
2016 RFP
Attachment 20: PacifiCorp High Level
Cost Estimates Associated With
Integration

Draft (9-22-2011)

Preliminary Assessment of Transmission Impacts Associated with RFP Points of Delivery

1. Overview of Points of Delivery

PacifiCorp is interested in resources that are capable of delivery into or in a portion of the Company's network transmission system in the eastern balancing area. Specifically, the point(s) of delivery of primary interest to PacifiCorp are:

East system Points of Delivery

- Salt Lake Valley
 - Connected to a major 138 kV or 345 kV substation in the Wasatch Front load area south of the Ben Lomond substation and north of the Camp Williams substation.
- PacifiCorp Sites
 - Currant Creek
- Mona 345 kV
- Glen Canyon 230 kV
- Nevada/Utah Border:
 - Gonder-Pavant 230 kV line known as "Gonder 230 kV"
 - Red Butte – Harry Allen 345 line known as "NUB" or Red Butte 345 kV
- Crystal 500 kV
- West of Naughton
 - Connected to a major 230 kV or 345 kV substation west of Naughton substation to the Utah border.

Although the Company will consider resources delivered to the following areas these areas have been identified as having potential transmission constraint implications and as such, will need to be evaluated accordingly:

- Wyoming, unless the resource(s) electrically reside south of the Naughton Monument 230kV line. If, resources in Wyoming are not electrically west of Naughton such resources may be useful in supporting the increased load and wind resources in Wyoming; however, such resources may be negatively affected by transmission constraints.
- All points of receipt which require transmission line construction will require 4-7 years and in some scenarios even longer in order to allow time for environmental work, route selection, permitting, and construction. Resources located at one of these POR's may require cost adjustment for some period of time to accommodate re-dispatch of existing resources or other means of managing transmission congestion in the interim period between completion of plant construction and before new transmission is commissioned.
- Estimates provided in the document are conceptual (plus or minus 50%) un-scoped and provided for informational purposes. System impact studies completed for actual generation interconnection request may identify new constraints and impacts that significantly change the cost and schedule estimates

provided here. Cost estimates and schedules provided in this document do not represent any firm offer of service.

PacifiCorp is willing to consider purchasing capacity and associated energy that is sourced from Desert Southwest (Nevada, California, Arizona, New Mexico); provided, the selling entity is able to purchase firm transmission from the resource to either Gonder or Nevada Utah Border.

West System Points of Delivery include

- Mid Columbia – Yakima Area
 - Midway 230 kV
 - Wanapum 230 kV
 - California Oregon Border
 - Portland
 - Troutdale 230 kV
 - Willamette Valley
 - Alvey 500 kV
 - Fry 230 kV
 - Southern Oregon
 - Chiloquin 230 kV
 - Dixonville 230 kV
 - Meridian 230 kV
 - Reston 230 kV
 - Central Oregon
 - Bend 69 kV
 - Pilot Butte 69/230 kV
 - Ponderosa 230 kV
 - Redmond 69 kV
 - Oregon Coast
 - Astoria to Tillamook 115 kV
 - Boyer (Lincoln City) 115 kV
- Within the Western Control Area – The point of interconnection is the point between the resource, or the electrical system to which the resource is connected, and PacifiCorp’s transmission system.
 - Scheduled to the point(s) of interconnection between PacifiCorp’s western control area and the Bonneville Power Administration or Portland General Electric such that transfer limitations are not exceeded. If the resource is located within the Bonneville control area the Bidder must show they have control area service from the resource to the delivery point.
 - All points of receipt that require transmission line construction will require 4-7 years and in some scenarios even longer in order to allow time for environmental work, route selection, permitting, and

construction. Resources located at one of these POR's may require cost adjustment for some period of time to accommodate re-dispatch (if possible) of existing resources or other means of managing transmission congestion in the interim period between completion of plant construction and before new transmission is commissioned.

2. Transmission Assumptions Associated with the Points of Delivery

PacifiCorp may need to increase transmission import capability and upgrade its network system capacity in order to integrate a resource delivered to the preferred points of delivery. The table below indicates the possible additions necessary and the indicative cost associated with the upgrade. These indicative costs are based on assessments done by the PacifiCorp Transmission group for current and past Integrated Resource Plan and System Impact Studies.

These cost estimates are indicative but will be used for the purpose of evaluating bids and may be refined if better estimates are received prior to issuance of the RFP.

East System				
Point of Delivery	Description of Possible Transmission Additions / Upgrades	Path(s) to Upgrade and Voltage Support	Estimated Cost of Upgrades¹	Transmission In Service (estimate)²
Salt Lake Valley 138 kV 600 MW	Upgrades to existing lines	Unknown location	\$108M	2016
Mona/ Carrant Creek 345 kV 600 MW	Substation upgrades	Mona to PACE	\$67M	2013 ³
Glen Canyon 345 kV 600 MW	Transmission line(s), substation, phase shifter	Glen Canyon to Sigurd and Mona to PACE	\$382M	2019
Gonder 345 kV 600 MW	Transmission line(s), substation	Gonder/Nev Border to Sigurd and Mona to PACE	\$336M	2018
NUB	Series	Sigurd/Huntington	\$76 M	Mid 2015 ⁵

¹ The costs are shown in current year (2011) up-front capital dollars.

² Date reflects Dec 31 of the stated in service date unless otherwise stated. .

³ Requires completion of the Mona to Oquirrh transmission line which is currently under construction.

(Harry Allen 345 kV) 449 MW Summer, 524 MW Winter	Compensation on Sigurd to Mona transmission lines. Requires wheeling across the NV Energy transmission system to the PacifiCorp system + Sigurd to Red Butte #2 line ⁴ .	north		
Crystal 500 kV 600 MW	Transmission line(s), substation, transformer, phase shifter	Crystal to RButte + RButte + Clover to PACE	\$549 M	2020
Wyoming 400 MW	Transmission line, substation + planned Energy Gateway capacity	Dave Johnston to Windstar line, Dave Johnston and Windstar substation additions	\$173 M	2018
Populus 345 kV, 600 MW	Substation connection. Delivery requires use of existing firm network allocation rights across Path C.	N/A	\$30 M	2014
Four Corners 345kV 600 MW	New line, terminations, phase shifter	F.Corners to Clover + Clover to PACE	\$798M	2019

West System				
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⁵ Installation of series compensation to support NUB imports completed three years after notification of need.

⁴ Sigurd to Red Butte #2 is required for load service to SW Utah and excluded from costs for this resource.

Point of Delivery	Description of Possible Transmission Additions / Upgrades	Path(s) to Upgrade and Voltage Support	Estimated Cost of Upgrades	Transmission In Service (estimate)
Mid Columbia Paul 600 MW	Delivered load to Yakima POD – of Wanapum and Vantage	N/A	No Cost ⁶	2013
California Oregon Border 600 MW	Delivered to southern Oregon load via Malin 230 kV – 200 MW delivered to Southern Oregon and up to 400 MW delivered to the Willamette Valley through a new or double circuit 230 upgrade through Alvey.	230 kV line Alvey to Dixonville substations, additions at Alvey and Dixonville	\$314 M	2018
Portland Troutdale 400 MW	Transmission line, substation additions	230 kV line Gresham to Bethel substations, additions at Gresham and Bethel	\$216 M	2018
Willamette Valley – Alvey 230 KV 400 MW	Transmission line, substation additions	230 kV line Alvey to Dixonville substations, additions at Alvey and Dixonville	\$314 M	2018
Chiloquin Southern Oregon 400 MW	Transmission line, substation additions	230 kV line Chiloquin to Klamath substations, additions at Chiloquin and	\$108 M	2017

⁶ Assumes the proposed 230 kV Vantage to Wannapum line, required for load service to Yakima is constructed as planned

		Klamath		
Southern Oregon 588 MW	Integrate existing interconnected, third party, generation.	N/A	N/A	N/A
Southern Oregon 600 MW	Substation,	New 500/230 kilovolt substation between Meridian and Grants Pass or Klamath Falls substations	\$55M	2015