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BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

In the Matter of PacifiCorp's 2021 Integrated Resource Plan	)))	Docket No. 21-035-09

INITIAL COMMENTS OF THE INTERWEST ENERGY ALLIANCE

The Interwest Energy Alliance ("Interwest") hereby submits these initial comments in response to PacifiCorp's 2021 Integrated Resource Plan ("IRP").

INTRODUCTION

Interwest brings together the nation's leading solar, wind, geothermal and storage developers with the nongovernmental environmental community to expand renewable energy around the Intermountain West, in Utah as well as Wyoming, Colorado, New Mexico, Arizona, and Nevada. Interwest has been actively engaged in public input meetings hosted by PacifiCorp to develop each IRP over the last decade and has been granted intervention in a number of

Commission proceedings for review and implementation of PacifiCorp's proposed integrated resource plans, both in Utah and Wyoming.

SUMMARY OF RECOMMENDATIONS

Interwest recommends acknowledgment of the IRP and the 4-Year Action Plan, with cautionary recommendations and conditions to be placed on the development of future portfolios, the 2022AS RFP, and actions outside of the Action Plan period.

PacifiCorp's IRP was submitted to the Public Service Commission of Utah ("Commission" or "PSC") pursuant to the 1992 Order on Standards and Guidelines for Integrated Resource Planning (Docket No. 90-2035-01, "Order on Standards and Guidelines"). Under the Utah PSC Guidelines, the Commission is tasked with deciding whether to acknowledge the IRP and the analysis used to prepare the Preferred Portfolio and the Action Plan to carry out its goals over the next four years. Acknowledgement does not create any presumption of regulatory approval for any of the resources or strategies contained within the IRP. These decisions related to approval and cost recovery are reserved for separate dockets where prudency of specific investments is determined. The IRP, Vol. 2 Table B.1 documents how PacifiCorp complies with regulatory requirements in each state within its service territory.

To be acknowledged in Utah, the IRP must include the following:

- A range of forecasts of future load growth
- Evaluation of all present and future resources, including demand side, supply side and market, on a consistent and comparable basis
- Analysis of the role of competitive bidding

• A plan for adapting to different paths as the future unfolds

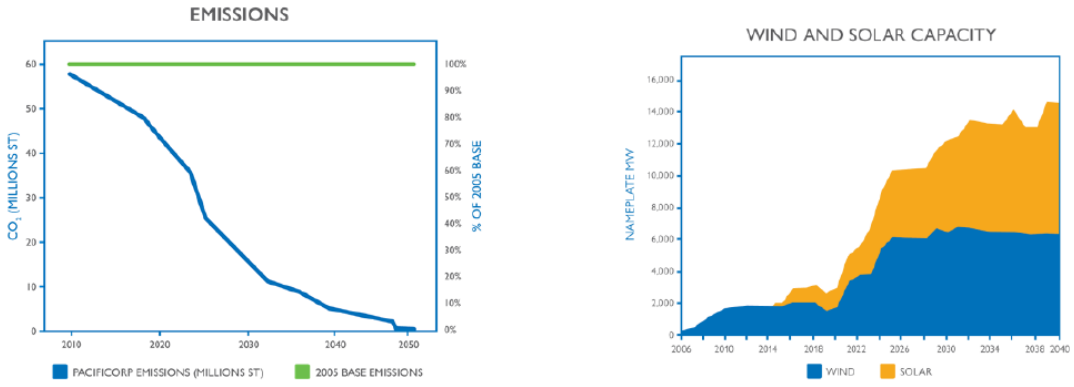
• A cost effectiveness methodology

• An evaluation of the financial, competitive, reliability and operational risks associated with resource options, and how the action plan addresses these risks

• Definition of how risks are allocated between ratepayers and shareholders

Interwest generally supports the acknowledgment of the IRP because PacifiCorp continues to incorporate higher levels of renewable energy into its Preferred Portfolio, and will achieve reduced greenhouse gas emissions, which is critically important within the electricity sector. On the whole, PacifiCorp is on the right path to meet goals of reduced emissions and increasing renewable, inverter-based resources, as reflected by the matrix graph of the preferred portfolio:

Figure 1.1 – IRP preferred portfolio metrics and trajectory



To achieve these goals, the Preferred Portfolio includes a combination of wind, solar with storage, stand-alone storage (battery and pumped hydro), along with demand-side resources, reflecting the continued price reductions and other market changes which causes the model to select emissions-free zero marginal cost renewable energy when available. The remaining resources in the

Preferred Portfolio, including nuclear and non-emitting peaker units, requires the attention of the Commission because that portion of the portfolio does not reflect the least cost/least risk selection by the software modeling. For example, the nuclear resources were "forced-in" rather than selected by the model through system optimizing, and the zero-emitting peaking resources reflect reliance on the development of technologies which are not yet commercially viable.

Interwest recommends the Commission find that the 2021 PacifiCorp IRP and the Action Plan adhere to the PSC Guidelines and should be acknowledged, with conditions. Notwithstanding this support for the higher levels of renewable energy to be acquired under the action plan, Interwest recommends the Commission consider ordering the following for inclusion in future IRPs:

- Require PacifiCorp to participate in and report on all regional transmission planning processes which will analyze transmission interconnecting with the PacifiCorp system, with specific focus in interconnections to maximize lowest-cost resource dispatch, reduction of renewable curtailment, and reduction of transmission rates and costs.
- Require PacifiCorp to fully identify, analyze, and report on reliability benefits provided by new transmission lines, specifically including Bureau of Ocean Energy Management Offshore Wind and Boardman to Hemmingway, and provide an analysis of the value of these lines by tying together the new resources that the modeling suggests will become available through the transmission optimization.

- Require PacifiCorp to fully identify, analyze, and report on availability of federal Infrastructure Investment and Jobs Act[1] benefits that may be available for new transmission interties and provide an analysis of any opportunities.
- Require PacifiCorp to fully analyze and report on diversity benefits of current and future renewables over the large PacifiCorp service footprint, and to utilize this analysis in assigning capacity value to any new resources.
- Require PacifiCorp to fully identify, analyze, and report on all ancillary services provided by renewable facilities and provide an analysis of the value of these services.
- Require PacifiCorp to fully analyze and report on tools available for identifying fuel cost risks and include utilization of modeling tools to address this issue going forward.
- Require PacifiCorp to fully analyze and report on correlated gas plant outages and to utilize this analysis in future modeling.
- Require PacifiCorp to optimize portfolios based on known costs and risks, rather than assume the inclusion of resources with unknown costs and risks, such as non-emitting peaking units, carbon capture and sequestration, and small modular reactors in any future portfolios.
- Require a commitment for a regular pattern of procurements every two years of new generation resources, and to coordinate the procurement processes with the interconnection study process through which new generation facilities can obtain any required transmission

[1] H.R.3684 - Infrastructure Investment and Jobs Act. Available at https://www.congress.gov/bill/117th-congress/house-bill/3684/text.

upgrade cost information, so that the competitive procurement process remains robust, predictable, and fair.

- Include a section in all future IRPs that reconciles the agreements or decisions made through the Multi-State Protocol ("MSP") with the IRP and how they are treated and modeled in the IRP.

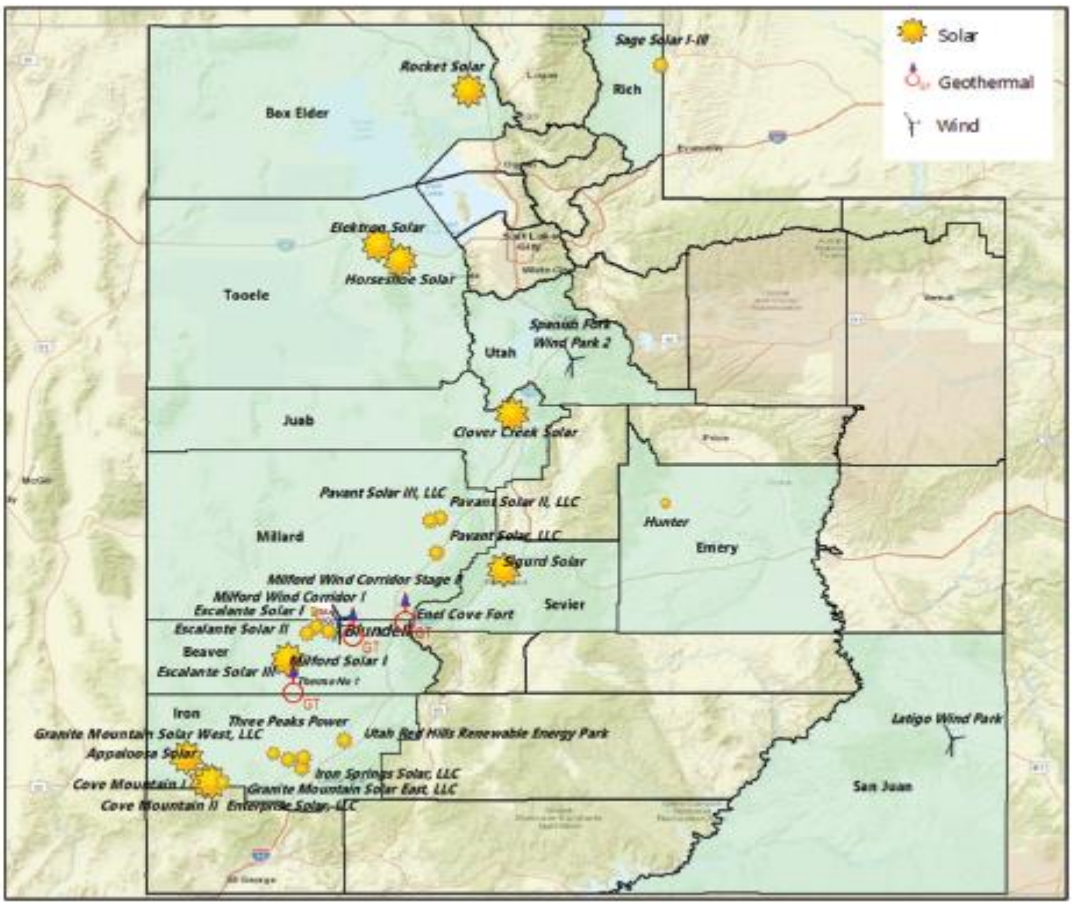
DISCUSSION

1. New generation resources to serve Utah electricity customers and for export to other states in PacifiCorp's service territory and to other western states provide economic development benefits to Utah's rural counties.

Renewable energy developers have already brought millions in capital investment to Utah, spurring much-needed economic stimulus, including through land lease and easement payments to property owners, tax revenues to local governments, and new jobs, especially in rural areas. The Western Way's analysis reported in 2020 found that the total direct and indirect benefits of renewable energy development in Utah from 2007 to 2023 is estimated to be $5.3 billion and includes the employment of 9,051 Utah residents.[2] By 2023, renewable energy projects will

[2] Development Research Partners, The Western Way, *The Economic Benefits of Utah's Rural Renewable Energy Industry*, Sept. 2021, at 14. Available at https://www.thewesternway.org/s/TWW_UT-Rural-Renewable-Econ-FINAL1.pdf

contribute $24.6 million in annual property tax revenue and $154.4 million in annual economic activity in the state.



[3]

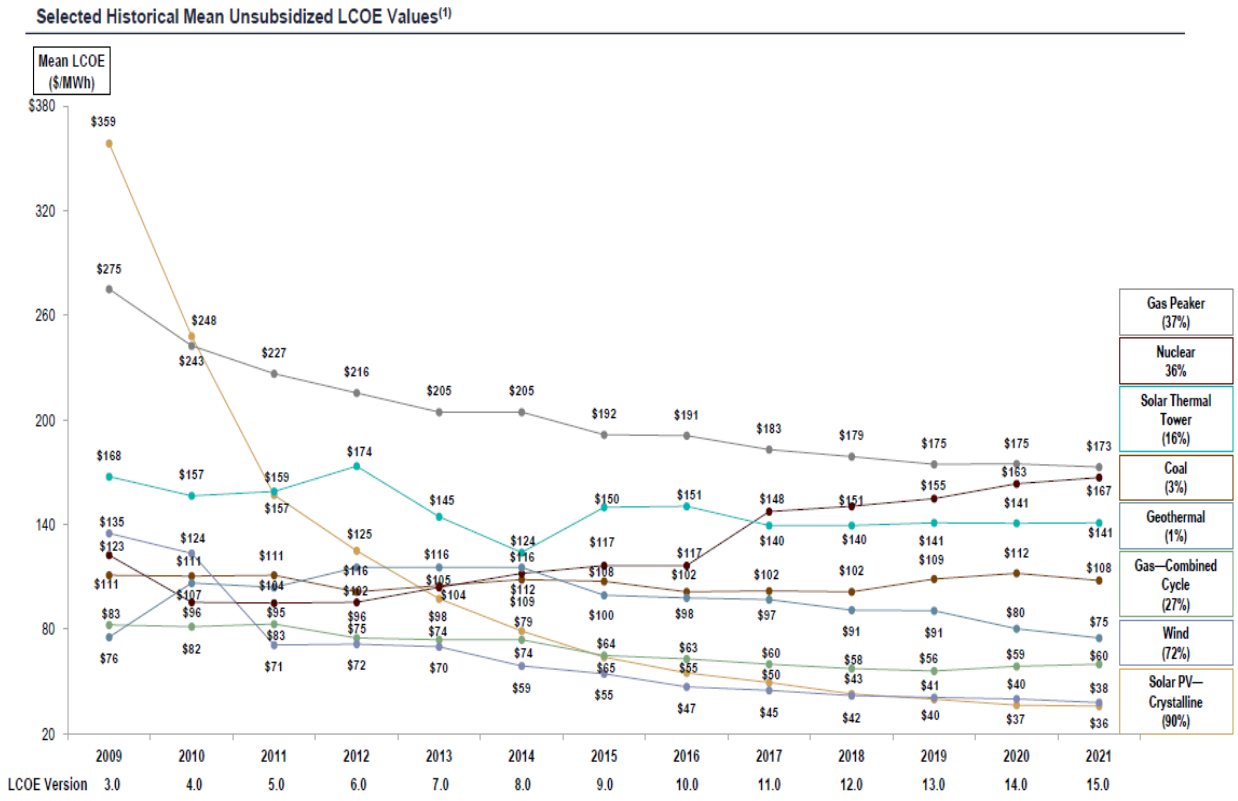
Two-thirds of the installed capacity is located in Beaver County and Iron County, providing additional diversity to help stabilize and expand these rural areas.[4]

2. Wind, solar and energy storage resources continue to bring substantial savings to electricity consumers due to falling costs.

[3] Western Way, map at 8.
[4] Western Way, at 3.

Wind and solar energy are typically the lowest-cost resources available in the wholesale electricity market because they have zero fuel cost and near-zero variable operating and maintenance costs. When wind and solar generation is delivered to customers it displaces an equivalent amount of output from the highest cost generating resource (typically the least efficient fossil-fired power plant) that would have otherwise operated.

Since 2009, Wall Street firm Lazard reports that the levelized cost of wind energy has fallen by 72%, while solar energy costs have fallen 90%.[5]



[5] Lazard. "Levelized Cost of Energy Analysis, Version 15.0". Available at https://www.lazard.com/media/451905/lazards-levelized-cost-of-energy-version-150-vf.pdf.

The National Renewable Energy Laboratory ("NREL") expects the levelized cost of wind energy to fall an additional 40% by 2030, while solar costs are expected to decrease by an additional 50% from today's prices.[6] Other analysts agree. Bloomberg New Energy Finance expects renewable energy to dominate utility investment going forward, given its growing cost advantage against fossil generation.[7] A 2016 national laboratory study funded by the Department of Energy ("DOE") surveyed experts around the world and found they anticipated cost reductions for land-based wind of around 24% by 2030, driven by a 12% reduction in capital costs, a 9% reduction in fixed operating costs, and 10% increases in capacity factor and project life.[8] A similar projection by NREL in August 2017 concluded that a 50% reduction in the cost of wind energy was achievable by 2030 due to capital and operating cost reductions and capacity factor and plant life increases in excess of 20%.[9] Another recent report, which details installed costs for PV solar systems as of the first quarter of 2021 states that costs continue to fall for residential, commercial rooftop, and utility-scale PV solar systems by 3%, 11%, and 12%, respectively, compared to last year, with a 19% reduction in module cost, causing overall costs to continue their decade-long decline.[10] PacifiCorp's own experience provides additional data: the 2020 All-Source Request for

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[6] NREL, *Annual Technology Baseline*, (2021). Available at: https://atb.nrel.gov/electricity/2021/data.
[7] S. Henbest et al., New Energy Outlook 2020, (2020). Available at: https://about.bnef.com/new-energy-outlook/.
[8] R. Wiser et al., *Forecasting Wind Energy Costs and Cost Drivers: The Views of the World's Leading Experts*, (June 2016). Available at: https://eta-publications.lbl.gov/sites/default/files/lbnl-1005717.pdf.
[9] K. Dykes et al., *Enabling the SMART Wind Power Plant of the Future Through Science-Based Innovation*, (August 2017). Available at: https://www.nrel.gov/docs/fy17osti/68123.pdf.
[10] NREL, "U.S. Solar Photovoltaic System and Energy Storage Cost Benchmarks: Q1, 2020" (November 2021). Available at: https://www.nrel.gov/docs/fy22osti/80694.pdf.

Proposals ("2020AS RFP") anticipated acquisition of approximately 4,000 MW of new resources, and PacifiCorp received nearly 10 times that amount of nameplate capacity proposals in response, with over 28,000 MW of conforming bids, with an additional 12,500 MW of bids that did not conform with the specific RFP requirements. From this robust offering the utility initially selected 5,453 MW of potentially useable 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. While the proposed final generation portfolio will still undergo later review for rate recovery purposes,[11] the results of the 2020AS RFP clearly show that acquiring higher amounts of wind, solar and battery resources at scale is both feasible and cost-effective. Therefore, we can assume that a diverse set of cost-effective resources will be available to meet PacifiCorp's capacity and energy needs moving forward.

3. Renewables and energy storage provide increased reliability to the grid.

A higher renewable-based portfolio with energy storage and pumped storage can contribute more peaking capacity and overall reliability than is recognized by PacifiCorp's modeling of the Preferred Portfolio. PacifiCorp's modeling leaves more capacity and energy needs to be filled by the amorphous "non-emitting peaking resources" than is truly required and avoids reliable proven technologies currently available in the market.

In the IRP, PacifiCorp describes its capacity contribution analysis at a high level as follows:[12]

[11] February 11, 2022, *Order Granting the Waiver of Requirement for Preapproval of Significant Energy Resource Acquisitions,* in Utah PSC Docket No. 22-035-03.
[12] 2021 IRP, Vol. I, at 21, pdf 35/364.

• Capacity Contribution

The capacity contribution of a resource is dependent on the other components in a portfolio, and PacifiCorp's portfolio development process is based on achieving reliable system operation using the aggregate contributions of each resource in the portfolio, rather than focusing on an individual estimate. For reporting, the capacity factor approximation method (CF Method) was used to identify marginal capacity contribution values for individual resource options, based on a portfolio similar to the preferred portfolio.

The CF Method is not as reliable as the more sophisticated methodologies available to evaluate capacity contribution of renewable energy and energy storage. While Interwest agrees that the capacity contribution of a resource is dependent on the other components, and that the Effective Load Carrying Capability ("ELCC") analysis of all renewable energy resources is an intensive modeling activity, we urge PacifiCorp to go farther to recognize the probabilities of each type of demand and supply-side contribution on a more granular scale to avoid overinvesting in excess reserve capacity resources. An issue brief from Energy Systems Integration Group ("ESIG"), "The Uses of Probabilistic Forecasts in Operating a High-Renewables Grid", explains the elements of a probabilistic determination of resource adequacy for high-renewables portfolios.[13]

NERC-sponsored discussions now promote probabilistic methodologies, described in one recent report as follows:[14]

> In a future with higher penetrations of variable and energy-limited resources, the dominant sources of resource adequacy risk begin to shift from (assumed)

[13] GridLab/ESIG, "The Uses of Probabilistic Forecasts in Operating a High-Renewables Grid". Available at: https://www.esig.energy/wp-content/uploads/2020/10/ESIG-brief-probabilistic-forecasts.pdf.

[14] See, *e.g.*, Steven Gordon, NREL, "Probabilistic Assessment of High-Renewables Power Systems: Current Work and Future Directions", U.S. Dept. of Energy Office of Scientific and Technical Information (Feb. 18, 2020). Available at: https://www.osti.gov/biblio/1601584.

> independent thermal unit outages to spatially- and temporally-correlated weather-driven phenomena.

The grid is moving towards these more accurate methodologies and PacifiCorp's engagement in the Western Power Pool's Western Resource Adequacy Program ("WRAP") will require a more advanced, uniform approach. The transmission projects included in the 2021 IRP are important steps forward, but they are not yet expansive enough to fully enable wider grid coordination and cost savings provided by geographically and technologically diverse supply and demand resources.

4. Accurate, probabilistic modeling and planning for the capacity contributions of inverter-based resources will also help recognize the essential grid services they provide to support a reliable system.

In addition to their capacity values, renewable energy facilities can provide essential grid services necessary to maintain reliability, which Interwest continues to recommend should be acknowledged in the resource planning risk assessment. By way of example, wind generators can provide voltage ride-through abilities through voltage disturbances.[15] Solar plants are also likely to provide these services, but until FERC Order 828 were not required to do so.[16] Not all resources can provide this service. Gas-fired generation is often taken offline by grid disturbances, and therefore has not always provided substantial voltage ride-through.[17] Similarly, coal plants often

[15] For this ride-through discussion and more information about essential grid services and reliability for renewables, see Milligan, M., "Sources of grid reliability services", The Electricity Journal, Vol. 31, Issue 9, pp. 1-7 (Nov. 2018), at Sec. 2.2.2.2. Available at: https://www.sciencedirect.com/science/article/pii/S104061901830215X.
[16] Milligan, at Sec. 2.2.2.2.
[17] Milligan, at Sec. 2.2.2.2, citing TRC Solutions (2015) "Revisions to NERC PRC Standards Have Significant Implications for Utility Compliance Programs". Available at:

go offline during voltage faults because some combination of the generator or critical plant equipment such as pumps and conveyor belts cannot ride through the disturbance.[18] Nuclear plants can go offline for similar reasons.[19] The inability of some large generators to ride through a disturbance contributed to recent blackouts in Washington, D.C. and Florida.[20] The final short list selected from the 2020AS RFP includes several solar-battery hybrid facilities selected from a large list of bidders promoting these technologies. The Company's modeling is beginning to capture the flexibility value of these resources, further reducing the need for peaking resources. Therefore, Interwest recommends that the Commission continue to carefully review capacity analysis and require PacifiCorp to provide peer-reviewed ELCC reports including accurate probabilistic analysis to fully recognize the value and inherent resource adequacy available from increased reliance on widely dispersed inverter-based resources to operate its system.[21]

5. Natural gas resources remain volatile and risky, so conversion of aging coal units to natural gas should be minimized.

https://www.trcsolutions.com/writable/images/Regulatory-Update-NERC-PRC-Standards-Changes-Nov-2015-FINAL.pdf.

[18] Milligan, at Sec. 2.2.2.2, citing NERC (2015) "Standard PRC-024-2 – Generator Frequency and Voltage Protective Relay Settings". Available at: https://www.nerc.com/pa/Stand/Reliability%20Standards/PRC-024-2.pdf.

[19] Milligan, at Sec. 2.2.2.2.

[20] Reuters (2008), "FPL cites human error as cause of Florida blackout". Available at: https://www.reuters.com/article/us-florida-blackout/fpl-cites-human-error-as-cause-of-florida-blackout-idUSWNAS318320080229.

[21] A. Mills, P. Rodriguez, 2019, "Drivers of the Resource Adequacy Contribution of Solar and Storage for Florida Municipal Utilities", Lawrence Berkeley National Laboratory. Available at https://escholarship.org/uc/item/9xz19063.

On a positive note, PacifiCorp is not adding new natural gas-fueled generation during the Action Plan period, and no new natural gas resources were bid into the 2020AS RFP. Natural gas prices have more than doubled recently, due to increasing use of gas for electricity generation, declining investment in new gas production, and other factors.[22] While the IRP relies upon currently reduced cost projections,[23] many experts expect prices to remain elevated, a trend confirmed by forward spot market prices.[24] The future of natural gas prices may be more like those modeled in the high gas price sensitivity than in PacifiCorp's medium price case modeling. PacifiCorp is planning to convert Jim Bridger Units 1 and 2 to natural gas peaking units in 2024, which introduces greater reliance on the natural gas market, increasing the risk profile of the system. Gas price risk carries an economic cost to consumers which is not thoroughly accounted for by the three levels of natural gas prices modeled in the IRP scenarios. Extreme weather events such as Winter Storm Uri highlighted how natural gas supplies can be unreliable, producing correlated outages, which are often not fully captured in the modeling. This risk can be more accurately reflected in the modeling through tools such as those developed by Lawrence Berkeley National Laboratory ("LBNL").[25] Interwest recommends that the Commission require the use of

[22] EIA, "EIA forecasts natural gas prices to remain near $4/MMBtu in 2022, slightly lower in 2023". Available at https://www.eia.gov/todayinenergy/detail.php?id=50898
[23] Fig. 1.10, "Comparison of Power Prices and Natural Gas Prices in Recent IRPs", IRP Vol. I, p. 14, pdf at 28/364.
[24] EIA, "Natural Gas Spot and Futures Prices (NYMEX)". Available at https://www.eia.gov/dnav/ng/ng_pri_fut_s1_d.htm.
[25] M. Bolinger, (2017), "Using Probability of Exceedance to Compare the Resource Risk of Renewable and Gas-Fired Generation". Available at https://emp.lbl.gov/publications/usingprobability-exceedance-compare/ and M. Bolinger, R. Wiser, W. Golove, "Accounting for Fuel Price Risk When Comparing Renewable to Gas-Fired Generation: The Role of Forward Natural Gas Prices". Available at https://www.osti.gov/servlets/purl/886817.

these tools to evaluate the exposure of portfolios to natural gas fuel price risk to consumers in future IRP analysis.

6. Utah and the rest of the states in PacifiCorp's service territory require more transmission to interconnect to the wider grid.

a. Transmission provides important diversity benefits and greater reliability from generation resources.

In order to fully realize the benefits of zero emission, zero fuel-cost renewable energy and energy storage supporting higher penetrations of these resources, PacifiCorp will need to continue to invest in its transmission system. An expanded transmission system will enable it to tap into wider geographic diversity and any new wholesale market services which are developing around the Western Interconnect.

Transmission will amplify geographic and technological diversity benefits providing greater capacity contribution from each generation facility. A networked aggregation of many customers and sources of supply greatly reduces costs because variations in individual sources of electricity supply and demand are not perfectly correlated. Access to variable renewable resources like wind and solar over a large geographic footprint can deepen these diversity benefits.[26] A

[26] See response to Interwest DR 1.7 – PacifiCorp will accept bids in the 2022AS RFP from both PACE and PACW.

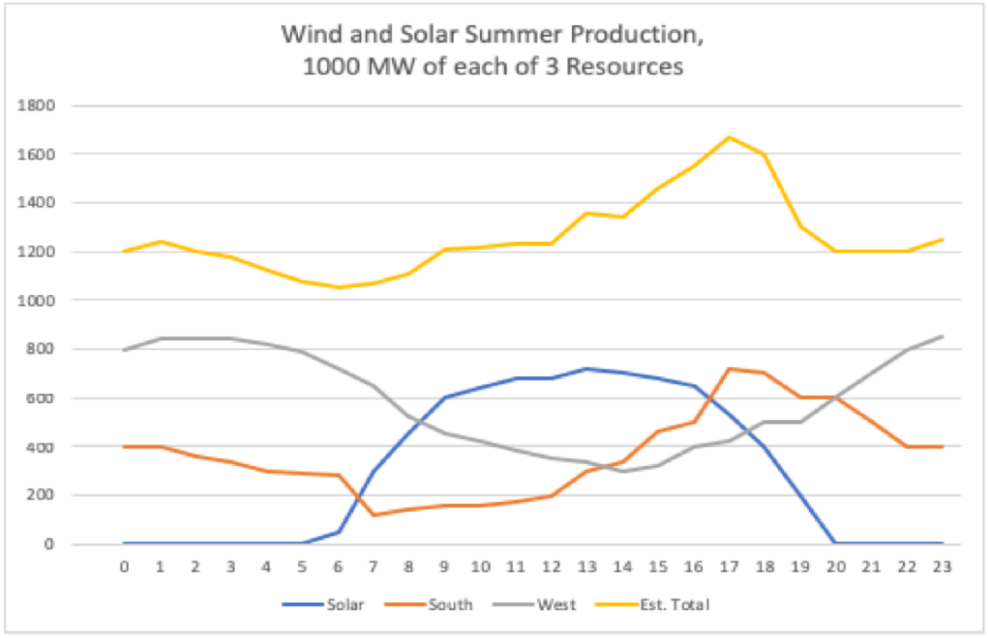
relatively small amount of geographic distance between various wind plants[27] or two solar plants[28] tend to be less than perfectly correlated, as local weather phenomena no longer affect both plants simultaneously. Seemingly small geographic differences can provide wider availability, increased production, and a reduction of overall costs. So long as the transmission system is sized adequately, PacifiCorp can access these variations to reduce its overall reserve and load following requirements.

A study of the growing Texas portfolio of wind and solar resources provides a graphic example of how wind and solar resources can work together to balance the supply resources:[29]

[27] H. Holttinen, et al., *Design and Operation of Power Systems with Large Amounts of Wind Power*, at 15, (2009). Available at: https://community.ieawind.org/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=c7a0f97c-b01c-713b-b51a-46f33d62b5db&forceDialog=0.

[28] Andrew Mills & Ryan Wiser, "Implications of Wide-Area Geographic Diversity of Short-Term Variability of Solar Power", LBNL (September 2010). Available at: https://emp.lbl.gov/sites/all/files/presentation-lbnl-3884e-ppt.pdf.

[29] Carl Linvill, Ph.D., Regulatory Assistance Project, "Electricity Trends and Critical PUC Activities" (April 11, 2019), Slide 13, citing Slusarewicz and Cohen, "Assessing Solar and Wind Complementarity in Texas," *Renewables: Wind, Water and Solar*, 2018, Vol. 5, No. 7. Available at https://www.raponline.org/knowledge-center/electricity-trends-critical-puc-activities/.



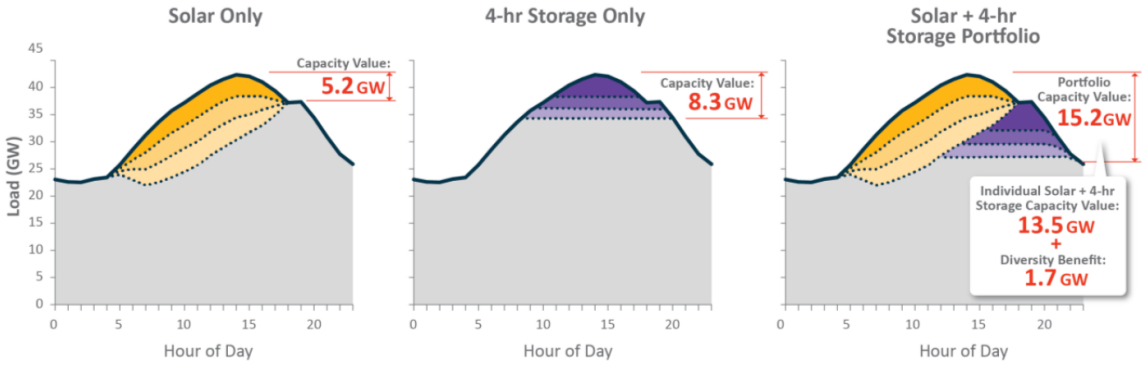
Slusarewicz and Cohen, "Assessing Solar and Wind Complementarity in Texas," *Renewables: Wind, Water and Solar*, 2018, Vol. 5, No. 7.

As demonstrated by several recent industry studies,[30] renewable output diversity and load diversity is greater over a larger and larger geographic area. Expanded ties to neighboring power systems provides greater access to flexible resources that are critical at higher penetrations of renewable energy.[31] Because wind and solar have negatively correlated output profiles, and

[30] *See, e.g., Macro Grids in the Mainstream: An International Survey of Plans and Progress,* available at: also Brown and Botterud, *The Value of Inter-Regional Coordination and Transmission in Decarbonizing the U.S. Electricity System* (2020). Available at https://www.cell.com/joule/fulltext/S2542-4351(20)30557-2;
also Americans for a Clean Energy Grid, *Consumer, Employment and Environmental Benefits of Electricity Transmission Expansion in the Eastern U.S.* (2020). Available at https://cleanenergygrid.org/wp-content/uploads/2020/10/Consumer-Employment-and-Environmental-Benefits-of-Transmission-Expansion-in-the-Eastern-U.S..pdf.

[31] *Western Flexibility Assessment,* Energy Strategies for Western Interstate Energy Board (2019)("Western Flexibility Assessment"). Available at: https://westernenergyboard.org/wp-content/uploads/2019/12/12-10-19-ES-WIEB-Western-Flexibility-Assessment-Final-Report.pdf.

because solar and wind complement storage by shortening the duration of peak net load periods (as illustrated in the example below[32] for a hypothetical power system), portfolios of wind, solar, and storage resources provide a capacity value that is greater than the sum of the capacity values of their component parts.



For most well-balanced combinations of wind and solar, the diversity benefits increase the capacity value of the total existing and new wind and solar fleet by several percentage points, which translates into dozens of MW of additional capacity value given that these portfolios include thousands of MWs of wind and solar. As consulting firm E3 has explained, "As the penetrations of these resources grow to represent significant shares of the electricity system across the U.S., these interactive effects cannot be ignored or rounded away. Rather they must be addressed head-on to ensure that electricity systems continue to provide both reliability and economic efficiency."[33]

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[32] N. Schlag, et al., *Capacity and Reliability Planning in the Era of Decarbonization*, at 6. Energy and Environmental Economics, Aug. 2020. Available at https://www.ethree.com/wpcontent/uploads/2020/08/E3-Practical-Application-of-ELCC.pdf.

[33] Utah Office of Energy Development, *Western States' Market Study: Exploring Western Organized Market Configurations: A Western States' Study of Coordinated Market Options to*

b. Increased transmission capacity will enable access to the wider grid and any new market services to be provided on a broader regional scale.

Increased access to the wider grid and market services provided by energy imbalance markets, day-ahead markets or regional system operators through transmission upgrades can help reduce PacifiCorp's reserve requirements and overall production costs. PacifiCorp's engagement in the Western Energy Imbalance Market ("WEIM") has already provided savings approaching $2B to western electricity customers since operations commenced in 2014. The WEIM achieved a record $739 million in savings in 2021, with PacifiCorp enjoying $39.8 million in savings in the fourth quarter of 2021.[34] This integration of western utility operations through enhanced grid connectivity will enable electricity customers across the West to enjoy savings while enhancing environmental and reliability benefits.[35]

Western states in which PacifiCorp operates have implemented increasingly stringent emissions reduction requirements, some of which will influence PacifiCorp's resource planning, and will place pressure on all western utilities to achieve higher penetrations of renewable energy, which continues to motivate many utilities to explore regional wholesale markets.[36]

Advance State Energy Policies, (July, 2021), at 7 (technical report)("Western States Market Study"). Available at https://energy.utah.gov/wp-content/uploads/State-Study-Final-Report-1.pdf.

[34] News Release, CAISO. Jan. 31, 2022. Available at: http://www.caiso.com/Documents/Western-EIM-achieves-record-setting-739-million-in-benefits-for-2021.pdf

[35] Id.

[36] Western States Market Study, fn. 32, *supra*, at 13.

Figure 2: 2030 Clean Energy or Renewable Portfolio Standard (RPS) Targets

State	2030 Target (% of annual energy)
Arizona	38% RPS
California	60% RPS
Colorado	31% RPS
Idaho	55% Clean
Montana	18% Clean
Nevada	50% RPS
New Mexico	50% RPS
Oregon	27% RPS
Utah	31% Clean
Washington	80% Clean
Wyoming	No RPS

The Western Flexibility Assessment estimated that 9 GW of renewable energy would be added to the grid each year starting in 2026 to provide energy sufficient to meet state public policy goals through 2035.[37] In order to achieve these goals, and to achieve them in a cost-effective manner, western states including Utah will likely need to join the trend towards further wholesale regional market development and integration of grid operations, either through further grid services provided under the California Independent System Operator ("CAISO"), including a new day-ahead market to be formed, or through a new full-scale organized wholesale regional electricity market, or through other options under development throughout the Western Interconnection.[38]

A number of other studies validate these projections. The Western States Market Study found that an RTO or ISO is expected to provide increasing levels of gross benefits over time. If an RTO were formed today, it could generate as much as $1.3 billion of benefits annually. By

[37] Western Flexibility Assessment, fn. 30, *supra*, at 9.
[38] Western States Market Study, fn. 32, *supra*, at 51-52.

2030, this estimate is nearly $2 billion per year. Capacity savings make up the majority of the overall benefits identified.[39]

Summary Market Factor Scorecard for Increased use of Clean Energy Technologies

Increased Use of Clean Energy Technologies	Bilateral	Real-Time	Day-Ahead	RTO
Efficient grid operation which allows low (and zero) marginal cost resources to be dispatched and reduces overall costs of integrating clean energy technologies	Fair	Good	Very Good	Excellent
Lower barriers to access new generation in high-quality renewable resource locations	Poor	Poor	Good	Excellent
Opportunities for clean electricity resources to be added to the grid (e.g. direct customer access to renewable/clean resource power purchase agreements)	Good	Good	Very Good	Excellent
Provides financing opportunities and a variety revenue stream opportunities for clean electricity technologies	Fair	Good	Very Good	Excellent
Economically facilitates emissions reduction goals/requirements via market signals	Fair	Good	Very Good	Excellent
Transparent and timely information on pricing, resource operations, and emissions	Fair	Good	Very Good	Excellent

Summary Market Factor Scorecard for Reliable, Affordable Provision of Energy to Consumers

Ability of Market Construct to Support Reliable, Affordable Provision of Energy to Consumers	Bilateral	Real-Time	Day-Ahead	RTO
Efficient grid operation which reduces costs and increases flexibility of transactions	Fair	Good	Very Good	Excellent
Ability to unlock full potential of existing generation (lowering costs) and to decrease generation capital costs/investments	Poor	Fair	Good	Very Good
Ability to unlock full potential of existing transmission system (lowering costs) and to decrease transmission capital costs/investments	Fair	Good	Very Good	Excellent
General ability to support reliable operations	Good	Very Good	Very Good	Excellent
Visibility into electric system conditions to improve reliability	Fair	Good	Very Good	Excellent
Transparent and timely information available to state PUCs, consumer advocates and other stakeholders	Fair	Good	Very Good	Excellent
Long-term mechanisms to support a system with adequate electric resources	Fair	Good	Good	Very Good
Increased opportunities for cost-effective demand-side resource participation	Fair	Good	Very Good	Excellent

[39] Western States Market Study, fn. 32, *supra*, at 7.

The various market structures studied support the concept that the broader a footprint an RTO can achieve, the bigger the benefits. Integration benefits, reliability benefits, and capacity savings from resource and load diversity will replace and likely exceed any lost energy benefits driven by an involving resource mix.

c. The Utah Transmission Study documents the economic benefits from grid expansion to transport electricity production from Utah to serve all PacifiCorp customers.

The Utah Office of Energy Development published a study concluding that the Utah transmission system may need to accommodate between 1.7 and 2 GW of new resources by 2025, between 3.5 and 5.1 GW by 2030, and 5.5 to 9 GW of new capacity by 2040.[40] The need for transmission expansion was based primarily on PacifiCorp's 2019 IRP, along with the assumptions regarding achievement of municipal and county renewable energy goals (e.g., Salt Lake City, Summit County, Moab), and the potential need to serve other utility loads with new resources located in Utah due to load growth, with low, medium, and high load growth assumptions.[41] Part of the goal of the study was to identify congested corridors and identify where upgrades to the grid will be necessary to reduce this congestion so that new generation can be interconnected and power transferred to serve Utah customers. A relatively modest addition of 210 line-miles of new and upgraded transmission at a cost of $325 million would enable in-state expansion of 3,500 to 4,000

[40] Energy Strategies, *Utah Transmission Study: A Study of the Options and Benefits to Unlocking Utah's Resource Potential*, 2021 (Technical Report)(January 21, 2021)("Utah Transmission Study"), at 27. Available at https://energy.utah.gov/wp-content/uploads/2021-Utah-Transmission-Study-Technical-Report-FINAL-210121.pdf.
[41] Utah Transmission Study, at 23.

MW of new renewable nameplate generation capacity.[42] Depending on the load projection scenario, this transmission investment will create temporary jobs ranging from 10,910 to 39,198 and permanent jobs range from 257 to 988 from 2025 through 2040.[43] Temporary taxes range from $136.4 million to $3.65 billion and permanent taxes range from $9.19 million to $32.67 million from 2025 through 2040.[44] Utilities around the region are also acting on this need and opportunity, such as the Public Service Company of Colorado's Colorado Power Pathway.[45]

7. The IRP Action Plan's pattern of procurements may require revision to acquire new resources in a predictable, fair, and transparent manner, and to achieve the most cost-effective portfolios throughout the planning period.

Regulatory timing and approval risks can have important and outsized impacts on the efficiency of the competitive electricity supply markets, which this Commission can help address. This Commission can provide guidance to PacifiCorp that would incentivize a more regular pattern of issuing requests for proposals following each IRP, aligned with its interconnection queue study process, so that procurements can proceed in an efficient manner.

PacifiCorp has already indicated that it intends to establish a regular pattern of procurements. This could occur every two years within a short period after the IRPs are filed in March of each odd-numbered year. A regular pattern of RFP issuance should also be coordinated with the FERC-approved tariff governing the interconnection queue study process. This process is

[42] Utah Transmission Study, at 60.
[43] Utah Transmission Study, at 55.
[44] Utah Transmission Study, at 55 and 56.
[45] Colorado Public Service Commission, Proceeding No. 21A-0096E.

fairly rigid in its time limits and deadlines, so considering the interaction of these processes can minimize disruption, risks and cost to developers selling projects to PacifiCorp. PacifiCorp's 2022 All-Source Request for Proposals ("2022AS RFP") reflects such a mismatch in the timing between the RFP response deadline and the interconnection study process. In the order acknowledging the 2019 IRP, this Commission indicated that the IRP review process may be a proper place for considering the results of the queue reform which resulted in the ongoing cluster study processing.[46]

> Any FERC queue reform will certainly impact some of the issues addressed by the 2019 IRP, but the ongoing nature of that process does not impact whether PacifiCorp substantially complied with the Guidelines in the development of the 2019 IRP. Other dockets, including future integrated resource planning, are appropriate venues to evaluate the implications of the results of queue reform.

Therefore, Interwest makes these recommendations to be included in the order acknowledging this IRP. If bidders can be fairly confident about when RFPs will be issued to acquire resources to fill the need identified in each IRP, then they can plan their engagement in the interconnection queue study process so that they are fully prepared to estimate transmission upgrade costs with each bid response. This predictability can help avoid costly unintended limitations on the eligibility of large numbers of bids as occurred in the procurement process implementing the 2020 Energy Vision.[47] Overall, predictability creates a more efficient market.[48] Therefore, Interwest recommends that

[46] IRP Vol II, at 42-43, citing Order, Utah PSC Docket No. 19-035-02, at 13.
[47] See Order, Docket No. 17-035-40 (June 22, 2018), at 17-18, and related Independent Evaluator reports filed in the docket.
[48] By way of example, Colorado's resource planning regulatory review process includes a single docket with two phases rolling out over two years. The initial Phase I order approves the (potentially revised) resource plan and contents of the RFP, and a Phase II order is issued after the RFP bid review results and modeling of actual bids is submitted for review and comment. Bidders are fully advised in advance of the utility's need, the contents of the RFP and the timing of the

the Commission encourage a regular pattern (i.e., every two years following the filing and approval of IRPs) for issuance of solicitation requests to implement the IRP, at least through 2030. Comments about the specific provisions of the 2022AS RFP are reserved and will be highlighted further in the 2022AS RFP approval docket.

8. All future IRPs must reconcile the MSP with the IRP.

Agreements or decisions made in future MSP negotiations could have profound impact on the viability of the IRP plan over the planning period. Interwest recommends that the Commission require a section in future IRPs to address how the MSP could impact planning procedures and outcomes.

SUMMARY OF RECOMMENDATIONS

Interwest recommends that the Commission acknowledge the IRP, but with conditions to improve the analysis of capacity contributions and essential grid services provided by new renewable energy resources and energy storage, to continue the utility's focus on transmission expansion, and to establish an expectation for a regular patter of procurements timed to dovetail with the cluster study process. Specifically, as stated in the introduction to these comments, Interwest recommends as follows:

- Require PacifiCorp to participate in and report on all regional transmission planning processes which will analyze transmission interconnecting with the PacifiCorp system,

RFP throughout the process so they can plan their interconnection study process along a parallel path.

with specific focus in interconnections to maximize lowest-cost resource dispatch, reduction of renewable curtailment, and reduction of transmission rates and costs.

- Require PacifiCorp to fully identify, analyze, and report on reliability benefits provided by new transmission lines, specifically including Bureau of Ocean Energy Management Offshore Wind and Boardman to Hemmingway, and provide an analysis of the value of these lines by tying together the new resources that the modeling suggests will become available through the transmission optimization.
- Require PacifiCorp to fully identify, analyze, and report on availability of federal Infrastructure Investment and Jobs Act[49] benefits that may be available for new transmission interties and provide an analysis of any opportunities.
- Require PacifiCorp to fully analyze and report on diversity benefits of current and future renewables over the large PacifiCorp service footprint, and to utilize this analysis in assigning capacity value to any new resources.
- Require PacifiCorp to fully identify, analyze, and report on all ancillary services provided by renewable facilities and provide an analysis of the value of these services.
- Require PacifiCorp to fully analyze and report on tools available for identifying fuel cost risks and include utilization of modeling tools to address this issue going forward.
- Require PacifiCorp to fully analyze and report on correlated gas plant outages and to utilize this analysis in future modeling.

[49] H.R.3684 - Infrastructure Investment and Jobs Act. Available at https://www.congress.gov/bill/117th-congress/house-bill/3684/text.

- Require PacifiCorp to optimize based on costs and risks, rather than assume the inclusion of non-emitting peaking units, carbon capture and sequestration, and small modular reactors in any future portfolios.
- Require a commitment for a regular pattern of procurements of new generation resources, and to coordinate the procurement processes with the interconnection study process through which new generation facilities can obtain any required transmission upgrade cost information, so that the competitive procurement process remains robust, predictable, and fair.
- Include a section in all future IRPs that reconciles the agreements or decisions made through the MSP with the IRP and how they are treated and modeled in the IRP.

Finally, the Preferred Portfolio includes 745 MW of wind and an additional 600 MW solar co-located with storage needed through 2026 as stated in the Action Plan, but the results of the RFP may warrant increasing the size of those acquisitions. In that docket, parties may advocate changes to the RFP to extend the commercial operation dates allowed for new projects as discussed by stakeholders in the workshops and technical conferences conducted by PacifiCorp. Therefore, Interwest also recommends that the Commission expressly indicate in its order that the IRP levels are not a ceiling or limitation on the amount which PAC can acquire from the 2022AS RFP.

Interwest sincerely appreciates the opportunity to submit these comments.

Respectfully submitted,

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CERTIFICATE OF SERVICE
21-035-09

I hereby certify that a true and correct copy of the foregoing was e-filed and served by email this 4th day of March, 2022, as follows:

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