



2013

**Integrated
Resource
Plan
Update
REDACTED**



March 31, 2014

Let's turn the answers on.

This 2013 Integrated Resource Plan Update Report is based upon the best available information at the time of preparation. The IRP action plan will be implemented as described herein, but is subject to change as new information becomes available or as circumstances change. It is PacifiCorp's intention to revisit and refresh the IRP action plan no less frequently than annually. Any refreshed IRP action plan will be submitted to the State Commissions for their information.

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Cover Photos (Top to Bottom):

Transmission: Sigurd to Red Butte Transmission Segment G

Hydroelectric: Lemolo 1 on North Umpqua River

Wind Turbine: Leaning Juniper I Wind Project

Thermal-Gas: Chehalis Power Plant

Solar: Black Cap Photovoltaic Solar Project

horizon. PacifiCorp will be analyzing the Wyodak SCR investment and alternatives to this investment in its 2015 IRP.

- In EPA’s action on the Wyoming SIP in January 2014, it explicitly stated its support for the natural gas conversion of Naughton Unit 3, but noted that because the Wyoming SIP documentation did not include a natural gas conversion option, EPA has no basis to disapprove the Wyoming SIP requirement for low NO_x burners/overfired air, SCR, and baghouse, with its authority and obligation to take action on the SIP as submitted by the state. PacifiCorp has since been working with the state of Wyoming Division of Air Quality to identify amendments necessary to support the Naughton Unit 3 natural gas conversion and to clearly document the compliance requirements and timeline for implementation of the project under the Regional Haze program. In the 2013 IRP Update, the resource needs assessment and updated resource portfolio continues to reflect a gas conversion completed by summer 2015.
- Since 2010, no significant activity has occurred with respect to the development of a federal renewable portfolio standard (RPS). In addition, current political environments are shifting focus from items such as the extension of federal incentives for renewables and portfolio standards to EPA’s development of greenhouse gas standards. Accordingly, the 2013 IRP Update assumes no federal RPS requirement over the course of the planning horizon. With the removal of the federal RPS assumptions requirements, the updated resource portfolio shows a reduced need for renewable resources required solely to meet state RPS obligations in 2024 and 2025.
- After PacifiCorp filed the 2013 IRP, President Obama issued a Presidential Memorandum in June 2013 directing EPA to issue standards, regulations, or guidelines, as appropriate that address greenhouse gas emissions from modified, reconstructed, and existing power plants. The proposed standards, regulations, or guidelines are to be issued by June 1, 2014, finalized by June 1, 2015, with implementation of regulations as proposed in SIPs required by June 30, 2016. EPA would then review the implementation plan proposed by each state, and the effective compliance dates for these standards, regulations, or guidelines would become applicable sometime thereafter. Absent information on how EPA intends to proceed with its rule-making process, and without any information on how individual states will propose to implement those regulations through a SIP, there is currently no means to develop a specific CO₂ price assumption that accurately reflects potential CO₂ regulation. PacifiCorp’s review of current third-party CO₂ price forecasts shows that despite issuance of the Presidential Memorandum, these forecasters have not materially altered either their assumed CO₂ start date or price level. In the 2013 IRP Update, PacifiCorp continues to assume a CO₂ price signal beginning 2022 at \$16/ton escalating at three percent plus inflation thereafter, and expects to update its CO₂ policy assumptions and scenarios in the 2015 IRP, taking into consideration the proposed standard, regulation, or guidelines expected to be issued by EPA later this year.

Resource Need Update

Figure ES.3 shows the 2013 IRP Update resource need, prior to acquiring any new resources, alongside the resource need from the 2013 IRP and the fall 2013 ten-year business plan. Overall,

CHAPTER 1 – INTRODUCTION

This 2013 Integrated Resource Plan Update (2013 IRP Update) describes resource planning activities that occurred subsequent to the filing of the 2013 Integrated Resource Plan (2013 IRP) in April 2013, presents an updated resource needs assessment, an updated resource portfolio consistent with changes in the planning environment, and provides an IRP Action Plan status update. In presenting the updated resource needs assessment and updated resource portfolio, PacifiCorp shows changes relative to the 2013 IRP and relative to PacifiCorp's fall 2013 ten-year business plan (Business Plan), which covers the 2014 to 2023 planning horizon. In this update PacifiCorp also addresses recommendations and requirements identified by its state regulatory commissions during the 2013 IRP acknowledgement process.

In support of its business planning process, PacifiCorp refined the 2013 IRP Preferred Portfolio to reflect updates to forecasted loads, resources, market prices, and other model inputs. PacifiCorp's business planning process also considers capital expenditure and operating cost constraints with input from the PacifiCorp business units (PacifiCorp Energy, Pacific Power, and Rocky Mountain Power). Consideration of both capital and operating cost constraints is critical to ensure that PacifiCorp's business plan is financially supportable and affordable to customers. The 2013 IRP Preferred Portfolio served as the primary basis in establishing the resource portfolio for the Business Plan, and as summarized herein, differences between the two resource portfolios are minor.

A similar process has been completed to develop the resource needs assessment and resource portfolio for this 2013 IRP Update, which considers updates to forecasted loads, resources, market prices, and other model inputs since the intervening Business Plan resource portfolio was developed. For purposes of assessing an updated resource needs assessment and updated resource portfolio in this 2013 IRP Update, PacifiCorp has not completed new financial analysis of pending environmental compliance decisions applicable to specific coal units on its system. PacifiCorp will analyze specific environmental compliance decisions applicable to Cholla Unit 4, Wyodak, and Dave Johnston Unit 3 in its 2015 IRP, with the full engagement of PacifiCorp's diverse stakeholder group. PacifiCorp will also provide an update on its efforts working with the Wyoming Division of Air Quality to identify amendments necessary to support the Naughton Unit 3 natural gas conversion and to clearly document the compliance requirements and timeline for implementation of the natural gas conversion under the Regional Haze program. In this 2013 IRP Update, PacifiCorp continues to assume the Naughton Unit 3 natural gas conversion is completed by summer 2015.

The 2013 IRP Update also addresses recommendations and requirements identified by its state regulatory commissions during the 2013 acknowledgement process. This includes presentation of solar resource modeling sensitivities developed in response to a request by the Public Service Commission of Utah (PSCU) of and analysis of how CO₂ price and natural gas price assumptions affect the analysis of environmental compliance decisions for specific coal units as requested by the Washington Utilities and Transportation Commission.

This report first describes the current planning environment, load updates, resource updates, emissions/climate change regulatory outlook, and Energy Gateway transmission planning and

Figure 4.4 – Average Annual Flat Mid-Columbia Electricity Prices

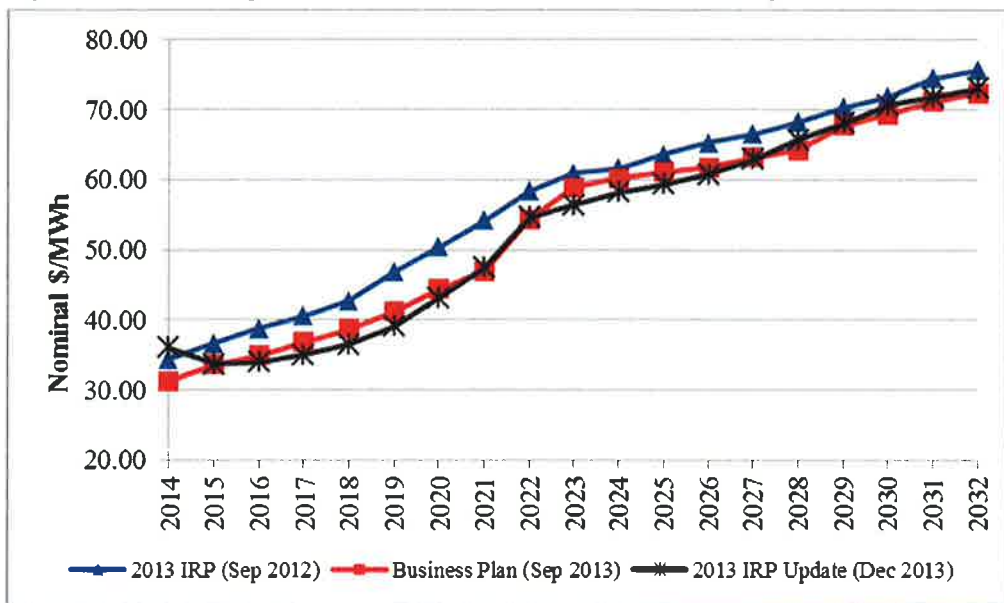
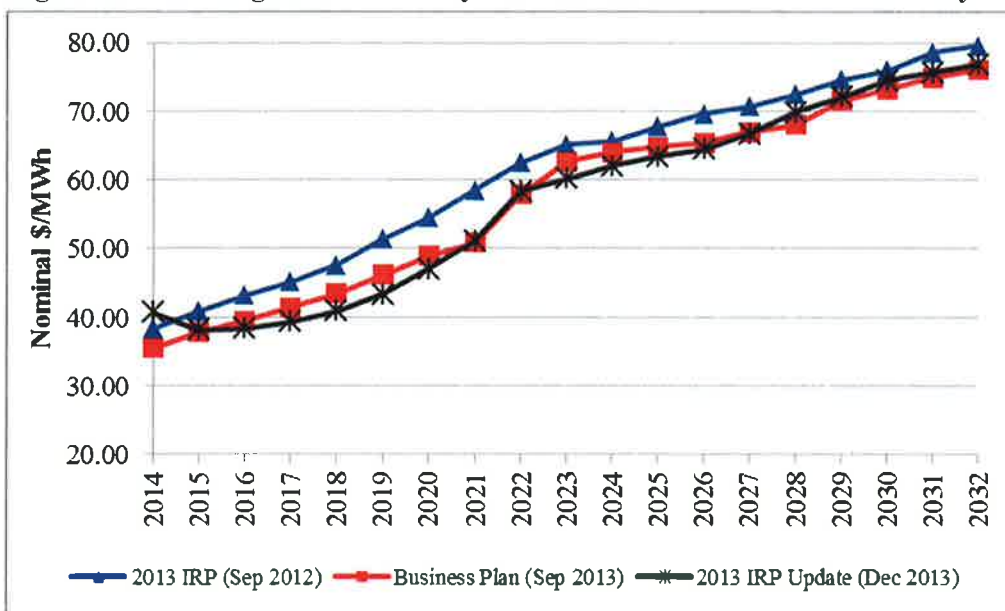


Figure 4.5 – Average Annual Heavy Load Hour Mid-Columbia Electricity Prices



Carbon Dioxide Emission Costs and Compliance

After PacifiCorp filed the 2013 IRP, President Obama issued a Presidential Memorandum in June 2013 directing EPA to issue standards, regulations, or guidelines, as appropriate that address greenhouse gas emissions from modified, reconstructed, and existing power plants. The proposed standards, regulations, or guidelines are to be issued by June 1, 2014, finalized by June 1, 2015, with implementation of regulations as proposed in SIPs required by June 30, 2016. EPA would then review the implementation plan proposed by each state, and the effective compliance

dates for these standards, regulations, or guidelines would become applicable sometime thereafter.

Absent information on how EPA intends to proceed with its rule-making process, and without any information on how individual states will propose to implement those regulations through a SIP, there is currently no means to develop a specific CO₂ price assumption that accurately reflects potential CO₂ regulation. PacifiCorp’s review of current third-party CO₂ price forecasts shows that despite issuance of the Presidential Memorandum, these forecasters have not materially altered either their assumed CO₂ start date or price level. In the 2013 IRP Update, PacifiCorp continues to assume a CO₂ price signal beginning 2022 at \$16/ton escalating at three percent plus inflation thereafter, and expects to update its CO₂ policy assumptions and scenarios in the 2015 IRP, taking into consideration the proposed standard, regulation, or guidelines expected to be issued by EPA later this year.

Transmission Topology

The topology used in the Business Plan sensitivity and the 2013 IRP Update studies are consistent with what was used for Energy Gateway Scenario 2 in the 2013 IRP, except the changes in timing of Energy Gateway Segment D as noted in Chapter 2 of the 2013 IRP Update.

Supply-side Resources

The supply side resource costs and performance parameters did not change from the 2013 IRP, except that the costs of utility scale solar photovoltaic resources are updated based on a Company commissioned study completed by Black & Veatch in December 2013. Updated costs are summarized in Table 4.1, along with those included in the 2013 IRP. The costs of solar reduced by over 10% for both single tracking and fixed tilt.

Table 4.1 – Updated Cost of Solar Resources, 2013\$ - (50 MW AC)

Technology	2013 IRP Update			2013 IRP		
	EPC Only \$/W _{AC}	Owner's Costs \$/W _{AC}	Total (with Owner's Costs) \$/W _{AC}	EPC Only \$/W _{AC}	Owner's Costs \$/W _{AC}	Total (with Owner's Costs) \$/W _{AC}
Single Axis Tracking	\$2.682	\$0.172	\$2.854	\$2.982	\$0.194	\$3.176
Fixed Tilt	\$2.526	\$0.162	\$2.688	\$2.770	\$0.182	\$2.952

For this filing, PacifiCorp performed two sensitivity studies around the performance of renewable resources and costs of the solar resources. The first sensitivity study changed the peak contribution of wind resource to 20.5%, and solar resources to 68% and 84% for fixed tilt and single axis tracking, respectively. This sensitivity study was requested by the PSCU in its order acknowledging the Company’s 2013 IRP. The second sensitivity was performed using updated the costs consistent with those shown above, in addition to changes to the peak contributions consistent with those requested by the PSCU. Both sensitivities are discussed in Chapter 5.

Action Item	Activity	Status
	<p>conversion project. The permit application requesting operation on coal through year-end 2017 is currently under review by the Wyoming Department of Environmental Quality, Air Quality Division.</p> <ol style="list-style-type: none"> 2. Issue a request for proposal to procure gas transportation for the Naughton plant as required to support compliance with the conversion date that will be established during the permitting process. 3. Issue an RFP for engineering, procurement, and construction (EPC) of the Naughton Unit 3 natural gas retrofit as required supporting compliance with the conversion date that will be established during the permitting process. 	<p>Naughton Unit 3, but couldn't take action because this was not included in the WY regional haze SIP and related documents. The Company met with the Wyoming Department of Environmental Quality: Air Quality Division and WY SIP and related document modifications are now in progress.</p> <ol style="list-style-type: none"> 2. RFP was issued on December 23, 2013. As of March 14, 2014 the RFP was suspended. PacifiCorp will reevaluate its natural gas transportation procurement alternatives following pending resolution of the on-going best available retrofit technology permit amendment process for Naughton Unit 3. 3. A tentative technical evaluation of the EPC RFP proposals was completed. Work to continue the RFP evaluation has been suspended until early 2016.
8b. Coal Resource Actions - Hunter Unit 1	Complete installation of the baghouse conversion and low NOX burner compliance projects at Hunter Unit 1 as required by the end of 2014.	Work is ongoing with substantial completion of the project anticipated by the end of August 2014.
8c. Coal Resource Actions - Jim Bridger Units 3 and 4	Complete installation of selective catalytic reduction (SCR) compliance projects at Jim Bridger Unit 3 and Jim Bridger Unit 4 as required by the end of 2015 and 2016, respectively.	Received Certificate of Public Convenience and Necessity from Idaho, Wyoming and Utah and a full Notice to Proceed. Project evaluation is in progress.
8d. Coal Resource Actions - Cholla Unit 4	Continue to evaluate alternative compliance strategies that will meet Regional Haze compliance obligations, related to the U.S. Environmental Protection Agency's Federal Implementation Plan requirements to install SCR equipment at Cholla Unit 4. Provide an update of the Cholla Unit 4 analysis regarding compliance alternatives	Evaluation is ongoing. See Chapter 2 under the Resource Update section for more information.