

Northwest Regional Forecast of Power Loads and Resources

2013 through 2022

The background of the page features three broad, parallel diagonal stripes that run from the bottom-left corner towards the top-right corner. The stripes are colored in a gradient from light gray at the top to dark gray and black at the bottom.

PNVCC
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Special thanks to PNUCC System Planning Committee members and utility staff that provided us with this information.

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Executive Summary

The Place to Find the Utility Perspective

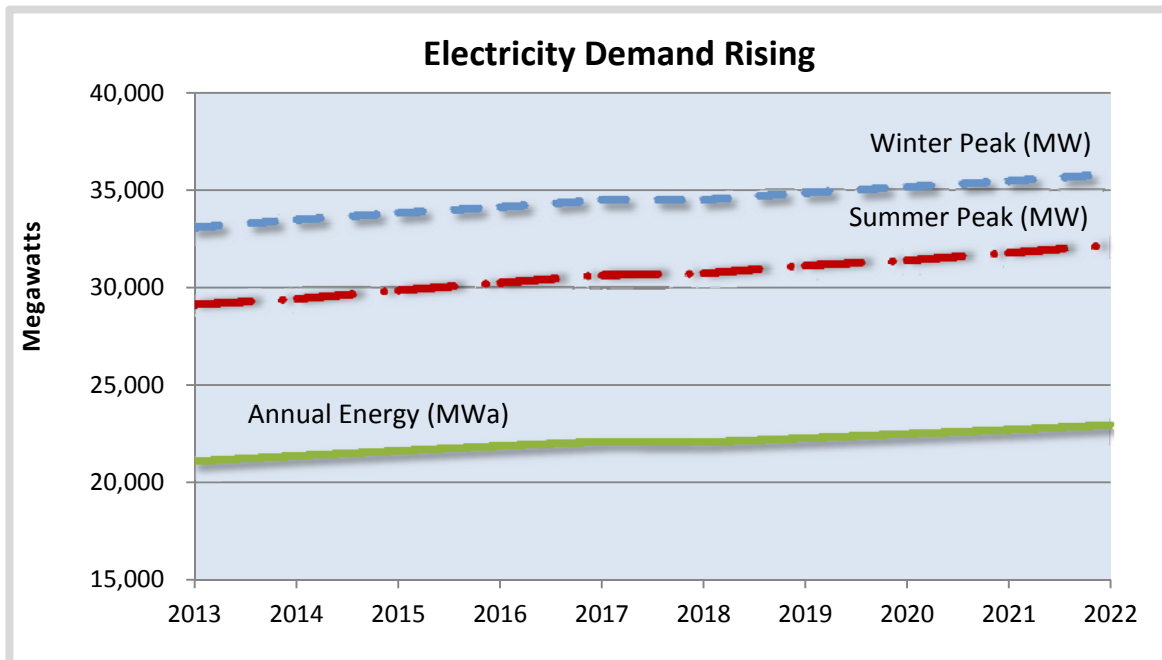
The Northwest Regional Forecast, an annual look at electric demand and resources, is the only assessment of the Northwest’s need for power from the utilities’ perspective. It serves as a regional “GPS” indicating where the power industry is now and what conditions look like up ahead. The *Forecast* provides a regional snapshot of actions utilities are taking to ensure an adequate, reliable power supply for the future.

As a compilation of Northwest utilities’ integrated resource plans, the *Forecast* spells out how we are meeting today’s challenges and power customers’ needs. PNUCC has provided the region with this annual update for more than half a century. Here’s a summary of this year’s key findings.

Electricity Demand Steadily Rising

The regional demand for electricity is influenced by an array of factors, including the economy, advancements in technology and our growing population. In addition, there are state and federal laws and a variety of energy policies that utilities have to consider in estimating electric demand.

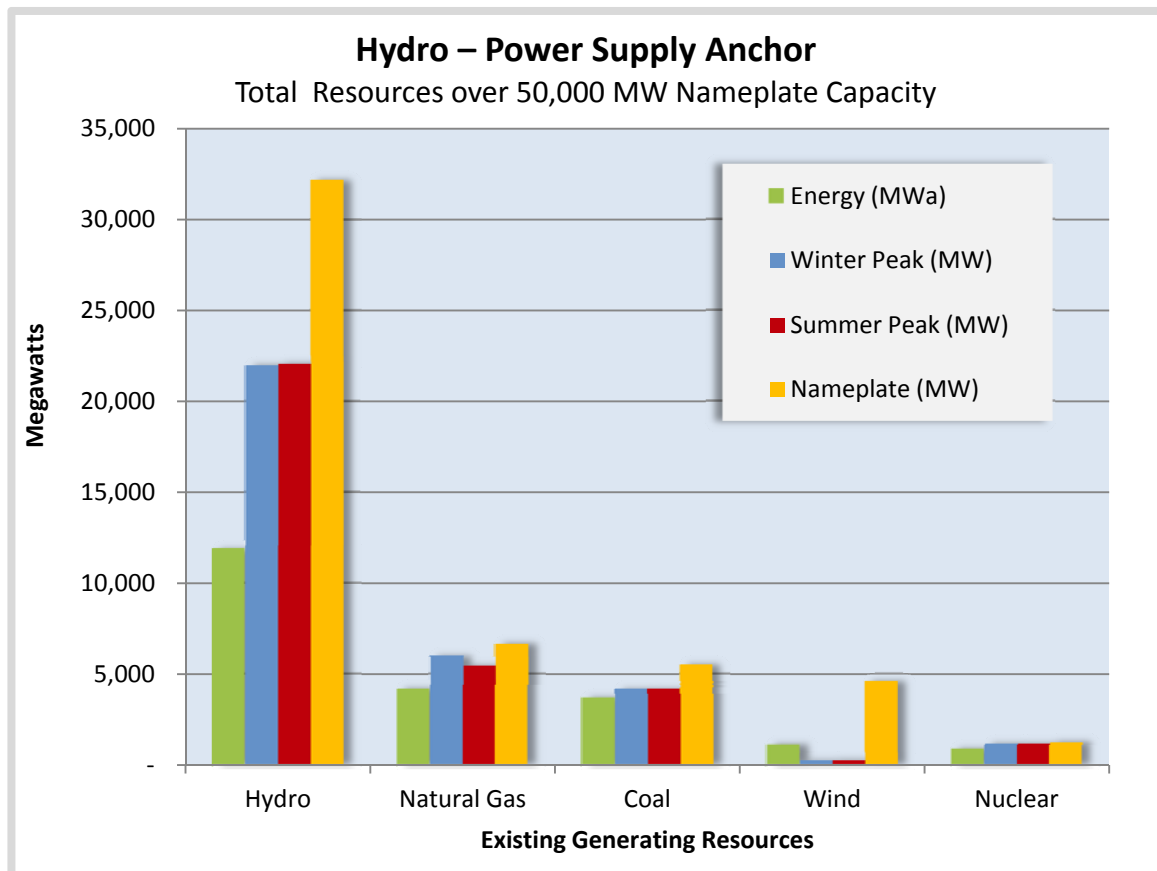
The 2012 demand forecast shows loads growing 150 to 200 average megawatts (MWa) annually over the next decade. This growth is what utilities anticipate after they have factored in savings from their energy efficiency programs. This year’s firm load forecast is up 450 MWa from last year, mostly due to a new five-year firm commitment by Bonneville Power Administration to serve an industrial load previously being met with power from the market.



The Type of Technology Matters

Generating resources contribute to meeting our power needs in different ways depending on what technology they use. Resources such as nuclear and coal plants produce constant energy, and their peak capability is similar to their annual energy production. Other resources, like some natural gas plants, sit ready to fire up to meet our needs in peak demand situations for a couple of days or just a few hours a month. And intermittent resources – wind and solar projects – produce power when the wind is blowing and the sun is shining to help keep electricity flowing. In total, the region depends on more than 50,000 MW of generating resources to provide almost 23,000 MWa of firm energy and 34,500 MW of firm peaking capability to meet today’s demand.

Hydropower is the largest component of the resource mix, and the Northwest relies heavily on it to meet from 50 to 80 percent of our demand for electricity, depending on water supply and weather conditions. Hydropower is flexible, constant and agile. System operators count on quickly dialing hydropower generation up or down to keep the power system stable and in balance as demand for electricity and wind generation fluctuate from moment to moment. For planning purposes, the hydropower we depend on is what can be generated in the lowest water conditions, resulting in almost 12,000 MWa of firm energy and over 22,000 MW of firm peaking capability.



A Shift in Focus on Power Needs

Utility planners have found that no single yardstick can adequately describe our resource needs. This *Forecast* assesses annual energy, as well as winter peak and summer peak needs, in order to capture the multi-dimensional characteristics of the region's power system.

Utilities have shifted their focus from annual energy needs to how to meet peak demand. On an annual energy basis, we have adequate power supply. However, the analytics are telling us that there is a need to acquire firm resources to help meet both winter and summer peak needs over the next 10 years.

The bottom line is this: in the near term, the region needs to acquire another 2,000 to 3,000 MW of firm peak capacity. This estimate takes into account all the savings expected from demand-side programs, and it means the region needs new generating resources to maintain our reliable system.

Utilities are also developing new operating tools to assist with integrating intermittent wind and solar generation to provide what they call "flexible capacity". These flexible resources are able to react quickly to rapid changes in wind generation or electricity demand. While this need is not quantified in this year's *Forecast*, it is a growing requirement being factored into future resource decisions.

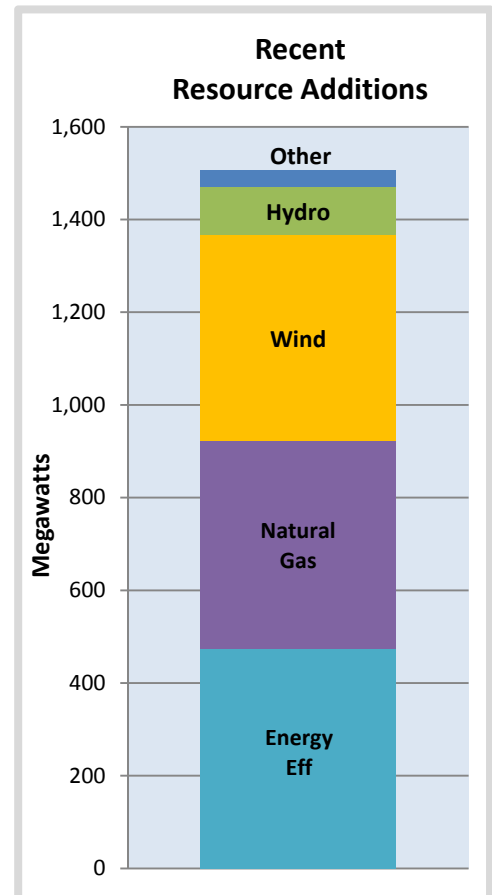
New Resources Stack Up

Between the resources acquired this year and what is now under construction, utilities have added 1,500 MW of nameplate capacity and energy savings to the power system.

New generating resources totaling over 300 MW were brought on line in 2011. These included a waste-to-energy project in Spokane, two wind projects in Idaho, a couple of small hydro projects, and the Dave Gates Generating Station, a natural gas plant built by NorthWestern Energy to provide system regulation.

In addition, the region has another 700 MW of generating resources under construction. The two largest projects are a 300 MW natural gas plant in Idaho and a 350 MW wind farm for Puget Sound Energy. There are also upgrades at existing hydro projects and a new cogeneration project being built in Oregon.

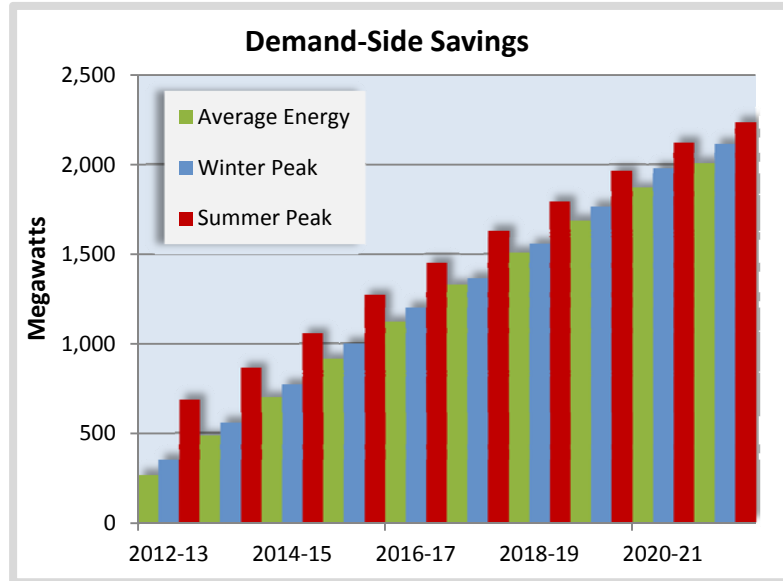
Utilities are also investing heavily in demand-side management and have added more than 470 MW of program savings in 2009 and 2010. According to the most recent reports from the Northwest Power and Conservation Council's Regional Technical Forum, utilities have acquired more than 220 MWa of savings annually for the last five years analyzed (2006-2010).



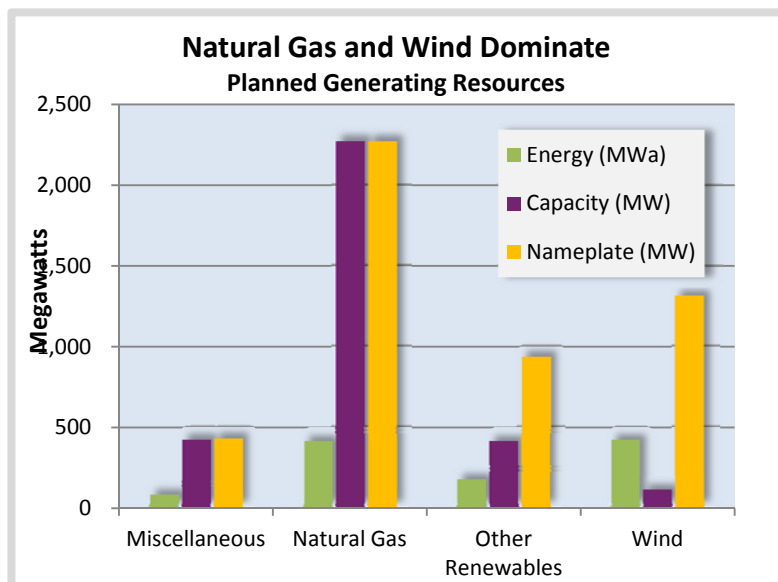
The Future: Demand-Side Savings, Wind and Natural Gas

Looking ahead, utilities are counting on more than 6,500 MW of demand-side savings and new generating resources to fill growing firm peak power needs and to meet state policy requirements.

Estimates of expected power savings over the next 10 years are foundational to utilities' resource planning efforts. Companies tailor their demand-side savings programs to fit their customers, and they work to capture savings through energy efficiency programs, distribution efficiency efforts, fuel switching, demand response and market transformation. Utilities are projecting savings of more than 2,000 MWa over the next 10 years.



Along with planned demand-side savings, utilities are getting ready to build or acquire generating resources. They plan to use natural gas-fired plants and wind turbines to fill most of their new resource needs over the next 10 years. Utilities have 2,300 MW of natural gas-fired generation on the drawing board, most of which is intended for peak demand situations. Wind generation will continue to be a major component of future electricity generation. The *Forecast* shows another 1,300 MW of wind turbines in utilities' plans, primarily to meet state renewable energy policies.



Besides wind, the region is also looking at dozens of other types of renewable energy projects that add up to 900 MW of nameplate capacity. These include turbine and generator upgrades at Wanapum and Priest Rapid dams; geothermal, biomass, small hydro and solar projects; and a tidal power pilot program.

Overview

Each year the *Northwest Regional Forecast* compiles utilities' 10-year projections of electric loads and resources which provide information about the region's need to acquire new power supply. The *Forecast* is a comprehensive look at the capability of existing and new electric generation resources, long-term firm contracts, expected savings from energy efficiency programs and other components of electric demand for the Northwest. This year's report presents estimates of annual average energy, seasonal energy and winter and summer peak capability. These metrics provide a multi-dimensional look at the Northwest's need for power and underscore the growing complexity of the power system. This information can be found in Tables 1, 2, 3 and 4 of the *Northwest Region Requirements and Resources* section of the report.

Northwest generating resources are shown by resource type. Existing resources include those resources listed in Tables 5, 6 and 8. Table 5 *Recently Installed Generating Resources* highlights those projects that have come on-line most recently, and Table 6 *Resources Under Construction* lists those generating projects where construction has started and that utilities are counting on to meet need. Table 8 *Northwest Generating Resources* is a comprehensive list of generating resources that make up the electric power supply for the Pacific Northwest. These resources are utility-owned, utility contracted, and owned by independent power producers.

In addition to those resources and energy efficiency programs currently in place, utilities continue to acquire resources and implement conservation programs to meet future demand. Table 7 *Planned Resources* captures resources utilities have identified to meet their own needs. The table shows the expected savings from utilities' demand-side management programs and planned generating projects that are being counted on to meet the growing demand. This information is a compilation of what utilities have reported in their individual integrated resource plans.

Planning Area

The Northwest Regional Planning Area is that area defined by the Pacific Northwest Electric Power Planning and Conservation Act. It includes: the states of Oregon, Washington and Idaho; Montana west of the Continental Divide; portions of Nevada, Utah, and Wyoming that lie within the Columbia River drainage basin; and any rural electric cooperative customer not in the geographic area described above, but served by BPA on the effective date of the Act.



Northwest Region Requirements and Resources

Table 1 Northwest Region Requirements and Resources – Annual Energy

This shows the sum of the individual utilities' requirements and resources for each of the next 10 years. Expected firm load and exports make up the total firm regional requirements. The load component reflects expected savings from demand-side management efforts.

Average Megawatts	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Firm Requirements										
Load ^{1/}	20,925	21,204	21,426	21,656	21,865	21,819	21,995	22,220	22,412	22,637
Exports	<u>897</u>	<u>783</u>	<u>691</u>	<u>662</u>	<u>642</u>	<u>607</u>	<u>546</u>	<u>528</u>	<u>523</u>	<u>472</u>
Total	21,822	21,986	22,117	22,318	22,507	22,426	22,541	22,748	22,935	23,109
Firm Resources										
Hydro	11,848	11,848	11,848	11,848	11,848	11,848	11,844	11,844	11,843	11,843
Small Thermal & Misc.	36	36	36	36	27	21	21	20	20	21
Combustion Turbines	3,401	3,401	3,396	3,388	3,403	3,400	3,392	3,404	3,398	3,391
Renewables-Other	195	201	190	189	193	190	191	192	192	191
Wind	1,100	1,100	1,094	1,094	1,094	1,094	1,094	1,094	1,094	1,094
Cogeneration	762	761	763	763	749	748	748	734	727	712
Imports	964	887	894	879	765	738	677	682	687	692
Nuclear	878	1,030	878	1,030	878	1,030	878	1,030	878	1,030
Coal	<u>3,685</u>	<u>3,654</u>	<u>3,708</u>	<u>3,708</u>	<u>3,668</u>	<u>3,741</u>	<u>3,711</u>	<u>3,681</u>	<u>3,527</u>	<u>3,374</u>
Total	22,870	22,919	22,807	22,935	22,624	22,810	22,555	22,682	22,366	22,348
Surplus (Need)	1,048	933	691	616	118	385	14	(66)	(570)	(760)

^{1/} Loads net of demand-side management

Table 2 Northwest Region Requirements and Resources – 2012-13 Monthly Energy

This presents the monthly energy values for the 2012-2013 operating year.

Average Megawatts	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	July
Firm Requirements												
Load ^{1/}	20,317	19,052	19,062	21,233	23,858	23,763	22,533	20,924	19,820	19,458	19,912	21,213
Exports	<u>1,267</u>	<u>1,193</u>	<u>953</u>	<u>902</u>	<u>931</u>	<u>728</u>	<u>720</u>	<u>731</u>	<u>742</u>	<u>759</u>	<u>847</u>	<u>977</u>
Total	21,584	20,245	20,015	22,135	24,789	24,491	23,253	21,655	20,562	20,217	20,759	22,190
Firm Resources												
Hydro	13,481	9,793	10,884	11,580	11,965	11,147	9,616	10,466	10,258	12,936	16,702	13,115
Small Thermal & Misc.	37	35	36	38	34	37	33	39	39	38	34	35
Combustion Turbines	3,596	3,380	3,370	3,440	3,743	3,743	3,450	3,423	3,268	2,600	3,376	3,596
Renewables-Other	197	205	205	204	203	202	194	198	188	178	167	191
Wind	1,101	995	1,025	962	988	1,023	1,008	1,299	1,183	1,188	1,255	1,156
Cogeneration	757	759	764	765	771	771	769	770	762	755	747	761
Imports	837	780	849	1,216	1,387	1,328	1,250	1,070	810	637	673	739
Nuclear	1,030	1,030	1,030	1,030	1,030	1,030	1,030	1,030	1,030	332	-	930
Coal	<u>3,827</u>	<u>3,827</u>	<u>3,827</u>	<u>3,827</u>	<u>3,827</u>	<u>3,827</u>	<u>3,827</u>	<u>3,663</u>	<u>2,984</u>	<u>3,124</u>	<u>3,842</u>	<u>3,827</u>
Total	24,862	20,805	21,990	23,061	23,948	23,108	21,175	21,957	20,522	21,790	26,797	24,349
Surplus (Need)	3,278	560	1,975	926	(842)	(1,384)	(2,077)	302	(40)	1,573	6,038	2,158

^{1/} Loads net of demand-side management

Table 3 Northwest Region Requirements and Resources – Winter Peak

The sum of the individual utilities' firm requirements and resources for the peak hour in January for each of the next 10 years are shown here. Firm peak requirements include a planning margin to account for planning uncertainties. Hydropower generation is the maximum hourly generation during the period of heavy load.

Megawatts	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Firm Requirements										
Load ^{1/}	33,027	33,420	33,722	33,990	34,320	34,316	34,631	34,927	35,207	35,530
Exports	1,572	1,556	1,420	1,420	1,396	1,396	1,351	1,351	1,351	1,351
Planning Margin ^{2/}	<u>3,963</u>	<u>4,345</u>	<u>4,721</u>	<u>5,098</u>	<u>5,491</u>	<u>5,834</u>	<u>6,234</u>	<u>6,636</u>	<u>7,041</u>	<u>7,106</u>
Total	38,167	38,899	39,590	40,058	40,690	41,427	42,093	42,740	43,504	43,917
Firm Resources										
Hydro	21,997	21,996	21,996	21,996	21,996	21,996	21,995	21,995	21,995	21,995
Small Thermal & Misc.	43	43	43	43	27	27	27	27	27	27
Combustion Turbines	5,128	5,128	5,128	5,128	5,128	5,128	5,128	5,128	5,128	5,128
Renewables-Other	242	248	237	237	237	237	236	236	236	236
Wind	216	216	216	216	216	216	216	216	216	216
Cogeneration	852	851	852	852	838	835	835	805	805	781
Imports	1,831	1,714	1,725	1,662	1,535	1,522	1,437	1,443	1,449	1,456
Nuclear	1,130	1,130	1,130	1,130	1,130	1,130	1,130	1,130	1,130	1,130
Coal	<u>4,151</u>	<u>4,151</u>	<u>4,151</u>	<u>4,151</u>	<u>4,151</u>	<u>4,151</u>	<u>4,151</u>	<u>4,151</u>	<u>3,724</u>	<u>3,724</u>
Total	35,589	35,478	35,479	35,416	35,257	35,242	35,157	35,132	34,711	34,693
Surplus (Need)	(2,973)	(3,843)	(4,384)	(5,093)	(5,950)	(6,304)	(7,059)	(7,781)	(8,888)	(9,293)

^{1/} Loads net of demand-side management

^{2/} Planning Margin accounts for forced outages, unanticipated load growth, load variation due to temperatures, and operating reserve

Table 4 Northwest Region Requirements and Resources – Summer Peak

This shows the sum of the individual utilities' firm requirements and resources for a peak hour in July for each of the next 10 years. Firm peak requirements include a planning margin to account for planning uncertainties. Hydropower generation is the maximum hourly generation during the period of heavy load.

Megawatts	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Firm Requirements										
Load ^{1/}	28,879	29,248	29,629	29,939	30,281	30,323	30,686	31,016	31,375	31,738
Exports	2,071	2,080	1,929	1,806	1,806	1,671	1,671	1,671	1,671	1,371
Planning Margin ^{2/}	<u>3,465</u>	<u>3,802</u>	<u>4,148</u>	<u>4,491</u>	<u>4,845</u>	<u>5,155</u>	<u>5,523</u>	<u>5,893</u>	<u>6,275</u>	<u>6,348</u>
Total	34,415	35,131	35,706	36,236	36,932	37,149	37,880	38,580	39,320	39,456
Firm Resources										
Hydro	22,085	22,085	22,085	22,085	22,085	22,085	22,077	22,077	22,077	22,077
Small Thermal & Misc.	43	43	43	43	27	27	27	27	27	27
Combustion Turbines	4,644	4,644	4,644	4,644	4,644	4,644	4,644	4,644	4,644	4,644
Renewables-Other	241	238	238	238	237	237	237	237	237	237
Wind	268	268	268	268	268	268	268	268	268	268
Cogeneration	794	793	793	793	779	776	776	752	734	734
Imports	1,055	1,061	1,067	1,074	965	888	893	897	902	907
Nuclear	1,130	1,130	1,130	1,130	1,130	1,130	1,130	1,130	1,130	1,130
Coal	<u>4,151</u>	<u>4,151</u>	<u>4,151</u>	<u>4,151</u>	<u>4,151</u>	<u>4,151</u>	<u>4,151</u>	<u>4,151</u>	<u>3,724</u>	<u>3,724</u>
Total	34,411	34,413	34,420	34,425	34,287	34,207	34,203	34,183	33,742	33,747
Surplus (Need)	(4)	(718)	(1,286)	(1,810)	(2,645)	(2,942)	(3,676)	(4,396)	(5,578)	(5,709)

^{1/} Loads net of conservation

^{2/} Planning Margin accounts for forced outages, unanticipated load growth, load variation due to temperatures, and operating reserve.

Northwest New and Existing Resources

The following tables present details about new and existing generating resources. **Table 5 *Recently Installed Generating Resources*** highlights those projects that have most recently come on line and **Table 6 *Resources Under Construction*** lists those generating projects where construction has started and that utilities are counting on to meet need. All resources listed in these tables are included in the regional analysis of power needs.

Table 7 *Planned Resources* captures resources utilities have identified to meet their own needs. The table shows the expected savings from utilities' conservation/energy efficiency programs and planned generating projects that are being counted on to meet the growing demand. This information is compilation of what utilities have reported in their individual integrated resources plans.

Table 8 *Northwest Generating Resources* is a comprehensive list of generating resources that make up the electric power supply for the Pacific Northwest. These resources are utility-owned, utility contracted, and owned by independent power producers.

Table 5
Recently Installed Generating Resources

Project	Date	Fuel/Tech	Nameplate (MW)	Peak (MW)	Energy (MWa)	Utility
Box Canyon Upgrade Unit 4	Mar-11	Hydro	6			Pend Oreille County PUD
City of Spokane Waste to Energy		Solid Waste	26	16	16	Avista Corp.
Dave Gates Generating Station	Jan-11	Natural Gas	150	149	7	NorthWestern Energy
Esquatzel Small Hydro		Hydro	0.9	0.9	0.9	Franklin County PUD
Rockland Wind	Dec-11	Wind	80	4	22	Idaho Power
Sawtooth Wind	Dec-11	Wind	21	1	3	Idaho Power
Wanapum 5 Turbine & Gen Replacement	Feb-11	Hydro	23	23		Grant County PUD
Young's Creek	Nov-11	Hydro	8	7	2	Snohomish County PUD
			314	200	51	

**Table 6
Resources Under Construction**

Project	Date	Fuel/Tech	Nameplate (MW)	Peak (MW)	Energy (MWa)	Utility
Box Canyon Units 1-3	Mar-14	Hydro	17			Pend Oreille County PUD
Dorena Hydro	Dec-12	Hydro	8	8	2	
Cushman North Fork Powerhouse	Dec-12	Hydro		4		Tacoma Power
Noxon Rapids	May-12	Hydro	8		6	Avista Corp.
Langley Gulch	Jul-12	Natural Gas	300	300	251	Idaho Power
Lower Snake River 1	Apr-12	Wind	342	33	102	Puget Sound Energy
Lower Baker 4	Dec-13	Hydro	30	30	13	Puget Sound Energy
University of Oregon	Dec-12	Cogeneration	10	8	9	Eugene Water & Electric Board
Wanapum 2 Turbine & Gen Replacement	Jan-13	Hydro	22.5	23	2	Grant County PUD
			738	405	384	

**Table 7
Planned Resources**

Project	Schedule	Fuel/Tech	Nameplate (MW)	Peak (MW)	Energy (MWa)	Utility
Biomass	2020	Biomass	25			Puget Sound Energy
Biomass	2016	Wood Waste/Coge	14		14	Seattle City Light
Biomass	2020	Wood Waste/Coge	6		6	Seattle City Light
CCCT	2015	Natural Gas	441	441	406	Portland General Electric
CHP	By 2015	Cogeneration	2	2	2	Portland General Electric
CHP	2023	Cogeneration	6		6	Seattle City Light
CHP - Biomass - PPA	2012-2022	Biomass	46	46	42	PacifiCorp
Clark Canyon Dam	Mar-13	Hydro	5	0	1	Idaho Power
Cold Springs	Dec-12	Wind	20	1	6	Idaho Power
Columbia Ridge	2013	Landfill Gas	6		6	Seattle City Light
Contract Renewals	By 2015	Contract	167	167	66	Portland General Electric
Cottonwood Wind Park	Jun-12	Wind	20	1	6	Idaho Power
Deep Creek Wind Park	Jun-12	Wind	20	1	6	Idaho Power
Demand-Side Savings		DSM		2,238	2,008	Multiple Utilities
Desert Meadow Windfarm	Dec-12	Wind	20	1	6	Idaho Power
Double A Digester	Jan-12	Biomass	5	0	1	Idaho Power
Double B Dairy	Dec-12	Biomass	2	0	1	Idaho Power
DSG	By 2015	Diesel	52	52	NA	Portland General Electric
Fall Creek Hydro	In License ILP Process	Hydro	10	8	2	
Geothermal	2019	Geothermal	18		18	Seattle City Light
Geothermal	2017	Geothermal	200			Snohomish PUD
Gorge Tunnel II	2015	Hydro Efficiency	5		5	Seattle City Light
Grandview Solar One	Jul-12	Solar	20	1	6	Idaho Power
Hammett Hill Windfarm	Dec-12	Wind	20	1	6	Idaho Power
Hidden Hollow Energy II	Feb-12	Biomass	3	0	1	Idaho Power
Hydro	2017	Hydro	24		24	Seattle City Light
Lava Beds Wind	Aug-12	Wind	18	1	5	Idaho Power
Lime Wind Energy	Oct-12	Wind	3	0	1	Idaho Power

**Table 7
Planned Resources**

Project	Schedule	Fuel/Tech	Nameplate (MW)	Peak (MW)	Energy (MWa)	Utility
Magic Wind Park	Jul-12	Wind	20	1	6	Idaho Power
Mainline Windfarm	Dec-12	Wind	20	1	6	Idaho Power
Murphy Solar	Jul-12	Solar	20	1	6	Idaho Power
Neal Hot Springs	Nov-12	Geothermal	20	1	6	Idaho Power
Notch Butte Wind	Aug-12	Wind	18	1	5	Idaho Power
Peakers	2014	Natural Gas	1,065	1,065		Puget Sound Energy
Peakers	2020	Natural Gas	213	213		Puget Sound Energy
Priest Rapids 1 Turbine & Gen Replacement	May-17	Hydro	21	21		Grant County PUD
Priest Rapids 2 Turbine & Gen Replacement	Sep-17	Hydro	21	21		Grant County PUD
Priest Rapids 3 Turbine & Gen Replacement	Jul-17	Hydro	21	21		Grant County PUD
Priest Rapids 4 Turbine & Gen Replacement	May-14	Hydro	21	21		Grant County PUD
Priest Rapids 5 Turbine & Gen Replacement	May-18	Hydro	21	21	1	Grant County PUD
Priest Rapids 6 Turbine & Gen Replacement	Mar-19	Hydro	21	21	1	Grant County PUD
Priest Rapids 7 Turbine & Gen Replacement	Jan-20	Hydro	21	21		Grant County PUD
Priest Rapids 8 Turbine & Gen Replacement	Nov-20	Hydro	21	21		Grant County PUD
Pumped Storage		Hydro	100			Douglas County PUD
Rock Creek Dairy	May-12	Biomass	4	0	1	Idaho Power
Rogerson Flats Wind Park	May-12	Wind	20	1	6	Idaho Power
RPS Renewables	2015	Wind, Solar	370	18	122	Portland General Electric
Ryegrass Windfarm	Dec-12	Wind	20	1	6	Idaho Power
Salmon Creek Wind Park	Jun-12	Wind	20	1	6	Idaho Power
SCCT or Similar	2013	Natural Gas	200	200	NA	Portland General Electric
Seasonal Capacity	2015	Natural Gas	354	354	NA	Portland General Electric
Shoshone Falls Upgrade	Oct-15	Hydro	49	2	9	Idaho Power
Solar (PV and Micro)	2012-2021	Solar	31	31	7	PacifiCorp
Swager Farms	Oct-12	Biomass	2	0	1	Idaho Power

**Table 7
Planned Resources**

Project	Schedule	Fuel/Tech	Nameplate (MW)	Peak (MW)	Energy (MWa)	Utility
Tidal	2013	Tidal	0.25		200 MWh	Snohomish PUD
Two Ponds Windfarm	Dec-12	Wind	20	1	6	Idaho Power
Wanapum 1 Turbine & Gen Replacement	Sep-12	Hydro	23	23		Grant County PUD
Wanapum 10 Generator Replacement	May-17	Hydro	14	14	1	Grant County PUD
Wanapum 3 Turbine & Gen Replacement	Oct-15	Hydro	23	23		Grant County PUD
Wanapum 4 Generator Replacement	Mar-14	Hydro	14	14	3	Grant County PUD
Wanapum 6 Generator Replacement	Jan-15	Hydro	14	14	1	Grant County PUD
Wanapum 8 Generator Replacement	Jun-13	Hydro	23	23	2	Grant County PUD
Wanapum 9 Generator Replacement and Transformer E upgrade	Jul-16	Hydro	23	23	2	Grant County PUD
Whitefish Hydro		Hydro	0.261	0.261	0.102	Flathead Electric Co-op.
Wind	2020	Wind	300	5	90	Puget Sound Energy
Wind	2020	Wind	56		56	Seattle City Light
Wind	2021	Wind	48		48	Seattle City Light
Wind		Wind	200			Douglas County PUD
Winter-only Capacity RFP	by 2012		200	200		Portland General Electric
Withdraw Wind Project		Wind	70	70	20	Douglas County PUD
Yellowstone Power	Dec-12	Wind	10	1	3	Idaho Power
			4,923	5,426	3,073	

Table 8
Northwest Generating Resources

Project	Owner	NW Utility	Nameplate (MW)	
HYDRO			32,489	MW
Albeni Falls	US Corps of Engineers	Federal System (BPA)	43	
Alder	Tacoma Power	Tacoma Power	50	
American Falls	Idaho Power	Idaho Power	92	
Anderson Ranch	US Bureau of Reclamation	Federal System (BPA)	40	
Arrowrock Dam	Clatskanie PUD/Idaho & Oregon irrigation	Clatskanie PUD	18	
Ashton	PacifiCorp	PacifiCorp	6	
B. Smith	PacifiCorp	PacifiCorp	0	
Barber Dam	Enel North America	Idaho Power	4	
Bell Mountain	PacifiCorp	PacifiCorp	1	
Bend Power Dam	PacifiCorp	PacifiCorp	1	
Big Cliff	US Corps of Engineers	Federal System (BPA)	18	
Big Creek (Hellroaring)		Mutiple Utilities	-	
Big Fork	PacificCorp	PacifiCorp	4	
Big Sheep Creek	Everand Jensen	Avista Corp.	0	
Birch Creek	Everand Jensen	Idaho Power	0	
Birch Creek	PacifiCorp	PacifiCorp	3	
Black Canyon	US Bureau of Reclamation	Federal System (BPA)	10	
Black Canyon # 3	Big Wood Canal Co.	Idaho Power	0	
Black Creek Hydro		Puget Sound Energy	4	
Blind Canyon	Blind Canyon Hydro	Idaho Power	2	
Bliss	Idaho Power	Idaho Power	75	
Boise River Diversion	US Bureau of Reclamation	Federal System (BPA)	2	
Bonneville	US Corps of Engineers	Federal System (BPA)	1,102	
Boston Power		PacifiCorp	-	
Boundary	Seattle City Light	Seattle City Light	1,040	
Box Canyon	Pend Oreille County PUD	Pend Oreille County PUD	70	
Box Canyon-Idaho	Richard Kaster	Idaho Power	0	
Briggs Creek	Richard Kaster	Idaho Power	1	
Brownlee	Idaho Power	Idaho Power	585	
Burnside Hydro		Public Utilities	-	
Bypass	Bypass, Ltd.	Idaho Power	10	
Cabinet Gorge	Avista Corp.	Avista Corp.	265	
Calispel Creek	Pend Oreille PUD	Pend Oreille PUD	1	
Canyon Springs	J.D. McCollum	Idaho Power	0	
Carmen-Smith	Eugene Water & Electric Board	Eugene Water & Electric Board	80	
Cascade	US Bureau of Reclamation	Idaho Power	12	
CDM Hydro	PacifiCorp	PacifiCorp	6	
Cedar Draw Creek	Crys. Sprgs. Hydro	Idaho Power	2	
Cedar Falls, Newhalem	Seattle City Light	Seattle City Light	-	

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Table 8
Northwest Generating Resources

Project	Owner	NW Utility	Nameplate (MW)
Central Oregon Siphon		PacifiCorp	-
Chandler	US Bureau of Reclamation	Federal System (BPA)	12
Chelan	Chelan County PUD	Chelan County PUD	59
Chief Joseph	US Corps of Engineers	Federal System(BPA)	2,457
C. J. Strike	Idaho Power	Idaho Power	83
Clear Lake	Idaho Power	Idaho Power	3
Clearwater	Non - Utility	Federal (BPA)	1
Clearwater #1	PacifiCorp	PacifiCorp	15
Clearwater #2	PacifiCorp	PacifiCorp	26
Cline Falls	COID	PacifiCorp	1
COID	PacifiCorp	PacifiCorp	7
Copco #1	PacifiCorp	PacifiCorp	20
Copco #2	PacifiCorp	PacifiCorp	27
Cougar	US Corps of Engineers	Federal System (BPA)	25
Cove Hydro		Public Utility	-
Cowlitz Falls	Lewis County PUD	Federal (BPA)	-
Crystal Springs	Crystal Springs Hydro	Idaho Power	2
Curry Cattle Company	Curry Cattle Co.	Idaho Power	0
Curtis Livestock	PacifiCorp	PacifiCorp	0
Cushman 1	Tacoma Power	Tacoma Power	43
Cushman 2	Tacoma Power	Tacoma Power	81
Deep Creek	Gordon Foster	Avista Corp.	0
Derr Creek	Jim White	Avista Corp.	0
Detroit	US Corps of Engineers	Federal System (BPA)	100
Dexter	US Corps of Engineers	Federal System (BPA)	15
Diablo Canyon	Seattle City Light	Seattle City Light	153
Dietrich Drop	Enel North America	Idaho Power	5
Dorena Hydro	Dorena Hydro LLC	-	9
Dry Creek		PacifiCorp	4
D. Wiggins		PacifiCorp	-
Dworshak	US Corps of Engineers	Federal System (BPA)	400
Dworshak/ Clearwater		Federal System (BPA)	-
Eagle Point	PacifiCorp	PacifiCorp	3
East Side	PacifiCorp	PacifiCorp	3
Electron	Puget Sound Energy	Puget Sound Energy	23
Elk Creek	El Dorado Hydro	Idaho Power	2
Eltopia Branch Canal	SEQCBID	Seattle City Light	2
Fall Creek	PacifiCorp	PacifiCorp	3
Falls Creek		Public Utility	-
Falls River	Marysville Hydro Partner	Idaho Power	9
Faraday-Clackamas	Portland General Electric	Portland General Electric	37

Table 8
Northwest Generating Resources

Project	Owner	NW Utility	Nameplate (MW)
Farmers Irrigation	PacifiCorp	PacifiCorp	3
Faulkner Ranch	Faulkner Brothers Hydro Inc.	Idaho Power	1
Felt	PacifiCorp	PacifiCorp	-
Fish Creek	PacifiCorp	PacifiCorp	11
Fisheries Development Co.	Fisheries Devel.	Idaho Power	0
Foster	US Corps of Engineers	Federal System (BPA)	20
Frontier Technologies	PacifiCorp	PacifiCorp	4
Galesville Dam	PacifiCorp	PacifiCorp	2
Gem State Hydro		Other Publics (BPA)	-
Geo-Bon No 2	Enel North America, Inc.	Idaho Power	1
Georgetown Power	PacifiCorp	PacifiCorp	0
Gorge	Seattle City Light	Seattle City Light	207
Grace	PacifiCorp	PacifiCorp	-
Grand Coulee	US Bureau of Reclamation	Federal System (BPA)	6,494
Green Peter	US Corps of Engineers	Federal System(BPA)	80
Green Springs	US Bureau of Reclamation	Federal System (BPA)	16
Hailey CSPP	City of Hailey	Idaho Power	0
Hazelton A	SE Hazelton ALP	Idaho Power	8
Hazelton B	Hazelton Power Co.	Idaho Power	8
Hells Canyon	Idaho Power	Idaho Power	392
Hills Creek	US Corps of Engineers	Federal System (BPA)	30
Hood Street Reservoir	Tacoma Power	Tacoma Power	-
Horseshoe Bend	Horseshoe Bend Hydro	Idaho Power	10
Hungry Horse	US Bureau of Reclamation	Federal System (BPA)	428
Hutchinson Creek	STS Hydro	Puget Sound Energy	1
Ice Harbor	US Corps of Engineers	Federal System(BPA)	603
Idaho Falls - City Plant		Federal System (BPA)	-
Idaho Falls - Lower Plant		Federal System (BPA)	-
Idaho Falls - Upper Plant		Federal System (BPA)	-
Ingram Warm Springs	PacifiCorp	PacifiCorp	1
Iron Gate	PacifiCorp	PacifiCorp	18
Island Park		Fall River Rural Electric	5
Jackson (Sultan)	Snohomish County PUD	Snohomish County PUD	112
James Boyd		PacifiCorp	-
Jim Ford Creek	Ford Hydro	Avista Corp.	2
Jim Knight	Big Wood Canal Co.	Idaho Power	0
John C. Boyle	PacifiCorp	PacifiCorp	90
John Day	US Corps of Engineers	Federal System(BPA)	2,160
John Day Creek	Dave Cereghino	Avista Corp.	1
John H Koyle	John H Koyle	Idaho Power	1
Joseph Hydro		PacifiCorp	-

Table 8
Northwest Generating Resources

Project	Owner	NW Utility	Nameplate (MW)
Kasel-Witherspoon	Kasel & Witherspoon	Idaho Power	1
Kerr	PPL Montana	-	194
Koma Kulshan	Koma Kulshan Associates PSE-100%		11
La Grande	Tacoma Power	Tacoma Power	64
Lacomb Irrigation	PacifiCorp	PacifiCorp	1
Lake Creek		Other Publics (BPA)	-
Lake Oswego Corp.		Portland General Electric	1
Last Chance			-
Lateral No. 10	Lateral 10 Ventures	Idaho Power	2
Leaburg	Eugene Water & Electric Board	Eugene Water & Electric Board	14
Lemolo #1	PacifiCorp	PacifiCorp	32
Lemolo #2	PacifiCorp	PacifiCorp	33
Lemoyme	John Lemoyme	Idaho Power	1
Libby	US Corps of Engineers	Federal System(BPA)	525
Lilliwaup Falls		Public	-
Little Falls	Avista Corp.	Avista Corp.	32
Little Goose	US Corps of Engineers	Federal System(BPA)	810
Little Wood	Little Wood Irr District	Idaho Power	2
Little Wood/Arkoosh	William Arkoosh	Idaho Power	1
Lloyd Fery	PacifiCorp	PacifiCorp	0
Long Lake	Avista Corp.	Avista Corp.	70
Lookout Point	US Corps of Engineers	Federal System (BPA)	120
Lost Creek	US Corps of Engineers	Federal System (BPA)	49
Lower Baker	Puget Sound Energy	Puget Sound Energy	85
Lower Granite	US Corps of Engineers	Federal System(BPA)	810
Lower Malad	Idaho Power	Idaho Power	14
Lower Monumental	US Corps of Engineers	Federal System(BPA)	810
Lower Salmon	Idaho Power	Idaho Power	60
Low Line #2	Enel North America, Inc.	Idaho Power	3
Lowline Canal	S. Forks	Idaho Power	8
Lowline Midway	Idaho Power	Idaho Power	3
Lucky Peak	IID	Seattle City Light	113
Magic Reservoir	Magic Reservoir Hydro	Idaho Power	9
Main Canal Headworks	SEQCBID	Seattle City Light	26
Malad River	V. Ravenscroft	Idaho Power	1
Mayfield	Tacoma Power	Tacoma Power	162
McNary	US Corps of Engineers	Federal System(BPA)	980
McNary Fishway	US Corps of Engineers	Other Publics (BPA)	-
Merwin	PacifiCorp	PacifiCorp	136
Meyers Falls	Michael Johnson	Avista Corp.	1
Middlefork Irrigation	PacifiCorp	PacifiCorp	3

Table 8
Northwest Generating Resources

Project	Owner	NW Utility	Nameplate (MW)
Mile 28	Contractors Power Group Inc.	Idaho Power	2
Mill Creek		Other Publics (BPA)	-
Milner	Idaho Power	Idaho Power	59
Milltown/Flint Creek			-
Minidoka	US Bureau of Reclamation	Federal System (BPA)	28
Mink Creek	PacifiCorp	PacifiCorp	3
Mitchell Butte	Owyhee Irrigation District	Idaho Power	2
Monroe Street	Avista	Avista Corp.	15
Mora Drop	Riverside LLC	Idaho Power	2
Morse Creek		Port Angeles	-
Mossyrock	Tacoma Power	Tacoma Power	300
Mountain Energy	PacifiCorp	PacifiCorp	0
Mount Tabor	City of Portland	Portland General Electric	0
Moyie Springs		Other Publics (BPA)	-
Mud Creek/S&S	H.K.Hydro	Idaho Power	1
Mud Creek/White	Mud Creek Hydro	Idaho Power	0
N-32 Canal (Marco Ranches)	Ranchers Irrig., Inc.	Idaho Power	1
Nicols Gap	PacifiCorp	PacifiCorp	1
Nicolson SunnyBar	PacifiCorp	PacifiCorp	0
Nine Mile	Avista	Avista Corp.	26
Nooksack	Puget Sound Hydro, LLC	-	3
North Fork-Clackamas	Portland General Electric	Portland General Electric	41
North Fork Sprague	PacifiCorp	PacifiCorp	1
Noxon Rapids	Avista Corp.	Avista Corp.	
N.R. Rousch	PacifiCorp	PacifiCorp	0
Oak Grove-Clackamas	Portland General Electric	Portland General Electric	51
Odell Creek	PacifiCorp	PacifiCorp	0
O.J. Power	PacifiCorp	PacifiCorp	0
Oneida	PacifiCorp	PacifiCorp	-
Opal Springs	PacifiCorp	PacifiCorp	5
Ormsby		PacifiCorp	-
Owyhee Dam	Owyhee Irrigation District	Idaho Power	5
Owyhee Tunnel No.1	Owyhee Irrigation District	Idaho Power	8
Oxbow	Idaho Power Company	Idaho Power	190
Packwood	Energy Northwest	Benton County PUD	26
Palisades	US Bureau of Reclamation	Federal System (BPA)	177
Paris	PacifiCorp	PacifiCorp	-
PEC Headworks	SEQBID	Grant County PUD	7
Pelton	Portland General Electric	Mutiple Utilities	110
Pelton Reregulation	Warm Springs Tribe	Portland General Electric	19
Phillips Ranch	Glen Phillips	Avista Corp.	0

Table 8
Northwest Generating Resources

Project	Owner	NW Utility	Nameplate (MW)
Pigeon Cove	Pigeon Cove Power	Idaho Power	2
Portland Hydro-Project	City of Portland	Portland General Electric	36
Portneuf River		PacifiCorp	1
Post Falls	Avista Corp.	Avista Corp.	15
Potholes East Canal 66 Headworks	SEQCBID	Seattle City Light	5
Powerdale	PacifiCorp	PacifiCorp	6
Preston City	PacifiCorp	PacifiCorp	0
Priest Rapids	Grant County PUD	Multiple Utilities	956
Pristine Springs	Pristine Springs, Inc	Idaho Power	0
Pristine Springs #3	Pristine Springs, Inc	Idaho Power	0
Prospect #1	PacifiCorp	PacifiCorp	4
Prospect #2	PacifiCorp	PacifiCorp	32
Prospect #3	PacifiCorp	PacifiCorp	7
Prospect #4	PacifiCorp	PacifiCorp	1
Quincy Chute	SEQBID	Grant County PUD	9
R.D. Smith	SEQCBID	Seattle City Light	6
Reeder Gulch		Other Publics (BPA)	-
Reynolds Irrigation	Reynolds Irr.	Idaho Power	0
Rim View	Rim View Trout Co.	Idaho Power	0
River Mill-Clackamas	Portland General Electric	Portland General Electric	19
River Reservoir		Idaho Power	-
Rock Creek No. 1	Rock Creek Joint	Idaho Power	2
Rock Creek No. 2	Enel North America	Idaho Power	2
Rock Island	Chelan County PUD	Mutiple Utilities	628
Rocky Reach	Chelan County PUD	Multiple Utilities	1,300
Ross	Seattle City Light	Seattle City Light	360
Round Butte	Portland General Electric	Mutiple Utilities	247
Roza	US Bureau of Reclamation	Federal System (BPA)	13
Sagebrush	Big Wood Canal Co.	Idaho Power	0
Sahko	Sahko	Idaho Power	1
Santiam	PacifiCorp	PacifiCorp	0
Schaffner	Lemhi Hydro Co.	Idaho Power	1
Sheep Creek	Glen Phillips	Avista Corp.	2
Shingle Creek	Willis D Deveny	Idaho Power	0
Shoshone II	Shorock Hydro	Idaho Power	1
Shoshone CSPP	Shorock Hydro, Inc.	Idaho Power	0
Shoshone Falls	Idaho Power	Idaho Power	13
Slide Creek	PacifiCorp	PacifiCorp	18
Smith Creek	Eugene Water & Electric Board	Eugene Water & Electric Board	38
Snake River Pottery	Snake River Pottery	Idaho Power	0
Snedigar Ranch	David Snedigar	Idaho Power	1

Table 8
Northwest Generating Resources

Project	Owner	NW Utility	Nameplate (MW)
Snoqualmie Falls	Puget Sound Energy	Puget Sound Energy	54
Soda Creek		Other Publics (BPA)	-
Soda Point Project			-
Soda Springs	PacifiCorp	PacifiCorp	11
South Fork Tolt	Seattle City Light	Seattle City Light	17
Spokane Upriver	City of Spokane	Avista Corp.	16
Stauffer Dry Creek		PacifiCorp	-
Steffen Hydro		Snohomish County PUD	-
Stone Creek	Eugene Water & Electric Board	Eugene Water & Electric Board	12
Strawberry Creek	South Idaho Public Agency	Other Publics (BPA)	-
Summer Falls	SEQCBID	Seattle City Light	92
Sunshine #2	McMillian	Idaho Power	0
Swan Falls	Idaho Power	Idaho Power	25
Swift 1	PacifiCorp	Mutiple Utilities	204
Swift 2	Cowlitz County PUD	Mutiple Utilities	70
Sygitowicz	Cascade Clean Energy	Puget Sound Energy	0
TGS/Briggs		PacifiCorp	-
The Dalles	US Corps of Engineers	Federal System(BPA)	1,807
The Dalles Fishway	Northern Wasco Co. PUD	Northern Wasco Co. PUD	5
Thompson Falls	PPL Montana	-	94
Thousand Springs	Idaho Power	Idaho Power	9
Tiber Dam	Tiber Montana, LLC	Idaho Power	8
Tokenetee	PacifiCorp	PacifiCorp	43
Trail Bridge	Eugene Water & Electric Board	Eugene Water & Electric Board	10
Trout Company	Branch Flower Co.	Idaho Power	0
Tunnel #1	Owyhee Irrig. Dist.	Idaho Power	7
Twin Falls	Idaho Power	Idaho Power	53
Twin Falls	Twin Falls Hydro Association LP	Puget Sound Energy	20
TW Sullivan	Portland General Electric	Portland General Electric	15
Upper Baker	Puget Sound Energy	Puget Sound Energy	106
Upper Falls	Avista Corp.	Avista Corp.	10
Upper Malad	Idaho Power	Idaho Power	8
Upper Salmon 1 & 2	Idaho Power	Idaho Power	18
Upper Salmon 3 & 4	Idaho Power	Idaho Power	17
Walla Walla	PacifiCorp	PacifiCorp	2
Wallowa Falls	PacifiCorp	PacifiCorp	1
Walterville	Eugene Water & Electric Board	Eugene Water & Electric Board	8
Wanapum	Grant County PUD	Mutiple Utilities	934
Weeks Falls	So. Fork II Inc.	Puget Sound Energy	5
Wells	Douglas County PUD	Mutiple Utilities	774
West Side	PacifiCorp	PacifiCorp	1

**Table 8
Northwest Generating Resources**

Project	Owner	NW Utility	Nameplate (MW)	
White Water Ranch	White Water Ranch	Idaho Power	0	
Wilson Lake Hydro	Wilson Pwr. Co.	Idaho Power	8	
Woods Creek	Snohomish County PUD	Snohomish County PUD	1	
Wynoochee	Tacoma Power	Tacoma Power	13	
Woods Creek	Snohomish County PUD	Snohomish County PUD	1	
Yale	PacifiCorp	PacifiCorp	134	
Yelm		Other Publics (BPA)	-	
Yakima-Tieton	PacifiCorp	PacifiCorp	3	
COAL			6,999	MW
Boardman	Portland General Electric	Mutiple Utilities	642	
Centralia #1	TransAlta		670	
Centralia #2	TransAlta		670	
Colstrip #1	PP&L Montana, LLC	Mutiple Utilities	330	
Colstrip #2	PP&L Montana, LLC	Mutiple Utilities	330	
Colstrip #3	PP&L Montana, LLC	Mutiple Utilities	740	
Colstrip #4	NorthWestern Energy	Mutiple Utilities	805	
Corette	PP&L Montana, LLC	PPL Montana, LLC	163	
Jim Bridger #1	PacifiCorp / Idaho Power	Mutiple Utilities	540	
Jim Bridger #2	PacifiCorp / Idaho Power	Mutiple Utilities	540	
Jim Bridger #3	PacifiCorp / Idaho Power	Mutiple Utilities	540	
Jim Bridger #4	PacifiCorp / IPC	Mutiple Utilities	508	
Valmy #1	NV Energy / Idaho Power	Mutiple Utilities	254	
Valmy #2	NV Energy / Idaho Power	Mutiple Utilities	267	
NUCLEAR				
Columbia Generating Station	Energy Northwest	Federal System (BPA)	1,230	
COMBUSTION TURBINES			6,914	MW
Alden Bailey	Clatskanie PUD	Clatskanie PUD	11	
Beaver	Portland General Electric	Portland General Electric	586	
Beaver 8	Portland General Electric	Portland General Electric	25	
Bennett Mountain	Idaho Power	Idaho Power	162	
Big Hanaford	TransAlta		248	

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**Table 8
Northwest Generating Resources**

Project	Owner	NW Utility	Nameplate (MW)
Chehalis Generating Facility	PacifiCorp	PacifiCorp	517
Coyote Springs II	Avista Corp.	Avista Corp.	287
Danskin	Idaho Power	Idaho Power	90
Danskin 1	Idaho Power	Idaho Power	170
Dave Gates Generating Station	NorthWestern Energy	NorthWestern Energy	150
Encogen	Puget Sound Energy	Puget Sound Energy	159
Frederickson Generation Station	EPCOR Power L.P./PSE	Mutiple Utilities	258
Fredonia 1 & 2	Puget Sound Energy	Puget Sound Energy	208
Fredonia 3 & 4	Puget Sound Energy	Puget Sound Energy	108
Fredrickson 1 & 2	Puget Sound Energy	Puget Sound Energy	149
Goldendale	Puget Sound Energy	Puget Sound Energy	261
Grays Harbor (Satsop)	Invenergy		650
Hermiston Power Project	Hermiston Power Partners (Calpine)		689
Kettle Falls CT	Avista Corp.	Avista Corp.	7
Klamath Peaking Units 1-4	Iberdrola Renewables		100
Lancaster Power Project	EIF	Avista Corp.	270
Langley Gulch	Idaho Power	Idaho Power	300
Mint Farm Energy Center	Wayzata Investment Partners	Puget Sound Energy	305
Northeast 1 & 2	Avista Corp.	Avista Corp.	62
Pasco Generation Station	Franklin PUD/Grays Harbor PUD	Mutiple Utilities	44
Port Westward	Portland General Electric	Portland General Electric	415
Rathdrum 1 & 2	Avista Corp.	Avista Corp.	167
River Road Generating Project	Clark Public Utilities	Clark Public Utilities	248
Sumas Energy	Puget Sound Energy	Puget Sound Energy	121
Whitehorn #2 & 3	Puget Sound Energy	Puget Sound Energy	149

COGENERATION

1,947

MW

Billings Cogeneration	Billings Generation, Inc.	NorthWestern Energy	64
Boise Cascade	PacifiCorp	PacifiCorp	9
Coyote Springs I	Portland General Electric	Portland General Electric	266
DAW	PacifiCorp	PacifiCorp	-
Freres Lumber	Evergreen BioPower	PacifiCorp	10
Glenns Ferry (Magic West)	PURPA	Idaho Power	10
Grays Harbor Paper	Grays Harbor PUD	Grays Harbor PUD	16
Hampton Lumber		Snohomish County PUD	7
Hermiston Generating Project	PacifiCorp/Hermiston Generating Company	PacifiCorp	469
James River - Camas	PacifiCorp	PacifiCorp	52
Klamath Cogen Plant	Iberdrola Renewables		502
March Point 1	March Point Cogen	Puget Sound Energy	80

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2012 Northwest Regional Forecast

Table 8
Northwest Generating Resources

Project	Owner	NW Utility	Nameplate (MW)
March Point 2	March Point Cogen	Puget Sound Energy	60
Rough & Ready Lumber	Rough & Ready	PacifiCorp	1
Rupert (Magic Valley)	PURPA	Idaho Power	10
Simplot	PURPA	Idaho Power	12
Tasco 1	Tasco	Idaho Power	2
Tasco 2	Tasco	Idaho Power	3
Tenaska	Tenaska	Puget Sound Energy	245
University of Oregon	University of Oregon	Eugene Water & Electric Board	10
Thompson River	NorthWestern Energy	NorthWestern Energy	12
Warm Springs Forest Products	PacifiCorp	PacifiCorp	8
Wauna (James River)	Western Generation Agency	Multiple Utilities	36
International Paper Energy Center	Eugene Water & Electric Board	Eugene Water & Electric Board	64

RENEWABLES-OTHER

402

MW

Ashland Solar Project		Federal System (BPA)	-
Bellevue Solar	Bellevue Solar, LLC	Portland General Electric	1
Bettencourt B6	Cargill	Idaho Power	2
Bettencourt Dry Creek	Cargill	Idaho Power	2
Big Sky West Dairy	Dean Foods Co. & AgPower Partners LLC	Idaho Power	2
Biomass One	PacifiCorp	PacifiCorp	25
Coffin Butte Resource Project	Power Resources Cooperative	PNGC Power	6
Cogen Company		Multiple Utilities	8
Co-Gen II - DR Johnson Lumber	PacifiCorp	PacifiCorp	8
Columbia Ridge Landfill Gas	Waste Management	Seattle City Light	6
Convanta Marion	Portland General Electric	Portland General Electric	16
Dry Creek Landfill	Dry Creek Landfill Inc.	PacifiCorp	3
Flathead County Landfill	Flathead Electric Cooperative, Inc.	Flathead Electric Cooperative	2
Four Mile Hill Geothermal	Calpine	Federal System (BPA)	50
Hidden Hollow Landfill	G2 Energy	Idaho Power	3
H. W. Hill Landfill Gas Power Plant	Allied Waste Companies	Multiple Utilities	11
Kettle Falls	Avista Corp.	Avista Corp.	51
Lynden	Farm Power	Puget Sound Energy	1
Mead (Methane Energy Agricultural Development)		Multiple Utilities	2
Olympic View 1&2	Mason County PUD #3	Multiple Utilities	5
Pine Products	PacifiCorp	PacifiCorp	6
Pocatello Wastewater	Idaho Power	Idaho Power	0
Potlatch	Avista Corp.	Avista Corp.	114
Qualco	Owner Utility	Puget Sound Energy	0

**Table 8
Northwest Generating Resources**

Project	Owner	NW Utility	Nameplate (MW)
Raft River 1	US Geothermal	Idaho Power	16
Rexville	Farm Power	Puget Sound Energy	1
Seneca	Seneca Sustainable Energy, LLC	Eugene Water & Electric Board	20
Short Mountain		Emerald PUD	3
Spokane MSW	City of Spokane	Puget Sound Energy	23
Stimson Lumber	Stimson Lumber	Avista Corp.	7
Tamarack	Idaho Power	Idaho Power	5
Treasure Valley	Idaho Power	Idaho Power	3
VanderHaak Dairy	VanderHaak Dairy, LLC	Puget Sound Energy	0
Wild Horse Solar Project	Puget Sound Energy	Puget Sound Energy	1
Yamhill Solar	Yamhill solar, LLC	Portland General Electric	1

WIND

7,739

MW

Bennet Creek	Bennet Creek	Idaho Power	21
Big Horn	Iberdrola Renewables		199
Big Horn-Phase 2	Iberdrola Renewables		50
Big Top	Big Top LLC (QF)	PacifiCorp	2
Biglow Canyon - 1	Portland General Electric	Portland General Electric	125
Biglow Canyon - 2	Portland General Electric	Portland General Electric	150
Biglow Canyon - 3	Portland General Electric	Portland General Electric	174
Burley Butte Wind Farm	PURPA	Idaho Power	21
Butter Creek Power	Butter Creek Power LLC	PacifiCorp	5
Camp Reed Wind Park	PURPA	Idaho Power	23
Cassia Gulch	John Deere	Idaho Power	21
Cassia Wind Farm	Cassia Wind Farm	Idaho Power	11
Coastal Energy	CCAP	Grays Harbor PUD	6
Cold Springs	PURPA	Idaho Power	20
Combine Hills I	Eurus Energy of America	PacifiCorp	41
Combine Hills II	Eurus Energy of America	Clark Public Utilities	63
Condon Wind	Goldman Sachs (75%), SeaWest NW (25%)	Federal System (BPA)	25
Elkhorn Wind	Telocaset Wind Power Partners	Idaho Power	101
Foot Creek Rim 1	PacifiCorp & EWEB	Multiple Utilities	41
Foot Creek Rim 2	PPM Energy	Federal System (BPA)	2
Foot Creek Rim 4	PPM Energy	Federal System (BPA)	17
Fossil Gulch Wind	Idaho Power Company	Idaho Power	11
Four Corners Windfarm	Four Corners Windfarm LLC	PacifiCorp	10
Four Mile Canyon Windfarm	Four Mile Canyon Windfarm LLC	PacifiCorp	10
Glacier Wind - Phase 1	Naturener		107
Glacier Wind - Phase 2	Naturener		104

PNUCC

2012 Northwest Regional Forecast

Table 8
Northwest Generating Resources

Project	Owner	NW Utility	Nameplate (MW)
Golden Valley Wind Farm	PURPA	Idaho Power	12
Goodnoe Hills	PacifiCorp	PacifiCorp	94
Goshen North	Ridgeline Energy		125
Hammett Hill Windfarm	PURPA	Idaho Power	20
Harvest Wind		Multiple Utilities	99
Hay Canyon Wind	Hay Canyon Wind Project LLC (Iberdrola)	Snohomish County PUD	101
High Plains	PacifiCorp	PacifiCorp	99
Hopkins Ridge	Puget Sound Energy	Puget Sound Energy	157
Horseshoe Bend	Horseshoe Bend Wind Park LLC	Idaho Power	9
Hot Springs Wind	Hot Springs Wind	Idaho Power	21
Judith Gap	Invenergy Wind, LLC	NorthWestern Energy	135
Juniper Canyon - Phase 1	Iberdrola Renewables		151
Kittitas Valley	Horizon		101
Klondike I	PPM Energy	Federal System (BPA)	24
Klondike II	PPM Energy	Portland General Electric	75
Klondike III	PPM Energy	Multiple Utilities	221
Klondike IIIa	Iberdrola Renewables		77
Lava Beds Wind	PURPA	Idaho Power	18
Leaning Juniper 1	PPM Energy	PacifiCorp	101
Leaning Juniper II-North	Iberdrola Renewables		90
Leaning Juniper II-South	Iberdrola Renewables		109
Lime Wind Energy	PURPA	Idaho Power	3
Linden Ranch	NW Wind Partners		50
Lower Snake River 1	Puget Sound Energy	Puget Sound Energy	342
Magic Wind Park	PURPA	Idaho Power	20
Marengo	Renewable Energy America	PacifiCorp	140
Marengo II	PacifiCorp	PacifiCorp	70
Martinsdale Colony North	Two Dot Wind		1
Martinsdale Colony South	Two Dot Wind		2
McFadden Ridge I	PacifiCorp		29
Milner Dam Wind Farm	PURPA	Idaho Power	20
Moe Wind	Two Dot Wind	NorthWestern Energy	1
Mountain Wind	Edison Mission	PacifiCorp	61
Mountain Wind II	Edison Mission	PacifiCorp	80
Nine Canyon	Energy Northwest	Multiple Utilities	96
Notch Butte Wind	PURPA	Idaho Power	18
Oregon Trail Windfarm	Oregon Trail Windfarm LLC	PacifiCorp	10
Oregon Trails Wind Farm	PURPA	Idaho Power	14
Pa Tu Wind Farm	Pa Tu Wind Farm, LLC	Portland General Electric	9
Pacific Canyon Windfarm	Pacific Canyon Windfarm LLC	PacifiCorp	8
Palouse Wind	Palouse Wind, LLC	Avista Corp.	100

Table 8
Northwest Generating Resources

Project	Owner	NW Utility	Nameplate (MW)
Paynes Ferry Wind Park	PURPA	Idaho Power	21
Pebble Springs Wind	Iberdrola Renewables		99
Pilgrim Stage Station Wind Farm	PURPA	Idaho Power	11
Rattlesnake Rd Wind (aka	Horizon Wind		103
Rock River	SeaWest	PacifiCorp	50
Rock River	SeaWest	PacifiCorp	50
Rockland Wind	PURPA	Idaho Power	80
Rogerson Flats Wind Park	PURPA	Idaho Power	20
Rolling Hills	PacifiCorp	PacifiCorp	99
Salmon Falls Wind Farm	PURPA	Idaho Power	22
Sand Ranch Windfarm	Sand Ranch Windfarm LLC	PacifiCorp	10
Sawtooth Wind	PURPA	Idaho Power	21
Seven Mile Hill	enXco	PacifiCorp	99
Seven Mile Hill II	enXco	PacifiCorp	20
Sheep Valley Ranch	Two Dot Wind	NorthWestern Energy	1
Shepards Flat Central	Caithness Energy		290
Shepards Flat North	Caithness Energy		265
Shepards Flat South	Caithness Energy		290
Stateline Wind	PPM Energy	Multiple Utilities	300
Thousand Springs Wind Farm	PURPA	Idaho Power	12
Three Mile Canyon	Momentum RE	PacifiCorp	10
Tuana Gulch Wind Farm	PURPA	Idaho Power	11
Tuana Springs Expansion Wind	Cassia Gulch Wind Park	Idaho Power	36
Two Ponds Windfarm	PURPA	Idaho Power	20
Vancycle II (Stateline III)	NextEra		99
Vansycle Ridge	ESI Vansycle Partners	Portland General Electric	25
Vantage Wind	Invenergy		90
Wagon Trail Windfarm	Wagon Trail Windfarm LLC	PacifiCorp	3
Ward Butte Windfarm	Ward Butte Windfarm LLC	PacifiCorp	7
Wheat Field Wind Project	Wheat Field Wind LLC (Horizon Energy/EDP)	Snohomish County PUD	97
White Creek	White Creek Wind I (investment firm)	Multiple Utilities	205
Wild Horse	Puget Sound Energy	Puget Sound Energy	273
Willow Creek	Invenergy		72
Windtricity - Imrie	Windtricity		100
Windy Flats Dooley-Phase 1			30
Windy Flats Dooley-Phase 2			233
Windy Point II	Windy Point Partners		153
Wolverine Creek	Invenergy	PacifiCorp	65
Wolverine Creek	Invenergy	PacifiCorp	65
Yahoo Creek Wind Park	PURPA	Idaho Power	21

Table 8
Northwest Generating Resources

Project	Owner	NW Utility	Nameplate (MW)
SMALL THERMAL AND MISCELLANEOUS			97
Boulder Park	Avista Corp.	Avista Corp.	25
City of Spokane Waste to Energy	City of Spokane	Avista Corp.	26
Colstrip Energy LP Coal	Colstrip Energy Limited Partnership		44
Crystal Mountain	Puget Sound Energy	Puget Sound Energy	3

Report Procedures

This report provides an estimate of regional ‘need to acquire’ generating resources using annual energy (August through July), seasonal/monthly energy, winter (January) peak-hour and summer (July) peak-hour metrics. These metrics provide a multi-dimensional look at the Northwest’s need for power and underscore the growing complexity of the power system.

This regional report reflects the summation of individual utilities’ forecasts. The utilities, in most cases, prepared their own projections. Bonneville Power Administration provides much of the information for its smaller customers. Load (i.e. electricity demand), and resource information is included for the utilities listed in Table 9 at the end of this section. Procedures employed in preparing the regional load-resource comparisons of winter and summer peak and energy are described here. And a list of definitions is included at the end of this section.

Load Estimate

Regional loads are the sum of loads estimated by the Northwest utilities and BPA for its federal agency customers, certain non-generating public utilities, and direct service industrial customers (DSI). Estimates are made for system peak and system energy loads. Load projections reflect network transmission and distribution losses, reductions in demand due to rising electricity prices, and the effects of appliance efficiency standards and energy building codes. Savings from demand-side management resources including energy efficiency and demand response are also reflected in the regional load forecasts.

Energy Loads

A ten-year forecast of monthly firm energy loads are provided. This forecast reflects normal weather conditions.

Peak Loads

Northwest regional peak loads are provided for each month of the ten year forecast period. The tabulated loads for winter and summer peak are the highest estimated 60-minute clock-hour average demand for that month, assuming normal weather conditions. The regional firm peak load is the sum of the individual utility peak loads, and does not account for the fact that each utility may experience its peak load at a different hour than other Northwest utilities. Hence the regional peak load is considered non-coincident. The federal system (BPA) firm peak load is adjusted to reflect a federal coincident peak among its many utility customers.

Federal System Transmission Losses

Federal System (BPA) transmission losses for both firm loads and contractual obligations are embedded in federal load. These losses represent the difference between energy generated by the federal system (or delivered to a system interchange point) and the amount of energy sold to customers. System transmission losses are calculated by BPA for firm loads utilizing the federal transmission system.

Planning Margin

In the derivation of regional requirements, a planning margin has been added to the load. This regional planning margin is equal to 12 percent of the total peak load for the first year of the planning horizon, increasing one percent per year to 20 percent and remaining at 20 percent thereafter. They are intended to cover, for planning purposes, all elements of uncertainty not specifically accounted for in determining loads and resources. These include forced-outage reserves, unanticipated load growth, temperature variations, hydro maintenance and project construction delays. An increasing reserve requirement reflects greater uncertainty about load levels and of achieving construction schedules in the future.

Demand-Side Management

The demand-side management estimates include expected future energy savings from existing and new programs in the areas of energy efficiency, distribution efficiency, market transformation, demand response, fuel conversion, fuel switching, energy storage and other efforts that reduce the demand for electricity.

These estimates reflect first year savings and in subsequent years the cumulative savings for the life of the measure. They reflect savings from programs that utilities fund directly, or through a third-party, such as Northwest Energy Efficiency Alliance and Energy Trust of Oregon.

Generating Resources

This report considers existing resources, resources under construction and future resources. For the assessment of needs only the existing resources and resources under construction are reflected in the regional tabulations. In addition, only those generating resources (or shares) that are firmly committed to meeting Northwest loads are included in the regional analysis.

Hydro

Hydro resource capabilities are estimated from a regional analysis using a computer model that simulates reservoir operation of past hydrologic conditions. The historical stream flow record used covers the 70-year period from August 1928 through July 1998.

Energy

The firm energy capability of hydro plants is the amount of energy produced during the operating year with the lowest 12-month average generation. The lowest generation occurred in 1936-37 given today's river operating criteria. The firm energy capability is the average of 12 months, August 1936 to July 1937. Generation for projects that are influenced by downstream reservoirs reflects the reduction due to encroachment.

Peak Capability

For this report the peak capability of the hydro system represents the maximum hourly generation available to meet peak demand during the period of heavy load.

The peaking capability of the hydro system maximizes available energy and capacity associated with the monthly distribution of streamflow. The peaking capability is the hydro system's ability to continuously produce power for a specific time period by utilizing the limited water supply while meeting power and non-power requirements, scheduled maintenance, and operating reserves (including wind reserves).

A computer model is used to estimate the operational hydro peaking capability of individual projects, based on their monthly average energy for 70 water conditions. The peaking capability used for this report is the 8th percentile of the resulting hourly peak capabilities for January and July to indicate winter and summer peak capability respectively. This model shapes the monthly hydro energy to maximize generation in the heavy load hours.

Columbia River Treaty

In 1964 the United States signed a treaty with Canada that outlined the operation of U.S. and Canadian storage projects to increase the total combined generation. Hydropower generation in this analysis reflects the firm power generated by coordinating operation of three Canadian reservoirs, Duncan, Arrow and Mica with the Libby reservoir and other power facilities in the region. Canada's share of the coordinated operation benefits is called Canadian Entitlement. BPA and each of the non-Federal mid-Columbia projects owners are obligated to return their share of the downstream power benefits owed to Canada. The delivery of the Entitlement is reflected in this analysis.

Downstream Fish Migration

Another requirement incorporated in the computer simulations is modified river operations to provide for the downstream migration of anadromous fish. These modifications include adhering to specific flow limits at some projects, spilling water at several projects, and augmenting flows in the spring and summer on the Columbia, Snake and Kootenai rivers. Specific requirements that are a part of operation for fish include: observing flow limits as measured at Columbia Falls (downstream of Hungry Horse Dam); and operating the Brownlee project as prescribed by its owner, Idaho Power.

During the spring and summer, an amount of water is deliberately spilled at all mid-Columbia projects based on negotiations and/or Federal Energy Regulatory Commission (FERC) orders. The amount of spill used for fish varies by project and generally occurs the second half of April through August.

Similarly, fish passage spill programs during the spring and summer have been reflected for the Lower Snake River and Lower Columbia River dams operated by the Corps of Engineers. Scheduled spill for fish is in accordance with the Corps of Engineers data submitted for project operations. Augmented flows are simulated according to the National Marine Fisheries Service (NMFS) Biological Opinion for river operations. Augmented flows for salmon occur during the spring and summer months on both the Snake and Columbia rivers. The amount of water provided for flow augmentation varies depending on the water supply forecast for each year. Since low water conditions warrant the maximum amount of augmentation that is what is assumed for determining the firm power generation.

Flow augmentation for sturgeon on the Kootenai River and for steelhead on the mid-Columbia occurs according to the US Fish and Wildlife and NMFS Biological Opinions and is the same every year regardless of the water supply.

Thermal and Renewable Resources

Thermal resources are reported in a variety of categories. Coal, nuclear, cogeneration, and combustion turbine projects are each totaled and reported as individual categories.

The category of Other Renewables includes energy from biomass, geothermal, solar, municipal solid waste projects and other small projects. Wind projects are reported in their own category.

All existing generating plants, regardless of size, are included in amounts submitted by each utility that owns or is purchasing the generation. The energy capabilities of plants are computed on annual planning equivalent availability factors submitted by the sponsors of the projects. The factors include allowance for scheduled maintenance (including refueling), forced outages and other expected operating constraints. Some small fossil-fuel plants and combustion turbines are included as peaking resources and their reported energy capabilities are only the amounts necessary for peaking operations. Additional energy potentially may be available from these peaking resources for emergencies but is not included in the regional load/resource balance.

New and Future Resources

The latest activity with new and future resource developments, including expected savings from demand-side management are tabulated in this report. These resources are reported as *Recently Installed*, *Under Construction* and *Planned* resources to reflect the different stages of development.

Recently Installed

The *Recently Installed Generating Resources* have been acquired in the past year and are serving utility loads as of December 31, 2011. They are reflected as part of the regional firm needs assessment.

Under Construction

Resources Under Construction include those projects not complete as of December 31, 2011, but currently are being built. In this report, resources being built by utilities or resources where their output is firmly committed to utilities are included in the regional load-resource analysis. Uncommitted resources being developed by non-utility entities are reported but not included in the regional analysis.

Planned Resources

Planned Resources include future savings from demand-side management programs, specific resources and/or blocks of resources identified in utilities' most current integrated resource plans. Projects specifically named in *Planned Resources* are not yet under construction as of December 31, 2011, but a firm commitment to construct or acquire the power has been made and they are at some stage in the site certification process. For example, a utility or developer has obtained all licenses for construction or acquisition or is in the process of receiving their site certificate from the state. These resources are not part of the regional analysis.

Contracts

Imports and exports include firm arrangements for interchanges with systems outside the region. These arrangements comprise firm contracts with utilities to the East, the Pacific Southwest and Canada. Contracts to and from these areas are amounts delivered at the area border and include any transmission losses associated with deliveries.

"Intra-company transfers" apply to utilities whose service territories extend beyond the regional boundary. These transfers pertain to utilities with loads inside the region that will be served by resources that are outside the region. Transfers of other utilities do not consider any transmission bottlenecks that may occur in the future.

Table 9: Utilities included in the Northwest Regional Forecast

Albion, City of	Fall River Rural Electric Cooperative	Pacific County PUD #2
Alder Mutual	Farmers Electric Co-op	Pacific Power
Ashland, City of	Ferry County PUD #1	Parkland Light & Water
Asotin County PUD #1	Fircrest, Town of	Pend Oreille County PUD
Avista Corp.	Flathead Electric Cooperative	Peninsula Light Company
Bandon, City of	Forest Grove Light & Power	Plummer, City of
Benton PUD	Franklin County PUD	PNGC Power
Benton REA	Glacier Electric	Port of Seattle – SEATAC
Big Bend Electric Co-op	Grant County PUD	Portland General Electric
Blachly-Lane Electric Cooperative	Grays Harbor PUD	Puget Sound Energy
Blaine, City of	Harney Electric	Raft River Rural Electric
Bonnors Ferry, City of	Hermiston, City of	Ravalli Co. Electric Co-op
Bonneville Power Administration	Heyburn, City of	Richland, City of
Burley, City of	Hood River Electric	Riverside Electric Co-op
Canby Utility	Idaho County L & P	Rocky Mountain Power
Cascade Locks, City of	Idaho Falls Power	Rupert, City of
Central Electric	Idaho Power	Salem Electric Co-op
Central Lincoln PUD	Inland Power & Light	Salmon River Electric Cooperative
Centralia, City of	Kittitas County PUD	Seattle City Light
Chelan County PUD	Klickitat County PUD	Skamania County PUD
Cheney, City of	Kootenai Electric Co-op	Snohomish County PUD
Chewelah, City of	Lakeview L & P (WA)	Soda Springs, City of
City of Port Angeles	Lane Electric Cooperative	Southside Electric Lines
Clallam County PUD #1	Lewis County PUD	Springfield Utility Board
Clark Public Utilities	Lincoln Electric Cooperative	Steilacoom, Town of
Clatskanie PUD	Lost River Electric Cooperative	Sumas, City of
Clearwater Power Company	Lower Valley Energy	Surprise Valley Elec. Co-op
Columbia Basin Elec. Co-op	Mason County PUD #1	Tacoma Power
Columbia Power Co-op	Mason County PUD #3	Tanner Electric Co-op
Columbia REA	McCleary, City of	Tillamook PUD
Columbia River PUD	McMinnville Water & Light	Troy, City of
Consolidated Irrigation Dist. #19	Midstate Electric Co-op	Umatilla Electric Cooperative
Consumers Power Inc.	Milton, Town of	Umpqua Indian Utility Co-op
Coos-Curry Electric Cooperative	Milton-Freewater, City of	United Electric Cooperative
Coulee Dam, City of	Minidoka, City of	US Corps of Engineers
Cowlitz County PUD	Missoula Electric Co-op	US Bureau of Reclamation
Declo, City of	Modern Electric Co-op	Vera Water & Power
Douglas County PUD	Monmouth, City of	Vigilante Electric Co-op
Douglas Electric Cooperative	Nespelem Valley Elec.Co-op	Wahkiakum County PUD #1
Drain, City of	Northern Lights Inc.	Wasco Electric Co-op
East End Mutual Electric	Northern Wasco Co. PUD	Weiser, City of
Eatonville, City of	NorthWestern Energy	Wells Rural Electric Co.
Ellensburg, City of	Ohop Mutual Light Company	West Oregon Electric Cooperative
Elmhurst Mutual P & L	Okanogan Co. Electric Cooperative	Whatcom County PUD
Emerald PUD	Okanogan County PUD #1	Yakama Power
Energy Northwest	Orcas Power & Light	
Eugene Water & Electric Board	Oregon Trail Co-op	

Definitions

Annual Energy

Energy value in megawatts that represents the average of monthly values in a given year.

Average Megawatts

(MWa) Unit of energy for either load or generation that is the ratio of energy (in megawatt-hours) expected to be consumed or generated during a period of time to the number of hours in the period.

Biomass

Any organic matter which is available on a renewable basis, including forest residues, agricultural crops and waste, wood and wood wastes, animal wastes, livestock operation residue, aquatic plants, and municipal wastes.

Canadian Entitlement

Canada is entitled to one-half the downstream power benefits resulting from Canadian storage as defined by the Columbia River Treaty. Canadian entitlement returns above contractually stipulated amounts are estimated by Bonneville Power Administration and in no way constitute endorsement or agreement by other utilities.

Capacity

The maximum power that an electrical system or machine such as a hydro-powered or thermal-powered generating plant can produce under specified conditions, or that a power transmission line can carry.

Coal Resources

This category of resources includes the region's coal-fired plants.

Cogeneration

Cogeneration is the technology of producing electric energy and other forms of useful energy (thermal or mechanical) for industrial and commercial heating or cooling purposes through sequential use of an energy source.

Combustion Turbines

These are plants with combined-cycle or simple-cycle gas-fired combustion turbine technology for producing electricity.

Conservation

Any reduction in electrical power consumption as a result of increases in the efficiency of energy use, production, or distribution. (Synonymous with energy efficiency in the *Forecast*)

Critical Period

That portion of the historical streamflow record during which recorded streamflows, combined with all available reservoir storage, produced the least amount of hydroelectric energy. For this report, the critical period is the 8-month period starting September 1936 and ending April 1937.

Demand Response

Control of load through customer/utility agreements that result in a temporary change in consumers' use of electricity in times of system stress.

Demand-side Management

Peak and energy savings from conservation/energy efficiency measures, distribution efficiency, market transformation, demand response, fuel conversion, fuel switching, energy storage and other efforts that that serve to reduce electricity demand.

Dispatchable Resource

A term referring to controllable generating resources that are able to be dispatched for a specific time and need.

Distribution Efficiency

Infrastructure upgrades to utilities' transmission and distribution systems that save energy by minimizing losses.

Encroachment

A term used to describe a situation where the operation of a hydroelectric project causes an increase in the level of the tailwater of the project that is directly upstream.

Energy Efficiency

Any reduction in electrical power consumption as a result of increases in the efficiency of energy use, production, or distribution.

Energy Load

The demand for power averaged over a specified period of time.

Energy Storage

Technologies for storing energy in a form that is convenient for use at a later time when a specific energy demand is greater.

Exports

Firm interchange arrangements where power flows from regional utilities to utilities outside the region.

Federal System (BPA)

The federal system is a combination of BPA's customer loads and contractual obligations, and resources from which BPA acquires the power it sells. The resources include plants operated by the U.S. Army Corps of Engineers (COE), U.S. Bureau of Reclamation (USBR), and hydroelectric projects owned by the city of Idaho Falls and Energy Northwest. BPA markets the thermal generation from Columbia Generating Station, operated by Energy Northwest.

Federal Columbia River Power System (FCRPS)

Thirty federal hydroelectric projects constructed and operated by the Corps of Engineers and the Bureau of Reclamation, and the Bonneville Power Administration transmission facilities.

Firm Energy

Electric energy intended to have assured availability to customers over a defined period.

Firm Load

The sum of the estimated firm loads of private utility and public agency systems, federal agencies and BPA industrial customers.

Firm Losses

Losses incurred on the transmission system of the Northwest region.

Fuel Conversion

Consumers' efforts to make a permanent change from electricity to natural-gas or other fuel source to meet a specific energy need, such as heating.

Fuel Switching

Consumers' efforts to make a temporary change from electricity to another fuel source to meet a specific energy need.

Historical Streamflow Record

A database of unregulated streamflows for 70 years (July 1928 to June 1998). Data is modified to take into account adjustments due to irrigation depletions, evaporations, etc. for the particular operating year being studied.

Hydro Maintenance

The amount of energy lost due to the estimated maintenance required during the critical period. Peak hydro maintenance is included in the peak reserve calculations.

Hydro Regulation

A study that utilizes a computer model to simulate the operation of the Pacific Northwest hydroelectric power system using the historical streamflows, monthly loads, thermal and other non-hydro resources, and other hydroelectric plant data for each project.

Imports

Firm interchange arrangements where power flows to regional utilities from utilities outside the region.

Independent Power Producers

Non-utility entities who own generation that may be partially contracted to meet regional load.

Intermittent Resource

An electric generating source with output controlled by the natural variability of the energy resource rather than dispatched based on system requirements. Intermittent output usually results from the direct, non-stored conversion of naturally occurring energy fluxes such as solar and wind energy.

Intra-Company Transfer

An interchange category that applies to utilities whose service territories extend beyond the regional boundary.

Investor-Owned Utility (IOU)

A privately owned utility organized under State law as a corporation to provide electric power service and earn a profit for its stockholders.

Market Transformation

A strategic process of intervening in a market to accelerate the adoption of all cost-effective energy efficiency.

Megawatt (MW)

A unit of electrical power equal to 1 million watts or 1,000 kilowatts.

Nameplate Capacity

A measure of the approximate generating capability of a project or unit as designated by the manufacturer.

Non-Utility Generation

Facilities that generate power whose percent of ownership by a sponsoring utility is 50 percent or less. These include PURPA-qualified facilities (QFs) or non-qualified facilities of independent power producers (IPPs).

Nuclear Resources

The nuclear plant, the Columbia Generating Station is included in this category.

Operating Year

Twelve-month period beginning on August 1 of any year and ending on July 31 of the following year. For example, operating year 2012 is August 1, 2011 through July 31, 2012.

Other Publics (BPA)

Refers to the smaller, non-generating Public Utility Customers whose load requirements are estimated and served by Bonneville Power Administration.

Peak Load

The maximum demand for power during a specified period of time.

Planned Resources

Planned resources include those projects, measures, and transactions that utilities have made some commitment to acquire and are in some stage of state site certification process; however, either not all licenses have been obtained, no commercial operation data has been specified, or the specifics of the transaction have not been finalized.

Planning Margin

A component of regional requirements that is added to the load forecast to account for uncertainties.

Private Utilities

Same as investor-owned utilities.

Publicly-Owned Utilities

One of several types of not-for-profit utilities created by a group of voters and can be a municipal utility, a public utility district, or an electric cooperative.

PURPA

Public Utility Regulatory Policies Act of 1978. The first federal legislation requiring utilities to buy power from qualifying independent power producers.

Renewables - Other Resources

A category of resources that includes projects that produce power from such fuel sources as solar, geothermal, and biomass (includes wood, municipal solid-waste facilities).

Requirements

For each year, a utility's projected loads, exports, and contracts out. Peak requirements also include the planning margin.

Reservoir Plant

A hydroelectric plant on a reservoir with storage capacity, installed machine capacity, head characteristics, and flow levels, which will permit seasonal drafts.

Resources Under Construction

These projects are under construction at the time of publication and are included in the resources for calculating the regional load/resource balance.

Small Thermal Resources

This category of resources includes small thermal generating resources such as diesel generators used to meet peak and/or emergency loads.

Thermal Resources

Resources that burn coal, natural gas, oil, diesel or use nuclear fission to create heat which is converted into electricity.

Wind Resources

This category of resources includes the region's wind powered projects.