease in energy production from the company's hydro facilities. This scenario assumes that total annual energy output from the company's hydro facilities, primarily Noxon Rapids and Cabinet Gorge, decreases by 50 aMW due to changes in river operations. This scenario could result from changes in operations at Hungry Horse Reservoir if more water is released in the spring and therefore less water is available later in the year on the Clark Fork River. More water available in the spring would result in more spill where all energy production is lost or increases production in the spring runoff period, when energy prices are typically very low. In either case, WWP's costs would remain roughly the same, but net system production would decrease leading to higher unit production cost.

A 50 aMW reduction in hydro output with no reduction in cost increases net cost of production by 1.5 mills/kWh or 5.8% over the base case in the year 2006. The replacement energy for the 50 aMW loss of production would probably cost around \$11 million.

**Summary**

WWP's production costs are not likely to significantly increase or decrease over the next ten years. Revenue requirements on fixed capital represents about one half of WWP's total production costs. Despite the addition of some expected significant capital expenditures the fixed capital recovery costs should decrease over the next 10 years and only be about 40% of production costs by 2006. Decreasing fixed costs are almost exactly offset by increasing fuel and O&M expenses. Overall, the unit production cost from WWP owned resources increases by 0.16 mills/kWh over 10 years. Given all the uncertainties in the estimate, this effectively means that the overall unit costs of production is flat over the planning period. To have cost of production at market rate by 2001, WWP will need to reduce operating costs at existing plants.

Appendix J

Resource Analysis  
(continued)

WWP does not anticipate adding any new resources to its portfolio over the next ten years. Future resource additions and dispositions will be based primarily on cost. Resources will be sold or purchased to minimize total net cost. Power generation transactions are unlikely to significantly affect the cost of resources used to serve retail customer load obligations.

Figure 1J

Production Cost Scenarios

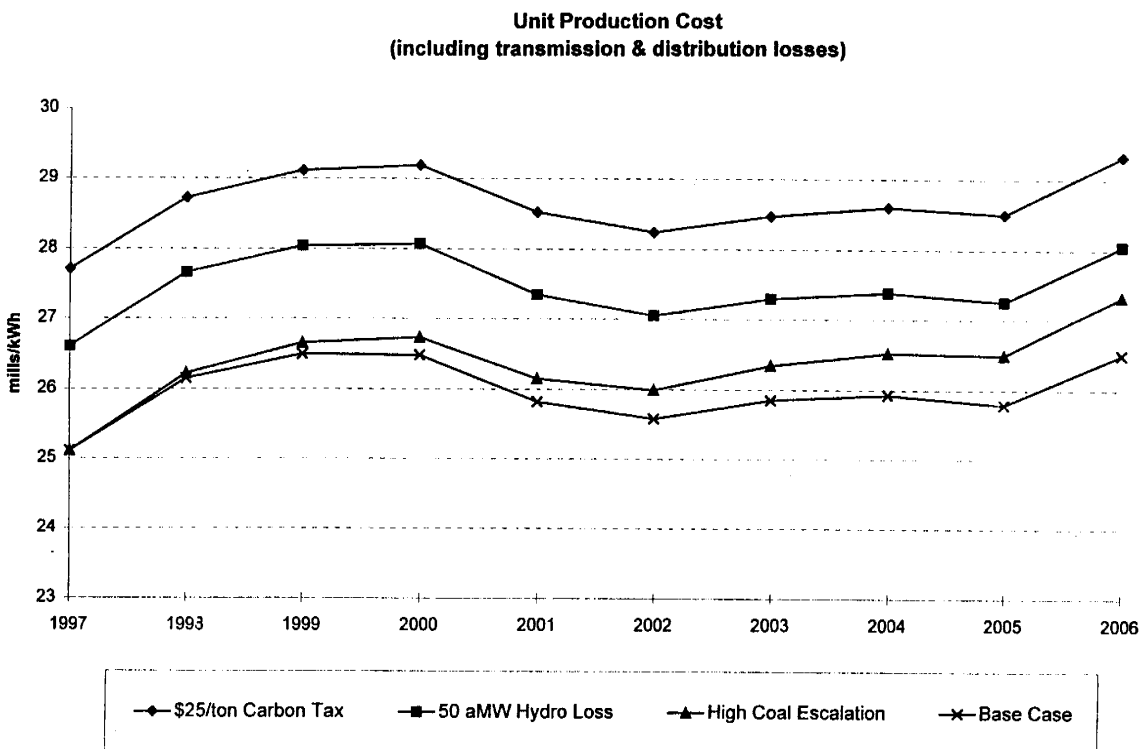




Figure 2J

Projected  
NW Prices

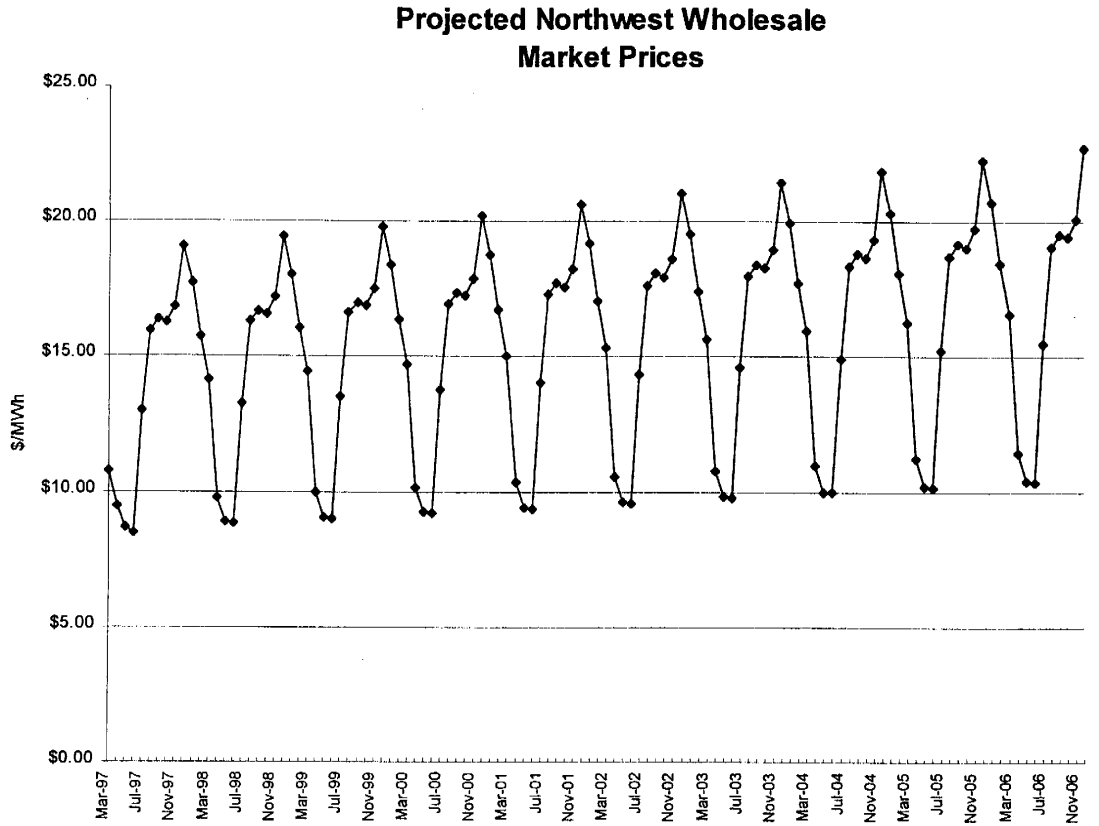


Figure 3J

Mid-Columbia  
Weekly Index  
Chart

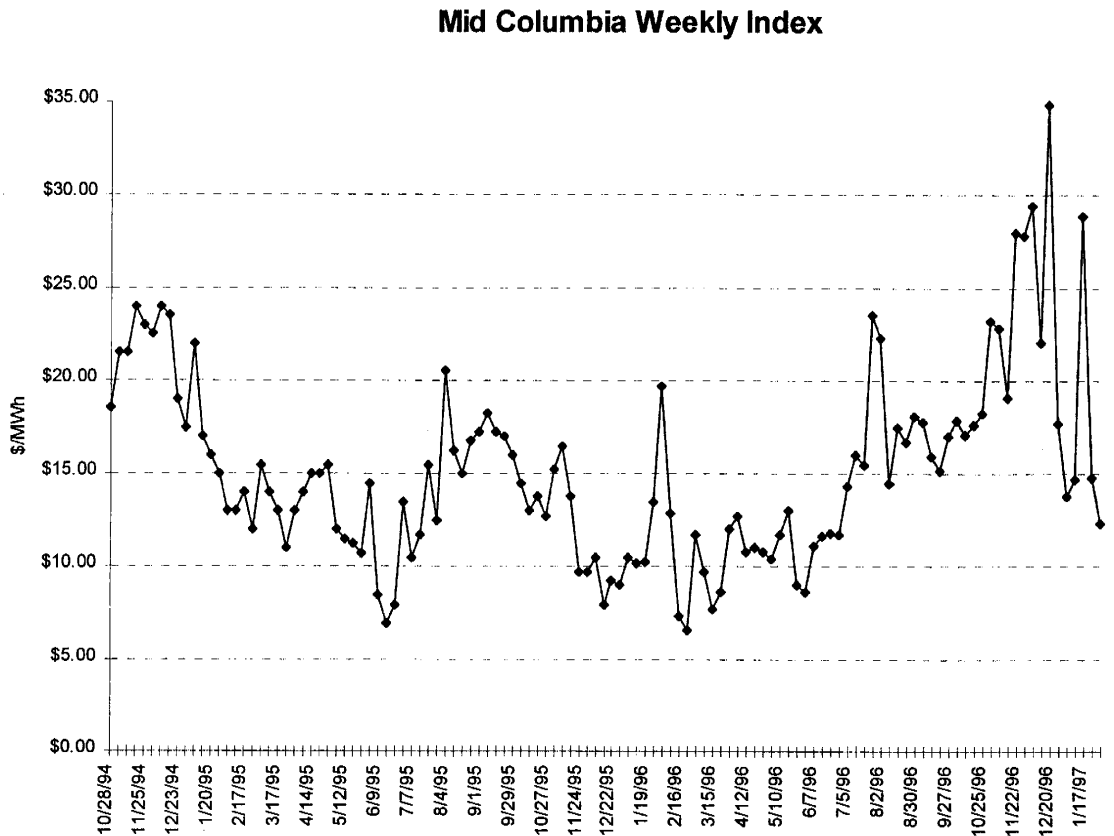


Figure 4J

Relative Rate Impacts

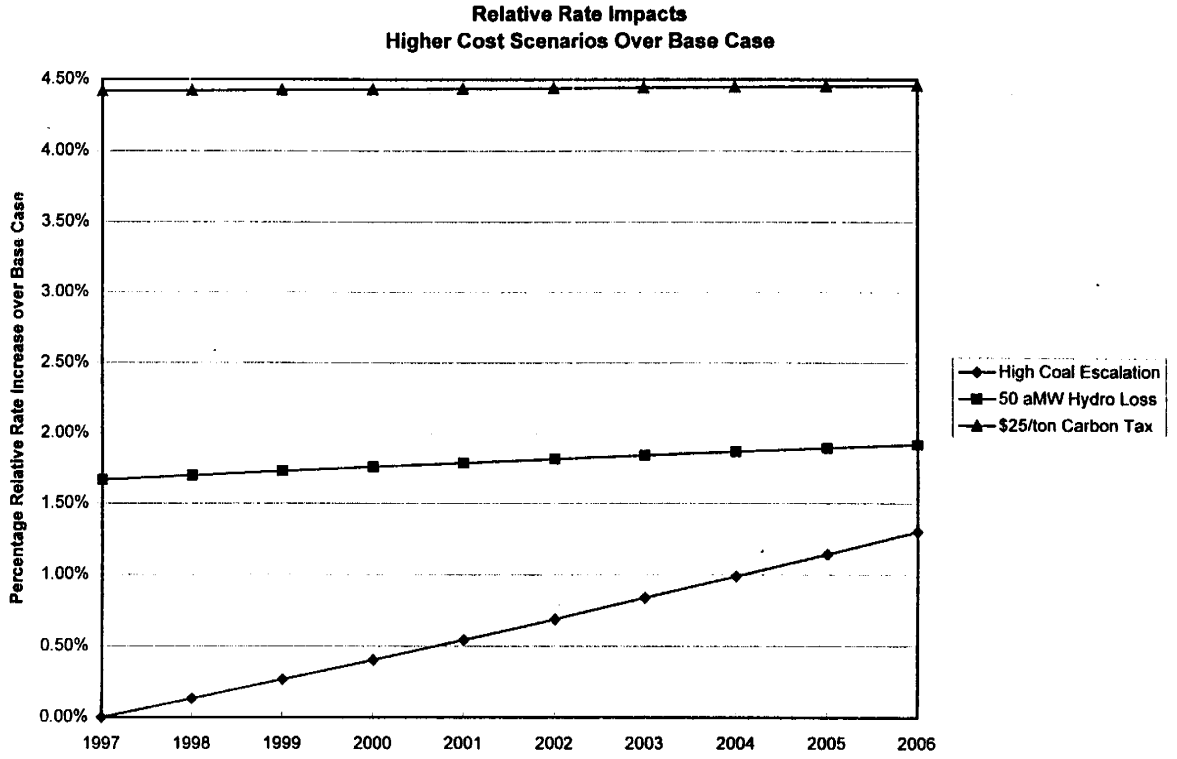


Table 1J

**System  
Resources  
Unit Cost and  
Availability**

Resource	Total Cost * (mills/kwWh)		Energy Available (aMW)	
	1997	2006	1997	2006
System Hydro	\$10.68	\$13.02	438.0	438.0
Mid Columbia Purchases	\$7.03	\$13.24	105.8	74.1
Colstrip	\$30.23	\$27.06	191.3	191.3
Centalia	\$23.90	\$30.30	176.9	176.9
Kettle Falls	\$37.04	\$32.03	44.6	44.6
WNP-3	\$88.55	\$62.27	38.0	40.0
Firm Purchases	\$44.44	\$57.30	99.9	2.4**

\* includes capital and operating costs.

\*\* based on firm contracts signed as of 1997.

Table 2J

**New  
Resource  
Options**

Potential Resource	Energy (aMW)	Levelized Cost (mills/kWh)
Cabinet 2 Upgrade	0.91	29
Cabinet 3 Upgrade	1.80	35
Cabinet 4 Upgrade	0.68	35
Noxon 1 Upgrade	1.50	44
Noxon 2 Upgrade	1.90	34
Mid Columbia Contract Renewal *	< 87	< 20
Northside Landfill Methane Plant **	0.80	26

\* WWP currently has rights to 87 Mwa. First Mid-Columbia contract expires in 2005.

\*\* Contract signed.

## Appendix K

Glossary of  
Terms

# Glossary of Terms, Abbreviations & Acronyms

Aggregators	Brokers who seek to bring together customers or generators to buy or sell power in bulk, making a profit on the sale.
Average Megawatt (aMW)	A measure of the average rate of energy delivered. One aMW equals 8,760,000 kWh per year.
Avoided Costs	Costs determined by a public utility commission process that are intended to represent the cost a utility would otherwise incur to generate or purchase power if not acquired from another source.
B. C. Hydro	British Columbia Hydro and Power Authority.
Base Loaded	A resource which operates more efficiently without being cycled to meet daily load changes.
Bilateral Contracts	Contract between a generator and consumer which may involve aggregation.
BPA	Bonneville Power Administration, the federal power marketing agency for the Pacific Northwest.
Capacity	The maximum load a generator, power plant, or power system can produce or carry under specified conditions.
Capacity Constrained	A condition where a system adds resources for capacity needs rather than energy needs.
Capital Costs	Cost of investment in a new resource, installed \$ per kW.
CF (Capacity Factor)	The percentage of a resource's maximum generation capacity that is actually used.
Cogeneration	The sequential production of electricity and useful thermal energy.

## Appendix K

Glossary of  
Terms  
(continued)

CO2 (Carbon Dioxide)	An emission from fossil fuel burning.
Competition Transition Charge (CTC)	Nonbypassable charge to customers to recover utility stranded costs.
Conservation	Reducing electrical consumption with measures that increase the energy efficiency of appliances, motors, building shells, etc.
Cost Shifting	Shifting cost from one group of customers to another—from industrial to residential or commercial to residential—or from one utility to another.
CPUC	California Public Utilities Commission.
Critical Period	The historical period of water conditions during which the region's hydro power system would generate the least amount of energy while drafting shortage reservoirs from full to empty.
Customer Groups	Industrial, residential, commercial and agricultural.
Data Resources Inc. (DRI)	WWP's national economic forecasting contractor.
Demand	The instantaneous rate at which electric energy is delivered to or used by a system.
Demand-Side Management (DSM)	The activity of acquiring demand-side resources.
Demand-Side Resources	Resources that can be added to a utility system to reduce customer electric usage, or control the timing or shaping of such usage.
DIG	Demand Side Issues Group
Direct Access	Ability of a power producer to sell directly to a retail customer.
Dispatchability	The ability to operate or not operate a resource for economic reasons.
Distribution	Function of distributing power to retail customers.

## Appendix K

Glossary of  
Terms  
(continued)

DSI	Direct Service Industries (certain industrial customers of BPA).
Electrical Energy	The amount of electrical usage or output average over a specified period, e.g. kWh.
Energy Policy Act (EPAAct)	House Referendum #776 passed in 1992, encouraged competition among bulk power producers.
EMF	Invisible lines of electric and magnetic fields surrounding an electric conductor, commonly referred to as Electro-Magnetic Fields.
End-Use	The final use of electricity by customers (e.g. lighting, cooking, etc.).
Environmental Externalities	Environmental effects, including environmental benefits, that are not directly reflected in the cost of electricity.
EWG	Exempt Wholesale Generator (of electricity). They are exempt from certain regulations which traditional utilities must follow.
Existing Resources	Those resources that are currently in use, or being developed under contract but not yet in operation.
FERC	Federal Energy Regulatory Commission.
Firm Load	Customer load served by a utility without a contractual provision for curtailment.
Fixed Costs	Costs that do not vary in relation to change in plant output.
Fossil Fuels	Coal, oil, natural gas and other fuels deriving from fossilized geologic deposits.
Framework	CPUC's new market structure for generation, transmission and distribution among investor-owned utilities.
Fuel Efficiency	Utilizing fuels in applications that produce the greatest end-use efficiency (e.g. conversion of electric space and water heating to natural gas).

## Appendix K

Glossary of  
Terms  
(continued)

Fuel Mix	The make-up of resources used to serve load by fuel type.
Generation	Producing electricity.
Generation Costs	Costs associated with producing electricity or acquiring it through contracts.
Grid	Large electric system linking transmission lines both regionally and locally.
GWh	1 gigawatt-hour = 1 million kilowatt hours.
Independent System Operator (ISO)	Independent operator of transmission lines to assure reliable and fair transfers of electricity from generators to distribution companies.
Inland Northwest	The area of eastern Washington, northern Idaho and western Montana.
Integrated Utility	Utility that provides generation, transmission and distribution services for its customers.
IOU	Investor-Owned Utility.
IPP's	Independent Power Producers.
IPUC	Idaho Public Utilities Commission.
IRP	Integrated Resource Plan or integrated resource planning.
kW	1 kilowatt = 1000 watts
kWh	1 kilowatt-hour = 1000 watt-hours
Levelized Cost	The present value of a cost stream converted into a stream of equal annual payments.
Load	Amount of electricity being used at any given time.
Load Forecast	The predicted demand for electric power for planning purposes.
Lost Opportunities	Resources, which if not acquired or developed within a certain time, could be lost.

## Appendix K

Glossary of  
Terms  
(continued)

Market Forces	Competition for sales, new alliances, innovative pricing structures, customer demand, choice and various kinds of services.
Market Power	Domination of the new marketplace by electricity suppliers that own a high percentage of generation.
MCS	Model Conservation Standards.
Mill/kWh	One mill equals one tenth of a cent. Frequently used as a monetary measure when referring to the cost of producing or conserving electricity.
Monte Carlo Simulation	Monte Carlo refers to the traditional method of sampling random variables in simulation modeling. Samples are chosen randomly across the range of the distribution.
Muni	Municipal- or publicly owned utility.
MW	1megawatt = 1000 kilowatts
MWh	1megawatt-hour =1000 kilowatt-hours
Net System Load	The total load of a system, including both firm and interruptible, within a utility's service area.
Nominal	Rates or costs that include the effects of inflation.
Nonfirm Interruptible Load	Load which can be curtailed in response to a system emergency.
Nonfirm/Secondary Energy	Electric energy having limited or no assured availability.
Nonutility Generation	Generation by producers other than electric utilities.
NWPP	Northwest Power Pool, an organization of electrical utilities.
NWPPC	Northwest Power Planning Council. A federally chartered council comprising Idaho, Oregon, Montana and Washington that establishes policy on Northwest electrical energy, fish and wildlife issues.



## Appendix K

Glossary of  
Terms  
(continued)

O & M	Operation and Maintenance Costs.
Obligation to Serve	Regulatory obligation of a utility to provide electric planning services for all customers and to assure an adequate supply of electricity now and in the future.
Pacific Northwest Coordination Agreement (PNCA)	An agreement signed in 1964 by the federal government and Northwest utilities to agree to operate generating projects as a single entity to make the optimum use of the water and storage resources in the region.
Peak	The greatest amount of demand occurring during a specific period of time.
Performance-Based Ratemaking (PBR)	Regulated rates based on performance objectives, not on actual costs.
Power Brokers and Marketers	Companies seeking to sell generation to large industrial customers or to an aggregate of smaller customers.
Power Exchange (PX)	"Spot" price market where electricity is bought and sold much like a stock exchange.
Present Value	The worth of future returns of costs in terms of their value now.
PUHCA	Public Utilities Holding Company Act.
PURPA	Public Utility Regulatory Policies Act.
QFs	Qualifying Facilities under PURPA (cogeneration and small power production facilities).
Rate Regulation	Supervision over rates and major decisions by elected officials and their appointees.
Real	Costs or rates that are corrected for the effects of inflation.
Redesign or Reengineering	Process corporations utilize to eliminate non-value added work and handoffs.
Regional Transmission Group (RTG)	New forum for energy service providers within a specific geographic area to agree on operating parameters and resolve issues.

**Appendix K**

**Glossary of  
Terms  
(continued)**

Regulatory Compact	Long-term agreements between regulatory agencies and utilities, which are usually embodied in regulatory decisions.
Reliability	A measurement of the availability over a defined period regarding the delivery of power to a customer.
Renewable Resource	Resources such as wind, solar, hydro, etc., in which their availability is not limited by use.
Resource Clearinghouse	WWP's internal employee group responsible for overall integration of resource acquisition activities.
Restructuring	Reconfiguring the market structure by opening the generation of electricity and retail services to competition.
Retail Wheeling	An alternative to traditional energy service where customers are able to choose any electric provider they want.
Seasonal Output	Electrical output from a resource which varies in amount according to the season.
Stranded Costs	Costs associated with providing electricity that are above market prices.
Supply-Side Resources	Resources that generate an electrical output in the utility system.
TAC	Technical Advisory Committee.
Tariff	A schedule filed by a utility with a regulatory agency describing transactions between the utility and customers in terms of type of service, rates charged and means of payment.
Tariff Rider	A separate schedule of rates, in addition to general tariff, intended to collect payment for specific programs or services such as DSM.
Traditional Ratemaking	Regulated rates based on costs expanded, not on meeting performance objectives.
Transition Period for Direct Access	1998-2005, as defined by the CPUC.

## Appendix K

Glossary of  
Terms  
(continued)

Transmission	Lines over which electricity from generators is sent to distribution companies.
Unbundled Rates	Separate line-item charges for generation, transmission, distribution and other services and programs.
Unbundled Services	Functional separation of generation, transmission and distribution services. Customers can select generation services from competing suppliers (direct access).
Utility Distribution Company (UDC)	The regulated utility that serves as the intermediary between the generator and the consumer by supplying distribution services.
Variable Costs	Costs that vary in direct proportion with plant output.
Watt	A basic unit of electric power equal to 0.00134 horsepower.
Weatherization	A process of making buildings more energy efficient such as the Home Insulation Program.
Wheeling	The use of one utility system's transmission facilities to transmit power of and for another system.
Wholesale Wheeling	Selling electricity to wholesale buyers to resell to retail customers.
WNP	Washington Public Power Supply System Nuclear Project.
WSCC	Western System Coordinating Council.
WUTC	Washington Utilities and Transportation Commission.
WWP	The Washington Water Power Company.

**Appendix K**

**Glossary of  
Terms  
(continued)**

**For further information or additional copies of this IRP report, please contact:**

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Doug graduated from the University of Idaho in 1965 with a Bachelor of Science Degree in Electrical Engineering. In December 1967 he was employed by WWP as assistant electrical engineer, with responsibilities in load and resource projections of the company. In 1974 he received an advancement to Power Resource Engineer and became involved with coordination of utility operation under the Pacific Northwest Coordination Agreement, and with the development and publication of company and regional publications of long-range load and resource planning. He was promoted to Supervisor of Planning and Contracts in 1982, and in 1988 received his present title of Contracts and Resource Administrator.

## Appendix L

Renewable  
Resource  
Study

# Renewable Resource Study

The industry has re-entered an era of declining costs in power generation, which is basically being driven by technological innovation and lower fuel costs. This has resulted in renewable resources being higher cost when compared to other alternatives. WWP still maintains data bases on renewables and pursues those reasonable opportunities as they become available.

WWP just recently signed a purchase agreement with Minnesota Methane to purchase the output of a methane generating facility using fuel from the City of Spokane north side landfill. The facility is 0.8 MW in size and the expected operation is unknown, at the present time.

As part of the merger process, WWP agreed to pay for a renewable resource study up to \$20,000. The company entered into an agreement with JBS Energy, Inc. to prepare the study. After the merger was terminated in June, 1996, WWP decided to continue with the study as it was felt that useful information could be realized from the effort. A final report was presented to the Company on January 31, 1997.

The company is planning a customer survey to determine the acceptability of a "green power" tariff in its service territory. If the results of the survey are favorable toward green power, a tariff will be developed and submitted to the state commissions for approval. Renewable resources will then be encouraged and pursued by WWP.

The cover, table of contents and executive summary are included as part of this appendix. If you have need for the full report, please contact Douglas Young at (509) 482-4521.

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# **Renewables as a Market Strategy for Washington Water Power in a Restructured Electric Industry**

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and the  
Northwest Conservation Act Coalition**

January 31, 1997

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## Executive Summary

This study is being prepared in light of a settlement agreement between Washington Water Power (WWP) and the Northwest Conservation Act Coalition (NCAC) in the docket regarding the previously proposed merger between WWP and Sierra Pacific Resources. The project marks a collaborative effort between these parties and also reflects the assistance of the Renewable Northwest Project (RNP).

The report is being completed, notwithstanding the withdrawal of the merger, for use in WWP's Integrated Resource Planning (IRP) process. It is the intent of this report to reflect information developed in this collaborative process and the views of parties to the process.

The marketplace for electricity is in a period of industry change and restructuring. The existing method for determining need for new resources, based on Integrated Resource Planning, consideration of environmental concerns, and portfolio diversification is being changed toward a more market-oriented structure. This change presents both challenges and opportunities for Washington Water Power. The utility's customer base can expand beyond the boundaries of its service territory. Customers will have more choice, and competitors will diversify their offerings to gain market share.

One opportunity for WWP, and the subject of this analysis, is to satisfy a potential customer demand for environmentally preferred clean energy. WWP is well situated to combine its existing emissions-free resources with new clean generation to create electricity "products" to meet this assumed customer preference. This is an opportunity for WWP to develop competitive product offerings and position itself for future growth. WWP could act on this opportunity to avoid migration of customers to other suppliers as competition becomes widespread.

### 1. Restructuring

Electric restructuring is a key issue now because the power system economics of the 1970s and 1980s have reversed. After the oil crisis and high interest and inflation rates of the 1970s and 1980s, the cost of new conventional generation was higher than rates based on the average costs of the existing system in most parts of North America. In recent years, embedded costs have risen and the cost of new generation has fallen as natural gas prices have declined and there have been technological advances in gas turbine-based combined cycle technology. The result is that many entities see the cost of new generation as well below the cost of existing utility generation and want to either switch to a lower cost utility, build their own generation, or buy on the spot market.

The push toward restructuring has also been fueled by low prices on the spot market. In part the low prices result because the spot market clears surplus generation among utilities on the basis that a utility's ratepayers must pay the costs

of fixed operations and maintenance (O&M) and capital additions costs. Spot market bids usually only reflect immediately variable costs plus a small profit. If a utility had to earn the full future cost of generation from the market, the price would be higher.

The spot price is also low for a structural reason – more frequent transfers among utilities and resulting excess capacity. Utilities have been recognizing that their system peaks do not all occur at the same time so that they can cut their reserve margins by relying more on other interconnected utilities.

Lured by the bait of lower costs, the movement toward restructuring is promoting more competition in the providing of electricity, and more customer choice among provider options. Small customers also can benefit from choice. Here, the important choice is in how a portfolio of power resources is constructed. Customers may want power which is “greener”, has shorter-term or longer-term price characteristics than the power which the utility currently has available, or which can be bundled with services such as appliances, energy efficiency investments, or communications technology. The utility and other aggregators of small customers become portfolio managers in this model.

## 2. Renewables

Renewable resources are those which do not consume conventional fuels, but rather use inputs which can be replenished over time (wind, water, solar energy, biomass, and most geothermal applications). Wind and geothermal technologies are emphasized in this study because of their commercialization potential in the Northwest.

Our cost comparison of various utility data sources showed that both technologies are more expensive than new combined cycles, except at high gas price forecasts. (See Table ES-1) (These comparisons exclude the environmental costs of fossil fuels). For wind resources, the largest issue affecting the energy cost is the capacity factor, and utility sources expect costs to increase with larger penetrations, as the best sites are built first.<sup>1</sup> This view does not reflect economies of scale which might occur as existing sites are more intensively utilized. The data sources vary with respect to geothermal cost estimates, and some expect significant technological improvements in a few years.

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<sup>1</sup> If in fact true, early development would be to WWP's advantage.

**Table ES-1: Summary of Renewable Cost Data from Various Sources**

	Capital '95 \$	Fixed & Variable O&M	First year fuel cost (\$/MWh)	Capacity Factor	Mills/kWh (real '95 \$)	Mills/kWh (levelized nominal \$)	Transmission Wheeling	Notes
<b>Combined Cycle</b>								
WWP CC from IRP	\$ 754	\$ 25.49	\$ 16.78	88%	31.0	44.7	excluded	gas at \$2.16 in 1995 escalating at 1.4% real
WWP CC higher gas	\$ 754	\$ 25.49	\$ 18.30	88%	37.0	53.3	excluded	gas at \$2.32 in 1995 escalating at 3% real
WWP CC lower gas	\$ 754	\$ 25.49	\$ 11.72	88%	26.4	38.1	excluded	gas at \$1.50 in 1995 escalating at 2% real
Low capital, low gas	\$ 600	\$ 25.49	\$ 11.72	88%	24.5	35.3	excluded	low gas, capital \$600/kW
<b>Wind</b>								
WWP Wind	\$ 1,018	\$ 31.83	\$ (15.00)	30%	40.5	58.5	excluded	negative fuel price is tax credit for 10 years
PGE Wind block 1	\$ 1,020	\$ 31.54	\$ (15.00)	30%	40.1	57.9	excluded	negative fuel price is tax credit for 10 years
Pacificorp Wind PNW	\$ 1,042	\$ 48.44	\$ (15.00)	28%	52.3	75.5	included	negative fuel price is tax credit for 10 years
Pacificorp Wind UT-WY	\$ 1,318	\$ 58.95	\$ (15.00)	36%	50.6	73.1	included	negative fuel price is tax credit for 10 years
Seattle City Light	\$ 939	\$ 28.60	\$ (15.00)	25%	44.5	64.2	excluded	negative fuel price is tax credit for 10 years
SCL modified to 30%	\$ 939	\$ 28.60	\$ (15.00)	30%	35.9	51.8	excluded	negative fuel price is tax credit for 10 years SCL assumes technological change beyond 2000, not reflected in these estimates
<b>Geothermal</b>								
WWP	\$ 2,732	\$ 170.44	\$ -	90%	51.1	73.8	excluded	includes tax credit
PGE block 1	\$ 2,500	\$ 157.68	\$ -	90%	47.8	68.6	excluded	includes tax credit
Pacificorp	\$ 2,177	\$ 114.84	\$ 11.12	90%	38.6	55.7	included	includes tax credit
Seattle City Light	\$ 1,720	\$ 90.00	\$ -	90%	31.1	55.2	excluded	dual flash technology assumed for 2002, incl. tax credit.
note: implementation of SCL option (and thus its levelized nominal cost) begins in 2002.								
Rest of geothermal begins in 1996								
<b>Wood</b>								
Northwest PPC 25 MW	\$ 2,722	\$ 115.97	\$ 14.90	80%	69.0	99.2	excluded	
Northwest PPC 50 MW	\$ 2,091	\$ 84.93	\$ 14.90	80%	56.2	80.8	excluded	

Several incentives exist which reduce the cost of renewables for Northwest utilities. The federal credit for wind and closed-loop biomass projects offers developers a production tax credit of 1.5 cents/kWh for the first 10 years of the project's life, for wind projects on-line by June, 1999. Another incentive, a result of the regional review, makes roughly \$34 million available annually to individual utilities, including WWP, to support new renewable generation. These incentives can be leveraged to make offerings of renewable energy products more attractive.

A large fraction of the costs of renewables are capital costs. The heavy dependence on capital costs creates hurdles in the form of high costs in the early years, even before considering the challenges of the new market for electric power with its

emphasis on short term price. When capital-intensive projects are financed independent of the utility, and have to be repaid over a short time frame, the impact of the financing requirements on the per kWh cost is disproportional to the capital intensity.

For example a wind project, with a real levelized lifecycle cost under utility financing about 30% above a combined cycle at WWP base case gas costs, has first year costs under independent financing about two-thirds higher than the combined cycle even with the tax credit. However, the wind project is cheaper than the combined cycle when its debt is paid off, and its margin improves over time. While such a cost structure is a disadvantage in a market based on short-term price, it can be an asset in creating electricity products with long term price stability.

Renewables generally have fewer environmental effects than conventional thermal resources. This relative lack of environmental impact can be considered not only a benefit of renewable generation, *per se*, but the environmental benefit also consists of emissions avoided, when renewables replace existing resources. Table ES-2 show these data. Furthermore, renewables have virtually no risk of higher costs due to future environmental regulation.

**Table ES-2: Avoided Tons of Conventional Plant Emissions per MW of Geothermal Power**

	NOX	CO2 measured as carbon	SO2	PM10
Colstrip (units 3&4)	22.7	2,208	3.2	0.7
Centralia	27.6	2,208	65.8	1.5
Gas-fired CC	2.0	1,006	0.0	0.4
Gas-fired CT	2.8	1,384	0.0	0.5
Generic California Gas Steam Plant	0.6	1,258	0	0.1

Some renewable resources have environmental impacts, but they are generally less than fossil-fueled resources. Geothermal projects emit limited amounts of carbon dioxide and hydrogen sulfide which had previously been dissolved in the underground hot water. Avian mortality is of concern with wind resources, but many improvements have been made in turbine design and siting to minimize this impact.

For non-baseload resources, such as wind, two types of resource integration issues arise. One is determining the value of the intermittent resource under traditional capacity planning. The capacity value of wind power for relatively small penetrations of wind into the utility grid is approximately equal to its capacity factor during times of system peak (or to the annual capacity factor for a wind plant whose

output is not significantly correlated with load). This capacity value would be less for wind penetration above 10% of the utility system.

The other issue is integration of the intermittent resource into a traditional utility grid. Viewed in light of the larger uncertainties in conventional dispatch, the inability of individual intermittent resources to be firm on an hourly basis is not important unless the amount of these resources is far greater than at present. Any possible need to carry more spinning reserves to deal with hourly variations of wind plants is less costly in pools where the spinning reserve is provided by hydro (so that the energy cost of reserves is low) as in the Pacific Northwest.

The extent of transmission construction and level of transmission costs will affect the feasibility of new renewable developments, which are often remote from load centers. Grid reinforcement may be required for wind projects at the end of long transmission lines at lower voltages, because of starting currents drawn by induction generators and their reactive power demands from this intermittent resource. Per KW-year transmission fees, under the new point-to-point structure of transmission charges, will have more relative impact on projects with lower capacity factors, such as wind (4-5 mills per kWh at Bonneville's new rates), than those at higher capacity factors, such as geothermal or combined cycles (1.5-1.7 mills per kWh). Charges for ancillary services, such as voltage and reactive power support, amount to 0.7 mills/kWh for non-hydro resources at Bonneville's current rates.

### **3. WWP's System**

WWP's existing characteristics provide a good starting point for a renewable strategy. Close to 50% of its generation comes from hydro, wood, and other renewables. Some of its purchases also come from hydro-based sources. It purchases and sells power throughout the western U.S. on both a firm and non-firm basis.

WWP is strongly connected in both gas and electricity markets. It is interconnected to gas pipelines which transport gas from both Alberta and the Southwest. It is also interconnected to the Northwest grid and can wheel power across the Bonneville system. Through that system it has access to both power resources and power markets in California which will be opening rapidly to competition. It has an interest in Itron Corp., which is developing advanced remote metering technology that could prove important for the restructured utility industry.

WWP's entrepreneurial and merchant interest, combined with its renewable generation base, well situate the utility to pursue marketing opportunities in the area of "green" power.

### **4. "Traditional" Planning and Renewables**

Traditional planning defines a utility's needs by its own loads and contractual commitments to serve other utilities' loads. While a utility will make sales of

surplus energy on a short-term basis to improve system economics, these sales do not justify construction of new generation in advance of "need" absent a strong economic benefit. Under this conventional definition, need is very limited on WWP's system, assuming pursuit of DSM, until between 2005 and 2010. Additional renewables now would serve to avoid more costly generation in the winter, hedge against fuel price changes and the risk of environmental controls, and reduce air emissions.

While the inclusion of renewable resources has a rate impact relative to market-priced electricity, the near-term impact is relatively modest for small quantities of renewables. Each average MW of renewables added to WWP's system would raise costs in the short term by about \$368,000, which translates into 0.051 mills/kWh or 0.11% of current system costs. The long-term cost impact would be lower.

## 5. "Green" Marketing

New power markets are changing the traditional planning paradigm. Increased customer choice means that customer's preferences will play more of a role. Products which are attractive to certain customer groups, for example those who desire environmentally friendly impacts and/or price stability, may be able to command a price premium and assure market share. New renewables can play a large part in meeting this customer-driven demand, possibly combined with existing resources for purposes of load following and cost reduction. Failure to anticipate customer desires may reduce the future competitiveness of the utility.

WWP has a number of options as to how it might enter this market. It's merchant interest could place it in any of these roles: (a) retailer to its own customers; (b) retailer to other customers with choice on an unregulated basis, possibly in conjunction with other firms; and (c) wholesaler and supply aggregator for green power with other brokers and retailers as immediate clients.

Market research in some parts of the U.S. has shown that 40% to 70% of those interviewed were willing to pay up to 10% more for products manufactured in an environmentally friendly manner. Early efforts at green power programs have shown much less participation, however, of 0.01% to 3% of customers who actually put money on the line. Participation can be increased by learning from other programs' experience. The number of customers participating tends to be reduced, the higher is the program price, with less than 0.5% of customers expected to participate if the monthly premium is \$15. Still this group constitutes a niche market which appears to consider more than price where the environment is concerned. Participants in DSM programs were more attracted to green pricing programs than non-participants, and membership in or contribution to an environmental group is a strong indicator of interest in green pricing.

When customers become more used to choice among electricity products, the potential market could expand beyond the initial niche composed of "premium greens." A recent pilot program in customer choice in Massachusetts confirms the

large percentage of environmentally sensitive customers. In this pilot program customers had the option to choose among alternatives claiming different price and environmental attributes. Fully 33% of residential customers made their choice based on environmental reasons.

A green price premium can be collected in many ways, including an energy charge or a fixed monthly fee. In the cases examined often the price premium does not cover the full cost of the renewable program, which receive subsidies from state and federal funds.

From experience with a survey of green pricing programs it appears that higher customer participation and satisfaction will result if the program is kept simple: 1) simple to understand, 2) easy for customers to sign up, 3) simple for customers to leave, 4) and easy for customers to believe claims. The credibility of both the product supplier (the utility) and the product itself are essential to program success.

In marketing such a program, the essential first step is market research, to determine customer preferences and potential responsiveness. An obvious initial market consists of WWP's own retail customers. Success with its own retail customers would allow WWP to construct a program template for retail sales which could be promoted on a "franchise" basis to other utilities and marketers, to increase WWP's wholesale green sales. Buyers might be the numerous small municipal utilities in the Northwest, some of whom prefer "green". For example, Salem Electric Cooperative has voted to become an all renewables utility. In a more competitive world the retail success of WWP could also position the utility to offer the product to retail customers of other utilities.

To develop the market, some education and outreach will be necessary. A continuing commitment to this activity is required for a successful program. Emphasis on the benefits of the renewable option, rather than its higher price, is the more constructive marketing focus.

As technology changes, especially in the areas of metering and communications devices, the range of green pricing products the utility can offer will expand, and services can be rebundled in new combinations. As the electricity industry becomes more competitive, new markets will open for a range of products. Thus a green pricing strategy can complement the product offerings that WWP plans to undertake in efforts to become more competitive. A provision of the California restructuring legislation (AB 1890) phases in direct access for customers of all classes from 1998 to 2001 but allows customers buying over 50% renewable resources to move to the head of the direct access line. A renewable portfolio offered by WWP would fit this opportunity.

A well-structured green pricing program will be viewed positively by a majority of customers, even if they don't all sign up. This is a fortuitous environment in which to launch a new utility program. Starting a green pricing program would also allow WWP to meet the preferences of its premium green customers. Offering customer

choice for electricity products also permits WWP to exercise its skills in competition and marketing, before those abilities are required for survival. A green pricing program could build on WWP's sizable hydro generation and its other renewables, and with minimal additions offer an attractive renewable product. The key to a successful program is to keep it simple, in designing an understandable and believable program, and in marketing it to retail as well as wholesale customers.

## **6. Recommendations for Further Analysis**

If WWP chooses to pursue the strategy outlined in this study, and to develop electricity products based on existing and new renewables to be sold under a green pricing program, the following research steps would be appropriate:

1. Product definition for both end-use and wholesale customers. Included would be a survey of costs for actual new renewable supplies.
2. Survey of customer acceptance of a range of green products, and estimation of market size.
3. Pilot program to test implementation.