Executive Summary

This Integrated Resource Plan (IRP) presents a long-term forecast of the lowest reasonable cost combination of resources capable of meeting the needs of Puget Sound Energy's customers over the next 20 years. It was developed during a two-year period in which U.S. and global economic conditions changed drastically, and the scenarios developed for this analysis cover a wide range of circumstances as a result. In the spring of 2009, PSE developed new demand forecasts and scenarios that allowed us to incorporate post-downturn information about economic conditions into our assumptions. One of these updates, the 2009 Trends scenario, was chosen as the basis for this plan.

The plan presented here will change as circumstances change, and actual resource acquisitions will take place in the real – rather than the hypothetical – marketplace. But examining the long-term implications of our customers' energy needs every two years makes it possible to identify many challenges as they appear on the horizon, study them as they approach, and better prepare to meet them. Among the key insights from this planning cycle are the following.

Expiring contracts and retiring assets are the biggest driver of electric resource need over the next 10 years. Even with NO growth in demand for power, PSE will need to acquire 800 megawatts (MW) of generation capacity by 2015 in order to fill the void created by expiring purchased power agreements and retiring generation plants. Soon, decisions will need to be made about whether it is more cost-effective to replace or refurbish aging assets. Either choice will mean substantial infrastructure investment.

Acquiring demand-side resources – as much as possible, as soon as possible -- is still the best strategy for avoiding both costs and risks. Natural gas prices and potential emissions costs affect portfolio costs more than any other factors tested in this analysis. Because energy efficiency consumes no fuel and produces no emissions, it continues to prove a cost-effective resource over the long term even though it is becoming more expensive to acquire.

As PSE's reliance on natural gas as fuel for electric generation increases, the issue of supply diversity grows more important. At present, almost 70% of the combined gas portfolio (gas used for retail sales and gas used for electric generation fuel) is sourced from the Western Canadian Sedimentary Basin (WCSB). Within a few years, 100% of the gas used for electric generation will come from that basin. This concentration leaves PSE exposed to physical supply disruptions. Investigating alternatives to increase supply diversity should be a priority in coming years.

Key components of resource planning are extremely variable due to changing economic conditions. This IRP models a wide range of demand forecasts, gas prices, and potential carbon dioxide (CO_2) costs because of the economic downturn, energy price volatility, and unresolved emissions policies. So much uncertainty would suggest that staying close to need is the best course of action. However, the same turbulent economic conditions have also created opportunities to obtain development rights and projects at substantial discounts compared to previous pricing, and some of these opportunities may offer long-term benefits to the utility and its customers.

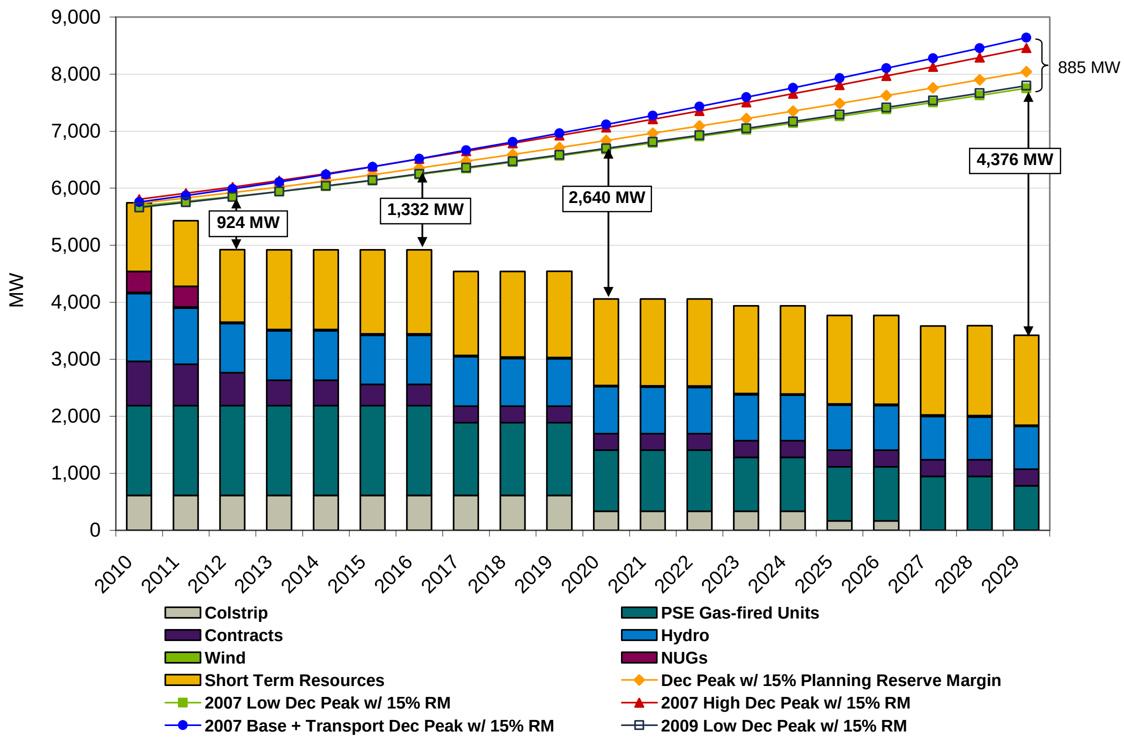
Electric Resources

Electric Resource Need. (Figure 1-1) The company's electric resource outlook indicates the need for an additional 924 MW by 2012, 1,332 MW by 2016, and 2,640 MW by 2020 to meet customer demand.

Figure 1-1

Electric Peak Capacity Resource Need:

Comparison of Projected Loads with Existing Resources



Origins of Need. Expiring purchased-power contracts and the potential retirement of aging generation units contribute more to resource need than demand growth. For the first five years of the planning horizon, expiring contracts have the most effect; starting in 2016, resources decline as aging generating units begin to retire. Figure 1-2 shows the drivers of electric resource need.

Figure 1-2
Drivers of Electric Resource Need:
Expiring Resources Compared to Demand Growth

	2012	2016	2020	2029
Need from Expiring Resources	819	825	1,685	2,322
Need Due to 2009 Low Growth Load	105	507	955	2,054
Total Need (MW)	924	1,332	2,640	4,376

Assumptions about the timing of resource retirements in this IRP are based on a depreciation study completed in 2006. The study evaluated how long existing generating plants may be able to continue commercial operation without major investment to prolong their useful lives. Analysis on whether to extend the useful life of existing assets is not incorporated in this IRP, but it does highlight that the Company will need to consider such decisions in the coming years.

Electric Resource Plan. Figure 1-3 illustrates the electric resource plan. The line rising to the right represents peak customer demand. The bars below show the resources used to meet that need; existing resources are shown in gray, and additions are color-coded by type. The table below shows the corresponding capacity builds. Because wind contributes only approximately 5% of its capacity to meet peak, it is barely discernable on the chart.

Options for resource additions remain limited. Wind is still the only renewable resource capable of generating utility-scale power for PSE, new hydroelectric projects are not feasible at this time, nuclear projects are unlikely to gain approval, and coal remains constrained by environmental concerns. Therefore, the plan recommends additional wind resources to fulfill renewables requirements, as much demand-side resources as possible (38 aMW per year for the first 12 years), and more natural gas-fired generating plants to fill the remainder of need.

Figure 1-3
Draft Electric Resource Plan, 2009 IRP
Cumulative Resource Additions (MW)

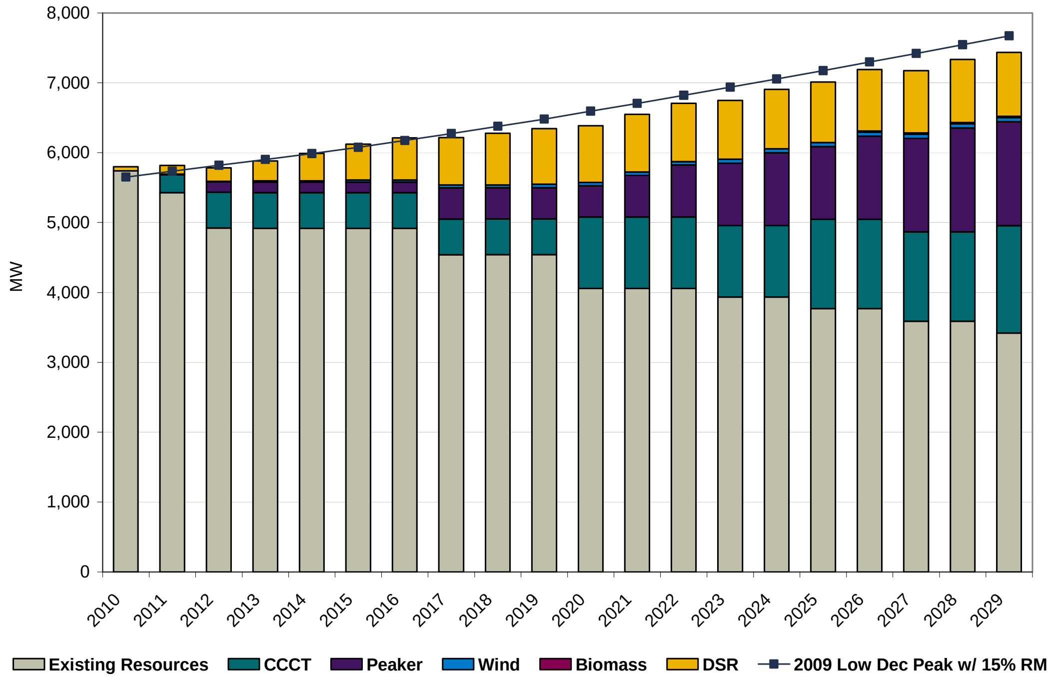


Figure 1-4
Cumulative Capacity Additions (MW)

	2012	2016	2020	2029
Demand-Side Resources	192	605	808	1030
Wind	200	600	1000	1200
Biomass	0	0	0	20
CCCT w/Duct Firing	550	550	1100	1650
Peakers (Reciprocating Engines)	160	160	480	1600

Looking Ahead

- Reliance on natural gas to fuel electric generation will continue to increase until other options become available.
- PSE will continue aggressive pursuit of geothermal, biomass, and concentrating solar thermal technologies, but until they develop the capability to produce utility-scale power, wind will remain PSE's primary renewable resource.

- Acquiring the wind resources needed to meet renewables requirements may require changes in our acquisition strategies. Until recently, independent developers have been able to bring PSE completed or ready-to-build wind facilities, but the current financial crisis has compromised their ability to bring projects so close to completion. It may become necessary to enter the development process earlier than we have in the past in order to meet renewable resource requirements—possibly for natural gas generation resources as well. This means the Company will be forced to take on more development risk than in the past to meet the needs of our customers.
- Finally, consideration of whether it is more cost effective to replace or refurbish older generation units will soon need to be included in PSE's resource acquisition and planning process.

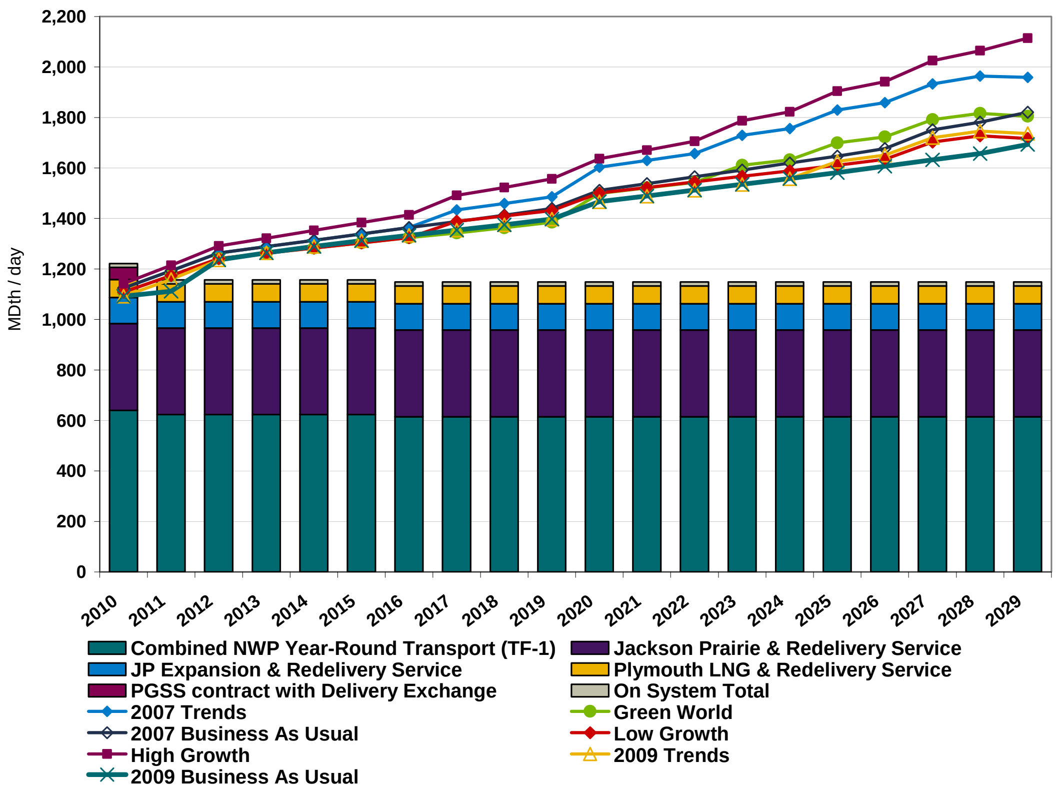
Natural Gas Resources

Reliance on natural gas continues to grow. In addition to the approximately 750,000 gas retail customers PSE serves, natural gas now fuels approximately 30% of electric generation. By 2029, it is projected to fuel 66% of electrical generation on an annual basis. Fuel for electric generation is now the primary driver of PSE's overall gas resource need, even though the absolute amounts required for generation remain lower than the absolute amounts needed for retail gas sales.

Because of this increasing dependence, we believe that looking at the total resource need for natural gas ("gas sales" and "gas for generation" combined) presents a more comprehensive picture of the challenges and decisions that must be made in the years ahead. Therefore, a plan for meeting the total gas needs of the utility is the focus here. (Separate gas sales and combined gas resource plans are presented in Chapter 8.)

Total Gas Resource Need. (Figure 1-5.) Need varies widely in the illustration below due to the difficulty of forecasting customer demand in uncertain economic times. Two hundred dekatherms (Dth) per day separates the need projected in the original reference scenario developed for this IRP, 2007 Trends, and the 2009 Trends scenario created this spring.

Figure 1-5
Total Gas Resource Need (Gas Sales and Gas for Generation)
Projected Peak Demand Compared to Existing Resources



Origins of need. Different uses are driving natural gas need at different points on the timeline. Figure 1-6 identifies how each use (gas for retail sales and gas for electric generation), contributes to overall need. Gas for generation is the most immediate and pressing need for approximately the first five years of the planning horizon; additions for this purpose are required starting in 2010. Gas sales need begins after the 2015-2016 heating season.

Figure 1-6
Origins of Total Natural Gas Need: Electric Generation and Gas Sales
2009 Trends Capacity Need (MDth/day)

	2012	2016	2020	2029
Gas Sales Need/(Surplus)	(91)	15	102	318
Gas for Generation Need	170	170	216	270
Combined Need	79	185	318	588

Gas resource plan. (Figure 1-7 and 1-8) PSE's plan to meet the total gas needs of our customer calls for increased pipeline capacity for transportation of gas from northern British Columbia (B.C.) to our service area and aggressive levels of demand-side resources. By 2017, the plan calls for still more capacity from northern B.C., along with regional storage for liquefied natural gas (LNG), expansion of the Mist storage facility, and still more demand-side resources. Further out (beyond the five-year action window), the plan does not include imported LNG. Eventually imported LNG may become more cost effective than regional supplies, but in the near term, the better solution is to rely on regional storage and to expand access to areas with growing, competitively priced natural gas supplies. This can best be accomplished through investment in additional natural gas transportation infrastructure.

Figure 1-7
Combined Sales and Generation Fuel Resource Plan

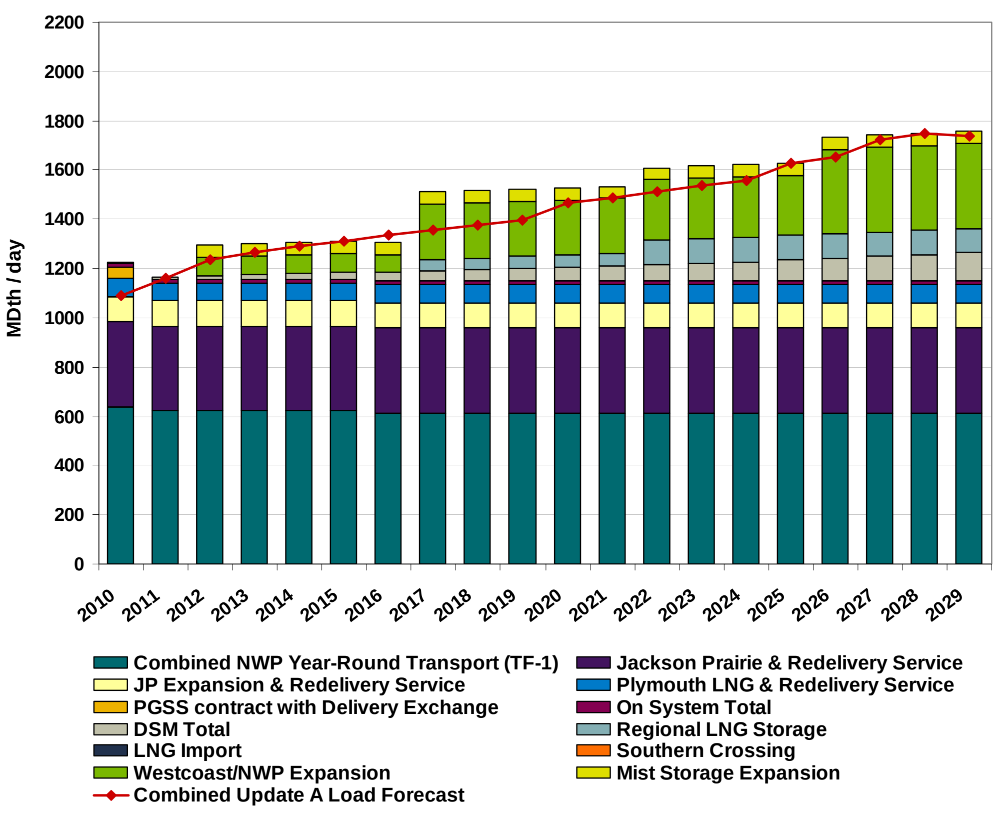


Figure 1-8
Combined Sales and Generation Fuel Resource Plan Table

	Additions in MDth/day				
	Cross Cascades Pipeline	Regional LNG Storage	Westcoast/NWP	Mist Storage & Pipeline	DSR
2012			76		13
2017		50	153	50	23
2022		50	23		24
2026			105		23
2029			0		21
Total Additions		**100**	**357**	**50**	**104**

This plan meets total gas resource need at the lowest reasonable cost identified during this analysis, but it does not address the risks of increasing the reliance on a single supply basin for a crucial resource.

Concern about supply diversity will increase as PSE's reliance on natural gas increases in coming years. Currently almost 70% of the combined gas portfolio is sourced from the Western Canadian Sedimentary Basin (WCSB)

- 65% of the gas portfolio comes from the WCSB
- 86% of the fuel for generation porfolio comes from the WCSB. The generation portfolio will become 100% reliant on WCSB supplies in June 2011, when contracts for Rocky Mountain basin supplies expire.

Such a high concentration of supply from one source leaves PSE vulnerable to supply interruptions should well freeze-offs, forced outages at processing plants, or pipeline disruptions occur. It also limits the company's ability to take advantage of cost differentials across different supply basins.

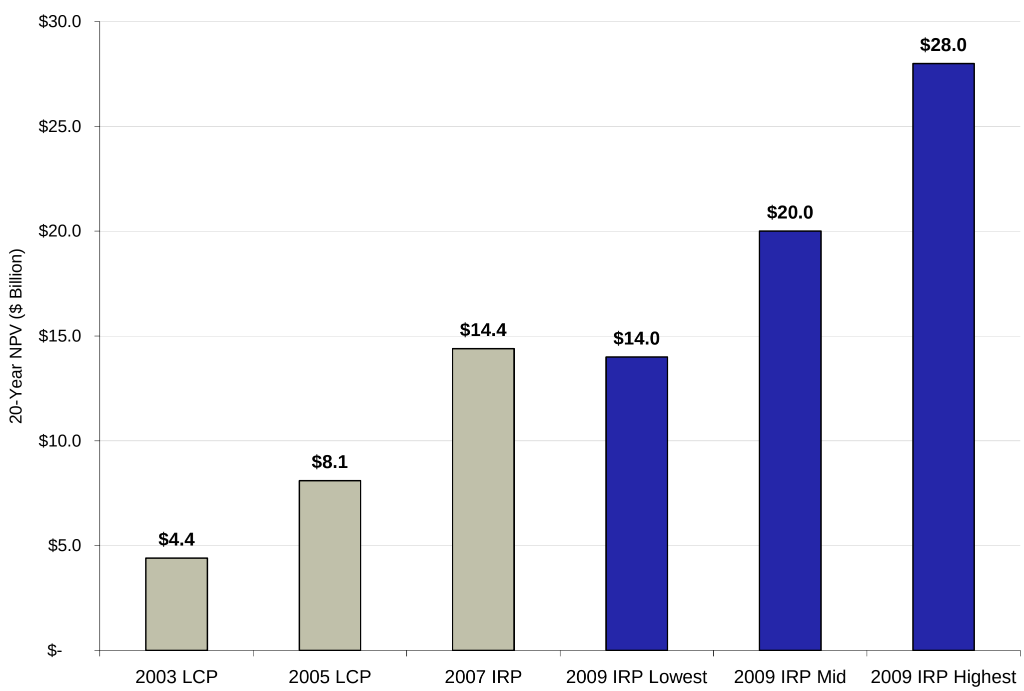
Increasing access to the Rocky Mountain basin would reduce these risks and increase the company's ability to take advantage of short-term price volatility, but the analysis estimated that doing so at this time would cost approximately $28 million more annually (increasing the total portfolio cost by about 1.4%). PSE will continue to investigate this issue. If the company is able to demonstrate that the benefits are greater than the costs, we will update resource strategies accordingly.

Energy Costs and Carbon Emissions

Electric Portfolio Costs—Higher and More Uncertain

Future estimates of incremental portfolio costs have increased in each resource plan since 2003. ("Incremental portfolio cost" refers to the variable cost of existing resources and the fixed and variable cost of new resources; it is the basis of making resource decisions, not setting rates.) The range of portfolio costs projected in this IRP is extremely wide, as can be seen in Figure 1-9. Assumptions in the "most expensive" scenario produced portfolio costs fully twice those produced by the assumptions in the "least expensive" scenario. Uncertainty about the future of natural gas prices accounts for approximately 60% of this difference. Uncertainty about the impact that cap-and-trade carbon regulation will have on energy costs and market prices accounts for most of the remainder. Potential offsets for carbon cost regulation add another level of uncertainty; the costs shown below do not reflect any carbon cost offsets.

Figure 1-9
Rising and Uncertain Incremental Power Portfolio Costs (DRAFT)



Electric Portfolio Projected Carbon Emissions

Carbon dioxide emissions are expected to fall in the future. All portfolio emissions fall below 1990 levels of 8.8 million tons per year by the end of the study period except for portfolios tested with no additional demand-side resources. This is a result of the assumed retirement of Colstrip units 1 and 2 in 2020, rather than the imposition of new carbon costs, as Figure 1-10 illustrates. It compares a portfolio that includes CO_2 costs of $37 per ton in 2012 rising to $130 per ton by 2029 (2007 Trends) with a portfolio that includes a negligible $0.32 per ton (2007 Business As Usual). By 2029, the difference between the two is only about 0.25 million tons per year.

Figure 1-10
Falling Carbon Emissions