Planning Environment

Long-term resource plans must fit within three sets of concerns: economic conditions, resource considerations, and policy requirements.

I. Economic Conditions

Economic conditions have changed considerably since work began on this IRP in the summer of 2007. At that time, uninterrupted growth was generally forecast for the U.S. economy, and the Pacific Northwest in particular. Worldwide appetite for energy was strong and increasing. Commodity prices – including oil, natural gas, and even coal – experienced a period of demand-induced speculation that drove prices to unprecedented highs. During 2008, economic conditions changed drastically. Major global banking institutions failed and others struggled to maintain solvency even with government help. The speculative bubble in commodity prices burst, driving prices to lows that are probably not realistic over the long term. By March 2009, the forecast for U.S. GDP growth had fallen to -3.7% for 2009 and 1.5% for 2010, with unemployment projected at more than 10% for 2010. Although many forecasts point to a recovery in 2011 or 2012, there is still little evidence to indicate when conditions might improve, or what that improvement might look like.

These conditions are having a variety of effects on long-term resource planning and acquisition.

Most immediately, uncertainty about future economic conditions affects PSE's ability to project energy demand. How much energy customers will require in coming years depends a great deal on economic activity; factors like employment and population growth are extremely important to calculating resource need. The wide range of demand forecasts modeled for this IRP analysis reflects how much conditions have changed since mid-2007. The challenge this presents is one of timing. Resources take time to develop, and should demand increase quicker than expected, the portfolios could be exposed to a greater reliance on spot markets at a time when demand and prices are high.

Compared to most utilities, PSE is in a relatively strong position. Financial markets have become constrained as a result of the economic downturn. Debt and equity capital are more difficult to find and more expensive for all marketplace participants. Declining stock prices have made equity financing more challenging. Overall, credit market turmoil has placed sizeable upward pressure on the cost of new capital. PSE has some insulation from these dynamics due to its committed credit facilities and its access to equity capital. (Committed credit facilities help fund short-term liquidity needs at pre-established rates, and access to equity capital helps to address resource needs.) Both result from the company's merger with a privately held consortium of long-term investors in February 2009.

Current economic conditions have changed the resource market in ways that may create opportunities for PSE. Prior to the financial crisis, low debt and equity requirements made it easy for independent developers to obtain financing. Also as demand increased – especially for renewable resources and lower-carbon alternatives like gas-fired generation – so did the number of developers in the market. Today, weaker players are departing, stressed by constraints on capital and the declining number of renewable tax credit investors. To raise cash, they are selling assets, and projects are becoming available earlier in the development cycle. This is creating opportunities to acquire resource development rights that could meet long-term customer needs at lower costs, relative to recent trends. Also, a shift away from the low debt and equity requirements that favored independent power producers over utilities may contribute to making utility ownership of renewable projects appear even more beneficial to customers than purchased-power agreements in the future. As a result, utilities that are strong enough to do so are reconsidering their reliance on purchased power agreements and reexamining ownership opportunities.

PSE is adapting our resource acquisition strategies accordingly. In the past few years, the company has secured gas-fired resources largely by acquiring distressed assets from independent generators. Wind development has been particularly affected by the rapid expansion in demand followed by diminishing access to capital, and PSE has found it advantageous to enter the development process earlier. With our relative financial strength and experience in developing wind resources, the company can be more effective at completing projects than many developers. Building the capability to do more development work also enables PSE to avoid large developer fees associated with mature or operating projects.

II. Resource Considerations

Limited resource alternatives increase reliance on natural gas for electric generation. Natural gas-fired generating resources appear to be the only viable option for filling the resource need that remains after adding demand-side and wind resources. Large-scale expansion of hydroelectric generation is not viable due to licensing challenges; nuclear generation is not financially feasible; and coal generation is constrained due to legislative and environmental issues. Although limited development of biomass has occurred, utility-scale renewable options have not yet expanded much beyond wind and solar, and wind is the only practical renewable for PSE's territory at this time. For PSE and others in the region, dependence on natural gas will increase until more choices become available, and this makes diversity of gas supply a growing concern. At this time, almost 70% of PSE's "combined" gas portfolio capacity is sourced from the Western Canadian Sedimentary Basin, and 86% of the generation portfolio's fuel capacity comes from this source.

Gas supplies and pricing. Portfolio costs tested for this IRP were extremely sensitive to two factors: natural gas prices, and CO_2 costs. Gas prices have been extremely volatile in the recent past. Between July 2008 and April 2009, Sumas prices fell from a high of $14.64 per MMBtu to a low of $3 per MMBtu. Although this drop has allowed PSE to obtain additional energy commodity supplies at more favorable prices, most experts do not expect such very low prices to continue over the long term.

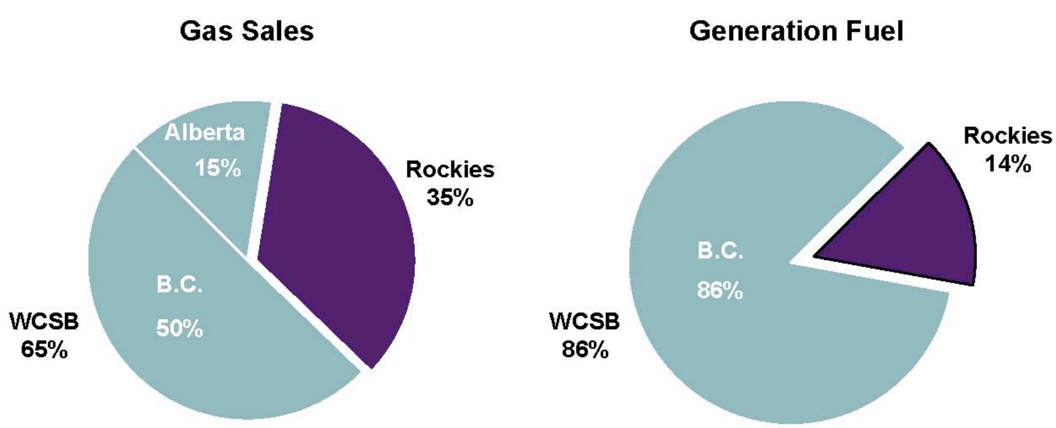
Availability of supply does not appear to be a significant concern. In October 2008 PSE asked Global Insight to assess the security of future supplies of gas to the Pacific Northwest. This study concluded that expanded supplies – primarily of unconventional gas sources in the United States and Western Canada, such as shale gas, coal bed methane, and tight formation gas – appear sufficient to meet the future gas needs of the region. (This study is included as Appendix K.) More recently, in June 2009, the Potential Gas Committee at the Colorado School of Mines reported an unprecedented increase in magnitude of the U.S. natural gas resource base.[1] The majority of the increase came "from reevaluation of shale-gas plays in the Appalachian basin and in the Mid-Continent, Gulf Coast and Rocky Mountain areas." Finally, large amounts of natural gas have reportedly been discovered in shale deposits located in northeastern British Columbia, a claim supported by the record drilling rights leasing activity reported for the region by the

[1] http://www.mines.edu/Potential-Gas-Committee-reports-unprecedented-increase-in-magnitude-of-U.S.-natural-gas-resource-base

B.C. Ministry of Energy and Mines. Fiscal year 2008-09 mineral license sales of CDN$2.4 billion were more than double the previous record.[2]

Diversifying natural gas supply is a challenging proposition. Maintaining geographic diversity in the company's gas supply portfolio is important. Such diversity helps protect against the risk of physical disruptions in either of the two basins that supply PSE: British Columbia and Alberta (which are different parts of the Western Canadian Sedimentary Basin, or "WCSB"), and the Rockies basin. Diversity of supply also helps mitigate cost risk, as prices between those basins fluctuate with long- and short-term market conditions. Figure 2-1 illustrates that the gas sales portfolio is more reliant on the WCSB—mainly British Columbia—than the Rocky Mountain basin. Gas for the generation fuel portfolio is heavily weighted toward British Columbia supplies. The challenge to maintaining diversity in the supply portfolio is that the least-cost route for pipeline expansion is to British Columbia, the basin from which PSE already draw most of its supplies. The analysis presented in Chapter 6 indicates that, given the assumptions used as inputs, gas prices in the Rockies basin would not be low enough to fully offset the cost of expanding pipeline capacity to the region. The simple "least-cost" solution would be to have all incremental supply sourced from British Columbia, but it does not address other concerns.

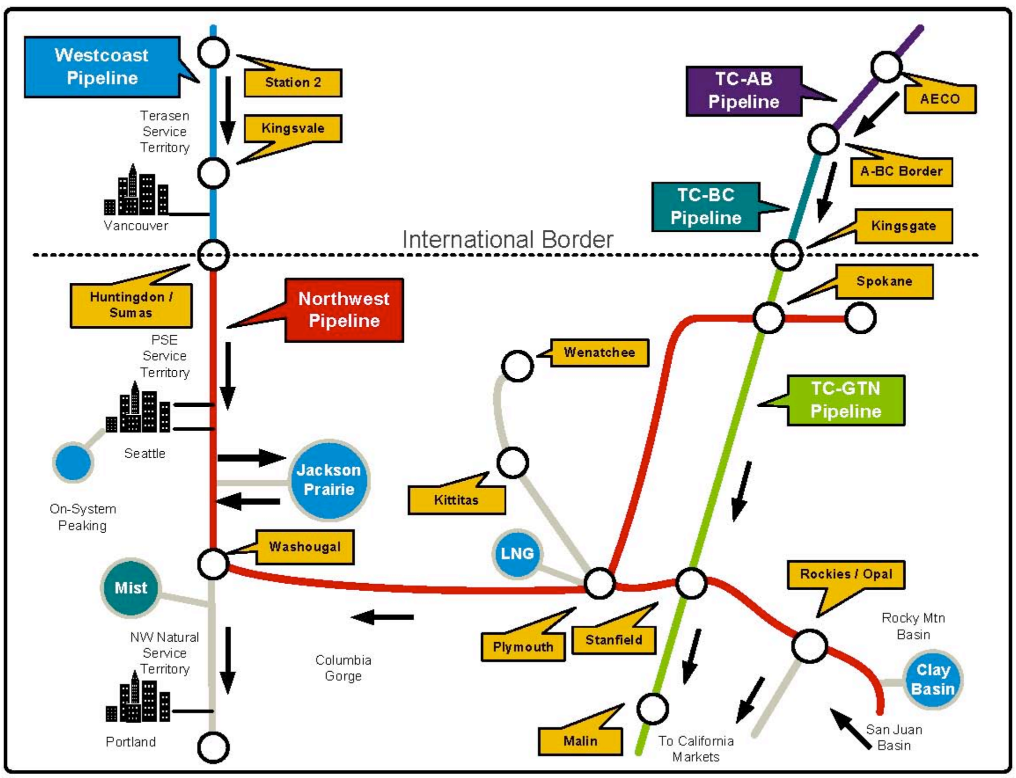
Figure 2-1
Summary of Gas Supply Sources
By Supply Basin—2009



[2] http://www2.news.gov.bc.ca/news_releases_2005-2009/2009EMPR0020-000532.pdf

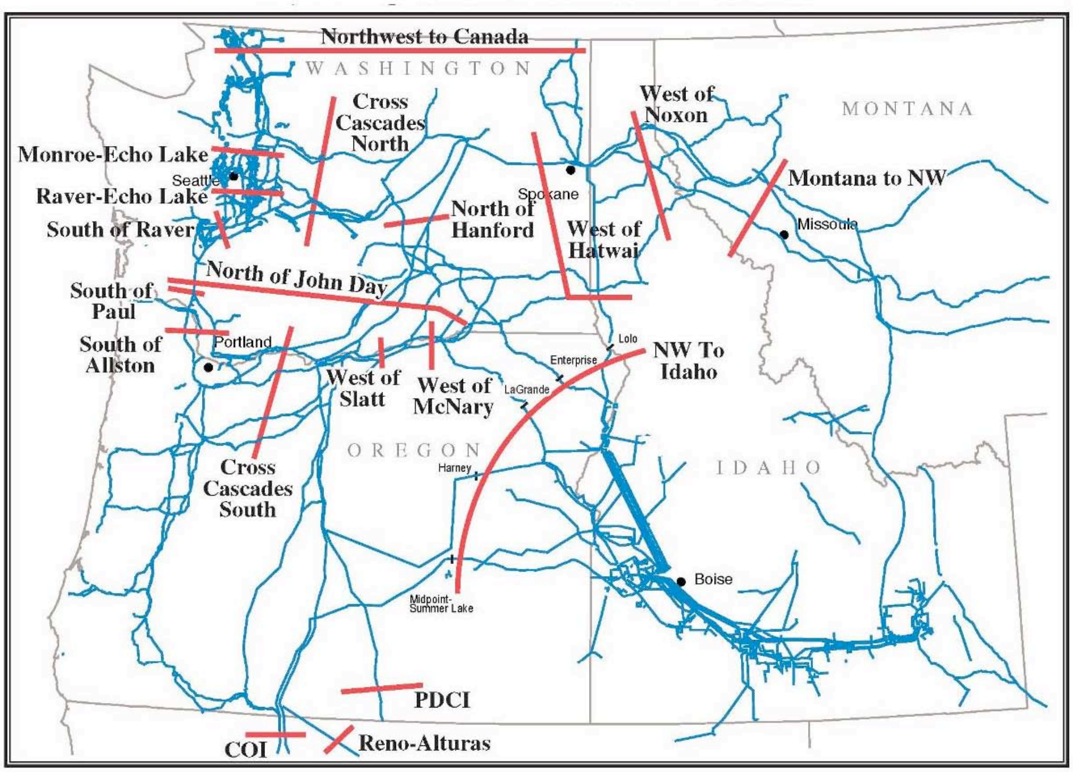
This diversity study focused on additional pipeline capacity to southwestern Wyoming or "the Rockies." A cross-Cascades pipeline would pick up gas from Stanfield, at the intersection of Northwest Pipeline and GTN, and take it west and then north to PSE's service territory. Figure 2-2 illustrates the geographic layout. The analysis assumed that this gas would carry Rockies prices, plus the full transportation cost of moving the gas from the Rockies via Ruby Pipeline to Malin, then north on GTN to Stanfield.

Figure 2-2
Northwest Regional Gas Pipeline Map



Electric transmission can be a hurdle to the acquisition of new resources. The Pacific Northwest's regional transmission situation is marked by an increasing frequency and duration of transmission constraints. This figure shows the constraints that limit flow of energy from generation to load. The prevailing constraint direction is from east to west and from north to south.

Figure 2-3
Northwest Constrained Transmission Paths



In order to overcome these constraints, transmission needs to be built. The ability to build new transmission has been hindered by:

- Limited coordination between generation and transmission development,
- The absence of a single regional transmission planning body,
- Limited access to significant amounts of capital, and
- No central permitting and siting authority.

There are some signs that some of these problems are being addressed:

- Bonneville Power Administration (BPA) has implemented a Network Open Season process to facilitate its ability to plan and construct new transmission lines.
- Other regional utilities are planning large transmission projects to interconnect generation, particularly wind, from outside the Pacific Northwest.
- Federal Energy Regulatory Commission (FERC) Order 890 requires transmission companies to establish a coordinated, open and transparent planning process. The Pacific Northwest region is responding to this requirement by having ColumbiaGrid perform the regional transmission planning function.

Demand-side resources may also be affected by deteriorating economic conditions. Lower customer growth and lower energy use per customer could result in less demand-side potential than projected. Lower incomes may reduce customers' willingness to invest in energy efficiency and this may mean that PSE will need to pay significantly higher incentives to achieve cost-effective levels of energy efficiency. Typically, on aggregate, PSE has paid approximately 50% of measure costs. While PSE does not anticipate having to pay 100% of total resource costs to achieve higher efficiency targets, there is considerable potential for increased levels of incentives.

III. Policy Requirements

Public policy requirements and recent economic impacts have increasing influence on utility decisions about resource additions. Two of the most important ones are summarized in this section.

Renewable Portfolio Standards (RPS). Renewable portfolio standards require utilities to meet a specified portion of their total resource need with renewable resources, even if the resources used to meet the portfolio standard are not the lowest cost. PSE has been a leader in building and acquiring wind resources. When the company acquired the Hopkins Ridge and Wild Horse wind projects in 2005, with the help of production tax credits, these were least cost resources. Since then, the picture has become more complicated. First, adoption of RPS requirements by other states—currently, 29 states and the District of Columbia have RPS mandates—increased demand for renewable resources, driving project costs up. In an environment of RPS requirements and rising fossil fuel prices, independent wind developers entered the market seeking to build and own projects, with the help of tax-equity investors to monetize the tax credits. As a result of the recent economic crisis, fossil fuel prices have declined dramatically, the number of tax-equity investors has fallen sharply, and the weaker players are looking for exit strategies. For utilities with the financial strength to take advantage of this phenomenon, there may be opportunities to meet long-term renewable requirements at a discount from previous prices.

CO_2 Emissions Costs. CO_2 costs and gas prices have the largest effect on portfolio prices in this IRP analysis. Future greenhouse gas emission policy decisions will have profound and far-reaching impacts on utility resource plans, whether they originate at the federal or state level. Emissions charges will increase the cost of fossil fuel-burning power plants, change market power prices, and potentially change the mix of resources chosen to meet need. This IRP models a range of CO_2 costs that vary from $0.32 to $150 per ton. Increasing the use of renewable resources is part of the answer, but it is not the same thing as reducing emissions. Intermittent resources, such as wind and solar, must be backed up and integrated with other power supplies, which will generally be fueled by fossil fuels.