BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON
UM 2032

In the Matter of PUBLIC UTILITY COMMISSION OF OREGON, Investigation into the Treatment of Network Upgrade Costs for Qualifying Facilities	NEWSUN'S CROSS-EXAMINATION EXHIBIT LIST

NewSun Energy LLC ("NewSun") hereby submits this cross-examination exhibit list.

Cross-Examination Exhibits	
Number	**Title**
NewSun/600	PacifiCorp Request for General Rate Revision, Docket No. UE 399, Direct Testimony of Richard A. Vail (March 1, 2022).
NewSun/601	PacifiCorp "Executed but Not In Service" Interconnection Queue as of 5/13/22 (accessed on 5/24/22).
NewSun/602	PacifiCorp 2020 All-Source RFP Final Shortlist Presentation, Docket No. UM 2059 (July 30, 2021).
NewSun/603	PacifiCorp "Cluster Study #2" Interconnection Queue as of 5/23/22 (accessed on 6/3/22).
NewSun/604	PacifiCorp Response to NewSun Data Request 48
NewSun/605	PacifiCorp Response to NewSun Data Request 49

Dated this 9th day of June 2022.

Respectfully submitted,

NewSun Energy LLC

/s/ Marie P. Barlow
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BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

Docket No. UM 2032

In the matter of

PUBLIC UTILITY COMMISSION OF OREGON,

Investigation into the Treatment of Network Upgrade Costs for Qualifying Facilities

EXHIBIT NEWSUN/600

PacifiCorp Request for General Rate Revision, Docket No. UE 399,

Direct Testimony of Richard A. Vail (March 1, 2022).

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

PACIFICORP

Direct Testimony of Richard A. Vail

March 2022

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ATTACHED EXHIBITS

I. INTRODUCTION AND QUALIFICATIONS

Q. Please state your name, business address, and present position with PacifiCorp d/b/a Pacific Power (PacifiCorp or the Company).

A. My name is Richard A. Vail. My business address is 825 NE Multnomah Street, Suite 1600, Portland, Oregon 97232. My present position is Vice President of Transmission. I am responsible for transmission system planning, customer generator interconnection requests and transmission service requests, regional transmission initiatives, capital budgeting for transmission, transmission and distribution project delivery, and administration of the Open Access Transmission Tariff (OATT).

Q. Please describe your education and professional experience.

A. I have a Bachelor of Science degree with Honors in Electrical Engineering with a focus in electric power systems from Portland State University. I have been Vice President of Transmission for PacifiCorp since December 2012. I was Director of Asset Management from 2007 to 2012. Before that position, I had management responsibility for a number of organizations in PacifiCorp's asset management group including capital planning, maintenance policy, maintenance planning, and investment planning since joining PacifiCorp in 2001.

II. PURPOSE OF TESTIMONY

Q. What is the purpose of your testimony in this case?

A. The purpose of my testimony is to describe PacifiCorp's transmission system and the benefits it provides to Oregon customers. PacifiCorp's transmission system is designed to reliably transfer electric energy from a broad array of generation resources to load. PacifiCorp's interconnection to other balancing authority areas

(BAAs) and participation in the Energy Imbalance Market (EIM) provide access to markets and promote affordable and reliable service to PacifiCorp's customers. Further, all transmission system capacity increases provide benefits to customers by increasing reliability and allowing more generation to interconnect to serve customer load, as well as allowing PacifiCorp flexibility in designating generation resources for reserve capacity to comply with mandatory reliability standards.

I also specifically describe PacifiCorp's major capital investment projects for new transmission systems included in this rate case. My testimony demonstrates that the Company has made prudent decisions related to these projects and that these investments result in an immediate benefit to PacifiCorp's customers in Oregon. I recommend that the Public Utility Commission of Oregon (Commission) find these investments prudent and in the public interest.

III. OVERVIEW OF PACIFICORP'S TRANSMISSION SYSTEM AND INVESTMENT DRIVERS

Q. Please briefly describe PacifiCorp's transmission system.

A. PacifiCorp owns and operates approximately 17,700 miles of transmission lines ranging from 46 kilovolts (kV) to 500 kV across multiple western states. PacifiCorp has nearly two million customers with approximately 631,000 customers located in Oregon.

For convenience in load and resource planning, PacifiCorp groups its local area transmission and distribution system into load areas. These load areas are regions in which the PacifiCorp system is generally contiguous within the load area, while a set of transmission constraints and boundaries separate the load area from

other portions of the PacifiCorp system. In Oregon, PacifiCorp generally has three primary load areas: Southern Oregon, Central Oregon, and the Willamette Valley. These primary load areas are further divided into 23 sub-areas within Oregon for planning purposes when evaluating the capability of the PacifiCorp system to meet the load and resource requirements of its customers.

Q. Please describe PacifiCorp's responsibility for maintaining reliability on its transmission system.

A. In 1996, the Federal Energy Regulatory Commission (FERC) issued Order No. 888,[1] which required that transmission system owners provide non-discriminatory access to their transmission systems. PacifiCorp is obligated under its OATT to plan its transmission system for the open access of all transmission customers. Through the OATT Attachment K local planning process and the FERC Order 1000 regional and inter-regional planning processes, PacifiCorp participates in open stakeholder planning processes covering its entire transmission footprint. These planning processes result in system plans that incorporate economics, reliability, and public policy inputs and requirements. PacifiCorp must also coordinate with other entities in the region for transmission planning purposes as required under FERC Order 1000.[2] In addition to these more general requirements, PacifiCorp also must comply with the specific requirements of the mandatory reliability standards approved by FERC.

[1] *Promoting Wholesale Competition Through Open Access Non-discriminatory Transmission Services by Pub. Util.; Recovery of Stranded Costs by Pub. Util. and Transmitting Utilities*, Order No. 888, 61 FR 21540 (May 10, 1996), FERC Stats. & Regs. ¶ 31,036 (1996), order on reh'g, Order No. 888-A, 62 FR 12274 (Mar. 14, 1997), FERC Stats. & Regs. ¶ 31,048 (1997), order on reh'g, Order No. 888-B, 81 FERC ¶ 61,248 (1997), order on reh'g, Order No. 888-C, 82 FERC ¶ 61,046 (1998).

[2] *Transmission Planning and Cost Allocation by Transmission Owning and Operating Pub. Util.*, Order No. 1000, 76 FR 49842 (Aug. 11, 2011), FERC Stats. & Regs. ¶ 31,323 (2011), order on reh'g, Order No. 1000-A, 139 FERC ¶ 61,132 (2012), order on reh'g, Order No. 1000-B 141 FERC ¶ 61,044 (2012).

Q. Who establishes transmission reliability standards?

A. FERC directs the North American Electric Reliability Corporation (NERC) to develop reliability standards to ensure the safe and reliable operation of the Bulk Electric System (BES) in the United States in a variety of operating conditions. On April 1, 2005, NERC established a set of transmission operations reliability standards. A subset of the transmission reliability standards are the transmission planning standards (TPL Standards). The purpose of the TPL Standards is to "establish Transmission system planning performance requirements within the planning horizon to develop a BES that will operate reliably over a broad spectrum of System conditions and following a wide range of probable Contingencies."[3] The TPL Standards, along with regional planning criteria (*i.e.*, regional planning criteria established by the Western Electricity Coordinating Council (WECC)) and utility-specific planning criteria, define the minimum transmission system requirements to safely and reliably serve customers.

Q. How does PacifiCorp ensure compliance with the TPL Standards?

A. The Company plans, designs, and operates its transmission system to meet or exceed NERC Standards for BES and WECC regional standards and criteria. To ensure compliance with applicable TPL Standards, PacifiCorp conducts an annual system assessment to evaluate the performance of the Company's transmission system and to identify system deficiencies. The annual system assessment is comprised of steady-

[3] *See* http://www.nerc.com/files/tpl-001-4.pdf.

state, stability, and short circuit analyses[4] to evaluate peak and off-peak load seasons in the near-term (one-, two-, and five-year) and long-term (10-year) planning horizons. The assessment is performed using power flow base cases maintained by WECC and developed in coordination among all transmission planning entities in the Western Interconnection. These base cases include load and resource forecasts along with planned transmission system changes for each of the future year cases and are intended to identify future system deficiencies to be mitigated.

As part of the annual system assessment, corrective action plans are developed to mitigate identified deficiencies, and may prescribe construction of transmission system reinforcement projects or, as applicable, adoption of new operating procedures. In certain instances, operating procedures prescribing action to change the configuration of the transmission system can prevent deficiencies from occurring when there are two back-to-back (N-1-1) (or concurrent) transmission system events. However, the use of operating procedure actions has limitations. In particular, actions taken in connection with operating procedures that are designed to protect the integrity of the larger integrated transmission system in the Western Interconnection of the United States can lead to large numbers of customers being at risk of an outage upon the occurrence of the second of two back-to-back (N-1-1) events. An effective corrective action plan is critical to ensuring system reliability so that large numbers of customers are not subjected to avoidable outage risk.

[4] Analyses consist of taking a normal system (N-0) and applying events (N-1, N-1-1, N-2, etc.) within each category (P0, P1, P2, P3, etc.) listed within the TPL Standards in order to identify system deficiencies. Example: An N-1-1 event describes two transmission system elements being out of service at the same time, but due to independent causes. An example of an N-1-1 event would be a planned outage of one 230 kV transmission line followed by an unplanned outage of any element in the system being used to continue service with the initial element out.

Q. Is compliance with the reliability standards optional?

A. No. The reliability standards are a federal requirement, subject to oversight and enforcement by WECC, NERC, and FERC. PacifiCorp is subject to compliance audits every three years and may be required to prove compliance during other NERC or WECC reliability initiatives or investigations. Failure to comply with the reliability standards could expose the Company to penalties of up to $1 million per day, per violation. Accordingly, and as described more fully later in my testimony, compliance with reliability standards is a major driver for the new capital investments in PacifiCorp's system transmission assets identified in and supported by my testimony.

Q. Please identify other drivers that are relevant to the capital investments in PacifiCorp's transmission system described in your testimony.

A. There are several other drivers that inform whether PacifiCorp will build new transmission facilities, including increased demand for transmission capacity, requests for transmission service, and the age and condition of existing transmission facilities. The specific drivers for the projects addressed in my testimony are described in more detail later in my testimony.

IV. OVERVIEW OF INVESTMENTS DESCRIBED IN TESTIMONY

Q. What specific transmission system investments are you addressing in your testimony?

A. My testimony addresses PacifiCorp's major new transmission system projects included in this general rate case filing. Specifically, my testimony addresses the following projects:

1. Goshen to Sugarmill to Rigby 161 kV Transmission Line Project

The Goshen to Sugarmill to Rigby 161 kV transmission line rebuild of an existing 69 kV line from Goshen substation to Sugarmill substation and then construction of a new 161 kV line from Sugarmill substation to Rigby substation located in the southeast Idaho area, as shown in the map attached in Exhibit PAC/601; and

2. Jordanelle to Midway 138 kV Transmission Line Project

The Jordanelle to Midway 138 kV transmission line project constructed nine miles of 138 kV transmission line between Midway and Jordanelle substations in Utah, as shown in the map attached in Exhibit PAC/602.

Q. What are the projected costs associated with these transmission investments and their associated in-service dates?

A. Table 1 identifies the specific projects and associated costs and in-service dates.

TABLE 1

Project	Total Company Cost ($m)	In-Service Date
Goshen-Sugarmill-Rigby 161kV Transmission Line Project	$23.2m	July 2022
Jordanelle-Midway 138kV Transmission Line Project	$21.9m	December 2021

These amounts include costs associated with engineering, project management, materials and equipment, construction, right-of-way (including rights acquired by condemnation), and an allowance for funds used during construction. These costs are also shown in the testimony and exhibits of Ms. Sherona L. Cheung. The in-service dates are based on the best available information at the time of preparing this case.

Q. Please briefly describe the benefits associated with these investments.

A. The benefits associated with these investments include increased load serving capability, enhanced reliability, conformance with NERC Reliability Standards, improved transfer capability within the existing system, relief of existing congestion, and interconnection and integration of new wind resources into PacifiCorp's transmission system. These benefits will be described more fully below.

Q. Will PacifiCorp's OATT transmission customers pay for some of these assets?

A. Yes, through OATT transmission charges. The Company's current transmission formula rate (included in PacifiCorp's OATT) was approved by FERC in Docket No. ER11-3643.[5] The Company's transmission formula rate is updated annually with the annual transmission revenue requirement (ATRR) that represents the annual total cost of providing firm transmission service over the test year. The ATRR calculation incorporates all transmission system investments by the Company, a return on rate base, income taxes, expenses, and certain revenue credits, among other specific elements and adjustments. Transmission assets, including new transmission capital, are included in the ATRR, weighted by months in service. The ATRR is converted into a rate by dividing the ATRR by firm transmission demand. All third-party revenues for transmission service (along with third-party revenues for ancillary services) are included as revenue credits in the calculation of rates in each of the Company's state retail jurisdictions.

[7] *In re PacifiCorp*, 143 FERC ¶ 61,162 (May 23, 2013) (letter order approving settlement agreement establishing formula rate).

Q. Please explain how network upgrade cost allocation works under the OATT.

A. In accordance with its OATT, when PacifiCorp receives a request for generation interconnection or transmission service, the Company completes studies to determine what new facilities or upgrades to existing facilities are required to accommodate the request. The studies identify the facilities and upgrades required and classify the asset additions required to support the service into two categories: direct assigned or network upgrade. Direct assigned assets are those assets that only benefit or are used solely by the customer requesting generator interconnection or transmission service. Those costs are directly assigned and paid for by that customer and will not be included in either the Company's ATRR or retail rate base. Network upgrades, on the other hand, are those assets that benefit all customers using the transmission system. Costs associated with network upgrades are investments by the transmission provider and are included in PacifiCorp's ATRR[6] and retail rate base.

V. GOSHEN TO SUGARMILL TO RIGBY 161 KV TRANSMISSION LINE PROJECT

Q. Please describe the investment for the Goshen to Sugarmill to Rigby 161 kV Transmission Line Project.

A. The Goshen to Sugarmill to Rigby 161 kV Transmission Line Project constructs approximately 44 miles of new transmission lines from the Goshen to Sugarmill and Sugarmill to Rigby substations located in the southeast Idaho area. Substation

[8] For generation interconnection customers, those customers may be required to pay the initial cost of network upgrades, subject to refund through credits to invoiced charges for transmission service and full refund of any remaining amounts after 20 years. *See* Section 11.4 of PacifiCorp's Standard Large Generator Interconnection Agreement (OATT Attachment N, Appendix 6 and available at http://www.oasis.oati.com/woa/docs/PPW/PPWdocs/20190601_OATTMASTER.pdf); *see also* Standardization of Generator Interconnection Agreements and Procedures, Order No. 2003-B, 109 FERC ¶ 61,287 (Dec. 20, 2004).

expansion will be required at Goshen, Sugarmill, and Rigby substations to accommodate the new 161 kV positions and associated structures and equipment, as shown on the map attached in Exhibit PAC/601. The project consists of two sequences of work. The first work sequence, completed in 2020, was to construct approximately 24 miles of the new Goshen to Sugarmill #2 161 kV transmission line and perform the required substation construction at Goshen and Sugarmill substations to terminate the new transmission line at both ends. This first work sequence was included and approved for recovery in the Company's last rate case proceeding, docket UE 374.[7]

The second work sequence consists of constructing approximately 20 miles of the new Sugarmill to Rigby #2 161 kV line and performing the required substation construction at Goshen and Sugarmill substations to terminate the new transmission line at both ends of the line.

As part of this project, PacifiCorp entered into a joint ownership agreement with Idaho Falls Power to construct 12 miles of new 161 kV shared transmission line from the corner of Lincoln Road and Hitt Road to Idaho Falls Power's future Paine Substation. Idaho Falls Power had much of this line already permitted and was able to secure final permits with the assistance of PacifiCorp while reducing time and costs required for PacifiCorp to secure permitting for a separate line. PacifiCorp will own and pay 51 percent of this line segment. Idaho Falls Power completed this portion of the line in December 2021. PacifiCorp expects to complete the line to Rigby substation by July 2022.

[7] *In the matter of PacifiCorp, dba Pacific Power, Request for a General Rate Revision*, Docket No. UE 374, Order No. 20-473 (Dec. 18, 2020).

Q. Please explain why this investment in the Goshen to Sugarmill to Rigby 161 kV Transmission Line Project is needed and beneficial.

A. The need for the Goshen to Sugarmill to Rigby 161 kV line was identified in the 2016 Goshen Area Planning Study to address projected overloads on the Goshen to Sugarmill 161 kV line and Goshen to Rigby 161 kV line, in addition to low voltage at Rigby and Sugarmill substations that manifest under heavy loading conditions. Projected peak summer load conditions in 2021 in the Rigby-Sugarmill area indicate that under normal operating conditions (N-0) the Goshen to Sugarmill 161 kV line was expected to load to 100 percent of its continuous rating of 201 megavolt amperes (MVA) and the Rigby and Sugarmill substations 161 kV bus voltage is expected to reach its minimum limit of 0.95 per unit. Additionally, the projected load growth exacerbates several existing N-1 conditions in the area. Based on 2021 load, loss of the Goshen to Sugarmill 161 kV line causes the Goshen to Rigby 161 kV line to overload to 179 percent of its four-hour emergency rating and can result in excessively low voltage down to 0.68 per unit in the Rigby-Sugarmill area. The loss of the Goshen to Rigby 161 kV line can cause the Goshen to Sugarmill 161 kV line to overload to 111 percent of its four-hour emergency rating of 255 MVA, overload to 102 percent of its 30-minute emergency rating of 279 MVA and can cause low voltage down to 0.88 per unit at Rigby substation. The Goshen to Sugarmill 161 kV line and Goshen to Rigby 161 kV line are operated radially during summer heavy loading periods to mitigate the risk of violating NERC Standard TPL-001-4 category P0 (N-0), P1 (N-1) and P6 (N-1-1) performance requirements due to transmission capacity deficiencies in the area. Operating radially puts approximately 150

megawatts (MW) of load at risk for N-1 loss of either the Goshen to Sugarmill 161 kV line or the Goshen to Rigby 161 kV line and 300 MW at risk for N-1-1 loss of any two transmission lines.

The new Goshen to Sugarmill to Rigby 161 kV line will increase load serving capacity in the Rigby to Sugarmill area by 250 MVA that will allow the transmission lines between Goshen, Sugarmill, and Rigby substations to operate in a normal loop configuration and eliminate N-1 thermal overload and low voltage issues on the remaining transmission line and substation. Benefits also include elimination of the N-0 overload risk, improved load service reliability under N-1 conditions, and resolution of most N-1-1 issues present in the area.

Q. Did PacifiCorp consider alternatives to investing in the Goshen to Sugarmill to Rigby 161 kV Transmission Line?

A. Yes. The first alternative in lieu of the Goshen to Sugarmill to Rigby 161 kV line that PacifiCorp considered was a project to construct a new approximately 35-mile-long Goshen to Rigby 345 kV line with 1272 aluminum conductor steel-reinforced (ACSR) cable and add a new 450 MVA capacity or larger 345/161 kV transformer at the Rigby substation. Work involved expanding both the Goshen and Rigby substation yards to accommodate the new facilities consisting of at least two 345 kV breakers at Goshen, one 345 kV breaker at Rigby and at least two 161 kV breakers at the Rigby 161 kV substation. This alternative was rejected since the estimated cost of the project was about $17.0 million higher than the chosen project to construct the new Goshen to Sugarmill to Rigby 161 kV transmission line. The alternative was estimated to be $57.7 million.

A second alternative considered was to construct an approximately 61-mile-long Antelope to Rigby 161 kV transmission line with 1272 ACSR cable or larger. Work involved expanding both the Antelope and Rigby substation yards to accommodate the new facilities consisting of at least two 161 kV breakers at Antelope and at least two 161 kV breakers at Rigby. A new 161 kV line from Antelope would provide a new source into the Rigby to Sugarmill area apart from Goshen substation; however, planning studies indicated that by adding the Antelope to Rigby 161 kV line, the N-1 loss of the Goshen to Sugarmill 161 kV line would still cause thermal overload and low voltage issues in the area and that load shedding and radialization of the Rigby to Sugarmill area would still be required. This alternative was rejected since the estimated cost of the project was about $8.0 million higher than the new Goshen to Sugarmill to Rigby 161 kV transmission line and that a new Antelope to Rigby 161 kV transmission line does not resolve the loading and voltage issues in the Rigby to Sugarmill area. The alternative was estimated to be $48.0 million.

A third alternative considered was to construct approximately 22.8 miles of a 161 kV transmission line from the Meadow Creek wind farm substation to Sugarmill and Rigby substations to create a looped transmission source back to Goshen substation. Work involved constructing approximately 5.9 miles of new single circuit 161 kV transmission line from Meadow Creek to a new tap location, using the existing right of way to construct 4.5 miles of double-circuit line from the new tap location to Sugarmill substation, and construct 12.4 miles of new single-circuit 161 kV line from the new tap location to Rigby substation. Work also included converting Meadow Creek's 161 kV substation yard into a new three breaker ring

bus, installation of at least two 161 kV breakers at Sugarmill and Rigby substations, rebuilding the Goshen to Wolverine Creek to Jolly Hills to Meadow Creek 161 kV line with 1557 ACSR cable (approximately 32.4 miles), rebuilding the remaining three miles of 795 all-aluminum conductor (AAC) cable on the Goshen to Sugarmill 161 kV line, and adding a 161 kV bus tie breaker at Rigby to facilitate sectionalizing post N-1. Currently, the Goshen wind farms are radial from the Goshen 161 kV substation. Once looped through the Rigby and Sugarmill substations, a detailed voltage control study would be required to coordinate the wind farms and shunt devices in the area. Since the existing radial wind farm line is owned and operated by third parties, an agreement to use or buy the facilities would need to be negotiated. This alternative was rejected since the estimated cost of the project was about $8.2 million higher than the new Goshen to Sugarmill to Rigby 161 kV transmission line and required significant coordination with third parties to deliver the project. The alternative was estimated to be $48.5 million.

The last alternative considered was to loop the existing Goshen to Jefferson 161 kV transmission line in and out of the Bonneville substation. Work involved converting the Bonneville substation into a 161 kV breaker and one-half configuration, constructing an approximately 27-mile-long 161 kV line from Bonneville to Rigby substation with at least 1557 ACSR cable. Work also involved expanding both the Rigby substation yards to accommodate a new 161 kV line position consisting of at least two 161 kV breakers at the Rigby substation. Adding this new Bonneville to Rigby 161 kV line does not improve N-1 and N-1-1 issues in the area and therefore is not considered as a viable alternative. The estimate for this

project was $33.2 million. Additional projects would be required to address the N-1 and N-1-1 issues. These projects include reconductoring 32 miles of Goshen to Rigby 161 kV line, reconductoring 16 miles of Sugarmill to Rigby 161 kV line, and reconductoring 3.5 miles of 795 AAC cable on existing Goshen to Sugarmill 161 kV line. Additionally, a new Goshen to Sugarmill 161 kV line would be required to mitigate the low voltage and voltage swings caused by the loss of the existing Goshen to Sugarmill 161 kV line. The estimate to reconductor these lines was $6.6 million and the estimate to construct a new Goshen to Sugarmill 161 kV line was $13.3 million. This alternative was rejected since the estimate for the new Bonneville to Rigby 161 kV line and supporting projects was about $12.7 million higher than the recommended new Goshen to Sugarmill to Rigby 161 kV transmission line project. The alternative was estimated to be $53.1 million.

VI. JORDANELLE TO MIDWAY 138 KV TRANSMISSION LINE PROJECT

Q. Please describe the investment for the Jordanelle to Midway 138 kV Transmission Line Project.

A. The Jordanelle to Midway 138 kV transmission line project constructed 9 miles of 138 kV transmission line between the Midway and Jordanelle substations in northwestern Wasatch County Utah. This project also included installation of two 138 kV breakers at Midway substation; the addition of 18 miles of optical ground wire between Hale and Midway substation; updates of the Naughton remedial action scheme (RAS); addition of a voltage transformer in Silver Creek and Hale substations; and protection and control upgrades at affected substations. The line siting partially followed Heber Light and Power's (HLP) existing 46 kV line across

the Heber Valley. The structures are owned by PacifiCorp and, for portions, HLP will have circuits and other facilities attached to PacifiCorp structures. HLP's paid contributions in aid of construction for their facilities and Midway City's paid contribution for excess costs to underground a portion of the line.

Q. Please explain why this investment in the Jordanelle to Midway 138 kV Transmission Line Project is needed and beneficial.

A. In 2011, as part of ongoing contingency and growth studies it was identified that an outage of the Cottonwood to Snyderville 138 kV line creates a voltage collapse of the looped Summit and Wasatch County system when the area load is above 190 MW. The same outage creates voltage below the transmission voltage guideline of .90 when loading is above 175 MW. In 2020, the area was projected to be above 190 MW for 156 hours and above 175 MW for 620 hours. In addition, Utah Associated Municipal Power Systems (UAMPS) on behalf of HLP submitted a load forecast that put them above the system capability under N-1 conditions (loss of the Hale to Midway 138 kV line) by the year 2019 (approximately 42.9 MW of HLP load). At the time HLP was served at 46 kV from the Midway substation. An official request for a 138 kV delivery point was made. HLP plans to install a 138-46 kV transformer to provide redundancy to their 46 kV system and split HLP's 46 kV load between the two sources.

Q. Did PacifiCorp consider alternatives to investing in the Jordanelle to Midway 138 kV Transmission Line?

A. Yes, an alternative project was to construct a second 138 kV 19-mile line from Hale substation in Utah County to Midway substation and install a second Midway 138-46 kV 75 MVA transformer. Although a second line from Hale and second transformer at Midway would raise the system radialization limit to 225 MW, the 138 kV voltage at the Snyderville substation during the loss of the Cottonwood to Snyderville 138 kV line is the limiting factor. This alternative was rejected due to the estimated cost coming in higher than the preferred option and the resulting radialization limit was 20 MW lower than the preferred option. In addition, the construction and permitting of a new 138 kV line through Provo Canyon was deemed to be more difficult.

VII. CONCLUSION

Q. Please summarize your recommendation to the Commission.

A. I recommend that the Commission determine that the projects stated above will provide benefits to Oregon customers and are therefore prudent and in the public interest.

Q. Does this conclude your direct testimony?

A. Yes.

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

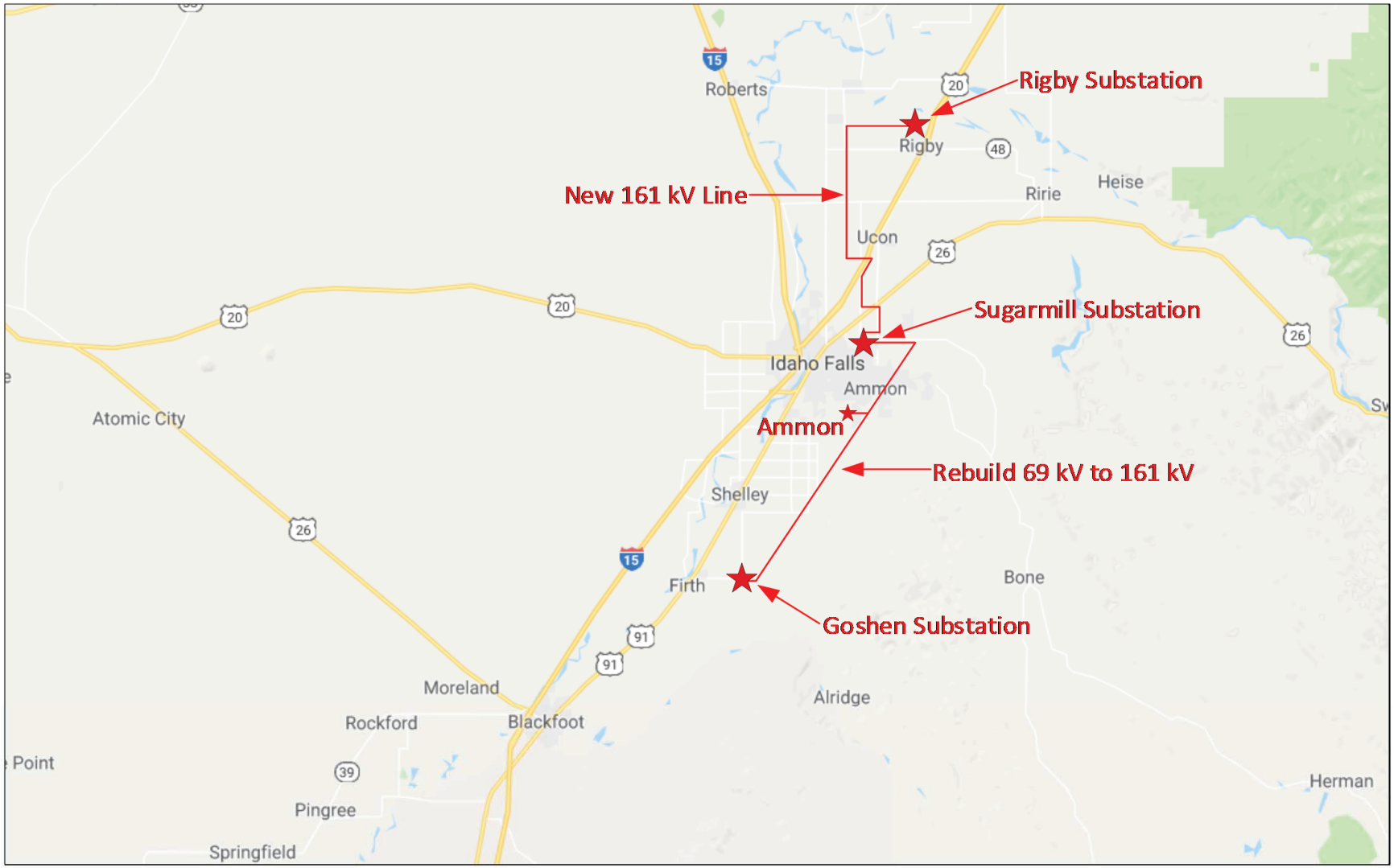
PACIFICORP

Exhibit Accompanying Direct Testimony of Richard A. Vail

Goshen to Sugarmill to Rigby 161 kV Transmission Line Project

March 2022

Goshen-Sugarmill-Rigby
161 KV Transmission Line Project Area



Docket No. UE 399
Exhibit PAC/602
Witness: Richard A. Vail

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

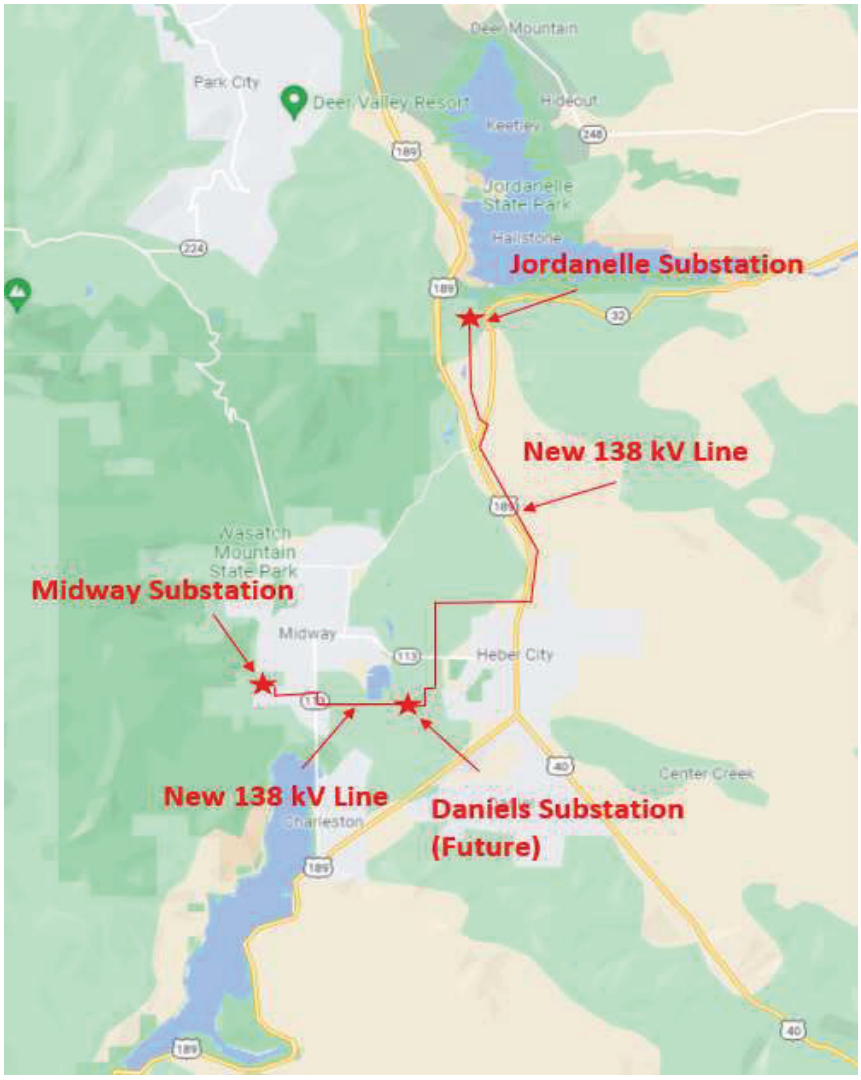
PACIFICORP

Exhibit Accompanying Direct Testimony of Richard A. Vail

Jordanelle to Midway 138 kV Transmission Line Project

March 2022

Jordanelle-Daniels-Midway
138 KV Transmission Line Project Area



BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

Docket No. UM 2032

In the matter of

PUBLIC UTILITY COMMISSION OF OREGON,

Investigation into the Treatment of Network Upgrade Costs for Qualifying Facilities

EXHIBIT NEWSUN/601

PacifiCorp "Executed but Not In Service" Interconnection Queue

as of 5/13/22 (accessed on 5/24/22).

As of: 5/13/22 Archive: These projects are not considered as part of the generation interconnection queue
Executed, but NOT In Service

Q#	Request Date	Request Stat	Company Name	Service Type	Application Rules	Qualifying Facility Status	Max MW Output		Location of Generating Facility			Location of Interconnection	In-Service Date (Commercial Operations)		Type	Feasibility Study / Fast Track	System Impact Study	Facilities Study	Optional Study	Schedule Deviation	Request Status Explanation
							S	W	County	ST	Region	Point of Interconnection	Customer Requested Commercial Operations Date	Agreed to Commercial Operations Date							
255	12/23/08	In Progress	Cedar Creek Wind, LLC	ER	LGI	NO	151.8	151.8	Bingham	ID	PACE	Goshen-Sugar Mill transmission line	7/1/10	6/24/22	Wind		Available	Available			IA signed 7/17/14
409	1/26/12	In Progress	Boswell Wind Project I, LLC	ER	LGI	No	320	320	Albany	WY	PACE	Freezeout substation	9/30/14	12/31/24	Wind	Available	Available	Available			IA signed 6/22/16, suspended 1/9/2020
443	10/16/12	Suspended	Ponderosa Solar, LLC	ER	LGI	NO	34.56	34.56	Crook	OR	PACW	Ponderosa substation	6/30/15	12/1/20	Solar & Battery Storage		Available	Available			IA signed June 4, 2015
524	10/8/13	In Progress	OREG 6, LLC	ER	SGI	NO	6	6	Salt Lake	UT	PACE	Terminal – Tooele 46kV	11/30/15	7/1/23	Waste Heat	Available	Available	Available			IA signed March 18, 2015
547	2/10/14	In Progress	Chopin Wind, LLC	NR	SGI	QF	18	18	Umatilla	OR	PACW	Weston P substation at 69 kV, on the line Athena side of the NO switch	11/30/15	*10/15/2016	Wind		Available	Available			IA signed 12/19/2014, *COD (10 MW) 10/15/16, (8 MW) 8/1/21
558	3/18/14	Suspended	US Magnesium, LLC	NR	LGI	QF	19	21	Tooele	UT	PACE	Rowley substation	3/31/15	11/15/21	Natural Gas		Available	Available		More Info	IA signed March 27, 2015,Suspended 7/8/2020
632	11/12/14	In Progress	Thermo No. 1 BE-01, LLC	NR	SGI	NO	2.99	2.99	Beaver	UT	PACE	Circuit SML21 out of South Milford substation	10/1/15	5/31/17	Solar		Available	Available			IA signed 11/30/15
634	11/20/14	In Progress	Fremont Solar, LLC	ER	LGI	NO	99	99	Beaver	UT	PACE	Parowan-Sigurd line	12/31/16	9/25/23	Solar		Available	Available			IA signed 9/9/16, Suspended 10/31/16
636	12/3/14	In Progress	Rush Lake Solar, LLC	ER	LGI	NO	99	99	Iron	UT	PACE	Parowan-West Cedar line	12/31/16	9/29/23	Solar		Available	Available			IA signed 9/9/16, Suspended 10/31/16
642	2/9/15	In Progress	Parowan Solar, LLC	ER	LGI	NO	58	58	Iron	UT	PACE	Parowan substation	10/1/16	12/31/24	Solar & Battery Storage		Available	Available		More Info	IA signed 9/8/16
650	4/7/15	In Progress	Orchard Windfarm 1, LLC	NR	OLGI	QF	10	10	Umatilla	OR	PACW	Hinkle substation	12/30/16	12/18/20	Wind		Available	Available		More Info	IA signed 5/31/16
651	4/7/15	In Progress	Orchard Windfarm 2, LLC	NR	OLGI	QF	10	10	Umatilla	OR	PACW	Hinkle substation	12/30/16	12/18/20	Wind		Available	Available		More Info	IA signed 5/31/16
652	4/7/15	In Progress	Orchard Windfarm 3, LLC	NR	OLGI	QF	10	10	Umatilla	OR	PACW	Hinkle substation	12/30/16	12/18/20	Wind		Available	Available		More Info	IA signed 5/31/16
653	4/7/15	In Progress	Orchard Windfarm 4, LLC	NR	OLGI	QF	10	10	Umatilla	OR	PACW	Hinkle substation	12/30/16	12/18/20	Wind		Available	Available		More Info	IA signed 5/31/16
666	5/5/15	In Progress	Sunthurst Energy, LLC	NR	OGI	QF	1.98	1.98	Umatilla	OR	PACW	Circuit SW406, Pilot Rock City, out of Pilot Rock substation	12/31/15	12/31/22	Solar	Available	Available	Available			IA signed 3/14/16
687	7/28/15	In Progress	Swan Lake North Hydro, LLC	ER	LGI	NO	415.8	415.8	Klamath	OR	PACW	PacifiCorp's Malin 500 kV substation	12/31/22	11/1/25	Pump Storage	Available	Available	Available		More Info	IA executed 10/31/19
713	10/12/15	In Progress	Cedar Springs Transmission LLC	ER	LGI	NO	350	350	Converse	WY	PACE	Yellowcake – Antelope Mine line	1/1/21	1/15/25	Wind	Available	Available	Available		More Info	IA executed 9/24/19
715	10/29/15	In Progress	Uinta Wind Energy, LLC	ER	LGI	NO	120	120	Uinta	WY	PACE	Canyon Compression-Railroad transmission line	7/1/17	TBD	Wind	Available	Available	Available		More Info	IA executed 9/24/18
719	11/11/15	In Progress	Two Rivers Wind, LLC	NR	LGI	QF	280	280	Albany	WY	PACE	Freezeout substation	12/31/18	2/1/25	Wind	Available	Available	Available	Available	More Info	IA Executed 6/26/19
721	11/14/15	In Progress	Skysol, LLC	NR	OLGI	QF	55	55	Klamath	OR	PACW	Klamath Falls-Malin transmission line	6/30/17	4/30/22	Solar		Available	Available		More Info	IA signed 6/5/17
731	3/4/16	In Progress	Prineville Solar Energy LLC	ER	LGI	NO	55	55	Crook	OR	PACW	Baldwin Rd – Ponderosa transmission line	7/1/18	TBD	Solar & Battery Storage		Available	Available		More Info	IA executed 11/5/18
734	3/18/16	Suspended	Aurora Solar, LLC	ER	LGI	NO	62.3	62.3	Crook	OR	PACW	Ponderosa substation	4/30/17	11/1/22	Solar	Available	Available	Available		More Info	IA signed 9/25/17, Suspended 8/13/20
741	5/6/16	In Progress	Sparrow Solar, LLC	NR	OLGI	QF	40	40	Klamath	OR	PACW	Klamath Falls-Lone Pine 230 kV transmission line	9/1/18	9/1/24	Solar		Available	Available		More Info	IA signed 12/6/17
752	5/25/16	In Progress	Castle Solar, LLC	ER	LGI	NO	40	40	Emery	UT	PACE	McFadden substation	12/31/18	10/31/21	Solar		Available	Available		More info	IA signed 2/1/18
753	5/25/16	In Progress	Rocket Solar, LLC	ER	LGI	NO	80	80	Box Elder	UT	PACE	Lampo substation	12/31/18	7/31/22	Solar		Available	Available		More Info	IA signed 3/6/18
754	5/25/16	In Progress	Steel Solar, LLC	ER	LGI	NO	80	80	Box Elder	UT	PACE	Wheelon-Nucor transmission line	12/31/18	12/16/22	Solar & Battery Storage		Available	Available		More Info	IA signed 6/28/18
763	6/22/16	In Progress	Appaloosa Solar I, LLC	ER	LGI	NO	200	200	Iron	UT	PACE	Three Peaks substation	11/15/18	7/14/23	Solar	Available	Available	Available	Available	More info	IA executed 1/7/19
764	6/22/16	In Progress	Graphite Solar I, LLC	ER	LGI	NO	80	80	Carbon	UT	PACE	Mathington substation	12/1/17	11/17/21	Solar		Available	Available		More info	IA signed 9/13/18
777	7/13/16	In Progress	Hornshadow, LLC	ER	LGI	NO	100	100	Emery	UT	PACE	Emery substation	12/31/18	8/31/24	Solar & Battery Storage	Available	Available			More info	IA executed 2/19/19
778	7/13/16	In Progress	Hornshadow, LLC	ER	LGI	NO	200	200	Emery	UT	PACE	Emery substation	12/31/18	TBD	Solar & Battery Storage	Available	Available			More info	IA executed 2/20/19, suspended 2/21/19
781	8/1/16	In Progress	Elektron Solar, LLC	ER	LGI	NO	80	80	Tooele	UT	PACE	Craner Flat substation	12/31/18	6/30/22	Solar		Available	Available		More info	IA signed 10/2/18
783	8/3/16	In Progress	Dinosolar, LLC	ER	LGI	NO	30	30	Natrona	WY	PACE	Bar Nunn substation	6/30/20	12/15/24	Solar & Battery Storage		Available	Available		More info	IA executed 2/12/20
784	8/4/16	In Progress	Dinosolar, LLC	NR	LGI	NO	80	80	Natrona	WY	PACE	Casper substation	12/30/18	12/31/24	Solar & Battery Storage		Available	Available		More info	IA executed 5/22/19
785	8/4/16	In Progress	Anticline Wind, LLC	ER	LGI	NO	100	100	Natrona	WY	PACE	Claim Jumper – Casper 230 kV transmission line	12/31/19	12/31/24	Wind	Available	Available	Available		More info	IA executed 9/20/19
786	8/4/16	Suspended	Echo Divide Wind, LLC	ER	LGI	NO	100	100	Summit	UT	PACE	Evanston-Anschutz transmission line	12/31/18	4/15/22	Wind	Available	Available	Available		More info	IA executed 12/24/18, suspended 9/29/20
787	8/8/16	In Progress	Green River Solar I, LLC	ER	LGI	NO	200	200	Emery	UT	PACE	Emery-Sigurd #2 line	11/15/18	8/15/24	Solar & Battery Storage	Available	Available	Available		More info	IA executed 5/13/19
788	8/8/16	In Progress	Green River Solar II, LLC	ER	LGI	NO	200	200	Emery	UT	PACE	Emery-Sigurd #2 line	11/15/18	10/25/24	Solar & Battery Storage	Available	Available	Available		More info	IA executed 5/13/19
789	8/8/16	Suspended	Fresh Air Energy II, LLC	NR	LGI	QF	74.9	74.9	Fremont	WY	PACE	Riverton-Thermopolis transmission line	9/30/19	10/20/23	Solar & Battery Storage	Available	Available	Available		More info	IA executed 10/8/20, suspended 6/17/21
792	9/1/16	Suspended	RC Solar Energy LLC	NR	LGI	NO	80	80	Carbon	UT	PACE	Mathington substation	12/1/19	11/2/21	Solar & Battery Storage	Available	Available	Available		More info	IA Executed 3/7/19, Suspended 6/28/19
799	9/20/16	In Progress	Steel Solar, LLC	ER	LGI	NO	67	67	Box Elder	UT	PACE	Wheelon - Nucor transmission line	6/30/19	12/4/23	Solar & Battery Storage	Available	Available	Available		More info	IA executed 9/20/19
801	9/20/16	In Progress	Dinosolar, LLC	ER	LGI	NO	80	80	Natrona	WY	PACE	Bar Nunn substation	6/30/19	12/15/24	Solar & Battery Storage	Available	Available	Available		More info	IA executed 2/12/20
802	9/20/16	In Progress	Dinosolar, LLC	ER	LGI	NO	50	50	Natrona	WY	PACE	Bar Nunn substation	6/30/19	12/15/24	Solar & Battery Storage	Available	Available	Available		More info	IA executed 2/12/20
805	9/30/16	In Progress	Glen Canyon Solar A, LLC	ER	LGI	NO	95	95	Kane	UT	PACE	Sigurd-Glen Canyon transmission line	12/19/19	11/30/23	Solar		Available	Available		More info	IA executed 4/8/20
807	9/30/16	In Progress	Elk Mountain Wind, LLC	ER	LGI	NO	75.9	75.9	Carbon	WY	PACE	Standpipe substation	8/31/19	12/31/24	Wind		Available	Available			IA executed 2/20/20
815	11/7/16	In Progress	Uinta Wind Energy LLC	ER	SGI	NO	20	20	Emery	UT	PACE	Moore substation	2/1/20	11/30/23	Solar		Available	Available			IA executed 5/8/19
820	11/15/16	Suspended	PacifiCorp	ER	LGI	NO	48	48	Beaver	UT	PACE	South Milford substation	2/22/18	11/15/21	Solar	Available	Available	Available		More info	IA Executed 11/7/19, Suspended 3/20/2020
821	11/15/16	Suspended	PacifiCorp	ER	LGI	NO	87	87	Carbon	UT	PACE	Mathington substation	2/22/18	9/15/23	Solar	Available	Available	Available		More info	IA executed 1/21/2020, Suspended 3/20/2020
822	11/15/16	In Progress	PacifiCorp	ER	LGI	NO	30	30	Sanpete	UT	PACE	Gunnison-Sigurd #1 transmission line	2/22/18	10/1/26	Solar	Available	Available	Available		More info	IA executed 10/17/19
823	11/15/16	Suspended	PacifiCorp	ER	LGI	NO	178	178	Emery	UT	PACE	Emery substation	6/30/19	2/1/27	Solar	Available	Available	Available		More info	IA executed 1/21/2020, Suspended 3/20/2020
824	11/14/16	Suspended	Grass Butte Solar, LLC	ER	LGI	NO	40	40	Crook	OR	PACW	Ponderosa substation	12/31/18	TBD	Solar	Available	Available	Available		More info	IA executed 1/21/2020, Suspended 10/9/2020
825	11/21/16	In Progress	Blue Marmot V LLC	ER	SGI	NO	10	10	Lake	OR	PACW	Bullard substation	11/30/19	6/30/22	Solar	Available	Available	Available			IA executed 10/1/19
826	11/21/16	In Progress	Blue Marmot VI LLC	ER	SGI	NO	10	10	Lake	OR	PACW	Bullard substation	11/30/19	6/30/22	Solar	Available	Available	Available			IA executed 10/1/19
827	11/21/16	In Progress	Blue Marmot VII LLC	ER	SGI	NO	10	10	Lake	OR	PACW	Bullard substation	11/30/19	6/30/22	Solar	Available	Available	Available			IA executed 10/1/19
829	11/21/16	In Progress	Blue Marmot IX LLC	ER	SGI	NO	10	10	Lake	OR	PACW	Bullard substation	11/30/19	6/30/22	Solar	Available	Available	Available			IA executed 10/1/19
830	11/21/16	In Progress	Blue Marmot XI LLC	ER	SGI	NO	10	10	Lake	OR	PACW	Bullard substation	11/30/19	6/30/22	Solar	Available	Available	Available			IA executed 10/1/19
835	12/5/16	In Progress	Rock Creek Wind, LLC	ER	LGI	NO	190	190	Carbon	WY	PACE	Foote Creek substation	10/1/20	12/15/24	Wind	Available	Available	Available			IA executed 3/25/2020
836	12/5/16	In Progress	Rock Creek Wind, LLC	ER	LGI	NO	400	400	Carbon	WY	PACE	Aeolus substation	10/1/23	12/15/24	Wind	Available	Available	Available			IA executed 3/25/2020
846	1/10/17	In Progress	Horseshoe Solar, LLC	ER	LGI	NO	75	75	Tooele	UT	PACE	Horseshoe substation	6/30/19	7/31/22	Solar	Available	Available	Available		More info	IA executed 4/26/19
849	2/6/17	Suspended	sPower Development Company, LLC	NR	OLGI	QF	100	100	Klamath	OR	PACW	Klamath Falls-Malin transmission line	12/31/19	12/31/23	Solar	Available	Available	Available			IA executed 5/13/19, suspended 1/4/22
862	4/6/17	In Progress	Rocket Solar, LLC	ER	LGI	NO	45	45	Box Elder	UT	PACE	Lampo substation	6/30/19	12/15/23	Solar & Battery Storage		Available	Available		More Info	IA executed 2/11/20
866	4/17/17	In Progress	Wyoming Machinery Company	ER	SGI	NO	0.3	0.3	Natrona	WY	PACE	Circuit 5H406 out of Fort Casper substation	8/1/17	6/15/18	Natural Gas	Available					IA signed 2/12/18
895	6/20/17	In Progress	Falls Creek HP, LP	ER	OGI	NO	4.96	4.96	Linn	OR	PACW	Circuit 4M94 out of Sweet Home substation	1/1/20	1/1/20	Hydro	Available	Available	Available			IA signed 4/3/18
905	7/12/17	In Progress	Fresh Air Energy II, LLC	NR	LGI	QF	50	50	Klamath	OR	PACW	Copco 2 - Westside Tap to Klamath Falls line (Line 18)	12/1/19	2/1/23	Solar & Battery Storage	Available	Available	Available			IA executed 1/20/21, suspended 2/18/21
906	7/12/17	In Progress	Fresh Air Energy II, LLC	ER	LGI	NO	80	80	Klamath	OR	PACW	Klamath Falls-Lone Pine transmission line	12/1/19	7/1/23	Solar & Battery Storage	Available	Available	Available			IA executed 3/24/2020, suspended 2/18/21
907	7/12/17	In Progress	Fresh Air Energy II, LLC	ER	LGI	NO	80	80	Klamath	OR	PACW	Klamath Falls-Lone Pine transmission line	12/1/19	7/1/23	Solar & Battery Storage	Available	Available	Available			IA executed 3/24/2020, suspended 2/18/21
953	9/27/17	In Progress	High Top Solar, LLC	NR	LGI	NO	80	80	Yakima	WA	PACW	Union Gap - Midway transmission line	1/1/20	12/1/23	Solar	Available	Available	Available		More info	IA executed 3/17/2021
958	10/11/17	In Progress	Ormat Nevada, Inc.	ER	LGI	NO	21.17	21.17	Lincoln	WY	PACE	Lima substation	2/1/20	6/10/24	Waste Heat		Available	Available		More info	IA executed 6/6/19
973	11/14/17	In Progress	City of Preston, Idaho	NR	SGI	QF	0.41	0.41	Franklin	ID	PACE	Circuit PRS13 out of Preston substation	1/1/18	12/31/18	Hydro		Available				IA executed 9/5/18
974	11/15/17	In Progress	Lincoln Solar, LLC	NR	LGI	NO	80	80	Lincoln	WY	PACE	Naughton-Treasureton transmisison line	12/31/19	12/15/23	Solar		Available	Available			IA executed 9/14/2020
1008	3/8/18	In Progress	Black Rock Solar, LLC	NR	LGI	NO	94	94	Yakima	WA	PACW	Union Gap - Midway line	12/1/20	11/20/23	Solar & Battery Storage		Available	Available			IA executed 6/23/21
1012	3/22/18	In Progress	Deschutes Valley Water District	NR	OGI	QF	4.3	4.3	Jefferson	OR	PACW	Madras – Redmond, Opal Springs tap line	1/1/21	12/15/20	Hydro		Available	Available			IA executed 10/29/2018
1045	7/5/18	In Progress		NR	OGI	QF	2.99	2.99	Umatilla	OR	PACW	Circuit SW406 out of Pilot Rock substation	12/31/19	12/31/22	Hydro		Available	Available			IA exected 3/17/22
1055	7/27/18	In Progress	Slate Creek Hydro Associates LP	NR	SGI	NO	4.2	4.2	Shasta	CA	PACW	Castella substation	12/31/18	2/24/20	Hydro		Available	Available			IA executed 4/25/2019
1186	10/23/19	In Progress	Commercial Energy Management, Inc.	NR	SGI	QF	0.9	0.9	Bannock	ID	PACE	Circuit LAV11 out of Lava substation	5/1/20	1/22/21	Hydro		Available				IA executed 3/24/2020

Company Name: Only displayed after Interconnection Agreement has been signed or is an affiliate of PacifiCorp.
Affiliate Initial Scoping Meeting Notification: It is PacifiCorp's intention to hold initial scoping meetings for all projects listed that are associated with an affiliate per the relevant timing requirements.
Service Type: Not applicable to Large Generator Interconnection requests made prior to 01/20/2004, Small Generator Interconnection requests, or Qualifying Facility Interconnection requests.
ER: Energy Resource Interconnection Service
NR: Network Resource Interconnection Service
NR with ER: Network Resource Interconnection Service requested, but also studied as Energy Resource. Customer will choose Service Type (ER or NR) prior to Facilities Study.
Study Reports: If displayed, click "Available" link to view PDF files.
Study Schedule Deviation: If displayed, click "More Info" link to view PDF files.
Deactivated Explanation
WITHDRAWN BY CUSTOMER: Interconnection Customer requested application be withdrawn from queue.
REMOVED-LACK OF PROGRESS: Removed by PacifiCorp due to lack of progress through procedures by Interconnection Customer.
REMOVED-ERROR IN ENTRY: Removed by Pacificorp due to entry error by PacifiCorp.

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

Docket No. UM 2032

In the matter of

PUBLIC UTILITY COMMISSION OF OREGON,

Investigation into the Treatment of Network Upgrade Costs for Qualifying Facilities

EXHIBIT NEWSUN/602

PacifiCorp 2020 All-Source RFP Final Shortlist Presentation,

Docket No. UM 2059 (July 30, 2021).

PACIFIC POWER
A DIVISION OF PACIFICORP

825 NE Multnomah, Suite 2000
Portland, Oregon 97232

July 30, 2021

VIA ELECTRONIC FILING

Public Utility Commission of Oregon
201 High Street SE, Suite 100
Salem, OR 97301-3398

Attn: Filing Center

RE: UM 2059 – Final Shortlist for the 2020 All Source Request for Proposals and Sensitivity Analysis

PacifiCorp, d/b/a Pacific Power (PacifiCorp) submits the attached highly confidential and redacted presentation covering the Final Shortlist (FSL) for the 2020 All-source RFP and sensitivity analyses as revised and provided to the Independent Evaluator on July 20, 2021. The presentation is an update to the original FSL presentation provided June 8, 2021. Highly confidential information is provided subject to modified protective order 21-202.

Please direct informal inquiries regarding this filing to Cathie Allen, Regulatory Affairs Manager, at (503) 813-5934.

Sincerely,

Shelley McCoy
Director, Regulation

CERTIFICATE OF SERVICE

I certify that I served a true and correct copy of PacifiCorp's **Final Shortlist for the 2020 All Source Request for Proposals and Sensitivity Analysis Presentation** on the parties listed below via electronic mail and/or or overnight delivery in compliance with OAR 860-001-0180.

Service List
UM 2059

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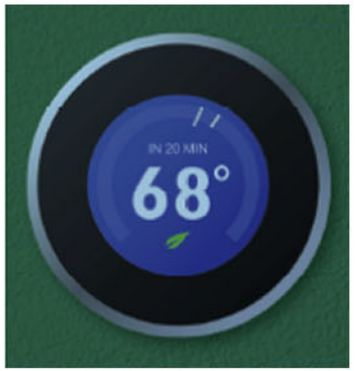
Dated this 30th day of July, 2021.

Katie Savarin
Coordinator, Regulatory Operations

2020 All Source RFP
Final Short List
Revised July 20, 2021



PUBLIC VERSION

PACIFICORP
POWERING YOUR GREATNESS

RFP Modeling Revisions

Issues with the previously filed final shortlist (FSL) analysis were identified as a result of a verification process initiated after developing responses to questions ask by the independent evaluators:

- Net delivery costs and indicative generation values were revised to reflect corrections in annual generation and net capacity factors:
  - Embedded text (rather than values) in provided generation profiles resulted in the omission of hours with no generation in some bidders' 8760 profiles.
  - Solar bids that provided net solar and storage 8760 profiles, instead of the requested solar output.
- Failed uploads to the model resulted in use of proxy resource profiles, rather than bid profiles in some instances.
- The modeled location of one bid was corrected from Utah North to Wyoming East.
- PacifiCorp repeated and expanded its final shortlist analysis after incorporating and verifying these changes.

Key Findings

- FSL bid selections remain unchanged.
- Modeling changes reduce the value of resources in eastern Wyoming; however, the eastern Wyoming bids continue to provide customer benefits.
- Bid selections by price-policy show minimal changes.
  - The low gas, no CO_2 bid-portfolio no longer includes Steel Solar
- After revisions, the LN Bid portfolio appears to be low cost under the base price-policy scenario, but the cost trend is notably unfavorable at end of study horizon.
- SNS bids with proxy resources selected under an LN price-policy scenario (the SNS Bid-LN portfolio) results in lower costs than the LN Bid portfolio when analyzed under the base price-policy scenario (MM).

Introduction

- PacifiCorp issued the 2020AS RFP to the market on July 7, 2020; bidder responses were returned to PacifiCorp for evaluation on August 10, 2020
  - The market responded with over 28,000 MW of conforming bids
  - An additional 12,500 MW of bids were submitted that did not conform with minimum requirements set forth in the 2020 AS RFP
- In October 2020, the initial shortlist was identified, which included 5,453 MW of renewable resource capacity—2,974 MW of solar or solar with storage (1,130 MW of battery storage), 2,479 MW of wind, and 200 MW of standalone battery capacity
- The transition interconnection cluster study process was subsequently initiated, and in April 2021, PacifiCorp began to evaluate best-and-final pricing updates from bidders
- Consistent with the bid evaluation and selection methodology set forth in the 2020AS RFP, PacifiCorp has evaluated a range of potential bid portfolios, reflecting results from the transitional interconnection cluster study process, to select the final shortlist, which includes:
  - 1,792 MW of new wind resources (590 MW as build-transfer agreements and 1,202 MW as power-purchase agreements)
  - 1,306 MW of solar capacity (all power-purchase agreements)
    - After modeling was well underway, Steel Solar I & II withdrew its combined 147 MW Utah solar and storage bids. These bids remained in the modeling effort and were removed from the Final Shortlist total after modeling was complete and not replaced.
  - 697 MW of battery energy storage system capacity—497 MW paired with solar bids (after Steel Solar I & II were removed) and 200 MW as standalone battery storage (power-purchase agreement)
- When using base case market price and CO_2 price assumptions, present-value net benefits of the final shortlist portfolio are $571 million over the best performing portfolio without bids

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Resource Need

Calendar Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
System										
Total Resources	10,671	10,646	10,685	10,391	10,334	9,997	9,943	9,043	8,538	8,313
Obligation	9,899	9,985	10,064	10,103	10,162	10,012	10,011	10,044	10,069	10,112
Reserves	1,310	1,321	1,331	1,336	1,344	1,325	1,324	1,329	1,332	1,338
Obligation + Reserves	11,209	11,306	11,395	11,439	11,506	11,336	11,335	11,372	11,401	11,449
System Position	(538)	(660)	(711)	(1,048)	(1,172)	(1,339)	(1,392)	(2,329)	(2,863)	(3,136)

- Final shortlist bids will help PacifiCorp fill a resource need.
- After accounting for a higher load forecast and recently signed contracts, the company's unmet capacity position is 1,172 MW in 2025—the first summer in which all resources from the 2020AS RFP will be online.
- The final shortlist has an estimated capacity contribution value of 998 MW.
- While the company's 2019 IRP assumed that over 1,400 MW of market purchases could be used to meet its requirements, the capacity position of the western interconnect is much tighter than in past years, with resource adequacy an ongoing concern in California and a growing concern elsewhere.
- The 2021 IRP assumes 500 MW market purchases available in summer and 1,000 MW in winter.

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Summary of Bids Evaluated

- 27 projects from 16 bidders can achieve a commercial operation date before the end of 2024 based on signed interconnection agreement or study results and were considered for selection to the final shortlist.

Project Count	East					East Total	West			West Total	Grand Total
Type	East WY	SW WY	Goshen ID	UT North	UT South		Central OR	South OR	Yakima WA		
BESS				1		1					1
Solar				1	1	2	1	1	2	4	6
Solar + BESS				2	6	8		2	1	3	11
Wind	7	1	1			9					9
Grand Total	**7**	**1**	**1**	**4**	**7**	**20**	**1**	**3**	**3**	**7**	**27**

Capacity (MW)	East					East Total	West			West Total	Grand Total
Type	East WY	SW WY	Goshen ID	UT North	UT South		Central OR	South OR	Yakima WA		
BESS				200		200					200
Solar				42	95	137	103	40	340	483	620
Solar + BESS				192	956	1,148		210	94	304	1,452
Wind	1,744	122	151			2,017					2,017
Grand Total	**1,744**	**122**	**151**	**434**	**1,051**	**3,501**	**103**	**250**	**434**	**787**	**4,288**

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2020AS RFP Final Shortlist

Project Name	Bidder	Type	Location	COD	Term/Life (Years)	Resource Capacity (MW)	Battery Capacity (MW)	Battery Duration (Hours)	Net Capacity Factor (%)	Bid PPA Price ($/MWh)	Bid PPA Price (Fixed / Esc)	Battery Price Applied to Battery Capacity ($/kW-mo)
Anticline	NextEra	Wind	WY	12/31/2024	30	100.5	n/a	n/a				
Cedar Springs IV	NextEra	Wind	WY	12/31/2024	30	350.4	n/a	n/a				
Rock Creek I*	Invenergy	Wind	WY	12/31/2024	30	190	n/a	n/a				
Rock Creek II*	Invenergy	Wind	WY	12/31/2024	30	400	n/a	n/a				
Boswell Springs	Innergex	Wind	WY	10/1/2024	30	320	n/a	n/a				
Two Rivers	Blue Earth Renewables LLC & Clearway Renew LLC	Wind	WY	12/31/2024	25	280	n/a	n/a				
Cedar Creek	rPlus Energies	Wind	ID	12/31/2022	25	151	n/a	n/a				
~~Steel Solar I & II~~	~~DESRI~~	~~PVS~~	~~UT~~	~~12/31/2023~~	~~25~~	~~147~~	~~37.5~~	~~2~~				
Rocket Solar II	DESRI	PVS	UT	12/31/2023	25	45	12.5	4				
Fremont	Longroad Energy	PVS	UT	11/30/2023	20	99	49.5	4				
Rush Lake	Longroad Energy	PVS	UT	11/30/2023	20	99	49.5	4				
Parowan	First Solar	PVS	UT	12/31/2024	25	58	58	4				
Hornshadow I	enyo energy	PVS	UT	12/31/2023	30	100	25	2				
Hornshadow II	enyo energy	PVS	UT	12/31/2023	30	200	50	2				
Green River I & II	rPlus Energies	PVS	UT	12/31/2024	20	400	200	2				
Hamaker	ecoplexus	PVS	OR	12/31/2023	30	50	12.5	4				
Hayden 2	ecoplexus	PVS	OR	12/31/2023	30	160	40	4				
Dominguez I	Able Grid	BESS	UT	7/1/2024	15	n/a	200	4				
Glen Canyon	sPower	Solar	UT	12/31/2023	30	95	n/a	n/a				

*BTA bids (additional price information in the next slide). All other bids are PPAs.

- Total wind and solar capacity = 3,098 MW
  - Wind = 1,792 MW
  - Solar = 1,306 MW (Note: this is without Steel Solar, which is in the revised analysis but has since been withdrawn by the developer.)
- Total battery energy storage system capacity (BESS) = 697 MW
  - Paired with photovoltaic (PVS) = 497 MW (excluding Steel Solar I & II, which withdrew from the RFP after being notified it was selected to the final shortlist)
  - Standalone BESS = 200 MW

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Final Shortlist BTA Pricing

Nominal $

Project Name	Bidder	Wind Bid with Direct-Assigned Interconnection Capital Cost	Wind Owner's Capital Cost & AFUDC	In-Service Interconnection Network Upgrade Capital Cost	Total In-Service Capital Cost
Rock Creek I	Invenergy	[redacted]			
Rock Creek II	Invenergy				

- In-service capital costs total $[redacted]m ($[redacted]m for bid capital, $[redacted]m for capitalized owner's costs, AFUDC, and property tax during construction, and [redacted]m for capital associated with interconnection network upgrades).

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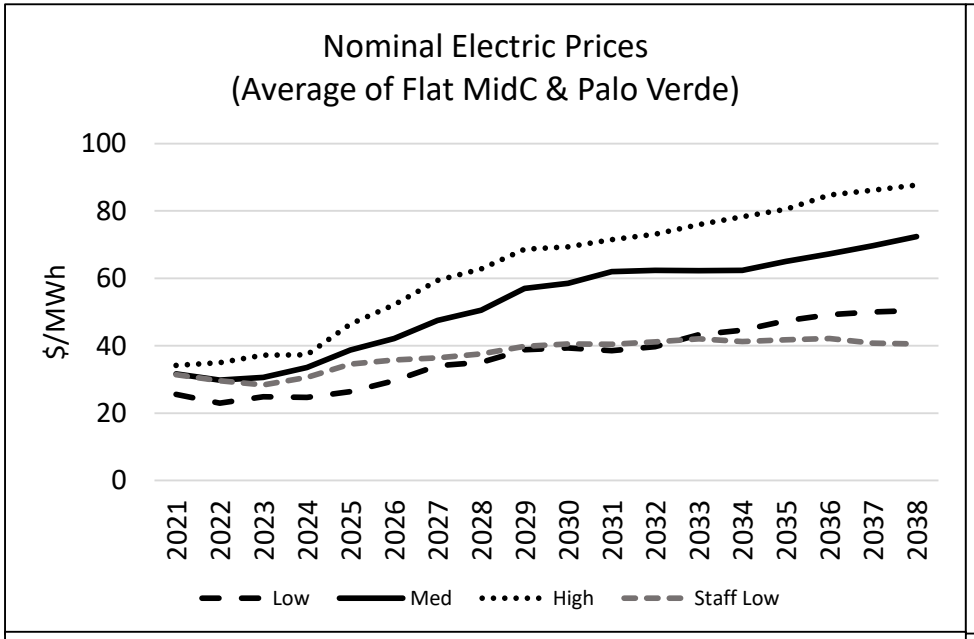
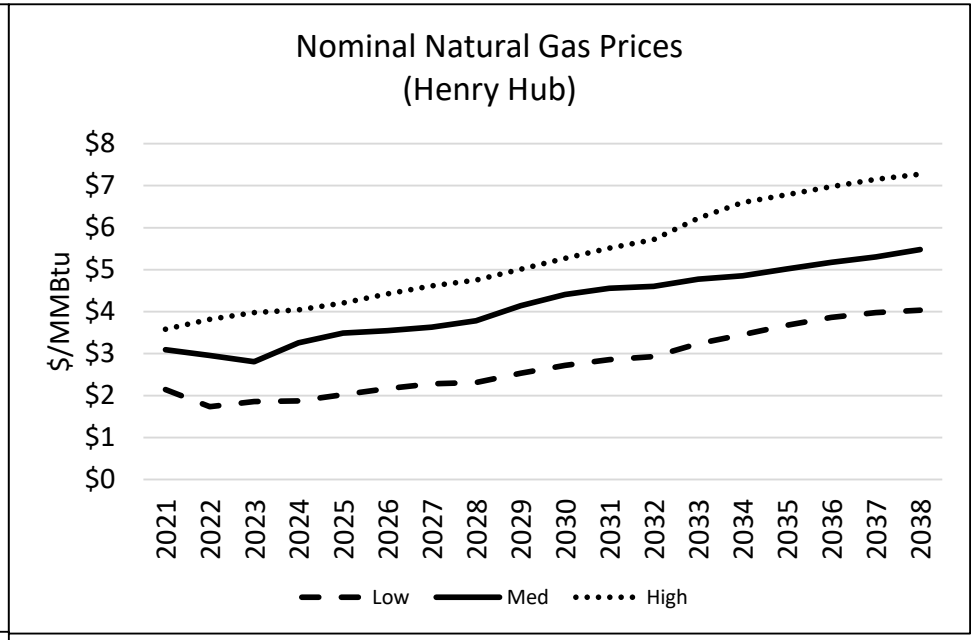
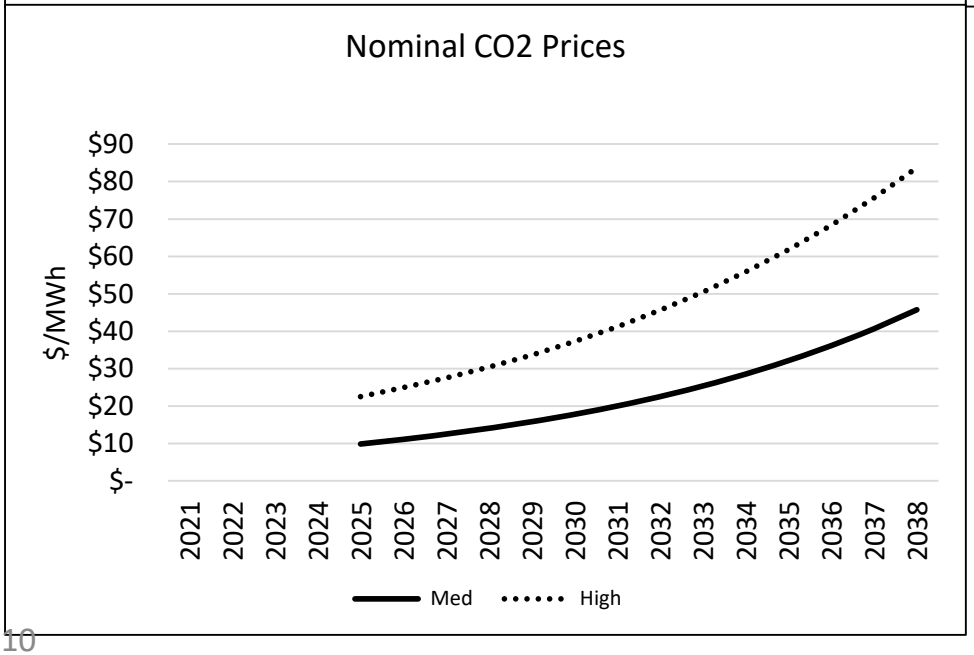
Portfolio-Selection Scenarios

- Portfolios were selected under a range of price-policy scenarios, plus others recommended by staff of the Public Utility Commission of Oregon:
  - LN: low gas/market price, no carbon price
  - MM: medium gas/market price, medium carbon price
  - HH: high gas/market price, high carbon price
  - SL: Staff's low market price sensitivity that assumes high renewable penetration in the WECC, medium gas price, and medium carbon price
  - SNS (MM): medium gas/market price, medium carbon price, but no wholesale market sales allowed
  - SNST (MM): the same as SNS (MM), plus PTC/ITC assumed extended through 2030
  - SNS Bid (LN): bid selections from the SNS (MM) case with proxy resources selected under LN price-policy assumptions (note, this case was not in the initial FSL evaluation, but added in this update to further analyze drivers to system cost differences between the SNS and LN bid portfolios)
- Portfolios with no RFP bids were also prepared—these scenarios are compared to the final shortlist bid portfolio to calculate net customer benefits.

Price-Policy Assumptions







- The assumptions for electricity prices, gas prices, and CO_2 prices summarized here were applied to the portfolio-selection scenarios summarized on the previous slide.

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Bid Selections by Scenario

Location	Company	Project / Facility Name	Resource type	Contract Type	Generating Asset (MW)	BESS Capacity (MW)	BESS Duration (Hours)	LN	MM	HH	SL	FSL SNS (MM)	SNST (MM)	Type
East WY	NextEra	Cedar Springs IV	Wind	PPA	350.4	0	0	0	350.4	350.4	350.4	350.4	350.4	Wind
East WY	Innergex Renewable	Boswell Springs	Wind	PPA	320	0	0	0	320	320	320	320	320	Wind
East WY	BluEarth/Clearway Renew	Two Rivers Wind Project	Wind	PPA	280	0	0	0	280	280	280	280	280	Wind
East WY	NextEra	Anticline	Wind	PPA	100.5	0	0	0	100.5	100.5	100.5	100.5	100.5	Wind
East WY	Invenergy	Rock Creek I BTA	Wind	BTA	190	0	0	0	190	190	190	190	190	Wind
East WY	Invenergy	Rock Creek II 400	Wind	BTA	400	0	0	0	400	400	400	400	400	Wind
[redacted]														
Goshen ID	rPlus	Cedar Creek	Wind	PPA	151	0	0	0	151	151	151	**151**	151	Wind
[redacted]														
UT South	Enyo Renewable Energy	Hornshadow II	Solar + BESS	PPA	200	50	2	200	200	200	200	200	200	Solar and/or Battery
UT North	Able Grid Energy Solutions	Dominguez I	BESS	BSA	0	200	4	200	200	200	200	200	200	Solar and/or Battery
UT South	rPlus	Green River Solar I & II	Solar + BESS	PPA	400	200	2	400	400	400	400	400	400	Solar and/or Battery
~~UT North~~	~~DESRI~~	~~Steel I 80 + Steel II~~	~~Solar + BESS~~	~~PPA~~	~~147~~	~~37.5~~	~~2~~	0	~~147~~	~~147~~	~~147~~	~~147~~	~~147~~	Solar and/or Battery
UT South	Long Road Energy	Rush Lake	Solar + BESS	PPA	99	49.5	4	99	99	99	99	99	99	Solar and/or Battery
UT South	Long Road Energy	Fremont	Solar + BESS	PPA	99	49.5	4	99	99	99	99	99	99	Solar and/or Battery
UT North	DESRI	Rocket II	Solar + BESS	PPA	45	12.5	4	0	45	45	45	45	45	Solar and/or Battery
UT South	Enyo Renewable Energy	Hornshadow I	Solar + BESS	PPA	100	25	2	100	100	100	100	100	100	Solar and/or Battery
UT South	AES Clean Power (sPower	Glen Canyon A	Solar	PPA	95	0	0	0	95	95	95	95	95	Solar and/or Battery
UT South	First Solar (now Leeward	Parowan	Solar + BESS	PPA	58	58	4	58	58	58	58	58	58	Solar and/or Battery
[redacted]														
South OR	ecoplexus	Hayden Mountain 2	Solar + BESS	PPA	160	40	4	0	160	160	0	160	160	Solar and/or Battery
South OR	ecoplexus	Hamaker	Solar + BESS	PPA	50	12.5	4	0	50	50	0	50	50	Solar and/or Battery
[redacted]														
							Total Maximum Capacity (MW)	1,156	3,722	4,247	3,235	3,445	3,445	
							Total Capacity Contribution (MW)	575	1,081	1,148	924	998	998	

* Change from June 8, 2021 RFP Presentation – selection made by model, not due to withdrawn bid
* FSL = final shortlist
* Note, the Energy Gateway South transmission line was selected in all but the LN portfolio

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Demand Response Selections

- Each 2020AS RFP bid portfolio includes bids submitted into the 2021DR RFP as a resource alternative (as selected by the System Optimizer model).
- Demand response selections are incremental to existing programs.
- Demand response selections vary by portfolio-selection scenario.
- Selected programs begin in 2022 and grow over the first ten years.
- The ability to ramp quickly into the full capacity identified starting in 2022 in any scenario below may be limited by program selection, design, and delivery requirements.
- Commitments to specific programs will be made as part of ongoing or new procurement processes, and in some instances regulatory approvals.

DR Bid Selections (MW)	2022				2030			
	MM	SNS	LN	SNS Bid-LN	MM	SNS	LN	SNS Bid-LN
Rocky Mountain Power	59	75	75	43	229	245	245	198
Pacific Power	12	46	46	45	91	316	316	260
Total	71	121	121	88	320	561	561	458

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Portfolio Costs – MM Scenario

Revised Analysis

PaR Stochastic Mean PVRR and Change From LN Bids Portfolio ($ millions)

	Portfolio							
Price-Policy	**LN Bids**	**MM Bids**	**HH Bids**	**No Bid LN**	**No Bid MM**	**No Bid HH**	**SNS Bids**	**SNS Bids-LN**
MM	23,828	23,968	24,408	24,306	24,345	24,959	23,893	23,735
Delta	0	139	580	477	517	1,131	65	(94)

- Of the scenarios considered previously, the LN Bid portfolio has the lowest cost under MM price-policy conditions.
- However, taking the SNS bids and selecting future proxy resources under LN conditions has an even lower cost—additional details are provided on the following slides.
- Portfolios with bids provide several hundred million dollars in benefits relative to portfolios without bids.

June 8, 2021 Analysis

PaR Stochastic Mean PVRR ($ millions)

	Portfolio						
Price-Policy	**LN Bids**	**MM Bids**	**HH Bids**	**No Bid LN**	**No Bid MM**	**No Bid HH**	**SNS Bids**
MM	23,903	23,898	24,594	24,306	24,345	24,959	24,022
Change from MM Portfolio	5	0	696	408	447	1,061	124

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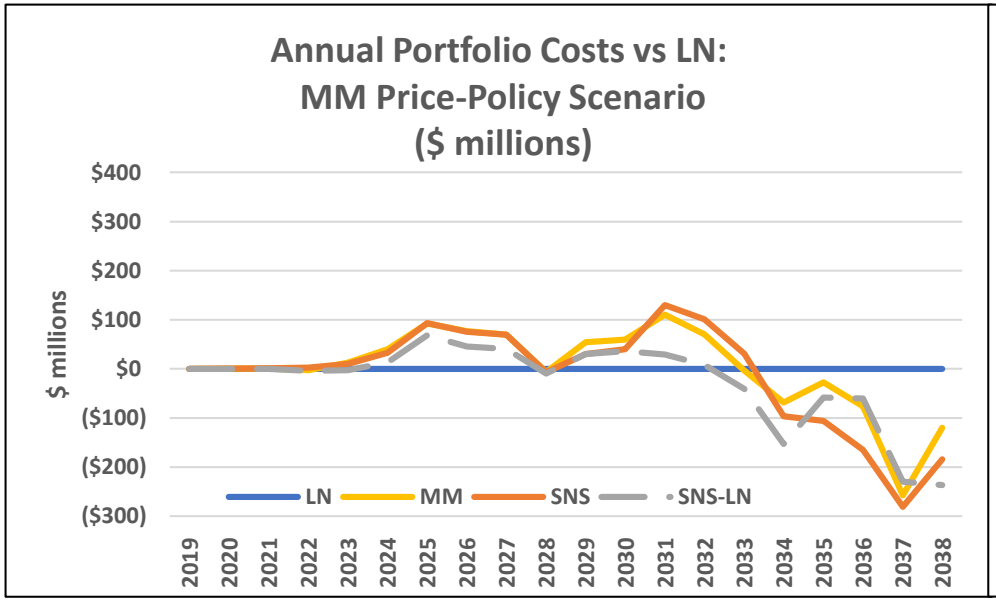
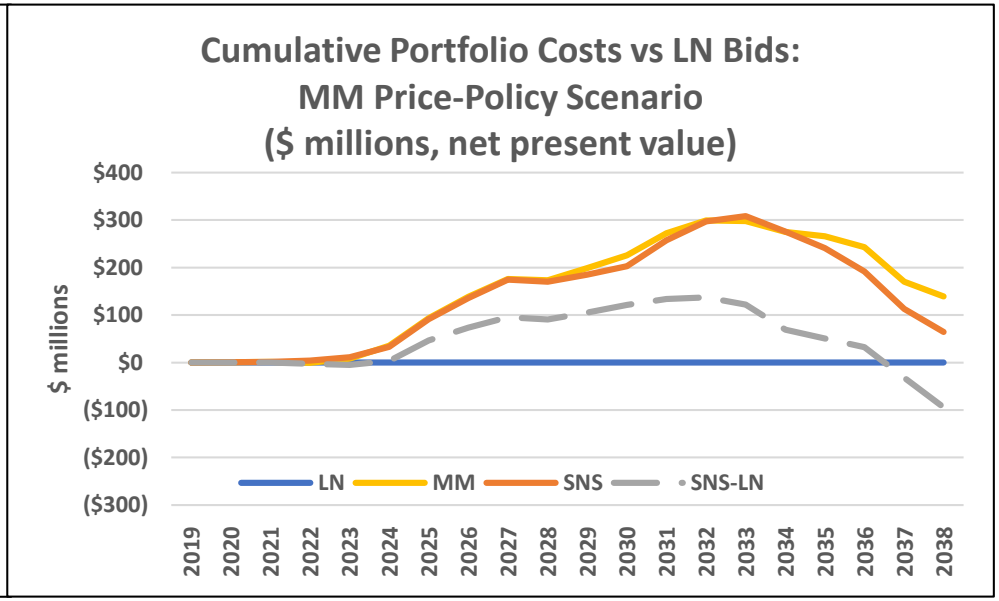
Annual Portfolio Costs

- The LN bid portfolio has the lowest annual costs through 2032 in the MM price-policy scenario, but costs climb quickly thereafter.
- Reported present value results are for 2019-2038, consistent with the 2019 IRP study horizon.
- The LN bid portfolio costs in 2039 and beyond are expected to continue to be higher than other portfolios, suggesting the results would worsen over a longer study horizon.





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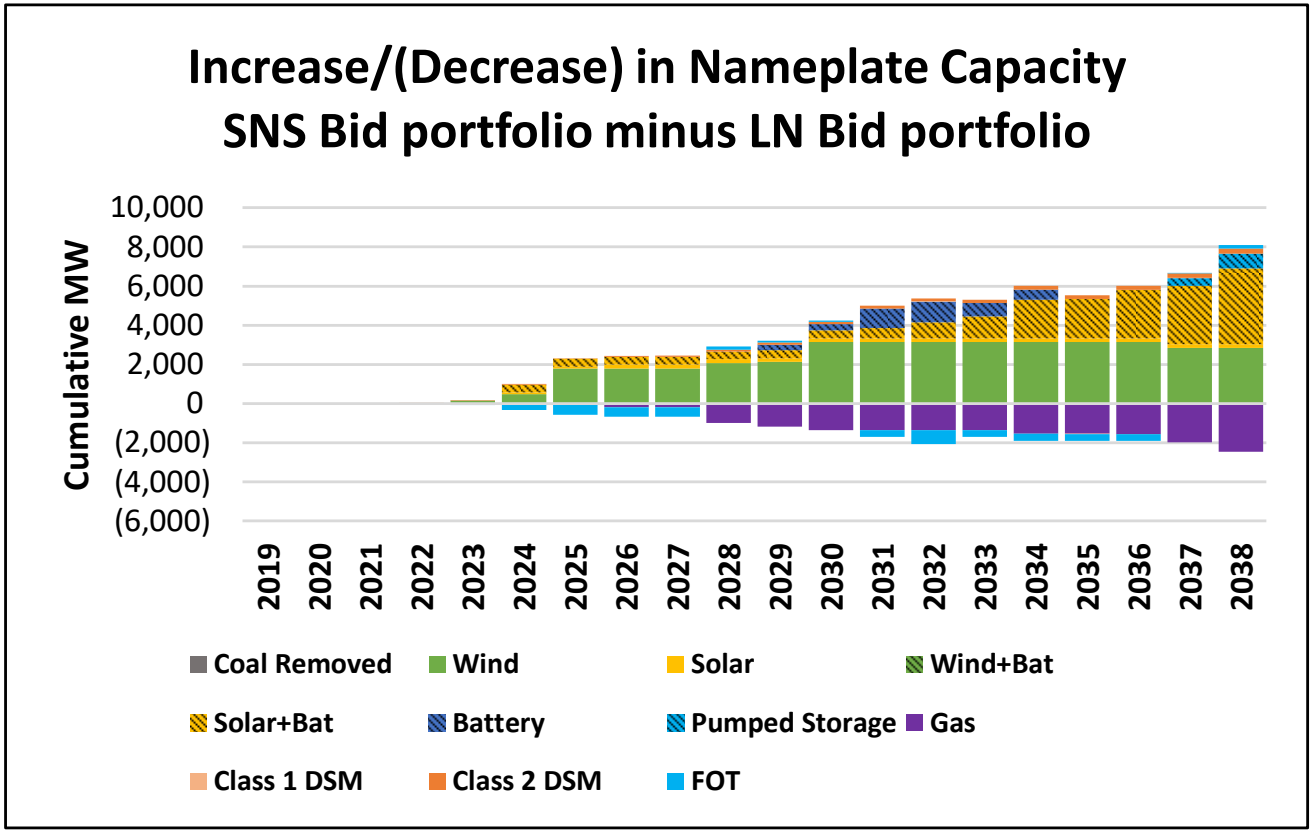
Portfolio Compare SNS Bid vs LN Bid

- The SNS bid portfolio has less gas and a lower open position (depicted with FOTs) relative to the LN bid portfolio.
- In addition, to these changes, the SNS bid portfolio adds more wind in 2030, battery capacity in 2031, and solar and storage thereafter.
- Annual cost results indicate some of the LN bid portfolio selections for proxy units in the intermediate timeframe are more cost-effective than proxy resource selections in the SNS bid portfolio.



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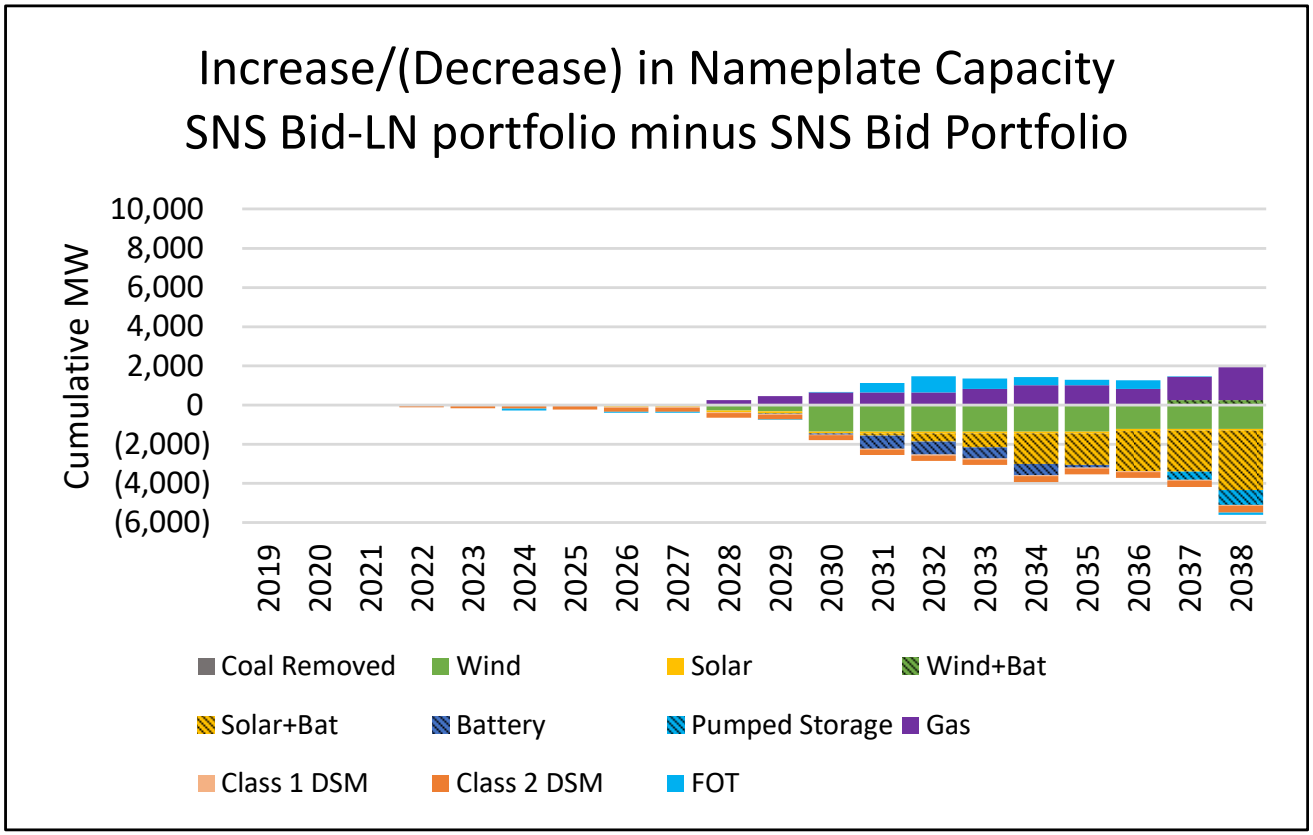
SNS Bid-LN Portfolio

- Considering these portfolio cost trends, the company looked for a way to combine the best aspects of the SNS and LN portfolio selections to better isolate value drivers associated with bids from value drivers associated with future proxy resources.
- The SNS portfolio was developed using the MM price curve, but with no market sales allowed.
- An alternate portfolio (SNS Bid-LN) was developed with:
  - The bids selected in the SNS portfolio
  - SO model selections of additional proxy resources for the remainder of the study period under LN price-policy conditions.
  - As in the LN bid portfolio, market sales were allowed.
- This portfolio's performance was evaluated under the same price-policy conditions as the other portfolios.

Portfolio Compare
SNS Bid-LN vs SNS Bid

Relative to the SNS Bid portfolio, the SNS Bid-LN portfolio has:

- Wind: 1,297 MW lower in 2028-2030
- Solar w/ storage: 3,000 MW lower in 2031-2038
- Stand-alone battery: 675 MW delayed 3-5 years
- Gas peakers: 589 MW higher in 2028-2030, plus 379 MW in 2033-2034, and more thereafter.



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Portfolio Costs – LN Scenario

Revised Analysis

PaR Stochastic Mean PVRR and Change From LN Bids Portfolio ($ millions)

	Portfolio							
Price-Policy	**LN Bids**	**MM Bids**	**HH Bids**	**No Bid LN**	**No Bid MM**	**No Bid HH**	**SNS Bids**	**SNS Bids-LN**
LN	18,578	20,106	21,124	18,744	20,064	21,099	20,096	19,299
Delta	-	1,528	2,546	166	1,486	2,521	1,518	721

- Under LN price-policy conditions, the LN Bid portfolio, SNS Bid portfolio, SNS Bids-LN portfolio, and the LN and MM portfolios without bids, outperform the MM portfolio.
- The MM Bid and SNS Bid portfolios produce similar results.
- The SNS Bid-LN portfolio results are midway between the LN Bid and MM Bid portfolio results.

June 8, 2021 Analysis

PaR Stochastic Mean PVRR ($ millions)

	Portfolio						
Price-Policy	**LN Bids**	**MM Bids**	**HH Bids**	**No Bid LN**	**No Bid MM**	**No Bid HH**	**SNS Bids**
LN	18,713	20,179	21,287	18,744	20,064	21,099	20,192
Change from MM Portfolio	(1,465)	-	1,109	(1,435)	(114)	920	14

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Portfolio Costs – HH Scenario

Revised Analysis

PaR Stochastic Mean PVRR and Change From MM Bids Portfolio ($ millions)

	Portfolio							
Price-Policy	**LN Bids**	**MM Bids**	**HH Bids**	**No Bid LN**	**No Bid MM**	**No Bid HH**	**SNS Bids**	**SNS Bids-LN**
HH	28,653	27,351	27,455	29,419	28,307	28,559	27,367	27,799
Delta	1,302	-	104	2,068	956	1,208	16	448

- The MM Bid portfolio is top-performing in the HH price-policy scenario, followed closely by the SNS Bid portfolio
- The SNS Bid-LN portfolio results are slightly closer to the MM Bid portfolio than the LN Bid portfolio.
- Note, the difference between the SNS Bid portfolio and the SNS Bid-LN portfolio is entirely driven by differences in proxy resources (and not bids).

June 8, 2021 Analysis

PaR Stochastic Mean PVRR ($ millions)

	Portfolio						
Price-Policy	**LN Bids**	**MM Bids**	**HH Bids**	**No Bid LN**	**No Bid MM**	**No Bid HH**	**SNS Bids**
HH	28,675	27,315	27,673	29,419	28,307	28,559	27,493
Change from MM Portfolio	1,361	-	358	2,104	992	1,244	178

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Marginal Bids

- Appendix A includes an indicative assessment of the net benefit or cost for each bid.
- This information helped identify which bids in the SNS portfolio might be marginal in terms of customer benefit.
- PacifiCorp further evaluated these bids to ensure their potential inclusion in the final shortlist would provide value for customers. Based on the nature of the revised inputs, the revised analysis focused on the lowest value eastern Wyoming bids: Rock Creek 1 and Rock Creek 2.
- Removing Rock Creek 1 or 2 results in higher costs, so these bids remain in the final shortlist.

Revised Analysis

PaR Stochastic Mean PVRR vs SNS Bids-LN Portfolio

($ millions) Portfolio Price-Policy	SNS Bids-LN	Remove Rock Creek 1	Remove Rock Creek 2
MM	23,735	23,760	23,893
Delta	0	26	159

June 8, 2021 Analysis

PaR Stochastic Mean PVRR ($ millions)

Portfolio Price-Policy	SNS	Remove Glen Canyon	Remove Hamaker	Remove Rock Creek 1	Remove Rock Creek 2
SNS	25,857	25,943	25,896	25,986	26,067
Change from SNS Portfolio	0	86	38	129	210

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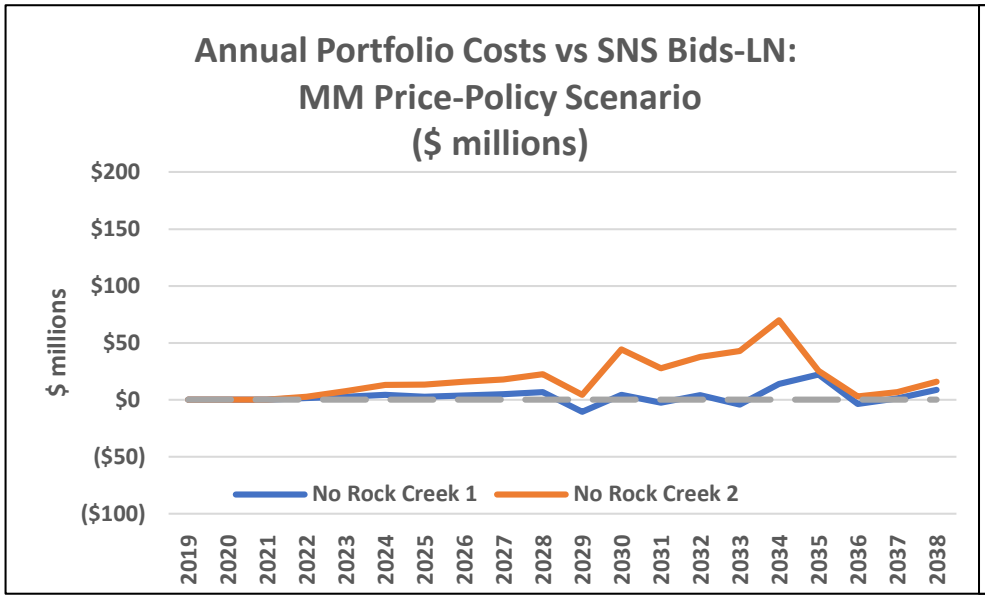
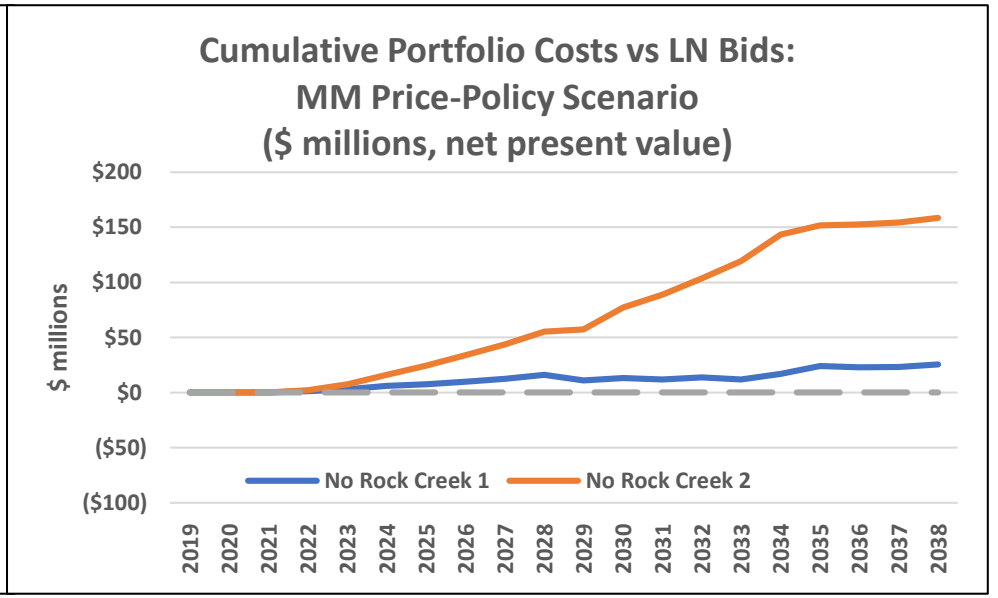
Marginal Bids – Annual Costs

- Each additional resource in a congested location produces lower benefits.
- The sensitivities evaluate the last-in benefits of each Rock Creek resource in eastern Wyoming.
- Because of its larger size (400 MW vs 190 MW for Rock Creek 1) Rock Creek 2 provides proportionately higher benefits, despite having a slightly lower indicative net benefit.
- Rock Creek 1, the smaller of the two Rock Creek bids, provides benefits in most years of the study period.
- Note a positive value indicates a net benefit, a negative value indicates a net cost.





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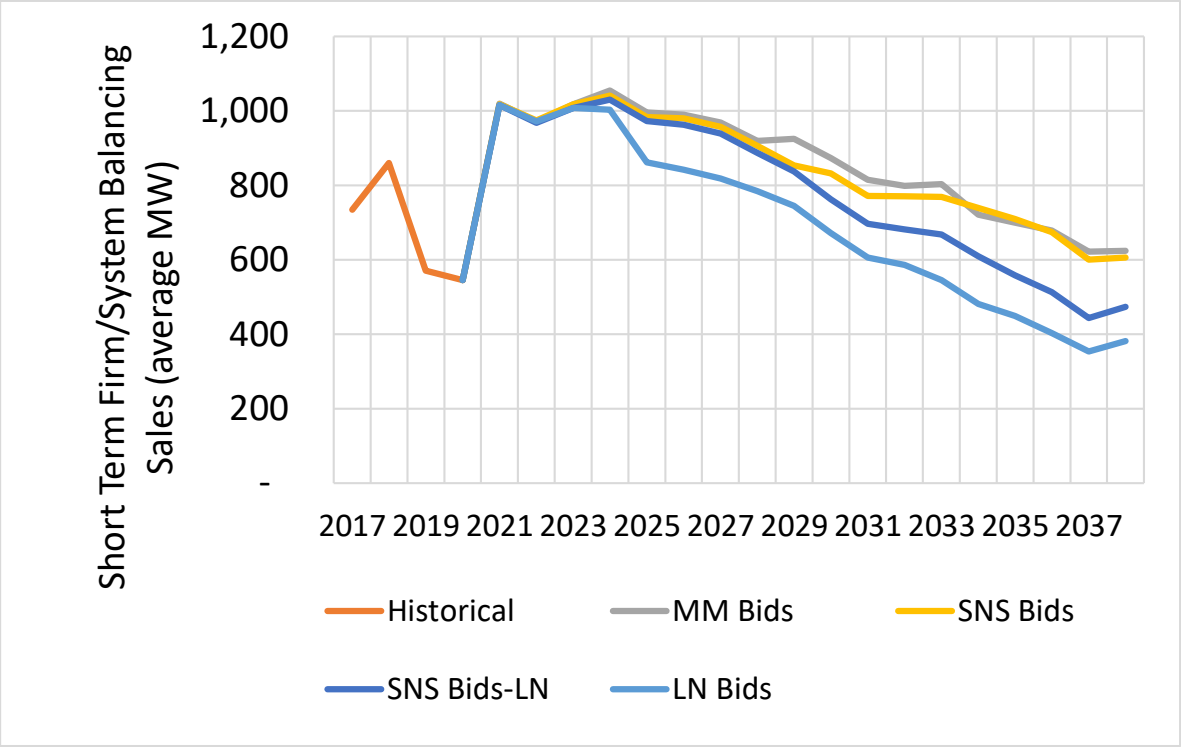
Market Sales by Portfolio

- While there is a slight uptick in forecasted market sales in 2024, market sales are forecasted to decline in the MM price-policy results for the LN, MM, SNS, and SNS Bids-LN resource portfolios.
- Market prices and volumes were low in 2019 due to weather and in 2020 due to COVID-19.
- Modeled markets can be more liquid (more purchases and sales) than current market structures, which primarily trade multiple hour blocks (e.g., the heavy load hour product from 6 a.m. to 10 p.m.)
- EIM has made intra-hour trading more liquid and an extended day-ahead market may further increase the liquidity of short-term firm transactions.



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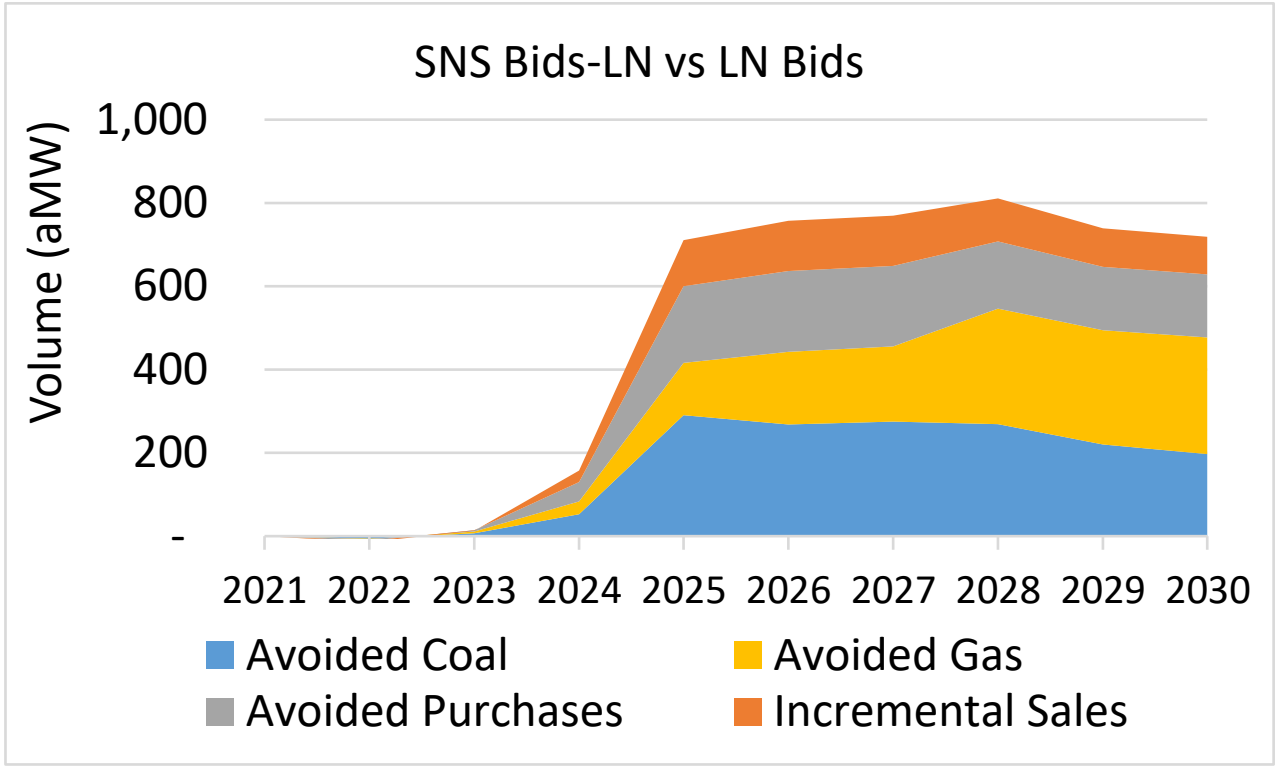
Incremental Bid Volumes (1)

- All bids have scheduled CODs by the end of 2024 based on signed interconnection agreement or study results.
- Relative to the LN Bid portfolio, the SNS Bid-LN portfolio includes Gateway South and eastern Wyoming wind, plus solar in OR and UT.
- Under MM price-policy assumptions, the additional bids in the SNS Bids-LN portfolio mainly avoid coal, gas, and market purchases.
- Incremental sales in the SNS Bids-LN portfolio amount to roughly 16% of the total change in system energy in 2025-2027 and decline thereafter.



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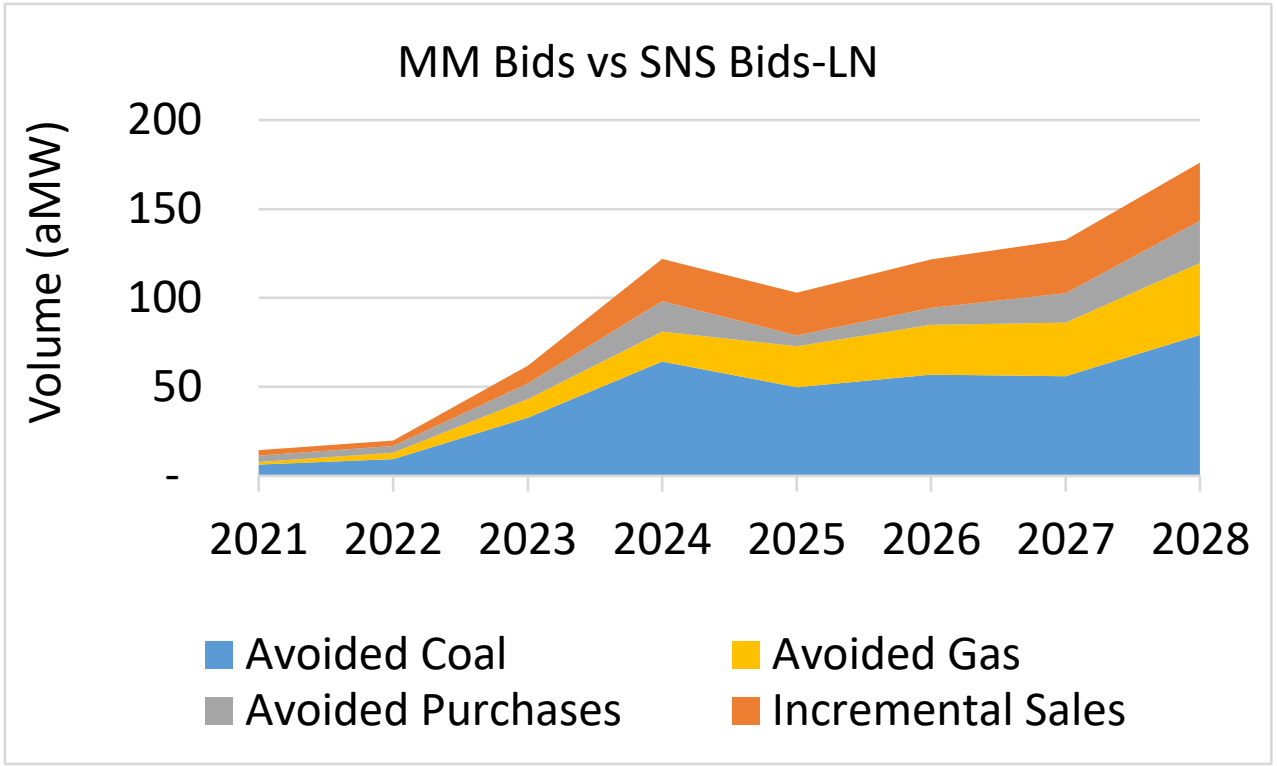
Incremental Bid Volumes (2)

- Relative to the SNS Bid-LN portfolio, the MM Bid portfolio includes off-system wind in eastern Wyoming, plus solar in Washington.
- Under MM price-policy assumptions, the additional bids in the MM Bid portfolio lean more heavily on incremental market sales, which represent 23% of the total change in system energy in 2025-2027.
- As a result, the value of these bids is more dependent on market prices.
- These bids are expensive relative to other resource options—future alternatives may provide greater value.



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Additional MM Considerations

- Emissions and Reliability

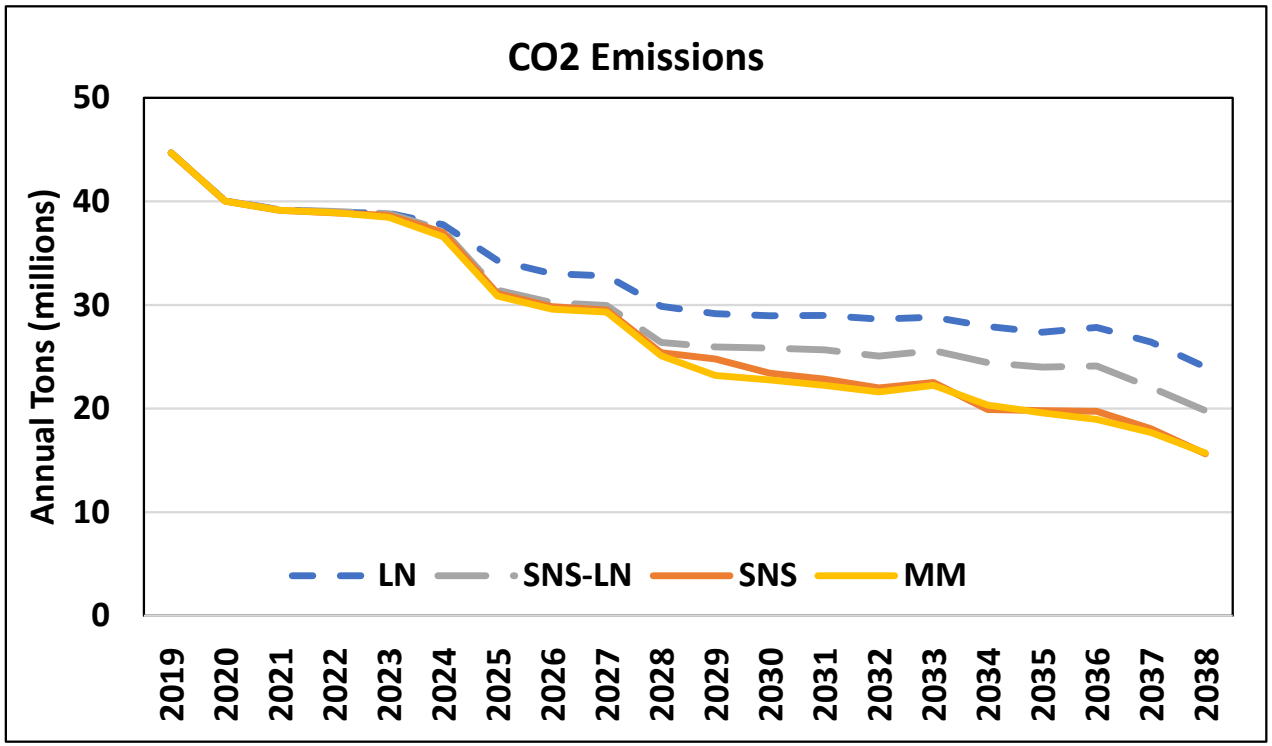
Revised	CO2 (ktons)	ENS (GWh)
MM Bids	557,013	361
LN Bids	647,710	242
SNS Bids	562,984	183
SNS Bids-LN	599,584	183

6/8/2021	CO2 (ktons)	ENS (GWh)
MM Bids	561,244	170
LN Bids	644,970	274
SNS Bids	565,943	349

  - CO_2 emissions in the MM Bid and SNS Bid portfolios are comparable, while the LN Bid portfolio emissions are 16% higher. The SNS Bid-LN portfolio is midway between MM and LN.
  - Most ENS is in the last ten years in all studies.
  - The company will be further refining its reliability calculations in its 2021 IRP and will be able to identify the best resource additions to address any shortfalls.
- Gateway South is included in the MM, SNS, and the SNS Bids-LN portfolios, but not in the LN portfolio:
  - Gateway South strengthens transmission at Mona/Clover allowing additional renewable generation in southern Utah with new transmission development.
  - Gateway South acts as a relief valve during low load and outage conditions increasing the reliability of the transmission system especially with the addition of renewable resources in southern Utah.
  - Modeled results do not fully capture these effects.

CO_2 Emissions

- CO_2 emissions are highest for the LN Bid portfolio due to higher dispatch of existing coal and gas, and more natural gas proxy resource additions.
  - 16% higher than MM Bids
  - 8% higher than SNS Bid-LN
- SNS Bid-LN portfolio emissions are comparable to MM and SNS until 2028 – the resource decisions that drive this difference will not be made for several more years.



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Portfolio Costs – Sensitivities

Revised Analysis

PaR Stochastic Mean PVRR ($ millions)
Portfolio

Price-Policy	MM Bids	Sensitivity	Change from MM Portfolio
SL	24,003	23,981	(22)
SNS	25,987	25,834	(153)
SNST	25,665	25,183	(482)

June 8, 2021 Analysis

PaR Stochastic Mean PVRR ($ millions)
Portfolio

Price-Policy	MM Bids	Sensitivity	Change from MM Portfolio
SL	24,143	24,058	(85)
SNS	25,922	25,857	(65)
SNST	25,812	25,283	(529)

- "Sensitivity" portfolios were developed and evaluated for each of Staff's price-policy assumptions.
- The MM Bid portfolio was also evaluated under each of these assumptions for comparison.
- Each Sensitivity outperforms the MM Bid portfolio under its respective price-policy assumptions, though the impact in the SL and SNS scenarios is relatively small.
- The SNST portfolio has the same wind selections as the SNS portfolio identified in the final shortlist, so benefits are from future wind selections that supplement rather than replace the RFP bids.

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FOT Sensitivity

- Additional sensitivities were prepared using the FOT limits from the 2021 IRP.
  - 500 MW in summer and 1,000 MW winter, starting 2022
- Reducing FOT limits results in substantially higher costs in the LN Bids case, but only a modest cost increase in the MM Bids and SNS Bids cases.

PaR Stochastic Mean PVRR and Impact of Reduced FOT Limit ($ millions)				
Price Policy	RFP Bids (MW)	2019 IRP FOT Limits	2021 IRP FOT Limits	Delta
LN Bids	1,156	23,828	25,078	1,249
MM Bids	3,722	23,968	24,076	109
SNS Bids	3,445	23,893	24,079	186

REDACTED

MM Bids vs. SNS Bids

- There are three fewer bids selected in the SNS Bid-LN portfolio, relative to bids selected in the MM Bid portfolio
  - [redacted] (off-system in Eastern Wyoming)
    - This resource is the most expensive remaining bid in eastern Wyoming
    - Because it is located within the Tri-State Generation and Transmission (TSGT) BAA, it requires transmission service to the PacifiCorp system
    - While the developer covers transmission service costs, it is unclear how it will be treated for intra-hour dispatch, or future day-ahead market or resource adequacy showings
    - Parts of TSGT are in the intra-hour market run by SPP, and not the Western EIM run by CAISO in which PacifiCorp participates (www.spp.org/weis/)
  - [redacted] and [redacted] (Yakima)
    - Relative to other solar with storage and solar bids, these projects are higher cost
- For these reasons and considering the increased reliance on market sales for the MM Bid portfolio relative to the SNS Bid-LN portfolio (described earlier), PacifiCorp is not considering these three bids for selection to its final shortlist.

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Value of Final Shortlist Bids

Revised Analysis

PaR Stochastic Mean PVRR ($ millions)
Portfolio

Price-Policy	SNS Bids	Best No Bid	Change with no bids
LN	20,096	18,744	(1,352)
MM	23,893	24,306	413
HH	27,367	28,559	1,192

Price-Policy	SNS Bids-LN	Best No Bid	Change with no bids
LN	19,299	18,744	(555)
MM	23,735	24,306	571
HH	27,799	28,559	760

June 8, 2021 Analysis

PaR Stochastic Mean PVRR ($ millions)
Portfolio

Price-Policy	SNS Bids	No Bid	Change from SNS Portfolio
LN	20,192	18,744	(1,449)
MM	24,022	24,345	323
HH	27,493	28,559	1,066

- Under MM and HH price-policy conditions, the SNS Bid portfolio outperforms the best no bid portfolio.
- The SNS Bid-LN portfolio has even lower costs under LN and MM conditions.
- After adding the SNS bids to the company's portfolio, many opportunities will remain to reoptimize future resource decisions.

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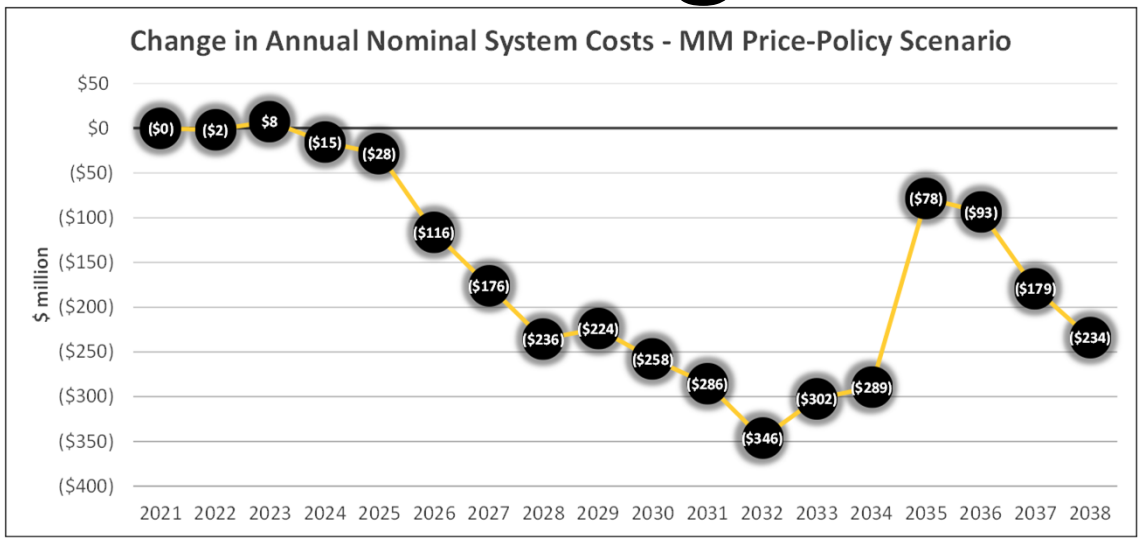
Nominal Change in Annual Cost



Best portfolio w/ bids in MM:
SNS Bid-LN

minus

Best portfolio w/o bids in MM:
No Bid LN

- The figure above summarizes annual nominal revenue requirement impacts associated with the RFP final shortlist bids and all associated transmission costs relative to the no-bid scenario assuming MM price-policy assumptions—negative values represent a reduction in revenue requirement with final shortlist bids and associated transmission projects.
- In 2025, the first full year all shortlisted bids and transmission projects are in service, the system nominal revenue requirement decreases by $28m.
- Year-to-year variability in annual nominal costs over time are largely influenced by changes in the timing of future resources between the two scenarios (with and without shortlisted bids).
  - Without shortlisted bids, gas resources are needed in 2026-2028 timeframe, battery resources are accelerated in 2031-2032, and wind and solar are added in 2036-2037, all of which reduce revenue requirement relative to the case with shortlisted bids (the SNS Bid-LN portfolio).
  - PTCs for the two build-transfer agreement wind bids expire beginning 2034, resulting in an uptick in system costs.
  - The increase in annual savings in the 2037 timeframe coincides with the retirement of Huntington, which is replaced by a combination of gas peakers and solar with storage in both studies, with a larger amount of solar with storage added in the portfolio without bids.

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Appendix A

Indicative Assessment of the Net Benefit/Cost for Each Bid

Overview of Appendix A

- To determine which resources might be marginal, the company used the system benefit curve values developed for the ISL and the final bid costs to identify a net benefit (or cost) for each bid.
- This data is provided for informational purposes only to give a sense of how the potential value of bids with the same or similar technology in a region compare to one another.
- System benefit curve values were developed using the company's June 2020 market prices and resource additions from the 2019 IRP preferred portfolio.
- When preparing values for a location, resources in that location were cut by half so that the result represents an average value for that location, rather than a last-in or marginal value.
- As a result of market price changes, declining marginal benefits within each location, and interactions across the system, the actual value of generation is expected to vary from that identified here, but is expected to impact resources in the same location and of the same type in a comparable manner, making the results useful for assessing the relative value or cost of specific bids.
- Updated Net Delivery Costs and Indicative Generation Values reflect corrections in annual generation and net capacity factors related to embedded text and omission of hours with no generation in some bidders' 8760 profiles.

REDACTED

Wind Bids

- Seven (7) wind resource bids are in eastern Wyoming, including five PPAs and two BTAs
- One bid is in Goshen, Idaho and one is in southwest Wyoming
- The Indicative Generation Value is based on hourly locational prices from June 2020 used in price scoring for the initial shortlist, which is mainly useful for comparing resources of the same type and location
- Net Benefit/(Cost) reflects the final bids and network upgrade costs

Location	Company	Project / Facility Name	Contract Type	Generating Asset (MW)	BESS Capacity (MW)	BESS Duration (Hours)	FSL Proposed COD	Net Delivery Cost ($/MWh)	Indicative Generation Value ($/MWh)	Net Benefit / (Cost)
East WY	NextEra	Cedar Springs IV	PPA	350.4	0	0	1/1/2025			
East WY	Innergex Renewable	Boswell Springs	PPA	320	0	0	10/1/2024			
East WY	BluEarth Renewables US/Clearway Renew	Two Rivers Wind	PPA	280	0	0	1/1/2025			
East WY	NextEra	Anticline	PPA	100.5	0	0	1/1/2025			
East WY	Invenergy	Rock Creek II 400	BTA	400	0	0	12/31/2024			
East WY	Invenergy	Rock Creek I BTA	BTA	190	0	0	12/31/2024			
Goshen ID	rPlus	Cedar Creek	PPA	151	0	0	12/31/2022			
SW WY	Invenergy	Uinta	BTA	121.8	0	0	12/31/2024			

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Utah Bids

- All Utah bids are for solar and/or battery storage
- Bids for solar with storage have battery capacity ranging from 25% to 100% of solar capacity, and duration ranging from two to four hours
- The Indicative Generation Value is based on hourly locational prices from June 2020 used in price scoring for the initial shortlist, which is mainly useful for comparing resources of the same type and location
- Net Benefit/(Cost) reflects the final bids and network upgrade costs

Location	Company	Project / Facility Name	Contract Type	Generating Asset (MW)	BESS Capacity (MW)	BESS Duration (Hours)	FSL Proposed COD	Net Delivery Cost* ($/MWh)	Indicative Generation Value ($/MWh)	Net Benefit / (Cost)
UT South	Enyo Renewable Energy	Hornshadow II	PPA	200	50	2	12/31/2023			
UT North	Able Grid Energy Solutions, Inc.	Dominguez I	BSA	0	200	4	7/1/2024			
UT South	rPlus	Green River Solar I	PPA	400	200	2	1/1/2025			
UT South	Long Road Energy	Rush Lake	PPA	99	49.5	4	11/30/2023			
UT South	Long Road Energy	Fremont	PPA	99	49.5	4	11/30/2023			
UT South	Enyo Renewable Energy	Hornshadow I	PPA	100	25	2	12/31/2023			
~~UT North~~	~~DESRI~~	~~Steel I 80 + Steel II~~	~~PPA~~	~~147~~	~~37.5~~	~~2~~	~~12/31/2023~~			
UT South	First Solar (now Leeward Energy)	Parowan	PPA	58	58	4	12/31/2024			
UT South	AES Clean Power (sPower LLC)	Glen Canyon A	PPA	95	0	0	12/31/2023			
UT North	DESRI	Rocket II	PPA	45	12.5	4	12/31/2023			

* Net Delivery Cost is net of value of storage, if applicable

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REDACTED

West Bids and Ranking

- All west-side bids are for solar or solar with battery storage
- Bids are in Central Oregon, Southern Oregon, and Yakima, Washington
- The Indicative Generation Value is based on hourly locational prices from June 2020 used in price scoring for the initial shortlist, which is mainly useful for comparing resources of the same type and location
- Net Benefit/(Cost) reflects the final bids and network upgrade costs

Location	Company	Project / Facility Name	Contract Type	Generating Asset (MW)	BESS Capacity (MW)	BESS Duration (Hours)	FSL Proposed COD	Net Delivery Cost* ($/MWh)	Indicative Generation Value ($/MWh)	Net Benefit / (Cost)
[redacted]										
South OR	ecoplexus	Hayden Mountain 2	PPA	160	40	4	12/31/2023			
South OR	ecoplexus	Hamaker	PPA	50	12.5	4	12/31/2023			
[redacted]										

* Net Delivery Cost is net of value of storage, if applicable

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BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

Docket No. UM 2032

In the matter of

PUBLIC UTILITY COMMISSION OF OREGON,

Investigation into the Treatment of Network Upgrade Costs for Qualifying Facilities

EXHIBIT NEWSUN/603

PacifiCorp "Cluster Study #2" Interconnection Queue

as of 5/23/22 (accessed on 6/3/22).

PacifiCorp Generation Interconnection Requests As of: 5/23/22

Interconnect Request Information									Max MW Output		Location of Generating Facility				In-Service Date (Commercial Operations)							
Generation Interconnection Cluster Number	Cluster	Cluster Area	Request Date	Request Status	Company Name	Service Type	Application Rules	Qualifying Facility Status	S	W	County	ST	Region	Point of Interconnection	Customer Requested Commercial Operations Date	Agreed to Commercial Operations Date	Type	Cluster Study	Facilities Study	Schedule Deviation	Request Status Explanation
C2-01	Cluster 2	CA4	4/1/22	In Progress	PacifiCorp	NR/ER	LGI	No	199.9	199.9	Sweetwater	WY	PACE	Anticline substation	12/15/26	TBD	Battery Storage				0
C2-02	Cluster 2	CA9	4/1/22	In Progress	PacifiCorp	NR/ER	LGI	No	199.9	199.9	Juab	UT	PACE	Clover substatin	12/15/26	TBD	Battery Storage				0
C2-03	Cluster 2	CA2	4/1/22	In Progress	PacifiCorp	NR/ER	LGI	No	199.9	199.9	Carbon	WY	PACE	Aeolus substation	12/15/26	TBD	Battery Storage				0
C2-04	Cluster 2	CA20	4/1/22	In Progress	PacifiCorp	NR/ER	LGI	No	199.9	199.9	Klamath	OR	PACW	Snow Goose substation	12/15/26	TBD	Battery Storage				0
C2-05	Cluster 2	CA9	4/1/22	In Progress	PacifiCorp	NR/ER	LGI	No	199.9	199.9	Juab	UT	PACE	Mona substation	12/15/26	TBD	Battery Storage				0
C2-06	Cluster 2	CA18	4/1/22	In Progress		NR	OLGI	Yes	80	80	Crook	OR	PACW	Ponderosa substation	5/30/26	TBD	Solar & Battery Storage				0
C2-07	Cluster 2	CA18	4/1/22	In Progress		NR	OLGI	Yes	80	80	Crook	OR	PACW	Baldwin Road-Ponderosa transmission line	5/30/26	TBD	Solar & Battery Storage				0
C2-08	Cluster 2	CA18	4/1/22	In Progress		NR	OLGI	Yes	80	80	Crook	OR	PACW	Ponderosa substation	5/30/26	TBD	Solar & Battery Storage				0
C2-09	Cluster 2	CA18	4/1/22	In Progress		NR	OLGI	Yes	80	80	Crook	OR	PACW	Ponderosa substation	5/30/26	TBD	Solar & Battery Storage				0
C2-10	Cluster 2	CA8	4/5/22	In Progress		NR/ER	LGI	No	500	500	Salt Lake	UT	PACE	Oquirrh substation	12/31/27	TBD	Battery Storage				0
C2-11	Cluster 2	CA2	4/6/22	In Progress	PacifiCorp	ER	LGI	No	26	26	Carbon	WY	PACE	Shirley Basin substation	3/1/23	TBD	Wind				0
C2-12	Cluster 2	CA1	4/6/22	In Progress	PacifiCorp	ER	LGI	No	42	42	Converse	WY	PACE	Windstar substation	3/1/23	TBD	Wind				0
C2-13	Cluster 2	CA2	4/6/22	In Progress	PacifiCorp	ER	LGI	No	30	30	Carbon	WY	PACE	Foote Creek substation	3/1/23	TBD	Wind				0
C2-14	Cluster 2	CA2	4/6/22	In Progress	PacifiCorp	ER	LGI	No	28	28	Carbon	WY	PACE	Freezeout substation	3/1/23	TBD	Wind				0
C2-15	Cluster 2	CA2	4/6/22	In Progress	PacifiCorp	ER	LGI	No	6.6	6.6	Carbon	WY	PACE	Foote Creek substation	3/1/23	TBD	Wind				0
C2-16	Cluster 2	CA12	4/7/22	In Progress	PacifiCorp	NR/ER	LGI	No	300	300	Carbon	UT	PACE	Huntington-Spanish Fork transmission line	6/1/28	TBD	Pump Storage				0
C2-17	Cluster 2	CA1	4/7/22	In Progress	PacifiCorp	NR/ER	LGI	No	500	500	Converse	WY	PACE	Dave Johnston substation	6/1/28	TBD	Pump Storage				0
C2-18	Cluster 2	CA20	4/7/22	In Progress	PacifiCorp	NR/ER	LGI	No	500	500	Klamath	OR	PACW	Malin-Summer Lake transmission line	6/1/28	TBD	Pump Storage				0
C2-19	Cluster 2	CA4	4/7/22	In Progress	PacifiCorp	NR/ER	LGI	No	1800	1800	Kootenai	ID	PACE	Bridger-Populas transmission line	6/1/28	TBD	Pump Storage				0
C2-20	Cluster 2	CA12	4/7/22	In Progress	PacifiCorp	NR/ER	LGI	No	500	500	Sanpete	UT	PACE	Camp Williams-Four Corners transmission line	6/1/28	TBD	Pump Storage				0
C2-21	Cluster 2	CA9	4/7/22	In Progress	PacifiCorp	NR/ER	LGI	No	500	500	Juab	UT	PACE	Mona substation	6/1/28	TBD	Pump Storage				0
C2-22	Cluster 2	CA12	4/7/22	In Progress	PacifiCorp	NR/ER	LGI	No	500	500	Emery	UT	PACE	Emery substation	6/1/28	TBD	Pump Storage				0
C2-23	Cluster 2	CA1	4/7/22	In Progress	PacifiCorp	NR/ER	LGI	No	500	500	Converse	WY	PACE	Amasa substation	6/1/28	TBD	Pump Storage				0
C2-24	Cluster 2	CA15	4/7/22	In Progress	PacifiCorp	NR/ER	LGI	No	500	500	Grant	WA	PACW	Walla Walla-Wanapum transmission line	6/1/28	TBD	Pump Storage				0
C2-25	Cluster 2	CA4	4/7/22	In Progress	PacifiCorp	NR/ER	LGI	No	500	500	Lincoln	WY	PACE	Bridger-Populas transmission line	6/1/28	TBD	Pump Storage				0
C2-26	Cluster 2	CA20	4/7/22	In Progress	PacifiCorp	NR/ER	LGI	No	500	500	Lake	OR	PACW	Malin-Summer Lake transmission line	6/1/28	TBD	Pump Storage				0
C2-27	Cluster 2	CA24	4/18/22	In Progress		NR/ER	LGI	No	100	100	Multnomah	OR	PACW	Troutdale substation	7/1/24	TBD	Battery Storage				0
C2-28	Cluster 2	CA8	4/18/22	In Progress		NR/ER	LGI	No	199	199	Salt Lake	UT	PACE	Terminal substation	7/1/24	TBD	Battery Storage				0
C2-29	Cluster 2	CA20	4/19/22	In Progress		NR/ER	LGI	No	340	340	Klamath	OR	PACW	Malin substation	12/31/25	TBD	Solar & Battery Storage				0
C2-30	Cluster 2	CA7	4/19/22	In Progress		NR/ER	LGI	No	199	199	Box Elder	UT	PACE	Bridgerland substation	12/31/25	TBD	Solar & Battery Storage				0
C2-31	Cluster 2	CA23	4/19/22	In Progress		NR/ER	LGI	No	199	199	Linn	OR	PACW	Fry substation	12/31/25	TBD	Solar & Battery Storage				0
C2-32	Cluster 2	CA7	4/26/22	In Progress		NR/ER	LGI	No	500	500	Lincoln	WY	PACE	Naughton substation	11/1/30	TBD	Nuclear				0
C2-33	Cluster 2	CA16	4/27/22	In Progress		NR/ER	LGI	No	94	94	Yakima	WA	PACW	Midway-Union Gap transmission line	11/1/26	TBD	Solar & Battery Storage				0
C2-34	Cluster 2	CA2	4/27/22	In Progress		NR/ER	LGI	No	506	506	Carbon	WY	PACE	Heward substation	12/31/24	TBD	Wind				0
C2-35	Cluster 2	CA16	4/27/22	In Progress		NR/ER	LGI	No	80	80	Yakima	WA	PACW	Midway-Union Gap transmission line	12/31/25	TBD	Solar & Battery Storage				0
C2-36	Cluster 2	CA9	4/28/22	In Progress		NR/ER	LGI	No	300	300	Utah	UT	PACE	Mercer substation	12/31/25	TBD	Solar & Battery Storage				0
C2-37	Cluster 2	CA9	4/28/22	In Progress		NR/ER	LGI	No	275	275	Juab	UT	PACE	Mona substation	12/31/25	TBD	Solar & Battery Storage				0
C2-38	Cluster 2	CA4	4/28/22	In Progress		NR/ER	LGI	No	300	300	Sweetwater	WY	PACE	Bridger substation	12/31/25	TBD	Solar & Battery Storage				0
C2-39	Cluster 2	CA14	4/28/22	In Progress		NR/ER	LGI	No	300	300	Iron	UT	PACE	Three Peaks substation	12/31/25	TBD	Solar & Battery Storage				0
C2-40	Cluster 2	CA20	4/28/22	In Progress		NR/ER	LGI	No	500	500	Klamath	OR	PACW	Klamath Falls-Lone Pine transmission line	12/31/25	TBD	Solar & Battery Storage				0
C2-41	Cluster 2	CA15	4/28/22	In Progress		NR/ER	LGI	No	400	400	Asotin	WA	PACW	Talbot substation	12/31/25	TBD	Solar & Battery Storage				0
C2-42	Cluster 2	CA15	4/28/22	In Progress		NR/ER	LGI	No	100	100	Umatilla	OR	PACW	Wallula substation	12/31/25	TBD	Solar & Battery Storage				0
C2-43	Cluster 2	CA4	4/28/22	In Progress		NR/ER	LGI	No	600	600	Sweetwater	WY	PACE	Bridger substation	12/31/25	TBD	Solar & Battery Storage				0
C2-44	Cluster 2	CA20	4/28/22	In Progress		NR/ER	LGI	No	300	300	Klamath	OR	PACW	Chiloquin-LaPine transmission line	12/31/25	TBD	Solar & Battery Storage				0
C2-45	Cluster 2	CA5	4/28/22	In Progress		NR/ER	LGI	No	600	600	Power	ID	PACE	Borah substation	12/31/25	TBD	Solar & Battery Storage				0
C2-46	Cluster 2	CA2	4/28/22	In Progress		NR/ER	LGI	No	600	600	Laramie	WY	PACE	Aeolus substation	12/31/25	TBD	Solar & Battery Storage				0
C2-47	Cluster 2	CA3	4/28/22	In Progress		NR/ER	LGI	No	160	160	Laramie	WY	PACE	Fort Sanders substation	12/31/25	TBD	Solar & Battery Storage				0
C2-48	Cluster 2	CA7	5/3/22	In Progress	PacifiCorp	NR/ER	LGI	No	48	48	Lincoln	WY	PACE	Naughton substation	5/18/22	TBD	Natural Gas				0
C2-49	Cluster 2	CA1	5/5/22	In Progress		NR/ER	LGI	No	150	150	Converse	WY	PACE	Amasa substation	12/1/26	TBD	Wind				0
C2-50	Cluster 2	CA24	5/5/22	In Progress	PacifiCorp	NR/ER	LGI	No	300	300	Skamania	WA	PACW	Swift substation	6/1/28	TBD	Pump Storage				0
C2-51	Cluster 2	CA24	5/5/22	In Progress	PacifiCorp	NR/ER	LGI	No	300	300	Clark	WA	PACW	Yale substation	6/1/28	TBD	Pump Storage				0
C2-52	Cluster 2	CA1	5/6/22	In Progress		NR/ER	LGI	No	176	176	Natrona	WY	PACE	Casper-Riverton transmission line	11/30/25	TBD	Solar & Battery Storage				0
C2-53	Cluster 2	CA1	5/6/22	In Progress		NR/ER	LGI	No	199.9	199.9	Campbell	WY	PACE	Pumpkin Butte-Wyodak transmission line	11/30/25	TBD	Wind				0
C2-54	Cluster 2	CA4	5/6/22	In Progress		NR/ER	LGI	No	199.9	199.9	Lincoln	WY	PACE	Kinport-Midpoint transmission line	11/30/25	TBD	Solar & Battery Storage				0
C2-55	Cluster 2	CA7	5/6/22	In Progress		NR	LGI	No	150	150	Lincoln	WY	PACE	Naughton-Treasureton transmission line	10/31/24	TBD	Battery Storage				0
C2-56	Cluster 2	CA9	5/6/22	In Progress		NR/ER	LGI	No	199	199	Utah	UT	PACE	Clover-Limber transmission line	12/1/26	TBD	Solar & Battery Storage				0
C2-57	Cluster 2	CA9	5/6/22	In Progress		NR/ER	LGI	No	199	199	Utah	UT	PACE	Clover-Limber transmission line	12/1/26	TBD	Solar & Battery Storage				0
C2-58	Cluster 2	CA9	5/6/22	In Progress		NR/ER	LGI	No	199	199	Utah	UT	PACE	Camp Williams-Mercer #2 transmission line	12/1/26	TBD	Solar & Battery Storage				0
C2-59	Cluster 2	CA9	5/6/22	In Progress		NR/ER	LGI	No	199	199	Utah	UT	PACE	Camp Williams-Mercer #2 transmission line	12/1/26	TBD	Solar & Battery Storage				0
C2-60	Cluster 2	CA6	5/10/22	In Progress		NR/ER	LGI	No	199	199	Jefferson	ID	PACE	Jefferson substation	8/31/25	TBD	Solar & Battery Storage				0
C2-61	Cluster 2	CA14	5/10/22	In Progress		NR/ER	LGI	No	199	199	Beaver	UT	PACE	Red Butte-Sigurd #2 transmission line	8/31/25	TBD	Solar & Battery Storage				0
C2-62	Cluster 2	CA12	5/10/22	In Progress		NR	LGI	No	150	150	San Juan	UT	PACE	Abajo-Pinto transmission line	12/15/25	TBD	Solar				0
C2-63	Cluster 2	CA7	5/10/22	In Progress		NR/ER	LGI	No	220	220	Uinta	WY	PACE	Railroad substation	9/1/26	TBD	Wind				0
C2-64	Cluster 2	CA12	5/10/22	In Progress		NR/ER	LGI	No	150	150	Emery	UT	PACE	Emery substation	6/1/24	TBD	Solar & Battery Storage				0
C2-65	Cluster 2	CA8	5/10/22	In Progress		NR/ER	LGI	No	150	150	Salt Lake	UT	PACE	Hoggard substation	6/1/24	TBD	Battery Storage				0
C2-66	Cluster 2	CA8	5/10/22	In Progress		NR/ER	LGI	No	150	150	Weber	UT	PACE	West Ogden substation	6/1/24	TBD	Battery Storage				0
C2-67	Cluster 2	CA8	5/10/22	In Progress		NR/ER	LGI	No	150	150	Salt Lake	UT	PACE	Parkway substation	6/1/24	TBD	Battery Storage				0

C2-68	Cluster 2	CA4	5/10/22	In Progress		NR/ER	LGI	No	300	300	Bannock	ID	PACE	Populus substation	6/1/24	TBD	Solar & Battery Storage				0
C2-69	Cluster 2	CA8	5/10/22	In Progress		NR/ER	LGI	No	150	150	Davis	UT	PACE	Syracuse substation	6/1/24	TBD	Battery Storage				0
C2-70	Cluster 2	CA14	5/10/22	In Progress		NR/ER	LGI	No	199	199	Beaver	UT	PACE	Red Butte-Sigurd #2 transmission line	12/31/25	TBD	Solar & Battery Storage				0
C2-71	Cluster 2	CA14	5/10/22	In Progress		NR/ER	LGI	No	199	199	Beaver	UT	PACE	Red Butte-Sigurd #2 transmission line	12/31/25	TBD	Solar & Battery Storage				0
C2-72	Cluster 2	CA9	5/10/22	In Progress		NR/ER	LGI	No	300	300	Tooele	UT	PACE	Limber substation	12/31/25	TBD	Solar & Battery Storage				0
C2-73	Cluster 2	CA6	5/11/22	In Progress		NR/ER	LGI	No	350	350	Wheatland	MT	PACE	Goshen-Rigby transmission line	12/31/27	TBD	Solar & Battery Storage				0
C2-74	Cluster 2	CA9	5/11/22	In Progress		NR/ER	LGI	No	199	199	Utah	UT	PACE	Camp Williams-Mona #1 transmission line	12/31/27	TBD	Solar & Battery Storage				0
C2-75	Cluster 2	CA9	5/11/22	In Progress		NR/ER	LGI	No	199	199	Tooele	UT	PACE	Clover-Limber transmission line	12/31/27	TBD	Solar & Battery Storage				0
C2-76	Cluster 2	CA6	5/11/22	In Progress		NR/ER	LGI	No	199	199	Bingham	ID	PACE	Goshen substation	12/31/27	TBD	Solar & Battery Storage				0
C2-77	Cluster 2	CA7	5/11/22	In Progress		NR/ER	LGI	No	100	100	Box Elder	UT	PACE	Nucor-Wheelon transmission line	12/31/27	TBD	Solar & Battery Storage				0
C2-78	Cluster 2	CA14	5/11/22	In Progress		NR/ER	LGI	No	456	456	Millard	UT	PACE	Red Butte-Sigurd #2 transmission line	12/31/25	TBD	Wind				0
C2-79	Cluster 2	CA23	5/11/22	In Progress		NR/ER	LGI	No	199	199	Linn	OR	PACW	Murder Creek substation	12/31/25	TBD	Battery Storage				0
C2-80	Cluster 2	CA16	5/11/22	In Progress		NR/ER	LGI	No	199	199	Yakima	WA	PACW	Midway-Union Gap transmission line	12/31/25	TBD	Wind & Battery Storage				0
C2-81	Cluster 2	CA6	5/11/22	In Progress		NR/ER	LGI	No	80	80	Bingham	ID	PACE	Basalt substation	12/31/25	TBD	Solar & Battery Storage				0
C2-82	Cluster 2	CA4	5/12/22	In Progress		NR/ER	LGI	No	300	300	Bannock	ID	PACE	Populus substation	12/31/26	TBD	Solar & Battery Storage				0
C2-83	Cluster 2	CA5	5/12/22	In Progress		NR/ER	LGI	No	300	300	Minidoka	ID	PACE	Adelaide substation	12/31/26	TBD	Solar & Battery Storage				0
C2-84	Cluster 2	CA7	5/12/22	In Progress		NR/ER	LGI	No	150	150	Box Elder	UT	PACE	Nucor-Wheelon transmission line	6/30/25	TBD	Solar & Battery Storage				0
C2-85	Cluster 2	CA22	5/12/22	In Progress		NR	ORSGI	Yes	3	3	Linn	OR	PACW	Distribution circuit 4M851 out of Calapooya substation	12/31/24	TBD	Solar				0
C2-86	Cluster 2	CA22	5/12/22	In Progress		NR	ORSGI	Yes	3	3	Linn	OR	PACW	Distribution circuit 4M851 out of Calapooya substation	12/31/24	TBD	Solar & Battery Storage				0
C2-87	Cluster 2	CA22	5/12/22	In Progress		NR	ORSGI	Yes	3	3	Linn	OR	PACW	Distribution circuit 4M17 out of Brownsville substation	12/31/24	TBD	Solar				0
C2-88	Cluster 2	CA22	5/12/22	In Progress		NR	ORSGI	Yes	3	3	Linn	OR	PACW	Distribution circuit 4M17 out of Brownsville substation	12/31/24	TBD	Solar & Battery Storage				0
C2-89	Cluster 2	CA17	5/12/22	In Progress		NR	ORSGI	Yes	3	3	Gilliam	OR	PACW	Distribution circuit 5K40 out of Blalock substation	12/31/24	TBD	Solar				0
C2-90	Cluster 2	CA17	5/12/22	In Progress		NR	ORSGI	Yes	3	3	Gilliam	OR	PACW	Distribution circuit 5K40 out of Blalock substation	12/31/24	TBD	Solar & Battery Storage				0
C2-91	Cluster 2	CA6	5/12/22	In Progress		NR/ER	LGI	No	153	153	Bonneville	ID	PACE	Bonneville-Goshen transmission line	12/31/24	TBD	Wind				0
C2-92	Cluster 2	CA6	5/12/22	In Progress		NR/ER	LGI	No	206	206	Bingham	ID	PACE	Antelope-Goshen transmission line	12/31/24	TBD	Wind				0
C2-93	Cluster 2	CA12	5/13/22	In Progress	PacifiCorp	NR/ER	LGI	No	199.9	199.9	Emery	UT	PACE	Emery substation	5/31/26	TBD	Battery Storage				0
C2-94	Cluster 2	CA12	5/13/22	In Progress	PacifiCorp	NR/ER	LGI	No	199.9	199.9	Emery	UT	PACE	Emery substation	9/30/30	TBD	Battery Storage				0
C2-95	Cluster 2	CA12	5/13/22	In Progress	PacifiCorp	NR/ER	LGI	No	199.9	199.9	Emery	UT	PACE	Huntington substation	5/31/26	TBD	Battery Storage				0
C2-96	Cluster 2	CA12	5/13/22	In Progress	PacifiCorp	NR/ER	LGI	No	199.9	199.9	Emery	UT	PACE	Huntington substation	9/30/30	TBD	Battery Storage				0
C2-97	Cluster 2	CA7	5/13/22	In Progress		NR/ER	LGI	No	300	300	Rich	UT	PACE	Birch Creek substation	12/31/25	TBD	Battery Storage				0
C2-98	Cluster 2	CA4	5/13/22	In Progress		NR/ER	LGI	No	350	350	Bannock	ID	PACE	Populus substation	12/31/25	TBD	Battery Storage				0
C2-99	Cluster 2	CA12	5/13/22	In Progress		NR/ER	LGI	No	166	166	Emery	UT	PACE	Emery substation	12/31/26	TBD	Solar & Battery Storage				0
C2-100	Cluster 2	CA22	5/13/22	In Progress		NR	ORSGI	Yes	3	3	Linn	OR	PACW	Distribution circuit 5M126 out of Scio substation	12/31/24	TBD	Solar				0
C2-101	Cluster 2	CA22	5/13/22	In Progress		NR	ORSGI	Yes	3	3	Linn	OR	PACW	Distribution circuit 5M126 out of Scio substation	12/31/24	TBD	Solar & Battery Storage				0
C2-102	Cluster 2	CA17	5/13/22	In Progress		NR	ORSGI	Yes	3	3	Sherman	OR	PACW	Distribution circuit 4K1 out of Gordon Hollow substatio	12/31/24	TBD	Solar				0
C2-103	Cluster 2	CA17	5/13/22	In Progress		NR	ORSGI	Yes	3	3	Sherman	OR	PACW	Distribution circuit 4K1 out of Gordon Hollow substatio	12/31/24	TBD	Solar & Battery Storage				0
C2-104	Cluster 2	CA4	5/13/22	In Progress		NR/ER	LGI	No	600	600	Lincoln	WY	PACE	Jim Bridger-Populas #1 transmission line	12/31/25	TBD	Wind				0
C2-105	Cluster 2	CA7	5/13/22	In Progress		NR/ER	LGI	No	300	300	Lincoln	WY	PACE	Monument substation	12/31/25	TBD	Wind				0
C2-106	Cluster 2	CA7	5/13/22	In Progress		NR/ER	LGI	No	400	400	Lincoln	WY	PACE	Naughton Ben Lomond #2 transmission line	12/31/25	TBD	Wind				0
C2-107	Cluster 2	CA4	5/13/22	In Progress		NR/ER	LGI	No	500	500	Sweetwater	WY	PACE	Bridger substation	12/31/25	TBD	Wind				0
C2-108	Cluster 2	CA4	5/13/22	In Progress		NR/ER	LGI	No	500	500	Sweetwater	WY	PACE	Bridger substation	12/31/25	TBD	Wind				0
C2-109	Cluster 2	CA9	5/13/22	In Progress		NR/ER	LGI	No	199	199	Utah	UT	PACE	Mercer substation	12/31/25	TBD	Battery Storage				0
C2-110	Cluster 2	CA9	5/13/22	In Progress		NR/ER	LGI	No	199	199	Utah	UT	PACE	Mercer substation	12/31/25	TBD	Battery Storage				0
C2-111	Cluster 2	CA1	5/13/22	In Progress		NR/ER	LGI	No	199	199	Natrona	WY	PACE	Casper substation	12/21/25	TBD	Solar				0
C2-112	Cluster 2	CA9	5/13/22	In Progress		NR/ER	LGI	No	199	199	Utah	UT	PACE	Mercer substation	12/21/25	TBD	Solar				0
C2-113	Cluster 2	CA12	5/13/22	In Progress		NR/ER	LGI	No	100	100	Emery	UT	PACE	Helper-Moab transmission line	12/31/25	TBD	Solar				0
C2-114	Cluster 2	CA18	5/13/22	In Progress		NR/ER	LGI	No	199	199	Crook	OR	PACW	Ponderosa substation	12/1/26	TBD	Solar & Battery Storage				0
C2-115	Cluster 2	CA9	5/13/22	In Progress		NR/ER	LGI	No	199	199	Utah	UT	PACE	Mercer-Mona #1	12/1/26	TBD	Solar & Battery Storage				0
C2-116	Cluster 2	CA2	5/13/22	In Progress		NR/ER	LGI	No	199	199	Carbon	WY	PACE	Shirley Basin substation	12/1/26	TBD	Solar & Battery Storage				0
C2-117	Cluster 2	CA18	5/13/22	In Progress		NR/ER	LGI	No	199	199	Crook	OR	PACW	Corral substation	12/1/26	TBD	Solar & Battery Storage				0
C2-118	Cluster 2	CA1	5/13/22	In Progress		NR/ER	LGI	No	199	199	Natrona	WY	PACE	Casper substation	12/1/26	TBD	Solar & Battery Storage				0
C2-119	Cluster 2	CA12	5/13/22	In Progress		NR	LGI	No	199	199	San Juan	UT	PACE	Camp Williams-Four Corners transmission line	12/15/25	TBD	Solar				0
C2-120	Cluster 2	CA11	5/13/22	In Progress		ER	SGI	No	20	20	Utah	UT	PACE	Santaquin-Nebo #2 Burgin Tap transmission line	12/1/25	TBD	Solar				0
C2-121	Cluster 2	CA7	5/13/22	In Progress		ER	SGI	No	20	20	Box Elder	UT	PACE	Cutler-El Monte Williad Pump Tap transmission line	12/1/25	TBD	Solar				0
C2-122	Cluster 2	CA7	5/13/22	In Progress		ER	SGI	No	20	20	Box Elder	UT	PACE	Ben Lomond-Bridgerland transmission line	12/1/25	TBD	Solar				0
C2-123	Cluster 2	CA6	5/13/22	In Progress		NR/ER	LGI	No	199	199	Jefferson	ID	PACE	Jefferson substation	12/1/25	TBD	Solar & Battery Storage				0
C2-124	Cluster 2	CA13	5/13/22	In Progress		NR/ER	LGI	No	100	100	Millard	UT	PACE	Pavant substation	6/1/25	TBD	Solar & Battery Storage				0
C2-125	Cluster 2	CA23	5/13/22	In Progress		NR/ER	LGI	No	100	100	Marion	OR	PACW	Parrish Gap substation	6/1/25	TBD	Solar & Battery Storage				0
C2-126	Cluster 2	CA8	5/13/22	In Progress		NR/ER	LGI	No	100	100	Salt Lake	UT	PACE	Terminal substation	6/1/25	TBD	Solar & Battery Storage				0
C2-127	Cluster 2	CA16	5/13/22	In Progress		NR/ER	LGI	No	100	100	Yakima	WA	PACW	Grandview substation	6/1/25	TBD	Solar & Battery Storage				0
C2-128	Cluster 2	CA16	5/13/22	In Progress		NR/ER	LGI	No	100	100	Yakima	WA	PACW	Pomona Heights substation	6/1/25	TBD	Solar & Battery Storage				0
C2-129	Cluster 2	CA12	5/13/22	In Progress		NR/ER	LGI	No	57.5	57.5	San Juan	UT	PACE	Abajo substation	12/1/26	TBD	Solar & Battery Storage				0
C2-130	Cluster 2	CA7	5/14/22	In Progress		NR/ER	LGI	No	199	199	Box Elder	UT	PACE	Nucor-Wheelon transmission line	12/1/26	TBD	Solar & Battery Storage				0
C2-131	Cluster 2	CA12	5/14/22	In Progress		NR/ER	LGI	No	199	199	Emery	UT	PACE	Camp Williams-Four Corners transmission line	12/1/26	TBD	Solar & Battery Storage				0
C2-132	Cluster 2	CA9	5/14/22	In Progress		NR/ER	LGI	No	100	100	Utah	UT	PACE	Camp Williams-Mona #1 transmission line	12/1/26	TBD	Solar & Battery Storage				0
C2-133	Cluster 2	CA9	5/14/22	In Progress		NR/ER	LGI	No	100	100	Juab	UT	PACE	Mona substation	12/1/26	TBD	Battery Storage				0
C2-134	Cluster 2	CA13	5/14/22	In Progress		NR/ER	LGI	No	57.5	57.5	Millard	UT	PACE	Cricket Mountain substation	12/1/26	TBD	Solar & Battery Storage				0
C2-135	Cluster 2	CA18	5/14/22	In Progress		NR/ER	LGI	No	150	150	Crook	OR	PACW	Corral substation	12/1/26	TBD	Solar & Battery Storage				0
C2-136	Cluster 2	CA14	5/14/22	In Progress		NR/ER	LGI	No	50	50	Iron	UT	PACE	Pintura substation	12/1/26	TBD	Solar & Battery Storage				0
C2-137	Cluster 2	CA14	5/14/22	In Progress		NR/ER	LGI	No	49	49	Iron	UT	PACE	Pintura substation	12/1/26	TBD	Solar & Battery Storage				0
C2-138	Cluster 2	CA8	5/14/22	In Progress		NR/ER	LGI	No	100	100	Salt Lake	UT	PACE	Terminal substation	12/1/26	TBD	Battery Storage				0
C2-139	Cluster 2	CA7	5/14/22	In Progress		NR/ER	LGI	No	150	150	Sweetwater	WY	PACE	Blue Rim-South Trona transmission line	12/1/26	TBD	Solar & Battery Storage				0
C2-140	Cluster 2	CA20	5/14/22	In Progress		NR/ER	LGI	No	199	199	Klamath	OR	PACW	Klamath Falls-Yamsay transmission line	12/1/26	TBD	Solar & Battery Storage				0
C2-141	Cluster 2	CA15	5/14/22	In Progress		NR/ER	LGI	No	199	199	Walla Walla	WA	PACW	Walla Walla-Wanapum transmission line	12/1/26	TBD	Solar & Battery Storage				0
C2-142	Cluster 2	CA9	5/14/22	In Progress		NR/ER	LGI	No	325	325	Utah	UT	PACE	Camp Williams-Mona #2 transmission line	12/31/25	TBD	Solar & Battery Storage				0
C2-143	Cluster 2	CA7	5/14/22	In Progress		NR/ER	LGI	No	90	90	Unita	WY	PACE	Thief Creek Substation	12/31/26	TBD	Wind				0
C2-144	Cluster 2	CA19	5/15/22	In Progress		NR/ER	LGI	No	200	200	Lake	OR	PACW	Summer Lake substation	6/1/27	TBD	Solar & Battery Storage				0
C2-145	Cluster 2	CA19	5/15/22	In Progress		NR/ER	LGI	No	200	200	Lake	OR	PACW	Summer Lake substation	6/1/27	TBD	Solar & Battery Storage				0

C2-146	Cluster 2	CA19	5/15/22	In Progress		NR/ER	LGI	No	100	100	Lake	OR	PACW	Summer Lake substation	6/1/27	TBD	Solar & Battery Storage				0
C2-147	Cluster 2	CA18	5/15/22	In Progress		NR	LGI	No	199.9	199.9	Crook	OR	PACW	Corral substation	5/31/25	TBD	Solar & Battery Storage				0
C2-148	Cluster 2	CA12	5/15/22	In Progress		NR/ER	LGI	No	199.9	199.9	San Juan	UT	PACE	Pinto substation	5/31/25	TBD	Solar & Battery Storage				0
C2-149	Cluster 2	CA9	5/15/22	In Progress		NR/ER	LGI	No	199.9	199.9	Tooele	UT	PACE	Limber substation	5/31/25	TBD	Solar & Battery Storage				0
C2-150	Cluster 2	CA20	5/15/22	In Progress		NR	LGI	No	50	50	Lake	OR	PACW	Bullard substation	12/1/26	TBD	Solar & Battery Storage				0
C2-151	Cluster 2	CA23	5/15/22	In Progress		NR/ER	LGI	No	200	200	Linn	OR	PACW	Diamond Hill substation	12/31/25	TBD	Wind				0
C2-152	Cluster 2	CA19	5/15/22	In Progress		NR/ER	LGI	No	320	320	Lake	OR	PACW	Burns-Summer Lake transmission line	5/15/28	TBD	Solar & Battery Storage				0
C2-153	Cluster 2	CA14	5/15/22	In Progress		NR/ER	LGI	No	200	200	Iron	UT	PACE	Three Peaks substation	12/31/25	TBD	Solar & Battery Storage				0
C2-154	Cluster 2	CA9	5/15/22	In Progress		NR/ER	LGI	No	400	400	Utah	UT	PACE	Clover-Limber transmission line	12/31/25	TBD	Solar & Battery Storage				0
C2-155	Cluster 2	CA7	5/15/22	In Progress		NR/ER	LGI	No	199.9	199.9	Uinta	WY	PACE	Muddy Creek-Mountain Wind transmission line	12/31/26	TBD	Solar & Battery Storage				0
C2-156	Cluster 2	CA23	5/15/22	In Progress		NR/ER	LGI	No	175	175	Linn	OR	PACW	Alvey-Fry transmission line	12/1/26	TBD	Solar				0
C2-157	Cluster 2	CA15	5/15/22	In Progress		NR/ER	LGI	No	150	150	Walla Walla	WA	PACW	Wallula substation	12/31/25	TBD	Battery Storage				0
C2-158	Cluster 2	CA18	5/15/22	In Progress		NR/ER	LGI	No	199	199	Crook	OR	PACW	Corral substation	12/31/26	TBD	Solar & Battery Storage				0
C2-159	Cluster 2	CA18	5/15/22	In Progress		NR/ER	LGI	No	199	199	Crook	OR	PACW	Corral substation	12/31/27	TBD	Battery Storage				0
C2-160	Cluster 2	CA14	5/15/22	In Progress		NR/ER	LGI	No	115	115	Iron	UT	PACE	Cameron-Parowan transmission line	12/31/26	TBD	Solar & Battery Storage				0
C2-161	Cluster 2	CA18	5/15/22	In Progress		NR/ER	LGI	No	100	100	Crook	OR	PACW	Ponderosa substation	6/1/25	TBD	Solar & Battery Storage				0
C2-162	Cluster 2	CA16	5/15/22	In Progress		NR/ER	LGI	No	100	100	Yakima	WA	PACW	Tieton substation	11/30/24	TBD	Solar & Battery Storage				0
C2-163	Cluster 2	CA2	5/15/22	In Progress		ER	LGI	No	220	220	Moffat	CO	PACE	Little Snake substation	6/30/25	TBD	Solar & Battery Storage				0
C2-164	Cluster 2	CA8	5/15/22	In Progress		NR/ER	LGI	No	110	110	Salt Lake	UT	PACE	Lee Creek substation	12/31/25	TBD	Battery Storage				0
C2-165	Cluster 2	CA12	5/15/22	In Progress		NR/ER	LGI	No	199.5	199.5	San Juan	UT	PACE	Camp Williams-Four Corners transmission line	9/9/26	TBD	Solar & Battery Storage				0
C2-166	Cluster 2	CA6	5/15/22	In Progress		NR/ER	LGI	No	107	107	Bonneville	ID	PACE	Goshen-Rigby transmission line	12/31/25	TBD	Solar				0
C2-167	Cluster 2	CA12	5/15/22	In Progress	PacifiCorp	NR/ER	LGI	No	125	125	Emery	UT	PACE	Huntington-Pinto transmission line	5/1/26	TBD	Solar & Battery Storage				0
C2-168	Cluster 2	CA12	5/15/22	In Progress	PacifiCorp	NR/ER	LGI	No	70	70	Emery	UT	PACE	Emery substation	5/1/26	TBD	Solar & Battery Storage				0
C2-169	Cluster 2	CA8	5/15/22	In Progress	PacifiCorp	NR/ER	LGI	No	100	100	Tooele	UT	PACE	Terminal-Rowley transmission line	5/1/26	TBD	Solar & Battery Storage				0
C2-170	Cluster 2	CA19	5/15/22	In Progress		NR/ER	LGI	No	199	199	Lake	OR	PACW	Summer Lake substation	12/31/26	TBD	Battery Storage				0
C2-171	Cluster 2	CA19	5/15/22	In Progress		NR/ER	LGI	No	199	199	Lake	OR	PACW	Summer Lake substation	12/31/27	TBD	Battery Storage				0
C2-172	Cluster 2	CA19	5/15/22	In Progress		NR/ER	LGI	No	199	199	Lake	OR	PACW	Summer Lake substation	12/31/26	TBD	Solar & Battery Storage				0
C2-173	Cluster 2	CA19	5/15/22	In Progress		NR/ER	LGI	No	199	199	Lake	OR	PACW	Summer Lake substation	12/31/26	TBD	Solar & Battery Storage				0
C2-174	Cluster 2	CA16	5/15/22	In Progress		NR/ER	LGI	No	270	270	Benton	WA	PACW	Midway-Union Gap transmission line	10/31/25	TBD	Solar & Battery Storage				0
C2-175	Cluster 2	CA15	5/15/22	In Progress		NR/ER	LGI	No	80	80	Umatilla	OR	PACW	Roundup substation	6/15/26	TBD	Solar & Battery Storage				0
C2-176	Cluster 2	CA15	5/15/22	In Progress		NR/ER	LGI	No	45	45	Umatilla	OR	PACW	Pendleton-McNary transmission line	12/31/24	TBD	Solar & Battery Storage				0
C2-177	Cluster 2	CA18	5/15/22	In Progress		NR/ER	LGI	No	199	199	Crook	OR	PACW	Corral substation	4/30/29	TBD	Battery Storage				0
C2-178	Cluster 2	CA18	5/15/22	In Progress		NR/ER	LGI	No	199	199	Crook	OR	PACW	Corral substation	12/31/28	TBD	Battery Storage				0
C2-179	Cluster 2	CA13	5/15/22	In Progress		NR	LGI	No	115	115	Millard	UT	PACE	Black Rock-Pavant transmission line	12/31/26	TBD	Geothermal				0
C2-180	Cluster 2	CA19	5/15/22	In Progress		NR	OLGI	Yes	80	80	Harney	OR	PACW	Burns-Summer Lake transmission line	12/31/25	TBD	Solar & Battery Storage				0
C2-181	Cluster 2	CA19	5/15/22	In Progress		NR	OLGI	Yes	80	80	Lake	OR	PACW	Summer Lake substation	10/1/26	TBD	Solar & Battery Storage				0
C2-182	Cluster 2	CA19	5/15/22	In Progress		NR/ER	LGI	No	320	320	Lake	OR	PACW	Burns-Summer Lake transmission line	5/15/29	TBD	Solar & Battery Storage				0
C2-183	Cluster 2	CA19	5/15/22	In Progress		NR	OLGI	Yes	80	80	Harney	OR	PACW	Burns substation	8/1/26	TBD	Solar & Battery Storage				0
C2-184	Cluster 2	CA19	5/15/22	In Progress		NR	OLGI	Yes	80	80	Lake	OR	PACW	Burns-Summer Lake transmission line	7/1/26	TBD	Solar & Battery Storage				0
C2-185	Cluster 2	CA19	5/15/22	In Progress		NR	OLGI	Yes	80	80	Lake	OR	PACW	Summer Lake substation	10/1/26	TBD	Solar & Battery Storage				0
C2-186	Cluster 2	CA19	5/15/22	In Progress		NR	OLGI	Yes	80	80	Harney	OR	PACW	Burns-Summer Lake transmission line	12/1/25	TBD	Solar & Battery Storage				0
C2-187	Cluster 2	CA19	5/15/22	In Progress		NR/ER	LGI	No	320	320	Lake	OR	PACW	Summer Lake substation	5/15/29	TBD	Solar & Battery Storage				0
C2-188	Cluster 2	CA21	5/15/22	In Progress		NR/ER	LGI	No	40	40	Coos	OR	PACW	Isthmus substation	3/31/26	TBD	Battery Storage				0
C2-189	Cluster 2	CA21	5/15/22	In Progress		NR/ER	LGI	No	40	40	Coos	OR	PACW	Isthmus substation	3/31/28	TBD	Battery Storage				0
C2-190	Cluster 2	CA21	5/15/22	In Progress		NR/ER	LGI	No	40	40	Coos	OR	PACW	Jordan Point substation	3/31/28	TBD	Battery Storage				0
C2-191	Cluster 2	CA21	5/15/22	In Progress		NR/ER	LGI	No	40	40	Coos	OR	PACW	Coos River substation	3/31/28	TBD	Battery Storage				0
C2-192	Cluster 2	CA16	5/15/22	In Progress		NR/ER	LGI	No	40	40	Yakima	WA	PACW	Union Gap substation	3/31/27	TBD	Battery Storage				0
C2-193	Cluster 2	CA16	5/15/22	In Progress		NR/ER	LGI	No	40	40	Yakima	WA	PACW	Union Gap substation	3/31/27	TBD	Battery Storage				0
C2-194	Cluster 2	CA16	5/15/22	In Progress		NR/ER	LGI	No	40	40	Yakima	WA	PACW	Wine Country substation	3/31/27	TBD	Battery Storage				0
C2-195	Cluster 2	CA16	5/15/22	In Progress		NR/ER	LGI	No	40	40	Yakima	WA	PACW	Union Gap substation	3/31/27	TBD	Battery Storage				0
C2-196	Cluster 2	CA16	5/15/22	In Progress		NR/ER	LGI	No	40	40	Yakima	WA	PACW	Moxee substation	3/31/27	TBD	Battery Storage				0
C2-197	Cluster 2	CA18	5/15/22	In Progress		NR	OLGI	Yes	40	40	Deschutes	OR	PACW	Redmond substation	3/31/27	TBD	Battery Storage				0
C2-198	Cluster 2	CA18	5/15/22	In Progress		NR	OLGI	Yes	40	40	Deschutes	OR	PACW	Redmond substation	3/31/27	TBD	Battery Storage				0
C2-199	Cluster 2	CA18	5/15/22	In Progress		NR/ER	LGI	No	40	40	Deschutes	OR	PACW	Redmond substation	3/31/27	TBD	Battery Storage				0
C2-200	Cluster 2	CA18	5/15/22	In Progress		NR/ER	LGI	No	40	40	Deschutes	OR	PACW	Redmond substation	3/31/27	TBD	Battery Storage				0
C2-201	Cluster 2	CA14	5/15/22	In Progress		NR	LGI	No	150	150	Beaver	UT	PACE	Hickory substation	TBD	TBD	Solar & Battery Storage				0
C2-202	Cluster 2	CA13	5/15/22	In Progress		NR	LGI	No	90	90	Millard	UT	PACE	Pavant substation	TBD	TBD	Solar & Battery Storage				0
C2-203	Cluster 2	CA20	5/15/22	In Progress		NR/ER	LGI	No	400	400	Klamath	OR	PACW	Klamath CoGen-Meridian transmission line	12/31/25	TBD	Solar & Battery Storage				0
C2-204	Cluster 2	CA16	5/15/22	In Progress		NR/ER	LGI	No	100	100	Yakima	WA	PACW	White Swan substation	12/1/24	TBD	Battery Storage				0
C2-205	Cluster 2	CA7	5/15/22	In Progress		NR/ER	LGI	No	150	150	Cache	UT	PACE	Bridgerland-Cache transmission line	10/31/26	TBD	Solar & Battery Storage				0
C2-206	Cluster 2	CA14	5/15/22	In Progress		NR/ER	LGI	No	100	100	Iron	UT	PACE	Cameron-Parowan transmission line	10/31/26	TBD	Solar & Battery Storage				0
C2-207	Cluster 2	CA24	5/15/22	In Progress		NR/ER	LGI	No	199	199	Multnomah	OR	PACW	Troutdale substation	12/1/24	TBD	Battery Storage				0
C2-208	Cluster 2	CA19	5/15/22	In Progress		NR/ER	LGI	No	320	320	Harney	OR	PACW	Summer Lake substation	12/1/27	TBD	Solar & Battery Storage				0
C2-209	Cluster 2	CA10	5/15/22	In Progress		NR/ER	SGI	No	20	20	Uintah	UT	PACE	Ashley substation	10/1/25	TBD	Battery Storage				0
C2-210	Cluster 2	CA19	5/15/22	In Progress		NR	OLGI	Yes	80	80	Harney	OR	PACW	Burns-Summer Lake transmission line	8/1/26	TBD	Solar & Battery Storage				0
C2-211	Cluster 2	CA13	5/15/22	In Progress		NR/ER	LGI	No	49.9	49.9	Millard	UT	PACE	Brush Wellington-Pavant transmission line	2/11/25	TBD	Solar & Battery Storage				0
C2-212	Cluster 2	CA8	5/15/22	In Progress		NR/ER	LGI	No	150	150	Salt Lake	UT	PACE	Centennial substation	2/11/25	TBD	Battery Storage				0

Company Name: Only displayed after Interconnection Agreement has been signed or is an affiliate of PacifiCorp.
Affiliate Initial Scoping Meeting Notification: It is PacifiCorp's intention to hold initial scoping meetings for all projects listed that are associated with an affiliate per the relevant timing requirements.
Study Reports: If displayed, click "Available" link to view PDF files.
Study Schedule Deviation: If displayed, click "More Info" link to view PDF files.

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

Docket No. UM 2032

In the matter of

PUBLIC UTILITY COMMISSION OF OREGON,

Investigation into the Treatment of Network Upgrade Costs for Qualifying Facilities

EXHIBIT NEWSUN/604

PacifiCorp Response to NewSun Data Request 48

UM 2032 / PacifiCorp
June 8, 2022
NewSun Information Request 48

NewSun Information Request 48

Please refer to the below spreadsheet. Please confirm that the final shortlisted projects from PacifiCorp's 2020 All-Source RFP Final Shortlist as shown under the heading "UM 2059 Final Shortlisted Project data" are interconnecting to PacifiCorp under the queue numbers and information shown below from PacifiCorp's OASIS under the heading "Interconnect Request Information." In other words, please confirm that the below table correctly matches up the shortlisted projects with their interconnection queue positions. If not, please provide any corrections.

UM 2059 Final Shortlisted Project data									Interconnect Request Information																
																Max MW Output		Location of Generating Facility				In-Service Date (Commercial Operations)		
Project Name		Type	Location	COD	Term/ Life (Years)	Resource Capacity (MW)	Battery Capcity (MW)	Battery Duration (Hours)	Q#	Request Date	Company Name	Service Type	Application Rules	Qualifying Facility Status	S	W	County	ST	Region	Point of Interconnection	Customer Requested Commercial Operations Date	Agreed to Commercial Operations Date	Type
Anticline	NextEra	Wind	WY	12/31/24	30	100.5	n/a	n/a	785	8/4/16	Anticline Wind, LLC	ER	LGI	NO	100	100	Natrona	WY	PACE	Claim Jumper – Casper 230 kV transmission line	12/31/19	12/31/24	Wind
Cedar Springs IV	NextEra	Wind	WY	12/31/24	30	350.4	n/a	n/a	713	10/12/15	Cedar Springs Transmission LLC	ER	LGI	NO	350	350	Converse	WY	PACE	Yellowcake – Antelope Mine line	1/1/21	1/15/25	Wind
Rock Creek I*	Invenergy	Wind	WY	12/31/24	30	190	n/a	n/a	835	12/5/16	Rock Creek Wind, LLC	ER	LGI	NO	190	190	Carbon	WY	PACE	Foote Creek substation	10/1/20	12/15/24	Wind
Rock Creek II*	Invenergy	Wind	WY	12/31/24	30	400	n/a	n/a	836	12/5/16	Rock Creek Wind, LLC	ER	LGI	NO	400	400	Carbon	WY	PACE	Aeolus substation	10/1/23	12/15/24	Wind
Boswell Springs	Innergex	Wind	WY	10/1/24	30	320	n/a	n/a	409	1/26/12	Boswell Wind Project I, LLC	ER	LGI	No	320	320	Albany	WY	PACE	Freezeout substation	9/30/14	12/31/24	Wind
Two Rivers	Blue Earth Renewables LLC & Clearway Renew LLC	Wind	WY	12/31/24	25	280	n/a	n/a	719	11/11/15	Two Rivers Wind, LLC	NR	LGI	QF	280	280	Albany	WY	PACE	Freezeout substation	12/31/18	2/1/25	Wind
Cedar Creek	rPlus Energies	Wind	ID	12/31/22	25	151	n/a	n/a	255	12/23/08	Cedar Creek Wind, LLC	ER	LGI	NO	151.8	151.8	Bingham	ID	PACE	Goshen-Sugar Mill transmission line	7/1/10	6/24/22	Wind
									754	5/25/16	Steel Solar, LLC	ER	LGI	NO	80	80	Box Elder	UT	PACE	Wheelon-Nucor transmission line	12/31/18	12/16/22	Solar & Battery Storage
Steel Solar I & II	DESRI	PVS	UT	12/31/23	25	147	37.5	2	799	9/20/16	Steel Solar, LLC	ER	LGI	NO	67	67	Box Elder	UT	PACE	Wheelon - Nucor transmission line	6/30/19	12/4/23	Solar & Battery Storage
Rocket Solar II	DESRI	PVS	UT	12/31/23	25	45	12.5	4	862	4/6/17	Rocket Solar, LLC	ER	LGI	NO	45	45	Box Elder	UT	PACE	Lampo substation	6/30/19	12/15/23	Solar & Battery Storage
Fremont	Longroad Energy	PVS	UT	11/30/23	20	99	49.5	4	634	11/20/14	Fremont Solar, LLC	ER	LGI	NO	99	99	Beaver	UT	PACE	Parowan-Sigurd line	12/31/16	9/25/23	Solar
Rush Lake	Longroad Energy	PVS	UT	11/30/23	20	99	49.5	4	636	12/3/14	Rush Lake Solar, LLC	ER	LGI	NO	99	99	Iron	UT	PACE	Parowan-West Cedar line	12/31/16	9/29/23	Solar
Parowan	First Solar	PVS	UT	12/31/24	25	58	58	4	642	2/9/15	Parowan Solar, LLC	ER	LGI	NO	58	58	Iron	UT	PACE	Parowan substation	10/1/16	12/31/24	Solar & Battery Storage
Hornshadow I	enyo energy	PVS	UT	12/31/23	30	100	25	2	777	7/13/16	Hornshadow, LLC	ER	LGI	NO	100	100	Emery	UT	PACE	Emery substation	12/31/18	8/31/24	Solar & Battery Storage
Hornshadow II	enyo energy	PVS	UT	12/31/23	30	200	50	2	778	7/13/16	Hornshadow, LLC	ER	LGI	NO	200	200	Emery	UT	PACE	Emery substation	12/31/18	TBD	Solar & Battery Storage
									787	8/8/16	Green River Solar I, LLC	ER	LGI	NO	200	200	Emery	UT	PACE	Emery-Sigurd #2 line	11/15/18	8/15/24	Solar & Battery Storage
Green River I & II	rPlus Energies	PVS	UT	12/31/24	20	400	200	2	788	8/8/16	Green River Solar II, LLC	ER	LGI	NO	200	200	Emery	UT	PACE	Emery-Sigurd #2 line	11/15/18	10/25/24	Solar & Battery Storage
Hamaker	ecoplexus	PVS	OR	12/31/23	30	50	12.5	4	905	7/12/17	Fresh Air Energy II, LLC	NR	LGI	QF	50	50	Klamath	OR	PACW	Copco 2 - Westside Tap to Klamath Falls line (Line 18)	12/1/19	2/1/23	Solar & Battery Storage
									906	7/12/17	Fresh Air Energy II, LLC	ER	LGI	NO	80	80	Klamath	OR	PACW	Klamath Falls-Lone Pine transmission line	12/1/19	7/1/23	Solar & Battery Storage
Hayden 2	ecoplexus	PVS	OR	12/31/23	30	160	40	4	907	7/12/17	Fresh Air Energy II, LLC	ER	LGI	NO	80	80	Klamath	OR	PACW	Klamath Falls-Lone Pine transmission line	12/1/19	7/1/23	Solar & Battery Storage
Dominguez I	Able Grid	BESS	UT	7/1/24	15	n/a	200	4															
Glen Canyon	sPower	Solar	UT	12/31/23	30	95	n/a	n/a	805	9/30/16	Glen Canyon Solar A, LLC	ER	LGI	NO	95	95	Kane	UT	PACE	Sigurd-Glen Canyon transmission line	12/19/19	11/30/23	Solar

Response to NewSun Information Request 48

The queue numbers are accurate. Please refer to PacifiCorp's Open Access Same-Time Information System (OASIS) webpage for any further questions or details. PacifiCorp's OASIS webpage can be accessed by utilizing the following website link:

http://www.oasis.oati.com/ppw/index.html

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

Docket No. UM 2032

In the matter of

PUBLIC UTILITY COMMISSION OF OREGON,

Investigation into the Treatment of Network Upgrade Costs for Qualifying Facilities

EXHIBIT NEWSUN/605

PacifiCorp Response to NewSun Data Request 49

UM 2032 / PacifiCorp
June 8, 2022
NewSun Information Request 49

NewSun Information Request 49

Please confirm that the network upgrades required to interconnect PacifiCorp's final shortlisted projects from its 2020 All-Source RFP will be refunded to the interconnection customer (or PPA counterparty) in any form under PacifiCorp's OATT or LGIA, directly funded by PacifiCorp, or otherwise paid for ultimately by the utility or its ratepayers in any manner. For clarity, it appears that all of the indicated interconnections are FERC jurisdictional and subject to PacifiCorp's FERC filed OATT. Therefore, the LGIA would provide that the interconnection customer initially fund the network upgrades, which are then refunded to the interconnection customer upon commercial operations. Please confirm that this is occurring for each of the fina shortlisted projects.

Response to NewSun Information Request 49

Per PacifiCorp's Open Access Transmission Tariff (OATT), all Federal Energy Regulatory Commission (FERC) jurisdictional generation interconnection requests will be refunded for any network upgrade costs paid for prior to commercial operation. Please refer to PacifiCorp's Open Access Same-Time Information System (OASIS) webpage which provides the jurisdiction of interconnection requests. PacifiCorp's OASIS webpage can be accessed by utilizing the following website link:

http://www.oasis.oati.com/ppw/index.html