Fact Sheet

August 2019

Power from the Willamette Basin dams

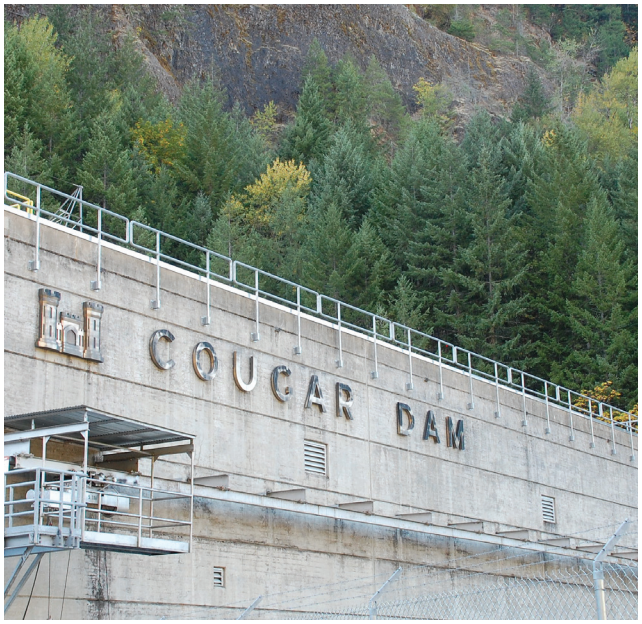
The Willamette Valley System is comprised of 13 multipurpose dams and reservoirs in the Willamette River drainage system, which begins south of Cottage Grove, Oregon, and extends north to the Columbia River.

The dams and reservoirs are operated by the U.S. Army Corps of Engineers as a unified water resource management system to preserve the quality of the valley's environment while providing flood risk management, power generation, irrigation, and navigation in the Willamette Basin.

These dams, built primarily for flood management, generate a small amount of power relative to their operating costs. BPA is evaluating the viability of economical power generation from these dams as it also seeks biologically effective and technologically feasible solutions for protecting, mitigating and enhancing fish and wildlife in the basin.

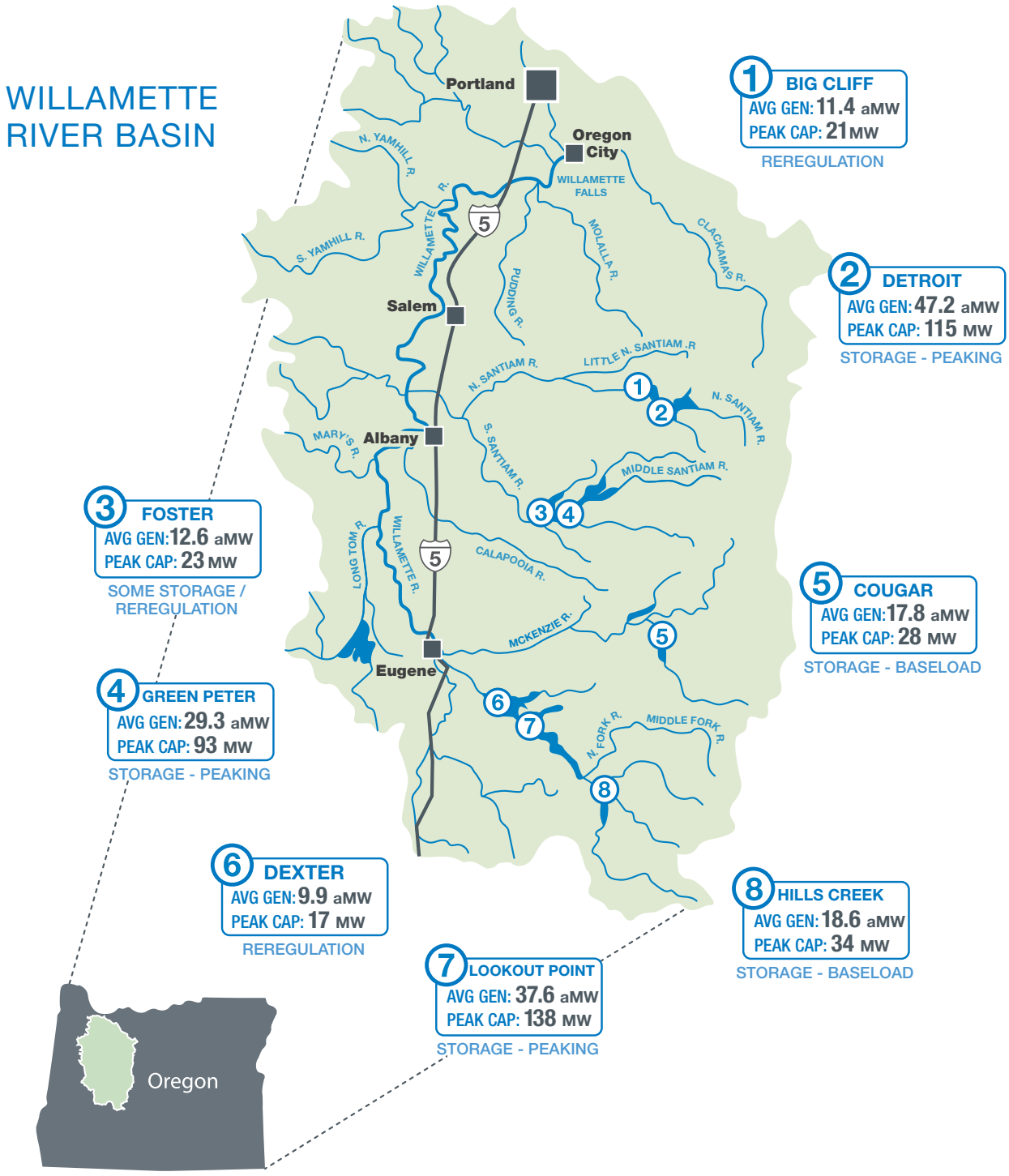
In addition, the dams help maintain water quality, provide municipal and industrial water supply, support fish and wildlife conservation, and allow for recreational activities that serve as an important economic base for local communities.

Eight of the Willamette Valley dams generate hydroelectricity. Their total maximum generating capacity is 495 megawatts, but due to variations in water supply the annual energy output of these dams is lower,



Cougar Dam, located in the McKenzie River subbasin, generates about 18 average megawatts of power each year.

averaging 184.4 MW of hydropower for an average water year, or enough power for about 138,000 homes. The Willamette dams contribute less than 4% to the average power generation for the entire Federal Columbia River Power System. Generation varies between years and within each year due to the seasonal differences in rain and snow and reservoir operations for flood control and other purposes. In most years, generation levels are highest in the winter and lowest in the summer. The operation of these projects has been significantly modified to address the survival and recovery of Endangered Species Act listed salmonids in the Willamette Valley.



Map of the Willamette River Basin showing the eight Willamette dams from which BPA markets power.

The eight dams across four Willamette subbasins from which BPA markets power include: Cougar Dam in the McKenzie River subbasin; Detroit and Big Cliff dams in the North Santiam subbasin; Green Peter and Foster dams in the South Santiam subbasin; and Hills Creek, Lookout Point and Dexter dams in the Middle Fork Willamette subbasin. Storage projects are operated to shape power generation to meet peak demand, and can be classified as either baseload (continuous generation) or peaking (operating during peak power need hours), while reregulation projects also generate hydropower but were installed downstream of the power peaking projects to normalize river flows.

Constructed primarily for flood risk management, the Willamette dams operate at a much higher cost compared to other FCRPS hydroelectric facilities. BPA is evaluating the Willamette Basin dams in its asset management strategy. The agency is taking a value-based approach that takes into account the relative value and performance of each asset. The current levelized cost of generation, as shown in the table, is the incremental cost per megawatt-hour of producing power for each of the different asset groups. BPA presented these costs in the 2018 Integrated Program Review, the public process it conducts every two years in conjunction with the rate case to discuss capital investments and expenses. Cost estimates for the Willamette dams are based on the 30-year capital and operations and maintenance forecasts and exclude investments already made in implementing the Willamette Biological Opinion.

The total levelized cost of generation for the FCRPS across all asset groups is quite low at under $11 per MWh. However, several of the Willamette dams are currently producing power at a much higher cost. It is important that the levelized cost of generation remains at or near $11 per MWh so that BPA can remain cost competitive, provide an economical power supply to the region and continue to successfully balance its multiple public duties. The Willamette dams are expected to have a levelized cost of generation of $30.83 per MWh over the next 30 years as they exist today, before any additional fish mitigation measures are constructed or implemented. Any additional fish mitigation measures would drive the cost to generate power from the Willamette dams even higher.

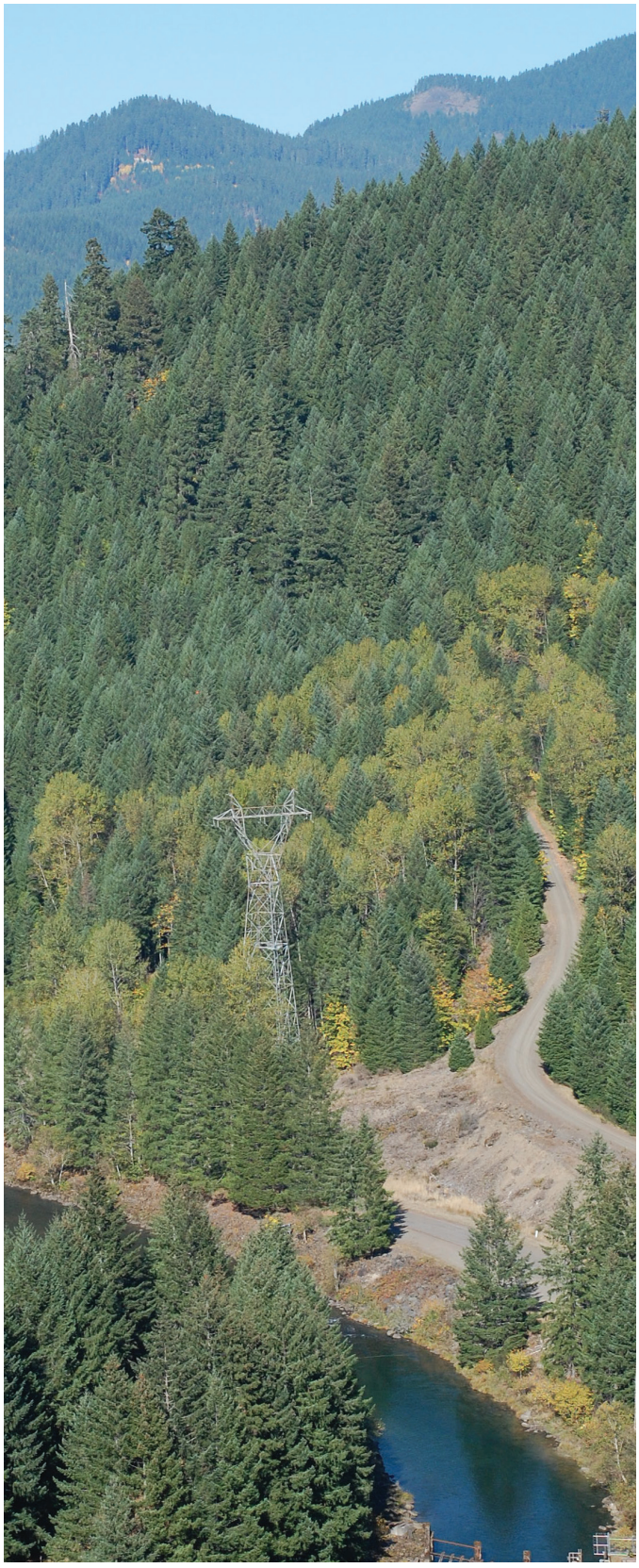
FCRPS POWER CONTRIBUTIONS AND GENERATION COSTS

ASSET GROUP	% OF AVERAGE ANNUAL GENERATION	LEVELIZED COST OF GENERATION ($/MWH)
Mainstem Columbia	77%	$9.03
Headwater/ Lower Snake	18%	$11.41
Willamette Basin (includes WVS dams)	4%	$30.83
Other	1%	$44.28
FCRPS TOTAL	**100%**	**$10.56**

The cost to generate power from the Willamette dams is among the highest in the FCRPS, but they only contribute about 4% to the total generation.

Multiple federal processes regarding the Willamette Basin Dams are underway. Federal agencies are conducting studies, performing structural and operational improvements and beginning a reevaluation process of how operations on the Willamette River impact chinook salmon, bull trout and steelhead populations.

BPA remains committed to fulfilling its environmental obligations and goals including protecting and enhancing fish and wildlife affected by the Willamette dams. BPA is also committed to fulfilling its obligations and goals for supplying an economical source of power to the region and to the economic viability of the agency. We look forward to working with our federal, state, tribal, and local partners and with other Willamette Valley stakeholders to assure any proposed improvements will result in substantial benefits to native fish populations while being cost-effective. This will require thoughtful and comprehensive analyses of various options to improve fish populations in the Willamette River Basin.



Looking downriver from Cougar Dam in the Willamette Valley.

WILLAMETTE BASIN HYDRO FAST FACTS

13 dams

8 produce hydropower

468 MW peak capacity

AVERAGE ANNUAL GENERATION
184 MW

4% TOTAL POWER CONTRIBUTION TO FCRPS

HYDRO POWER FLOWS HERE

BONNEVILLE POWER ADMINISTRATION
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