Executive Summary

The Fifth Power Plan: A guide for the Northwest's energy future

BACKGROUND

The Northwest is unique in how it plans its energy future. Through the Northwest Power and Conservation Council's power plan, strategies to ensure the affordability and adequacy of the power system are developed in an open forum where the public can voice its opinion. Why is this so important? With the building of the region's first mainstem Columbia River dams in the 1930s, the Northwest would have access to inexpensive electricity for many years.

But by the 1960s, increased demand led energy planners to believe that hydro-generating resources would soon be unable to keep up with the demand for electricity. In the 1970s, the federal Bonneville Power Administration and the region's public and investor-owned utilities embarked on an effort to build major new generating resources, including several nuclear power plants. Many of these projects proved to be hugely expensive. As a consequence, retail rates skyrocketed, demand for electricity plummeted and, although several of the projects were abandoned, the Northwest continues to pay on the debt that was incurred.

Amidst the turmoil caused by this massive planning failure, Congress enacted the 1980 Pacific Northwest Electric Power Planning and Conservation Act authorizing the states of Idaho, Montana, Oregon, and Washington to form the Council as an "interstate compact" agency. The Act requires the Council to periodically develop a 20-year power plan to assure the region of an adequate, efficient, economical, and reliable power system; and to develop a fish and wildlife program to protect, mitigate, and enhance fish and wildlife affected by the dams. As the Council embarked on its first plan, the lesson it drew from the experience of the 1970s and early '80s was that the future can turn out very differently than expected. Planning must take this uncertainty into account.

THE FIFTH POWER PLAN

This is the Council's fifth regional power plan. Like the first, it comes on the heels of a major crisis in the region's power system – the electricity crisis of 2000-2001. That crisis was the result of several adverse trends and events: uncertainty created by efforts to deregulate the power industry; a corresponding de-emphasis on planning; several years of under-investment in generation and conservation; a deeply flawed electricity market design in California; unethical and illegal actions by some of the participants in that market; and the second-worst water year in the Northwest's hydrological record. While the causes were different, the results of this crisis were much the same as the one

preceding the first Council plan – skyrocketing retail rates that struck a major blow to the regional economy.

The lessons for this plan are similar to those of the first. The future is uncertain. Plans and policies must be developed that allow the region to manage this uncertainty and the risks it entails. Many of the uncertainties we now face are familiar – uncertainty about demand for electricity, hydro conditions, and forced outages of major power plants. Other uncertainties are new or have greater importance. The increased role of gas-fired generation and changes in the nature of the gas industry mean gas price uncertainty and volatility is a significant factor. Increasing concerns about global climate change pose new uncertainties for resource choices. The wholesale electric power market is still important and is also uncertain and volatile.

The environment for this plan is also changed. It is no longer a world composed of the Bonneville Power Administration and regulated public and investor-owned utilities. It is now a mix of regulated and unregulated elements. From a physical standpoint, the region currently has a modest generation surplus under critical water conditions. That surplus is the result of reduced demand that has not yet returned to pre-crisis levels and a significant amount of new generation, most of which was built by independent power producers (IPPs). But in terms of generation owned by or contracted to the region's utilities, the region is deficit. The IPP generation is available to the region but, unless purchased long-term, it will be sold at market prices and subject to market risk. The role the IPPs will play in the region's electricity future is unclear.

In addition, those making resource decisions may be a more varied group than in the past. If proposed changes to Bonneville's role in power supply go forward, many smaller public utilities may be making resource decisions in addition to Bonneville, the investor-owned utilities, and the larger publics. However, until those changes are in place, there is uncertainty regarding who will acquire new resources for many public utility customers.

The challenge for this plan is two-fold. First, it must provide a robust and flexible resource strategy that can perform well under the expanded and intensified range of future uncertainties. Second, the plan must address key policy issues that affect the ability to assure an adequate, efficient, economical, and reliable power system. These include issues such as standards for resource adequacy; how we plan, pay for, and operate transmission; the interaction of fish and wildlife and power; and the future role of the Bonneville Power Administration in power supply. In t~~T~~he plan, the Council assesses these issues and ~~proposes~~ recommends actions to ~~assist~~help ~~to work with~~ regional entities ~~to~~ ~~in resolving~~~~e~~resolve them in the months ahead. Through a rigorous examination of various energy options, and a healthy willingness to question given assumptions, the Council believes its new power plan offers sound guidance on how the region can secure its energy future.

RECOMMENDATIONS

The Council's power plan comprises a resource development strategy to ensure the region's power supply with the least cost and risk; and recommendations on key policy issues that affect the power system.

Conservation

The Council recommends that the region increase and sustain its efforts to secure cost-effective conservation immediately. The Council's analysis shows that improved energy efficiency is a resource that is lower cost than new generating options and provides a hedge against market, fuel, and environmental risks. To fully achieve these benefits, however, it is necessary to sustain conservation efforts rather than vary the level of effort in response to changing wholesale power prices. Although conservation may result in small rate increases in the short-term, it can reduce both cost and risk in the long-term. The targets are ambitious but doable: 700 average megawatts between 2005 and 2009; and 2,500 average megawatts over the 20-year planning period.

Demand Response

The Council also recommends developing demand response programs--agreements between utilities and customers to reduce demand for power during periods of high prices and short supply. The Council recommends developing 500 megawatts of demand response between 2005 and 2009 and larger amounts thereafter. Demand response has proven helpful in stabilizing electricity prices and in preventing outages. The Council's analysis shows that although it will probably be used infrequently, demand response reduces both cost and risk compared to developing additional generation.

Wind

The plan incorporates almost 1,100 megawatts of wind generation capacity between 2005 and 2014 from state system benefits charge programs and current utility integrated resource plans. Beyond that, additional wind generation figures prominently in the next decade. However, the attractiveness of this wind is affected by a number of estimates made for this plan. These include: continuation of production tax credits for several years, possible future controls on green house gas emissions, decreasing production costs, the ability to integrate intermittent wind into the existing power system at reasonable costs, and the availability of large areas for development with access to transmission at moderate costs. Over the next five years, the power plan calls for gathering more experience and information about wind resources and their performance and cost within the regional power system. To be most useful, these projects ~~would~~ should be sited in geographically diverse wind resource areas. In addition, project developers and operators will need to be willing to share information about the projects. This can be done in ways that do not adversely affect their commercial interests.

Prepare for New Power Plants

This plan defines a schedule of "options" for generating resource development. ~~By~~ Options ~~we~~ mean completed siting and permitting for the amounts and types of power generation identified in the plan. Optioning is a risk management strategy. With siting and permitting completed, actual construction can be undertaken with a minimum of lead-time when the conditions warrant. Conversely, if the projects prove not to be needed, the sunk costs are relatively small.

The Council believes the region should secure options (sites and permits) to be able to begin constructing new wind generating resources as early as 2010, with up to 5,000 megawatts of capacity to be developed through the end of the 20-year planning period. The Council also analyzed both conventional pulverized coal-steam generation and coal gasification power plants. Recent information indicates that coal gasification generation has entered the early stage of commercial availability. The analysis indicates that use of coal gasification power plants lowers the expected cost and risk compared to the use of conventional coal generation technology and has lower emissions of pollutants, including carbon dioxide. However the analysis is predicated on further commercialization of coal gasification technology. The Council will monitor the progress on commercialization of coal gasification power plants. If, by early 2007, commercialization has not progressed as estimated, the Council will recommend securing options for 400 MW of conventional pulverized coal-steam generation by early 2010. Otherwise, ~~O~~options for 425 megawatts of gasified coal generation should be in place by January of 2012. ~~In light of concerns about global climate change and recent industry developments, the Council recommends that Integrated Gasified Coal technology be used.~~ Later in the 20-year planning period, some additional gas-fired generation may be needed. Needed transmission upgrades should be identified so all these resources can be built and brought on line quickly when required. If major transmission upgrades are needed, pre-construction planning, siting, and permitting will have to begin well before actual construction of the power plants.

THE POWER PLAN AND UTILITY INTEGRATED RESOURCE PLANS

The Council recognizes that a plan developed from a regional perspective cannot fully reflect the situation of each individual utility in the region. There can be legitimate reasons for individual utility plans to differ from this plan in their resource choices or resource timing. However, the Council's plan serves as an important independent, objective source of information on region's power system and the resource choices it faces. It provides strategic insights that have broad applicability. For example, this plan demonstrates the value of sustained investment in conservation as opposed to the up and down pattern of investment that has been followed in the past. It also suggests that in many situations over the next few years, reliance on market purchases, much of which could be supplied by in-region IPPs, can be a lower cost and lower risk option than immediate new power plant construction. In addition, the ~~treatment~~ method used to evaluate ~~of~~ uncertainty and risk ~~used~~ in this plan is one that can and should be applied in individual utility planning.

KEY POLICY ISSUES

Along with the Council's recommended resource development plan--the least risk, least cost development plan according to the Council's analysis--the power plan includes recommendations on key policy issues confronting the region. These include transmission operation and planning issues, the establishment of resource adequacy standards, improving the coordination between fish and wildlife and power planning and operations, and the future role of the Bonneville Power Administration in power supply.

With respect to Bonneville's role, the Council recommends that the agency sell the electricity from the existing Federal Columbia River Power System to eligible customers at cost. Customers that request more power than the existing system can provide should be required to pay the additional cost. The Council recommends that Bonneville implement this change through new long-term contracts to be offered by 2007. The Council also believes that Bonneville must continue its commitment to support conservation, renewable energy, and fish and wildlife mitigation.

The Council's two main responsibilities, fish and wildlife mitigation and power planning, are closely linked. The Council's power plan and fish and wildlife program attempt to meet the requirements of both the power system and fish and wildlife recovery as effectively and efficiently as possible. For the region to achieve these objectives, it is important that planning for both power and fish and wildlife are coordinated. Outside of the Council, however, no clear process exists for integrated long-term planning. The Council proposes ~~the establishment of a process~~ to improve the coordination between fish and wildlife and power planning and decisionmaking.

An adequate power system has a high probability of being able to maintain service when the region experiences a poor water year, unexpected load growth, or the failure of new resources to be developed as planned. The power plan includes analysis that evaluates alternative regional adequacy standards and how they would interact with the Western system. The Council is committed to working with regional utilities and regulators to develop a standard that will assure an adequate power supply while being fair and equitable to all parties.

Adequate transmission is key to any of the new generating resources identified in this plan. The move toward deregulation and the opening up of wholesale electricity markets, along with changes in technology, have altered the character of the traditional transmission system. Questions of how to effectively plan for, build, pay for, and manage the region's transmission system are becoming critically important. Efforts to establish an organization to assess the long-term requirements of the transmission system and a mechanism to encourage investments to meet those requirements have been pursued for several years with little success. The Council supports, and is an active participant in, the regional efforts to resolve these problems~~. But it~~ and believes the time for resolving these issues is growing ~~dangerously~~ short. If current efforts do not succeed in the near future, the Council is committed to seeking alternative means of resolving these transmission issues.

RECOMMENDED ACTION ITEMS: NEXT FIVE YEARS

The Council's power plan will be reviewed and revised at least every five years. The actions that the region takes now and over the next few years will determine the success of this plan. The key actions are:

1) Develop resources now that can reduce cost and risk to the region

- 700 average megawatts of conservation, 2005 - 2009
- 500 megawatts of demand response, 2005 - 2009
- Secure cost-effective cogeneration and renewable energy projects
- Develop cost-effective generating resources when needed

2) Prepare to construct additional resources

- Develop and maintain an inventory of ready-to-construct projects
- Resolve uncertainties associated with large-scale wind development
- Encourage use of state-of-the-art generating technology when siting and permitting projects
- Plan for needed transmission and work toward better integration of resource and transmission planning
- Improve utilization of available transmission capacity

3) Confirm the availability and cost of additional resources that promise cost and risk mitigation benefits

- Coal gasification with carbon sequestration
- Oil sands cogeneration
- ~~Integrated coal gasification~~

~~Carbon sequestration~~

- Energy storage technologies
- Demonstration of renewable and high efficiency generation with Northwest potential

4) Establish the policy framework to ensure the ability to develop needed resources

- Carry out a process to establish adequacy targets for the Northwest and the rest of the Western system
- Work through the Grid West, Regional Representatives Group process to address emerging transmission issues within the next ~~two~~ three years. If necessary, pursue alternative approaches to resolve issues
- Revise the role of the Bonneville Power Administration in power supply, consistent with the Council's May 2004 recommendations

5) Monitor key indicators that could signal changes in plans

- Periodically report on the regional load-resource situation and indicate whether there is a need to accelerate or slow resource development activities

- Monitor conservation development and be prepared to intensify efforts or develop alternative resources, if necessary
- Monitor progress in commercialization of gasified coal generation.
- Monitor efforts to resolve uncertainties regarding the cost and availability of wind generation, and prepare to develop alternatives, if necessary
- Monitor climate change science and policy for developments that would affect resource choices
- Prepare an ~~annual~~ biennial monitoring report and ~~R~~revise elements of the power plan as necessary

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