

Attachment B

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Description of Hydroelectric Efficiency Analysis

The incremental hydro generation resulting from efficiency gains from hydropower upgrades were calculated using the same method that PacifiCorp submitted to the Oregon Department of Energy for certification of PacifiCorp's facilities as eligible for the Oregon Renewable Portfolio Standard program.

Historical hourly generation data for the period 2007 through 2012 was collected for each unit that was upgraded. Each hour of generation was modified to create two additional hourly profiles representing the efficiency of the unit before and after the upgrade. The hourly pre- and post- efficiency values were based on curves developed from the unit index tests or manufacturer-provided theoretical curves. Efficiency gain for each hour was calculated by taking the difference between the new and old efficiency value and dividing it by the old efficiency value. This gain was then multiplied by the post upgrade generation value to produce an incremental megawatt-hour gain. The initial calculated incremental gain was subtracted from the pre/post upgraded generation profiles to exclude the generation associated with the upgrade.

Generation improvements were calculated for every instance when efficiency improvements were positive including those periods when the unit was ramping up to maximum efficiency. In some cases, portions of the post efficiency upgrade curve are less than the pre upgrade curve. In instances that the efficiency gain was negative, generation was not included in the calculation. Further, since in some cases the post upgrade curve extended beyond the pre upgrade curve (i.e. the new turbine had a higher generation capacity) generation improvements were capped at the point when flows on the pre and post upgrade curve were equal.



Oregon

Kate Brown, Governor

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December 29, 2015

Pooja Kishore
PacifiCorp
825 NE Multnomah St.
Portland, OR 97232



RE: Updated Certification for Efficiency Upgrades at Eleven Hydropower Generating Units

Dear Ms. Kishore:

The Oregon Department of Energy approved Pacific Power's request for an updated incremental hydropower efficiency percentage in April 2014 for the following eleven generating units. As part of the update, Pacific Power provided the department with hourly generation data for the time period 2007 through 2012. The Department is updating the Eligible Thru date for these facilities to reflect Oregon Administrative Rules adopted by the Department in 2014.

Generating Unit	WREGIS Number	Approval Number	Incremental Percentage	Eligible Thru Date
Prospect 2	W140	12alt002or	1.68%	January 2021
Yale 1 & 2	W141	12alt003wa	1.35%	January 2021
Copco 1	W142	12alt004ca	0.52%	January 2021
Cutler	W151	12alt005ut	3.10%	January 2021
Lemolo 1	W157	12alt006or	10.16%	January 2021
Lemolo 2	W158	12alt007or	0.78%	January 2021
Oneida	W160	12alt008id	7.87%	January 2021
Pioneer	W162	12alt009ut	6.74%	January 2021
Prospect 3	W164	12alt010or	10.71%	January 2021
Big Fork	W179	12alt011mt	4.22%	January 2021
JC Boyle	W180	12alt012or	1.33%	January 2021

If any changes are made to these facility that could affect their eligibility for the Oregon RPS, the Department must be notified.

Please contact me with any questions about this letter or approval.

Best,

Julie Peacock
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