

January 25, 2022

*VIA ELECTRONIC MAIL*

Public Utility Commission of Oregon  
Attn: [puc.filingcenter@puc.oregon.gov](mailto:puc.filingcenter@puc.oregon.gov)  
201 High Street SE, Suite 100  
Salem, OR 97301-3398

**RE: UM 2011–PacifiCorp Capacity Contribution Results**

PacifiCorp d/b/a Pacific Power (PacifiCorp or Company) hereby submits its Capacity Contribution Results and associated inputs in the above referenced docket. The information is based on the Company's most recent Integrated Resource Plan (IRP) filed in docket LC 77 and includes the following deliverables as outlined in the Joint Utility Updated Proposal provided to parties on December 10, 2021:

- Loss of Load Probability (LOLP) results beginning in 2024 and for every four years thereafter through 2040:
  - Each year of LOLP results contains 8,784 hourly values (366 days times 24 hours, due to leap year).
  - LOLP results are provided for two resource portfolios in each year:
    - Modeling that includes the incremental resource additions included in PacifiCorp's IRP preferred portfolio.
    - Modeling that reflects preferred portfolio resource retirements and committed resources only.
- Resource generation profiles (capacity factors):
  - PacifiCorp is providing the following generation profiles:
    - Oregon wind proxy: the hourly profile applicable to incremental wind resources available for selection in the 2021 IRP
    - Oregon solar proxy: the hourly profile applicable to incremental solar resources available for selection in the 2021 IRP
    - Aggregate resource profiles by control area: the sum of all wind and solar output, split by type (wind/solar) and location (PacifiCorp's East balancing authority area (BAA)/West BAA).
  - The same resource profiles are applied in all years for each resource, but capacity is derated to reflect degradation. The alignment between renewables and load is based on the 20 year study horizon, so it varies from year to year, as load shifts with the calendar. While each resource has the same hourly capacity factor each year, the mix of resources changes over time. As a result, a single resource profile is provided for items 1 and 2, while aggregate profiles vary by year.
- Capacity Contribution Results
  - Capacity Factor Approximation Method

- Calculations and results are provided for each generation profile, year, and portfolio.
- Results are also provided for based on a 12 month by 24 hour average of the wind and solar proxy generation profiles, to identify weather-related impacts.
- Effective Load Carrying Capability (ELCC)
  - The results of the ELCC analysis for the Oregon wind proxy in 2024 are provided.
  - PacifiCorp has not yet completed ELCC analysis for the Oregon solar proxy in 2024, 2032, and 2040 and expects to provide additional information within the next few days.
- Capacity Contribution Calculations
  - The Capacity Factor Approximation Method is readily extensible to any generation profile, and an example calculation and instructions are provided for use with a user-provided generation profile.
  - PacifiCorp has identified that variable energy resources in the same region tend to have correlated output. PacifiCorp has also identified relationships between variable energy resource output and load. Periods of relatively low resource output, where LOLP is likely to be higher, are likely to impact a prospective resource along with the rest of a portfolio. These effects are captured by the hourly generation profiles provided for the proxy resources and aggregate generation profiles. Generation profiles which do not have intra-month variability (such as a 12 month by 24 average), or which have intra-month variability (i.e. weather) that is inconsistent with that embedded in the LOLP results will not yield accurate results. To approximate weather impacts, the ratio of the contribution based on a 12x24 average and the full 8760 has been calculated for the proxy profiles. This ratio can then be used to adjust the contribution of a resource of the same type in the same region. Weather-adjusted Capacity Factor Approximation Method calculations and results are also provided for the user-provided generation profile.
  - The contribution for a combined wind and solar resource is additive, and should be calculated independently in the template. However, total output typically cannot exceed an interconnection limit (i.e. 100%), so the combined hourly inputs must be capped.
- Capacity Contribution Input Data
  - The LOLP results provided reflect the pattern of resource shortfalls from a fifty-iteration stochastic hourly analysis for each year. Details on the specific shortfalls including location, size, and duration are confidential and are provided for each LOLP study.

The data files submitted with this filing contain information designated as confidential and are provided subject to the general protective order in this docket (Order No. 22-004).

UM 2011  
Public Utility Commission of Oregon  
January 25, 2022

It is respectfully requested that all data requests regarding this matter be addressed to:

By email (preferred): [datarequest@pacificorp.com](mailto:datarequest@pacificorp.com)

By regular mail: Data Request Response Center  
PacifiCorp  
825 NE Multnomah, Suite 2000  
Portland, OR 97232

Informal inquiries may be directed to Cathie Allen, Regulatory Affairs Manager, at (503) 813-5934.

Sincerely,

A handwritten signature in blue ink that reads "Shelley McCoy". The signature is written in a cursive style.

Shelley E. McCoy  
Director, Regulation

Enclosure

## CERTIFICATE OF SERVICE

I certify that I served a true and correct copy of PacifiCorp's **Capacity Contribution Results** on the parties listed below via electronic mail and/or overnight delivery in compliance with OAR 860-001-0180.

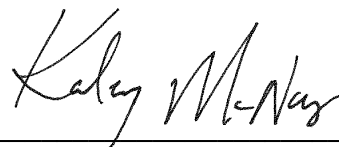
### Service List UM 2011

<b>Swan Lake North Hydro LLC</b>	
SIDNEY VILLANUEVA <a href="mailto:sidney.villanueva@troutman.com">sidney.villanueva@troutman.com</a>	
<b>Staff</b>	
STEPHANIE S ANDRUS <a href="mailto:stephanie.andrus@state.or.us">stephanie.andrus@state.or.us</a>	Marc Hellman <a href="mailto:Marc.hellman@puc.oregon.gov">Marc.hellman@puc.oregon.gov</a>
<b>Renewable NW</b>	
Max Greene (C) <a href="mailto:max@renewablenw.org">max@renewablenw.org</a>	Sashat Roy (C) <a href="mailto:sashwat@renewablenw.org">sashwat@renewablenw.org</a>
<b>Renewable Energy Coalition</b>	
John Lowe <a href="mailto:jravenesanmarcos@yahoo.com">jravenesanmarcos@yahoo.com</a>	Joni L Sliger (C) <a href="mailto:joni@sanger-law.com">joni@sanger-law.com</a>
<b>PGE</b>	
Erin Apperson <a href="mailto:Erin.apperson@pgn.com">Erin.apperson@pgn.com</a>	Rob McFarlane <a href="mailto:Rob.macfarlane@pgn.com">Rob.macfarlane@pgn.com</a> <a href="mailto:Pge.opucfilings@pgn.com">Pge.opucfilings@pgn.com</a>
Lisa F Rackner <a href="mailto:dockets@mrg-law.com">dockets@mrg-law.com</a>	
<b>PacifiCorp</b>	
Carla Scarsella (C) <a href="mailto:Carla.scarsella@pacificorp.com">Carla.scarsella@pacificorp.com</a> <a href="mailto:oregondockets@pacificorp.com">oregondockets@pacificorp.com</a>	
<b>Pacific Ocean Energy Trust</b>	
Jason Busch <a href="mailto:jbusch@pacificoceanenergy.org">jbusch@pacificoceanenergy.org</a>	Shannon Souza <a href="mailto:ssouza@pacificoceanenergy.org">ssouza@pacificoceanenergy.org</a>
<b>OSSIA</b>	
R Thomas Beach <a href="mailto:tomb@crossborderenergy.com">tomb@crossborderenergy.com</a>	Angela Crowley-Koch (C) <a href="mailto:angela@oseia.org">angela@oseia.org</a>
Patrick McGuire (C) <a href="mailto:patrickm@crossborderenergy.com">patrickm@crossborderenergy.com</a>	

<b>Oregon DoE</b>	
Jason Sierman <a href="mailto:Jason.sierman@energy.oregon.gov">Jason.sierman@energy.oregon.gov</a>	Wendy Simons <a href="mailto:Wendy.simons@energy.oregon.gov">Wendy.simons@energy.oregon.gov</a>
Rebecca Smith <a href="mailto:Rebecca.smith@energy.oregon.gov">Rebecca.smith@energy.oregon.gov</a>	
<b>Obsidian Renewables</b>	
David Brown <a href="mailto:dbrown@obsidianrenewables.com">dbrown@obsidianrenewables.com</a>	Peter Brown <a href="mailto:pbrown@obsidianrenewables.com">pbrown@obsidianrenewables.com</a>
<b>NW Natural</b>	
<a href="mailto:efiling@nwnatural.com">efiling@nwnatural.com</a>	
<b>NW Energy Coalition</b>	
Fred Heutte <a href="mailto:fred@nwenergy.org">fred@nwenergy.org</a>	
<b>NIPPC</b>	
Spencer Gray <a href="mailto:sgray@nippc.org">sgray@nippc.org</a>	Irion A Sanger <a href="mailto:irion@sanger-law.com">irion@sanger-law.com</a>
<b>NewSun Energy</b>	
Marie P Barlow (C) <a href="mailto:mbarlow@newsunenergy.net">mbarlow@newsunenergy.net</a>	Jake Stephens <a href="mailto:jstephens@newsunenergy.net">jstephens@newsunenergy.net</a>
<b>Idaho Power</b>	
Mark Annis <a href="mailto:mannis@idahopower.com">mannis@idahopower.com</a>	Adam Lowney (C) <a href="mailto:adam@mrg-law.com">adam@mrg-law.com</a> <a href="mailto:dockets@mrg-law.com">dockets@mrg-law.com</a>
Donovan E Walker (C) <a href="mailto:dockets@idahopower.com">dockets@idahopower.com</a> <a href="mailto:dwalker@idahopower.com">dwalker@idahopower.com</a>	Alison Williams <a href="mailto:awilliams@idahopower.com">awilliams@idahopower.com</a>
<b>EQ Research</b>	
Ben Cartwright <a href="mailto:Ben.cartwright@energytrust.org">Ben.cartwright@energytrust.org</a>	Jeni Hall <a href="mailto:Jeni.hall@energytrust.org">Jeni.hall@energytrust.org</a>
<b>CUB</b>	
Michael Goetz <a href="mailto:mike@oregoncub.org">mike@oregoncub.org</a>	Robert Jenks <a href="mailto:bob@oregoncub.org">bob@oregoncub.org</a>
<b>CREA</b>	
Gregory M Adams <a href="mailto:greg@richardsonadams.com">greg@richardsonadams.com</a>	Mike McArthur <a href="mailto:mwm@community-renewables.org">mwm@community-renewables.org</a>
<b>AWEC</b>	
Corrine Milinovich (C)	Tyler C Pepple (C)

<a href="mailto:com@dvclaw.com">com@dvclaw.com</a>	<a href="mailto:tcp@dvclaw.com">tcp@dvclaw.com</a>
<b>Other</b>	
Brittany Andrus (C) <a href="mailto:andruspdx@gmail.com">andruspdx@gmail.com</a>	Jed Jorgensen <a href="mailto:Jed.jorgensen@fcasolutions.org">Jed.jorgensen@fcasolutions.org</a>
Jonathan Belais <a href="mailto:jbelais@neea.org">jbelais@neea.org</a>	Alexia Kelly <a href="mailto:alexia@electric.capital">alexia@electric.capital</a>
LeAnn Bleakney <a href="mailto:lbleakney@nwcouncil.org">lbleakney@nwcouncil.org</a>	Jim Kreider <a href="mailto:jkreider@campblackdog.org">jkreider@campblackdog.org</a>
Edison G Elizeh <a href="mailto:egelizeh@bpa.gov">egelizeh@bpa.gov</a>	Christa Lim <a href="mailto:Christa.lim@shell.com">Christa.lim@shell.com</a>
Scott Gibbens <a href="mailto:Scott.gibbens@puc.oregon.org">Scott.gibbens@puc.oregon.org</a>	Carl Linvill <a href="mailto:clinvill@raponline.com">clinvill@raponline.com</a>
Kim Herb <a href="mailto:Kim.herb@puc.oregon.gov">Kim.herb@puc.oregon.gov</a>	Caitlin Liotiris <a href="mailto:ccollins@energystrat.com">ccollins@energystrat.com</a>
Paul Martin <a href="mailto:paul@intermountainwindllc.com">paul@intermountainwindllc.com</a>	Luke Mawhinney <a href="mailto:Luke.mawhinney@novisrenew.com">Luke.mawhinney@novisrenew.com</a>
Spencer Moersfelder <a href="mailto:Spencer.moersfelder@energytrust.org">Spencer.moersfelder@energytrust.org</a>	Caroline Moore <a href="mailto:Caroline.f.moore@puc.oregon.gov">Caroline.f.moore@puc.oregon.gov</a>
Tomas Morissey <a href="mailto:tomas@pnucc.org">tomas@pnucc.org</a>	Peter Richardson <a href="mailto:peter@richardsonadams.com">peter@richardsonadams.com</a>
Michael Rooney <a href="mailto:michael@ryedevelopment.com">michael@ryedevelopment.com</a>	Nathan Sandvig <a href="mailto:nathan@ryedevelopment.com">nathan@ryedevelopment.com</a>
Leslie Schauer (C) <a href="mailto:leslie@newsunenergy.net">leslie@newsunenergy.net</a>	Jessica Shipley <a href="mailto:jshipley@raponline.org">jshipley@raponline.org</a>
Zack Snyder <a href="mailto:zachs@solaroregon.org">zachs@solaroregon.org</a>	Chris Zentz <a href="mailto:cdz@vnf.com">cdz@vnf.com</a>

Dated this 25<sup>th</sup> day of January, 2022.




---

Kaley McNay  
Coordinator, Regulatory Operations