2013 Integrated Resource Plan

Volume I

Let's turn the answers on.

April 30, 2013

PacifiCorp

Rocky Mountain Power
Pacific Power
PacifiCorp Energy

Hydroelectric Relicensing

The issues involved in relicensing hydroelectric facilities are multifaceted. They involve numerous federal and state environmental laws and regulations, and participation of numerous stakeholders including agencies, Indian tribes, non-governmental organizations, and local communities and governments.

The value to relicensing hydroelectric facilities is continued availability of hydroelectric generation. Hydroelectric projects can often provide unique operational flexibility as they can be called upon to meet peak customer demands almost instantaneously and provide back-up for intermittent renewable resources such as wind. In addition to operational flexibility, hydroelectric generation does not have the emissions concerns of thermal generation. With the exception of the Klamath River and Wallowa Falls hydroelectric projects, all of PacifiCorp's applicable generating facilities now operate under contemporary licenses from the Federal Energy Regulatory Commission (FERC). The 169 MW Klamath River hydroelectric project continues to operate under its existing license while PacifiCorp works with parties to implement a 2010 settlement agreement that would result in removal of the project. The assumed date of the removal in the IRP is January 1, 2021. The 1.1 MW Wallowa Falls project is currently undergoing the FERC relicensing process.

FERC hydroelectric relicensing is administered within a very complex regulatory framework and is an extremely political and often controversial public process. The process itself requires that the project's impacts on the surrounding environment and natural resources, such as fish and wildlife, be scientifically evaluated, followed by development of proposals and alternatives to mitigate for those impacts. Stakeholder consultation is conducted throughout the process. If resolution of issues cannot be reached in this process, litigation often ensues which can be costly and time-consuming. The usual alternative to relicensing is decommissioning. Both choices, however, can involve significant costs.

The FERC has sole jurisdiction under the Federal Power Act to issue new operating licenses for non-federal hydroelectric projects on navigable waterways, federal lands, and under other certain criteria. The FERC must find that the project is in the broad public interest. This requires weighing, with "equal consideration," the impacts of the project on fish and wildlife, cultural resources, recreation, land-use, and aesthetics against the project's energy production benefits. However, because some of the responsible state and federal agencies have the ability to place mandatory conditions in the license, the FERC is not always in a position to balance the energy and environmental equation. For example, the National Oceanic and Atmospheric Administration Fisheries agency and the U.S. Fish and Wildlife Service have the authority within the relicensing process to require installation of fish passage facilities (fish ladders and screens) at projects. This is often the largest single capital investment that will be considered in relicensing and can significantly impact project economics. Also, because a myriad of other state and federal laws come into play in relicensing, most notably the Endangered Species Act and the Clean Water Act, agencies' interests may compete or conflict with each other leading to potentially contrary, or additive, licensing requirements. PacifiCorp has generally taken a proactive approach towards achieving the best possible relicensing outcome for its customers by engaging in settlement negotiations with stakeholders, the results of which are submitted to the FERC for incorporation into a new license. The FERC welcomes settlement agreements into the relicensing process, and with associated recent license orders, has generally accepted agreement

terms. Recently, the FERC has promoted that project owners seeking a new license do so through the Integrated Licensing Process (ILP). The ILP involves the FERC at early stages of the relicensing and seeks to resolve stakeholder issues in a timely manner.

Potential Impact

Relicensing hydroelectric facilities involves significant process costs. The FERC relicensing process takes a minimum of five years and may take longer, depending on the characteristics of the project, the number of stakeholders, and issues that arise during the process. As of December 31, 2012, PacifiCorp had incurred approximately $49 million in costs for license implementation and ongoing hydroelectric relicensing, which are included in Construction work-in-progress on PacifiCorp's Consolidated Balance Sheet. As current or upcoming relicensing and/or settlement efforts continue for the Klamath River, Wallowa Falls, and other hydroelectric projects, additional process costs are being or will be incurred that will need to be recovered from customers. Also, new requirements from contemporary FERC orders and expected requirements from ongoing or new relicensing processes could amount to over $978 million over the 30 to 50 year terms of these orders. Such costs include capital investments, and related operations and maintenance costs made in fish passage facilities, recreational facilities, wildlife protection, cultural and flood management measures as well as project operational changes such as increased in-stream flow requirements to protect aquatic resources resulting in lost generation. The majority of these relicensing and settlement costs relate to PacifiCorp's three largest hydroelectric projects: Lewis River, Klamath River and North Umpqua.

Treatment in the IRP

The known or expected operational impacts related to FERC orders and settlement commitments are incorporated in the projection of existing hydroelectric resources discussed in Chapter 5.

PacifiCorp's Approach to Hydroelectric Relicensing

PacifiCorp continues to manage this process by pursuing interest-based resolutions and/or negotiated settlements as part of relicensing. PacifiCorp believes this proactive approach, which involves meeting agency and others' interests through creative solutions is the best way to achieve environmental improvement while managing costs. PacifiCorp also has reached agreements with licensing stakeholders to decommission projects where that has been the most cost-effective outcome for customers.

Rate Design Information

Current rate designs in Utah have evolved over time based on orders and direction from the Public Service Commission in Utah and settlement agreements between parties during general rate cases. Most recently, current rates and rate design changes were adopted in Docket No. 11-035-200. Generally, the goals for rate design are to reflect the costs to serve customers and to provide price signals to encourage economically efficient usage. This is consistent with resource planning goals that balance consideration of costs, risk, and long-run public policy goals. The Company currently has a number of rate design elements that take into consideration these

Hydroelectric Generation

PacifiCorp owns 1,145 MW[34] of hydroelectric generation capacity and purchases the output from 136 MW of other hydroelectric resources. These resources account for approximately 10 percent of PacifiCorp's total generating capability, in addition to providing operational benefits such as flexible generation, spinning reserves and voltage control. PacifiCorp-owned hydroelectric plants are located in California, Idaho, Montana, Oregon, Washington, Wyoming, and Utah.

The amount of electricity PacifiCorp is able to generate or purchase from hydroelectric plants is dependent upon a number of factors, including the water content of snow pack accumulations in the mountains upstream of its hydroelectric facilities and the amount of precipitation that falls in its watershed. Operational limitations of the hydroelectric facilities are impacted by varying water levels, licensing requirements for fish and aquatic habitat, and flood control; leading to load and resource balance capacity values that are different from net facility capacity ratings.

Hydroelectric purchases are categorized into two groups as shown in Table 5.7, which reports 2013 capacity included in the load and resource balance.

Table 5.7 – Hydroelectric Contracts - Load and Resource Balance Capacities

Hydroelectric Contracts by Load and Resource Balance Category	L&R Balance Capacity at System Peak (MW)
Hydroelectric	99
Qualifying Facilities - Hydroelectric	37
Total Contracted Hydroelectric Resources	**136**

Table 5.8 provides an operational profile for each of PacifiCorp's owned hydroelectric generation facilities. The dates listed refer to a calendar year.

Table 5.8 – PacifiCorp Owned Hydroelectric Generation Facilities - Load and Resource Balance Capacities

Plant	State	L&R Balance Capacity at System Peak (MW)
West		
Big Fork	Montana	4
Clearwater 1	Oregon	15
Clearwater 2	Oregon	26
Copco 1 and 2	California	47
Fish Creek	Oregon	0
Iron Gate	California	11
JC Boyle	Oregon	15
Lemolo 1	Oregon	32
Lemolo 2	Oregon	16
Merwin	Washington	23
Rogue	Oregon	30
Small West Hydro [1/]	California / Oregon / Washington	3

[34] 2012 PacifiCorp 10-K filing shows 1,145 MW of Net Facility Capacity.

Plant	State	L&R Balance Capacity at System Peak (MW)
Soda Springs	Oregon	12
Swift 1	Washington	240
Swift 2 [2/]	Washington	72
Toketee and Slide	Oregon	26
East-Side / West-Side	Oregon	3
Yale	Washington	134
East		
Bear River	Idaho / Utah	86
Small East Hydro [3/]	Idaho / Utah / Wyoming	29
TOTAL – Hydroelectric before contracts		**824**
Hydroelectric Contracts		**136**
TOTAL – Hydroelectric		**960**

[1/] Includes Bend, Condit, Fall Creek, and Wallowa Falls
[2/] Cowlitz County PUD owns Swift No. 2, and is operated in coordination with the other projects by PacifiCorp
[3/] Includes Ashton, Paris, Pioneer, Weber, Stairs, Granite, Snake Creek, Olmstead, Fountain Green, Veyo, Sand Cove, Viva Naughton, and Gunlock

Hydroelectric Relicensing Impacts on Generation

Table 5.9 lists the estimated impacts to average annual hydro generation from FERC orders and relicensing settlement commitments. PacifiCorp assumes that the Klamath hydroelectric facilities will be decommissioned pursuant to the Klamath Hydroelectric Settlement Agreement in the year 2020 and that the Wallowa Falls project and other projects to be relicensed in future years will receive new operating licenses, but that additional operating restrictions imposed in new licenses, such as higher bypass flow requirements, will reduce generation available from these facilities.

Table 5.9 – Estimated Impact of FERC License Renewals and Relicensing Settlement Commitments on Hydroelectric Generation

Year	Lost Generation (MWh)
2013	201,228
2014	201,228
2015	201,228
2016	201,228
2017	201,228
2018	201,228
2019	201,228
2020	918,048
2021	918,048
2022	918,048
2023	918,048
2024	918,048
2025	918,048
2026	918,048
2027	918,048
2028	918,048
2029	918,048
2030	918,048

Year	Lost Generation (MWh)
2031	918,048
2032	918,048

Demand-side Management

DSM resources/products vary in their dispatchability, reliability of results, term of load reduction benefit and persistence over time. Each has its value and place in effectively managing utility investments, resource costs and system operations. Those that have greater persistence and firmness can be reasonably relied upon as a base resource for planning purposes; those that do not are more suited as system reliability resource options. Reliability tools are used to avoid outages or high resource costs as a result of weather conditions, plant outages, market prices, and unanticipated system failures. DSM resources/products can be divided into four general classes based on their relative characteristics, the classes are:

- **Class 1 DSM: Resources from fully dispatchable or scheduled firm capacity product offerings/programs** – Class 1 DSM programs are those for which capacity savings occur as a result of active Company control or advanced scheduling. Once customers agree to participate in Class 1 DSM program, the timing and persistence of the load reduction is involuntary on their part within the agreed upon limits and parameters of the program. In most cases, loads are shifted rather than avoided. Examples include residential and small commercial central air conditioner load control programs ("Cool Keeper") that are dispatchable in nature and irrigation load management and interruptible or curtailment programs (which may be dispatchable or scheduled firm, depending on the particular program design and/or event noticing requirements).

- **Class 2 DSM: Resources from non-dispatchable, firm energy and capacity product offerings/programs** – Class 2 DSM programs are those for which sustainable energy and related capacity savings are achieved through facilitation of technological advancements in equipment, appliances, lighting and structures, or repeatable and predictable voluntary actions on a customer's part to manage the energy use at their facility or home. Class 2 DSM programs generally provide financial and/or service incentives to customers to improve the efficiency of existing or new customer-owned facilities through the installation of more efficient equipment such as lighting, motors, air conditioners, or appliances or upgrading building efficiency through improved insulation levels, windows, etc. however the category has recently been expanded to include strategic energy management efforts at business facilities and home energy reports in the residential sector. The savings endure (are considered firm) over the life of the improvement or customer action. Program examples include comprehensive commercial and industrial new and retrofit energy efficiency programs ("Energy FinAnswer" and "FinAnswer Express"), refrigerator recycling programs ("See ya later, refrigerator®"), comprehensive home improvement retrofit programs ("Home Energy Saving"), strategic energy management and home energy reports.

- **Class 3 DSM: Resources from price responsive energy and capacity product offerings/programs** – Class 3 DSM programs seek to achieve short-duration (hour by hour) energy and capacity savings from actions taken by customers voluntarily, based on a financial incentive or signal. Savings are measured at a customer-by-customer level (via metering and/or metering data analysis against baselines), and customers are compensated or

New Qualifying Facility Wind Plants
- Meadow Creek Project – Five Pine – 40 MW
- Meadow Creek Project – North Point – 80 MW
- Lower Ridge Wind – 10 MW
- Mule Hollow Wind – 10 MW
- High Plateau Wind – 10 MW
- Pine City Wind – 10 MW

- **Solar Wind.** PacifiCorp has acquired a 2 MW photovoltaic solar plant in eastern Oregon to meet the Oregon Statute ORS 757.370, which requires the Company to acquire 8.7 MW_{ac} of qualifying photovoltaic system capacity by 2020.

  - Black Cap Solar – 2 MW

- **Coal plant turbine upgrades.** The current load and resource balance assumes 14 MW of coal plant turbine upgrades for Craig unit 2 (2 MW) and Jim Bridger Unit 2 (12 MW), completing the scheduled upgrades as noted in the 2011 IRP Update Report.

- **Construction of Lake Side 2.** PacifiCorp has begun construction of the Lake Side 2 plant in Utah. This plant is expected to have a net capacity of 645 MW.

Capacity Balance Results

PacifiCorp has updated the format for the load and resource balance table in Table 5.12. For reference, the Company has also provided table 5.11 which shows the same underlying information but in the table format used in prior IRPs. The tables show the annual capacity balances and component line items using a target planning reserve margin of 13 percent to calculate the planning reserve amount. Balances for the system as well as PacifiCorp's east and west balancing authority are shown. (It should be emphasized that while west and east balances are broken out separately, the PacifiCorp system is planned for and dispatched on a system basis.) Also note that the new Qualifying Facility wind projects listed above are reported under the Qualifying Facilities line item rather than the Renewables line item.

Table 5.11 provides a view of the Load and Resource balance using the old IRP's format for comparability to past IRP tables on the system level.

Table 5.11 – Old IRP Format: System Capacity Loads and Resources without Resource Additions

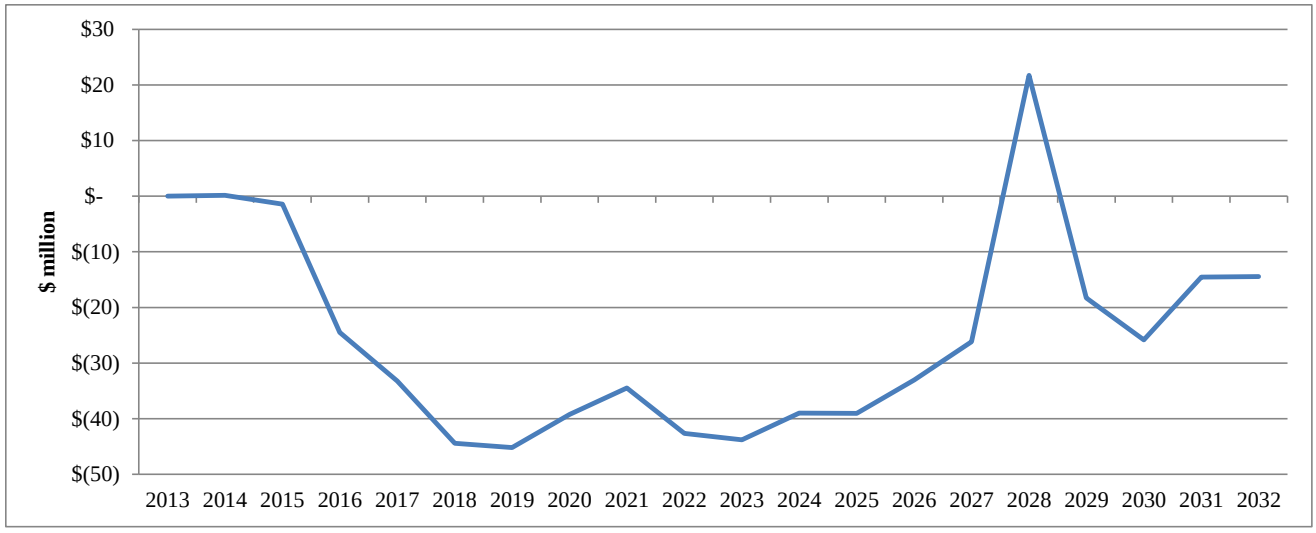
Calendar Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
System										
Thermal	8,724	9,150	8,984	8,974	8,957	8,957	8,957	8,957	8,957	8,954
Hydroelectric	913	891	916	917	915	912	858	861	782	785
Class 1 DSM	407	407	407	407	407	407	407	407	407	407
Renewable	121	121	119	119	119	119	119	119	118	99
Purchase	1,487	836	842	411	298	298	287	287	259	259
Qualifying Facilities	171	172	172	162	162	162	161	162	162	114
Interruptible	141	143	155	155	155	155	155	155	155	155
Transfers	(2)	(1)	0	0	0	0	0	(2)	0	0
System Existing Resources	11,962	11,719	11,595	11,145	11,013	11,010	10,944	10,946	10,840	10,773
System Total Resources	11,962	11,719	11,595	11,145	11,013	11,010	10,944	10,946	10,840	10,773
Load	10,136	10,330	10,495	10,359	10,512	10,687	10,816	10,971	11,133	11,280
Sale	1,292	992	890	834	748	748	748	749	267	261
System Obligation	11,428	11,322	11,385	11,193	11,260	11,435	11,564	11,720	11,400	11,541
Planning reserves (13%)	1,246	1,271	1,291	1,274	1,294	1,316	1,333	1,353	1,374	1,393
Non-owned reserves	112	112	147	147	147	147	147	147	147	147
System Reserves	1,358	1,383	1,438	1,421	1,441	1,463	1,480	1,500	1,521	1,540
System Obligation + Reserves	12,786	12,705	12,823	12,614	12,701	12,898	13,044	13,220	12,921	13,081
System Position	(824)	(986)	(1,228)	(1,469)	(1,688)	(1,888)	(2,100)	(2,274)	(2,081)	(2,308)

Table 5.12 – Updated Format: System Capacity Loads and Resources without Resource Additions

Calendar Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
East										
Thermal	6,200	6,626	6,460	6,454	6,454	6,454	6,454	6,454	6,454	6,454
Hydroelectric	137	140	140	135	135	132	135	135	135	135
Renewable	85	85	83	83	83	83	83	83	82	80
Purchase	1,005	611	611	398	285	285	285	285	257	257
Qualifying Facilities	83	73	73	73	73	73	73	73	73	25
Sale	(1,032)	(732)	(730)	(724)	(638)	(638)	(638)	(639)	(158)	(158)
Non-Owned Reserves	(103)	(103)	(138)	(138)	(138)	(138)	(138)	(138)	(138)	(138)
Transfers	750	829	737	672	678	683	1,124	1,122	1,124	706
East Existing Resources	**7,125**	**7,529**	**7,236**	**6,953**	**6,932**	**6,934**	**7,378**	**7,375**	**7,829**	**7,361**
Load	6,920	7,061	7,188	6,994	7,105	7,217	7,337	7,455	7,584	7,697
Existing Resources:										
Interruptible	(141)	(143)	(155)	(155)	(155)	(155)	(155)	(155)	(155)	(155)
DSM	(379)	(379)	(379)	(379)	(379)	(379)	(379)	(379)	(379)	(379)
East obligation	**6,400**	**6,539**	**6,654**	**6,460**	**6,571**	**6,683**	**6,803**	**6,921**	**7,050**	**7,163**
Planning Reserves (13%)	832	850	865	840	854	869	884	900	917	931
East Reserves	**832**	**850**	**865**	**840**	**854**	**869**	**884**	**900**	**917**	**931**
East Obligation + Reserves	**7,232**	**7,389**	**7,519**	**7,300**	**7,425**	**7,552**	**7,687**	**7,821**	**7,967**	**8,094**
East Position	**(107)**	**140**	**(283)**	**(347)**	**(493)**	**(618)**	**(309)**	**(446)**	**(138)**	**(733)**
East Reserve Margin	11.3%	15.1%	8.7%	7.6%	5.5%	3.8%	8.5%	6.6%	11.0%	2.8%
West										
Thermal	2,524	2,524	2,524	2,520	2,503	2,503	2,503	2,503	2,503	2,500
Hydroelectric	776	751	776	782	780	780	723	726	647	650
Renewable	36	36	36	36	36	36	36	36	36	19
Purchase	482	225	231	13	13	13	2	2	2	2
Qualifying Facilities	88	99	99	89	89	89	88	89	89	89
Sale	(260)	(260)	(160)	(110)	(110)	(110)	(110)	(110)	(109)	(103)
Non-Owned Reserves	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)
Transfers	(752)	(830)	(737)	(672)	(678)	(683)	(1,124)	(1,124)	(1,124)	(706)
West Existing Resources	**2,885**	**2,536**	**2,760**	**2,649**	**2,624**	**2,619**	**2,109**	**2,113**	**2,035**	**2,442**
Load	3,216	3,269	3,307	3,365	3,407	3,470	3,479	3,516	3,549	3,583
Existing Resources:										
Interruptible	0	0	0	0	0	0	0	0	0	0
DSM	(28)	(28)	(28)	(28)	(28)	(28)	(28)	(28)	(28)	(28)
West obligation	**3,188**	**3,241**	**3,279**	**3,337**	**3,379**	**3,442**	**3,451**	**3,488**	**3,521**	**3,555**
Planning Reserves (13%)	414	421	426	434	439	447	449	453	458	462
West Reserves	**414**	**421**	**426**	**434**	**439**	**447**	**449**	**453**	**458**	**462**
West Obligation + Reserves	**3,602**	**3,662**	**3,705**	**3,771**	**3,818**	**3,889**	**3,900**	**3,941**	**3,979**	**4,017**
West Position	**(717)**	**(1,126)**	**(945)**	**(1,122)**	**(1,194)**	**(1,270)**	**(1,791)**	**(1,828)**	**(1,944)**	**(1,575)**
West Reserve Margin	(9.5%)	(21.8%)	(15.8%)	(20.6%)	(22.3%)	(23.9%)	(38.9%)	(39.4%)	(42.2%)	(31.3%)
System										
Total Resources	10,010	10,065	9,996	9,602	9,556	9,553	9,487	9,488	9,864	9,803
Obligation	9,588	9,780	9,933	9,797	9,950	10,125	10,254	10,409	10,571	10,718
Reserves	1,246	1,271	1,291	1,274	1,294	1,316	1,333	1,353	1,374	1,393
Obligation + Reserves	10,834	11,051	11,224	11,071	11,244	11,441	11,587	11,762	11,945	12,111
System Position	(824)	(986)	(1,228)	(1,469)	(1,688)	(1,888)	(2,100)	(2,274)	(2,081)	(2,308)
Reserve Margin	4.4%	2.9%	0.6%	(2.0%)	(4.0%)	(5.6%)	(7.5%)	(8.8%)	(6.7%)	(8.5%)

Figures 5.2 through 5.4 charts the table above for annual capacity position (resource surplus or deficits) for the system, west balancing area, and east balancing area, respectively. The east increase in 2014 is primarily due to the addition of Lake Side 2 natural gas plant.

Figure 8.27 – Increase/(Decrease) in Annual Nominal Revenue Requirement with Wind Removed from the EG2-C07 Portfolio



The 2013 IRP Preferred Portfolio

Summary Reports

The following tables and figures summarize the 2013 IRP preferred portfolio:

- Table 8.7 shows the nameplate capacity of resources in the preferred portfolio over the 2013 through 2032 planning period.

- Table 8.8 shows the load and resource balance inclusive of preferred portfolio resources for the first 10 years of the planning horizon.

- Figures 8.28 and 8.29 present the capacity and energy resource mix, respectively, for representative years 2013 and 2022.
  - In the case where the resource type for a purchased power contract is identifiable, the contract is included with the corresponding resource group.
  - Energy mix figures are based upon medium natural gas, power, and CO2 price assumptions.
  - As noted in Chapter 3, the renewable energy capacity and generation reflect categorization by technology type and not disposition of renewable energy attributes for regulatory compliance requirements.

- Figure 8.30 graphically shows how PacifiCorp's capacity deficit is met through existing and IRP preferred portfolio resources.

- Figure 8.31 shows the contribution of energy from preferred portfolio resources to load growth projections from 2013 levels.

- Table 8.9 shows the amount of energy from Class 2 DSM resources by state.

Table 8.7 – PacifiCorp's 2013 IRP Preferred Portfolio

	Preferred Portfolio (EG-2 Case-07a)	Capacity(MW)																				Resource Totals 1/	
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	10-year	20-year
East	**Existing Plant Retirements/Conversions**																						
	Hayden1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(43)	-	-	(43)
	Hayden2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(30)	-	-	(30)
	Carbon1 (Early Retirement Conversion)	-	-	(67)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(67)	(67)
	Carbon2 (Early Retirement Conversion)	-	-	(105)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(105)	(105)
	Johnston1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(106)	-	-	-	-	-	(106)
	Johnston2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(106)	-	-	-	-	-	(106)
	Johnston3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(220)	-	-	-	-	-	(220)
	Johnston4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(328)	-	-	-	-	-	(328)
	Naughton1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(158)	-	-	-	(158)
	Naughton2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(205)	-	-	-	(205)
	Naughton3 (Early Retirement Conversion)	-	-	(330)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(330)	(330)
	Coal Ret_WY - Gas RePower	-	-	338	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(338)	-	-	338	-
	Expansion Resources																						
	CCCTFD 2x1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	661	-	661	-	-	-	1,322
	CCCTJ 1x1	-	-	-	-	-	-	-	-	-	-	-	423	-	-	-	-	-	423	-	-	-	846
	Lake Side II	-	645	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	645	645
	SCCTFrame UT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	181	-	181
	SCCTFrame ID	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	181	-	-	-	-	-	181
	Coal Plant Turbine Upgrades	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2
	Wind, Wyoming, 40	-	-	-	-	-	-	-	-	-	-	-	432	218	-	-	-	-	-	-	-	-	650
	Total Wind	-	-	-	-	-	-	-	-	-	-	-	432	218	-	-	-	-	-	-	-	-	650
	CHP - Biomass	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	1.6	3.2
	CHP - Other	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	3.6	7.2
	DSM, Class 1, ID-Curtail	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	-	-	-	-	-	-	9
	DSM, Class 1, ID-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
	DSM, Class 1, UT-Curtail	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	88	-	-	-	-	88
	DSM, Class 1, UT-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	0
	DSM, Class 1, WY-Curtail	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	19	-	-	-	-	-	22
	DSM, Class 1, WY-Irrigate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	0
	DSM, Class 1 Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	19	88	-	-	-	-	121
	DSM, Class 2, ID	3	3	3	3	3	3	4	3	4	4	3	3	3	3	3	3	3	3	3	3	31	59
	DSM, Class 2, UT	63	61	54	52	50	48	48	43	42	40	30	33	30	28	27	26	24	22	21	20	500	760
	DSM, Class 2, WY	4	4	5	5	6	6	6	6	7	7	6	7	7	7	8	7	7	7	7	7	56	127
	DSM, Class 2 Total	69	67	61	60	59	57	58	52	52	51	39	42	39	38	37	36	34	32	31	30	587	946
	Micro Solar - PV	7.11	11.0	14.2	16.4	17.0	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	131	262
	Micro Solar - Water Heating	-	-	-	-	0.8	0.4	0.5	0.6	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	7.0	30.6
	FOT Mona Q3	-	-	-	-	-	37	151	248	19	161	255	-	132	253	297	292	300	59	109	74	62	119
West	**Expansion Resources**																						
	Coal Plant Turbine Upgrades	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	12
	CHP - Biomass	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	5.5	11.0
	DSM, Class 1, WA-Curtail	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-	-	-	15
	DSM, Class 1, WA-DLC-IRR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	4
	DSM, Class 1, OR-Curtail	-	-	-	-	-	-	-	-	-	-	-	-	-	-	44	-	-	-	-	-	-	44
	DSM, Class 1, OR-DLC-IRR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	3
	DSM, Class 1, CA-DLC-IRR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	4
	DSM, Class 1, CA-Curtail	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	2
	DSM, Class 1 Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	72	-	-	-	-	-	-	72
	DSM, Class 2, CA	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	10	19
	DSM, Class 2, OR	37	41	33	32	29	28	24	21	20	23	23	22	22	23	26	26	24	19	22	22	288	517
	DSM, Class 2, WA	8	7	8	8	8	7	7	6	6	7	5	5	5	5	5	4	4	3	3	3	71	112
	DSM, Class 2 Total	45	49	42	41	38	35	32	28	27	30	28	28	28	29	32	30	29	23	26	26	368	647
	OR Solar (Util Cap Standard & Cost Incentive Prem)	4.45	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	10
	FOT COB Q3	131	130	247	262	297	297	297	297	297	297	297	237	297	297	297	297	297	297	297	297	255	273
	FOT NOB Q3	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
	FOT MidColumbia Q3	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400	400
	FOT MidColumbia Q3 - 2	19	79	98	221	305	375	375	375	375	375	375	375	375	375	375	375	375	375	375	375	260	317
	Existing Plant Retirements/Conversions	-	-	(164)	-	-	-	-	-	-	-	-	-	-	-	-	(760)	-	(701)	(74)	-		
	Annual Additions, Long TermResources	141	777	121	119	116	106	104	95	96	98	84	942	302	84	171	944	167	1,155	73	254		
	Annual Additions, Short TermResources	650	709	845	983	1,102	1,209	1,323	1,420	1,191	1,333	1,427	1,112	1,304	1,425	1,469	1,464	1,472	1,231	1,281	1,246		
	Total Annual Additions	791	1,486	966	1,102	1,218	1,315	1,427	1,515	1,287	1,431	1,511	2,054	1,606	1,509	1,640	2,408	1,639	2,386	1,354	1,500		

1/ Front office transaction amounts reflect one-year transaction periods, are not additive, and are reported as a 10/20-year annual average.

Table 8.8 – Preferred Portfolio Capacity Load and Resource Balance (2013-2022)

Calendar Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
East										
Thermal	6,200	6,626	6,460	6,454	6,454	6,454	6,454	6,454	6,454	6,454
Hydroelectric	137	140	140	135	135	132	135	135	135	135
Renewable	85	85	83	83	83	83	83	83	82	80
Purchase	1,005	611	611	398	285	285	285	285	257	257
Qualifying Facilities	83	73	73	73	73	73	73	73	73	25
Sale	(1,032)	(732)	(730)	(724)	(638)	(638)	(638)	(639)	(158)	(158)
Non-Owned Reserves	(103)	(103)	(138)	(138)	(138)	(138)	(138)	(138)	(138)	(138)
Transfers	804	574	847	791	890	924	871	850	754	726
East Existing Resources	**7,179**	**7,274**	**7,346**	**7,072**	**7,144**	**7,175**	**7,125**	**7,103**	**7,459**	**7,381**
Combined heat and Power	0	0	1	3	3	3	3	4	4	6
Front Office Transactions	0	0	0	0	0	41	170	280	22	181
Gas	0	0	0	0	0	0	0	0	0	0
Wind	0	0	0	0	0	0	0	0	0	0
Solar	0	1	2	3	4	5	5	6	7	8
Other	0	0	0	0	0	0	0	0	0	0
East Planned Resources	**0**	**1**	**3**	**6**	**7**	**49**	**178**	**290**	**33**	**195**
East Total Resources	**7,179**	**7,275**	**7,349**	**7,078**	**7,151**	**7,224**	**7,303**	**7,393**	**7,492**	**7,576**
Load	6,920	7,061	7,188	6,994	7,105	7,217	7,337	7,455	7,584	7,697
Existing Resources:										
Interruptible	(141)	(143)	(155)	(155)	(155)	(155)	(155)	(155)	(155)	(155)
DSM	(379)	(379)	(379)	(379)	(379)	(379)	(379)	(379)	(379)	(379)
New Resources:										
Class 1 DSM	0	0	0	0	0	0	0	0	0	0
Class 2 DSM	(55)	(109)	(160)	(208)	(255)	(302)	(350)	(389)	(430)	(466)
East obligation	**6,345**	**6,430**	**6,494**	**6,252**	**6,316**	**6,381**	**6,453**	**6,532**	**6,620**	**6,697**
Planning Reserves (13%)	825	836	844	813	821	830	839	849	861	871
East Reserves	**825**	**836**	**844**	**813**	**821**	**830**	**839**	**849**	**861**	**871**
East Obligation + Reserves	**7,170**	**7,266**	**7,338**	**7,065**	**7,137**	**7,211**	**7,292**	**7,381**	**7,481**	**7,568**
East Position	**9**	**9**	**11**	**13**	**14**	**13**	**11**	**12**	**11**	**8**
East Reserve Margin	13.1%	13.1%	13.2%	13.2%	13.2%	13.2%	13.2%	13.2%	13.2%	13.1%
West										
Thermal	2,524	2,524	2,524	2,520	2,503	2,503	2,503	2,503	2,503	2,500
Hydroelectric	776	751	776	782	780	780	723	726	647	650
Renewable	36	36	36	36	36	36	36	36	36	19
Purchase	482	225	231	13	13	13	2	2	2	2
Qualifying Facilities	88	99	99	89	89	89	88	89	89	89
Sale	(260)	(260)	(160)	(110)	(110)	(110)	(110)	(110)	(109)	(103)
Non-Owned Reserves	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)	(9)
Transfers	(804)	(574)	(848)	(792)	(890)	(924)	(872)	(851)	(754)	(727)
West Existing Resources	**2,833**	**2,792**	**2,649**	**2,529**	**2,412**	**2,378**	**2,361**	**2,386**	**2,405**	**2,421**
Combined heat and Power	1	1	2	2	3	3	4	4	5	6
Front Office Transactions	734	800	954	1,110	1,246	1,325	1,325	1,325	1,325	1,325
Gas	0	0	0	0	0	0	0	0	0	0
Wind	0	0	0	0	0	0	0	0	0	0
Solar	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0
West Planned Resources	**735**	**801**	**956**	**1,112**	**1,249**	**1,328**	**1,329**	**1,329**	**1,330**	**1,331**
West Total Resources	**3,568**	**3,593**	**3,605**	**3,641**	**3,661**	**3,706**	**3,690**	**3,715**	**3,735**	**3,752**
Load	3,216	3,269	3,307	3,365	3,407	3,470	3,479	3,516	3,549	3,583
Existing Resources:										
Interruptible	0	0	0	0	0	0	0	0	0	0
DSM	(28)	(28)	(28)	(28)	(28)	(28)	(28)	(28)	(28)	(28)
New Resources:										
Class 1 DSM	0	0	0	0	0	0	0	0	0	0
Class 2 DSM	(26)	(62)	(86)	(113)	(139)	(161)	(183)	(197)	(217)	(235)
West obligation	**3,162**	**3,179**	**3,193**	**3,224**	**3,240**	**3,281**	**3,268**	**3,291**	**3,304**	**3,320**
Planning Reserves (13%)	411	413	415	419	421	427	425	428	430	432
West Reserves	**411**	**413**	**415**	**419**	**421**	**427**	**425**	**428**	**430**	**432**
West Obligation + Reserves	**3,573**	**3,592**	**3,608**	**3,643**	**3,661**	**3,708**	**3,693**	**3,719**	**3,734**	**3,752**
West Position	**(5)**	**1**	**(3)**	**(2)**	**(0)**	**(2)**	**(3)**	**(4)**	**1**	**0**
West Reserve Margin	12.8%	13.0%	12.9%	12.9%	13.0%	13.0%	12.9%	12.9%	13.0%	13.0%
System										
Total Resources	10,747	10,868	10,954	10,719	10,812	10,930	10,993	11,108	11,227	11,328
Obligation	9,507	9,609	9,687	9,476	9,556	9,662	9,721	9,823	9,924	10,017
Reserves	1,236	1,249	1,259	1,232	1,242	1,256	1,264	1,277	1,290	1,302
Obligation + Reserves	10,743	10,858	10,946	10,708	10,798	10,918	10,985	11,100	11,214	11,319
System Position	4	10	8	11	14	12	8	8	13	9
Reserve Margin	13.0%	13.1%	13.1%	13.1%	13.1%	13.1%	13.1%	13.1%	13.1%	13.1%