19-035-02 / Rocky Mountain Power
December 4, 2019
OCS Data Request 2.1

OCS Data Request 2.1

Case P-45CNW without Gateway South. Please run a case based on the parameters of P-45CNW but remove Gateway South as a resource selection. Please provide the resulting resource portfolio, stochastic mean PVRR (benefit)/cost and risk adjusted PVRR versus P-45CNW.

Response to OCS Data Request 2.1

Throughout the 2019 Integrated Resource Plan (IRP) modeling process, Energy Gateway Segment F (Gateway South or GWS) was endogenously selected by the System Optimizer model (SO model) in nearly every resource portfolio. In the preferred portfolio, the year-end 2023 in-service date enables 1,920 megawatts (MW) of new wind capable of qualifying for 40 percent of the full value of production tax credits (PTC) before they expire. The persistence of the SO model selection of GWS in nearly every portfolio obviated the need for a counterfactual case that eliminates GWS from the preferred portfolio. Nonetheless, PacifiCorp recognizes there is broad stakeholder interest in understanding how the preferred portfolio and system costs might be impacted if GWS is assumed to be removed from the preferred portfolio. Consequently, in response to this data request, PacifiCorp has produced a range of cases to evaluate portfolio and system cost impacts when GWS is removed as a resource option.

Case 1 (Counterfactual with Third-Party Firm Transmission):
The first counterfactual case eliminates GWS as a resource option. However, even if GWS is not constructed, it is unrealistic to assume that PacifiCorp transmission would not be obligated to construct *any* transmission system upgrades out of eastern Wyoming to accommodate Federal Energy Regulatory Commission (FERC) jurisdictional requests for open access transmission tariff (OATT) interconnection service and transmission service. Indeed, both PacifiCorp's interconnection queue and its separate transmission service queue currently contain requests for service that are contingent upon GWS being constructed. Even conservatively examining only the transmission service (not interconnection service) queue, only third-party requests for service out of eastern Wyoming, and assuming no additional third-party request for transmission service will be submitted, PacifiCorp transmission would need to identify a non-GWS alternative to granting a request for 500 MW of FERC-jurisdictional OATT firm point-to-point (PTP) transmission service. Based on preliminary, high-level estimates only, granting that PTP request without GWS would trigger the need for a 230 kilovolt (kV) transmission line by the end of 2023, at a minimum. Therefore, this counterfactual case includes the cost of a 230 kV transmission line at the end of 2023, net of incremental wheeling revenue.

PacifiCorp has conservatively been assuming that 12 percent of system transmission costs are recovered by third-party transmission customers. A review of PacifiCorp's transmission usage relative to the usage of third-party transmission customers since 2012 shows that third-party usage has been increasing each year. In 2018, third-party usage was nearly 19 percent of the total. The table below shows the present value revenue

requirement differential (PVRR(d)) for the counterfactual case, inclusive of the estimated transmission upgrades to accommodate the queued 500 MW PTP request. Results are shown assuming 12 percent and 19 percent of system transmission costs are recovered by third-party customers. Please refer to Attachment OCS 2.1 for the counterfactual resource portfolio.

Study	Stochastic Mean ($m)			Risk Adjusted ($m)		
	Pref. Port. PVRR	Case 1 (No GWS) PVRR	(Benefit)/ Cost of GWS PVRR(d)	Pref. Port. PVRR	Case 1 (No GWS) PVRR	(Benefit)/ Cost of GWS PVRR(d)
12% Third-Party Revenue	$23,207	$23,474	($267)	$24,376	$24,657	($282)
19% Third-Party Revenue	$23,018	$23,369	($350)	$24,178	$24,548	($371)

Case 2 (No New Natural Gas Resources):
The counterfactual case described above accelerates the addition of new natural gas-fired capacity. Considering the risk that future policy developments such as a price on carbon emissions may increase the costs of operating these resources in the future, PacifiCorp developed an additional counterfactual case that assumes no new natural gas-fired resources can be added to the portfolio. As described above, this case also includes estimated transmission service request (TSR)-driven costs associated with a queued 500 MW request for firm PTP transmission service. This counterfactual is compared to Case P-29, which includes GWS but similarly eliminates new natural gas-fired capacity as a resource option. The table below shows the PVRR(d) for the second counterfactual case relative to Case P-29. Results are shown assuming 12 percent and 19 percent of system transmission costs are recovered by third-party customers. Please refer to Attachment OCS 2.1 for the counterfactual resource portfolio.

Study	Stochastic Mean ($m)			Risk Adjusted ($m)		
	P-29 PVRR	Case 2 (No GWS) PVRR	(Benefit)/ Cost of GWS PVRR(d)	P-29 PVRR	Case 2 (No GWS) PVRR	(Benefit)/ Cost of GWS PVRR(d)
12% Third-Party Revenue	$23,328	$24,077	($750)	$24,503	$25,293	($791)
19% Third-Party Revenue	$23,145	$23,958	($813)	$24,311	$25,170	($859)

Case 3 (Alternative Renewables):
Considering that the level of renewable energy is reduced in the first counterfactual case and considering strong customer interest in ensuring more renewable resources are added to the system, PacifiCorp also conducted a counterfactual case that includes renewable energy at levels that are similar to those in the preferred portfolio. Note: PacifiCorp was unable to include renewable energy levels that match the preferred portfolio, because without GWS, there are insufficient transmission upgrades available across the system to achieve a comparable level of renewable resources as the 2019 IRP Preferred Portfolio.

Consequently, this counterfactual case includes renewable resources that represent just 74 percent of the renewable nameplate capacity and just 77 percent of the renewable energy in the preferred portfolio. As described above, this case also includes estimated TSR-driven costs associated with a queued 500 MW request for firm PTP transmission service. The table below shows the PVRR(d) for the third counterfactual case relative to the preferred portfolio. Results are shown assuming 12 percent and 19 percent of system transmission costs are recovered by third-party customers. Please refer to Attachment OCS 2.1 for the counterfactual resource portfolio.

Study	Stochastic Mean ($m)			Risk Adjusted ($m)		
	P-29 PVRR	Case 2 (No GWS) PVRR	(Benefit)/ Cost of GWS PVRR(d)	P-29 PVRR	Case 2 (No GWS) PVRR	(Benefit)/ Cost of GWS PVRR(d)
12% Third-Party Revenue	$23,207	$24,186	($979)	$24,376	$25,403	($1,027)
19% Third-Party Revenue	$23,018	$24,057	($1,038)	$24,178	$25,269	($1,092)

Conclusions:

The results above show that quantified benefits from GWS and associated new wind range between $267 million and $1.09 billion. These benefits are conservative as they do not include the non-quantified benefits associated with the new transmission line, which include (also listed at page 75, Volume I of the 2019 IRP):

- Adding a parallel path to the Gateway West Sub-Segment D.2 project (Aeolus-to-Bridger/Anticline), which will improve the reliability of the 230 kV system in Wyoming for the loss of either 500 kV line.

- Strengthens the PacifiCorp transmission system (increased fault duty) by interconnecting the geographically drivers areas of eastern Wyoming and southern Utah together, allowing additional generation resources to be connected.

- Improves grid reliability by providing better operational control of the backbone transmission system by interconnecting two areas of the PacifiCorp transmission system that are abundant in two different forms of renewable resources, specifically wind rich eastern Wyoming with the solar rich areas of southern Utah.

- Provides anticipated improvements in eastern Utah reliability by providing a potential future high voltage source and power delivery option to meet the projected oil expansion and corresponding load growth (Ashley, Vernal).

- Improves the southern Utah transmission system reliability by providing congestion relief on the 345 kV lines during outage conditions.

- Supports PacifiCorp's North American Electric Reliability Corporation's (NERC) TPL-001-4 transmission system reliability efforts, which are necessary to improve grid reliability performance.

- Assists PacifiCorp in meeting its OATT obligations to identify and construct the transmission system upgrades necessary to accommodate FERC-jurisdictional requests for interconnection service and transmission service.

19-035-02 / Rocky Mountain Power
January 22, 2020
OCS Data Request 2.1 – 1st Revised

OCS Data Request 2.1

Case P-45CNW without Gateway South. Please run a case based on the parameters of P-45CNW but remove Gateway South as a resource selection. Please provide the resulting resource portfolio, stochastic mean PVRR (benefit)/cost and risk adjusted PVRR versus P-45CNW.

1st Revised Response to OCS Data Request 2.1

Further to the Company's response to OCS Data Request 2.1 dated December 4, 2019, the Company has become aware of a labeling error on the study names associated with the information provided in the original response for Case 3 (Alternative Renewables), specifically the provided table. Please refer to the corrected table provided below, which corrects the second column study name from "P29" to "Pref. Port. PVRR" and "Case 3" in the third column from being labeled as "Case 2" to accurately reflect the cases being compared, which are the Preferred Portfolio to Case 3:

Study	Stochastic Mean ($m)			Risk Adjusted ($m)		
	Pref. Port. PVRR	Case 3 (No GWS) PVRR	(Benefit)/ Cost of GWS PVRR(d)	Pref. Port. PVRR	Case 3 (No GWS) PVRR	(Benefit)/ Cost of GWS PVRR(d)
12% Third-Party Revenue	$23,207	$24,186	($979)	$24,376	$25,403	($1,027)
19% Third-Party Revenue	$23,018	$24,057	($1,038)	$24,178	$25,269	($1,092)

Note: all other information / attachments provided with the Company's original response to OCS Data Request 2.1 remain unchanged and valid.

OCS Data Request 3.1

Please reference the Company's response to OCS 2.1 and provide:

(a) The System Optimizer (SO) PVRRs for each of the cases discussed in the response.

(b) A map showing the location of the 230 kV transmission line needed for the referenced 500 MW of OATT PTP transmission service.

(c) The costs included for the 230 kV transmission line broken out into high level categories (e.g. transmission line, substations, etc.).

(d) Identification of the source of the 500 MW OATT PTP transmission service request (i.e. name, location, queue number(s), generation type, etc.).

(e) An explanation as to why the 230 kV line was not needed and not included in the preferred portfolio (Case P-45CNW).

(f) An explanation verifying that if Gateway South is constructed, it will provide sufficient capacity to service both the referenced 1,920 MW of new wind and the 500 MW OATT PTP transmission service request.

Response to OCS Data Request 3.1

(a) Please refer to the table below for a comparison of System Optimizer (SO) model present value of revenue requirements (PVRR) results for each of the cases described in the Company's response to OCS Data Request 2.1:

Case 1 (Counterfactual with Third-Party Firm Transmission):
The first counterfactual case eliminates Energy Gateway South (or GWS) as a resource option.

Study	System Optimizer ($m)		
	Preferred Portfolio PVRR	Case 1 (No GWS) PVRR	(Benefit)/Cost of GWS PVRR(d)
12% Third-Party Revenue	$21,624	$22,406	($783)
19% Third-Party Revenue	$21,435	$22,301	($867)

Case 2 (No New Natural Gas Resources):
The second counterfactual case accelerates the addition of new natural gas-fired capacity.

Study	System Optimizer ($m)		
	P-29 PVRR	Case 2 (No GWS) PVRR	(Benefit)/Cost of GWS PVRR(d)
12% Third-Party Revenue	$21,798	$22,860	($1,062)
19% Third-Party Revenue	$21,615	$22,741	($1,126)

Case 3 (Alternative Renewables):
Considering that the level of renewable energy is reduced in the first counterfactual case and considering strong customer interest in ensuring more renewable resources are added to the system, PacifiCorp also conducted a counterfactual case that includes renewable energy at levels that are similar to those in the preferred portfolio.

Study	System Optimizer ($m)		
	Preferred Portfolio PVRR	Case 3 (No GWS) PVRR	(Benefit)/Cost of GWS PVRR(d)
12% Third-Party Revenue	$21,624	$23,136	($1,513)
19% Third-Party Revenue	$21,435	$23,007	($1,573)

(b) The request is for 500 megawatts (MW) of service from Aeolus Substation in Wyoming to Clover Substation in Utah. A map is not available, but would run the exact route that the Energy Gateway South line would run. The 230 kilovolt (kV) line would be built to accommodate this request rather than building the 500 kV Energy Gateway South line.

(c) Please refer to Confidential Attachment OCS 3.1 which provides the estimated costs used for the 230 kV transmission line broken out into high level categories.

(d) The 500 MW Open Access Transmission Tariff (OATT) point-to-point (PTP) transmission service request (TSR) information is as follows:

i. Customer: The information is not publically available at this time.

ii. Please refer to the Company's response to subpart (i) above.

iii. Queue Number: TSR 2594.

iv. Generating Facility: To be located in Wyoming.

v. Generation Type: Wind.

vi. Point of Receipt (POR): PacifiCorp's Aeolus substation, as represented by the "WYOEAST" POR.

vii. Point of Delivery (POD): PacifiCorp's Clover substation represented by the "MDWP" POD.

(e) PacifiCorp has no existing means to meet the contemplated PTP TSR as described in the Company's response to OCS Data Request 2.1 without the construction of Energy Gateway South. In all cases where Energy Gateway South is selected, the construction of Energy Gateway South provides a means to meet such a request without the need for the more restrictive 230 kV transmission line.

(f) The addition of the Energy Gateway South project will increase transfers from eastern Wyoming to southern Utah by 1,700 MW. In achieving this transfer capability, technical studies have demonstrated that the project can provide enough strength to the eastern Wyoming transmission system that 1,920 MW of additional generation can be interconnected, while meeting Western Electricity Coordinating Council (WECC) and North American Electric Reliability Corporation (NERC) planning criteria. The generation interconnection study related to the 500 MW OATT PTP TSR has not been completed; hence the related TSR has not been evaluated.

Confidential information is provided subject to the Commission's confidentiality rules R746-1-603 and R746-1-605.