

# Major Capital Projects<sup>1</sup> - End-of-Project Target Performance

Q2 2019

Project	Description	Direct Capital (\$M) <sup>2</sup>			In-Service Date	
		Authorized	Forecast	Actual <sup>3</sup>	Authorized	Forecast
<b>Transmission</b>						
Sustain Steel Program Defective Damper Replacements	Replace approximately 1,700 miles of defective PPI spacer dampers.	\$ 34.4	\$ 31.9	\$ 31.3	9/30/14	12/28/20
500 kV Spare Transformer Project	Acquire 5 spares and relocate 2 existing transformers to be used as spares. The spares will be placed strategically across the system.	\$ 43.0	\$ 52.0	\$ 51.9	1/30/14	6/30/19
Fleet Mobile Equipment Replacement FY17-19	Heavy duty and specialized vehicle replacement program for FY17-19	\$ 17.2	\$ 16.3	\$ 9.7	4/1/20	9/30/19
Ross - Schultz Fiber Replacement	Replace the obsolete and limited 36 strand fiber with standard 72 strand fiber.	\$ 34.0	\$ 39.0	\$ 28.9	9/15/18	12/21/21
P25 Two-Way Mobile Radio Upgrade	Replace and upgrade the mobile radio system to P25 technology.	\$ 64.5	\$ 80.0	\$ 21.6	9/30/17	12/22/25
Puget Sound Area Northern Intertie (PSANI) Memorandum of Agreement	Install a 500/230 kV transformer bank addition at Raver Substation.	\$ 56.4	\$ 50.6	\$ 38.6	9/30/16	10/1/19
Operational Multi-Gigabit Ethernet Transport (OMET)	Communications upgrade and replacement to ensure adequate capacity and compatibility for emerging requirements.	\$ 43.5	\$ 46.6	\$ 28.7	9/30/17	8/1/21
Paul Substation Shunt Reactor Addition	Install an additional reactor in the Portland area for voltage control.	\$ 10.4	\$ 14.8	\$ 13.6	9/30/16	7/18/19
Spare Transformers for Hub Wind Sites	Add a spare 500/230 kV single phase transformer at John Day, Rock Creek, Slatt and Central Ferry substations.	\$ 21.4	\$ 21.0	\$ 17.6	4/1/19	9/1/19
Quenett Creek Substation L0380	Construct new substation and associated line work to serve additional N. Wasco PUD load.	\$ 44.9	\$ 49.8	\$ 35.9	12/31/19	6/30/19
Avangrid Montague I Wind Project	Interconnection facilities for Avangrid's wind project.	\$ 11.0	\$ 13.6	\$ 8.6	12/28/18	7/31/19
UEC Morrow Flat Phase II	Interconnection facilities for Umatilla Electric Cooperative load service request.	\$ 18.2	\$ 12.6	\$ 11.1	10/1/19	10/1/19
Central Oregon Series Capacitor	Add capacitors at Slatt and Bakeoven to support load growth.	\$ 18.9	\$ 10.7	\$ 8.0	6/30/19	5/30/19
Wheatridge Wind	Interconnection for NextEra's Wheatridge wind project.	\$ 10.1	\$ 9.5	\$ 0.0	12/31/19	10/1/20
Fairview Reactor and Transformer	Install a reactor to address high voltages on the Fairview 230 kV bus and replace an aging transformer.	\$ 14.3	\$ 10.8	\$ 0.1	12/31/22	12/31/21
Mission Critical IT Infrastructure	Completely replace the Dittmer Data Center IT infrastructure.	\$ 15.9	\$ 13.5	\$ 0.3	12/30/22	6/30/22
Anaconda-Dixon-Silverbow Transformer	Install a transformer at Dixon, move an existing transformer from Dixon to Anaconda and retire the transformer at Silver Bow.	\$ 14.0	\$ 11.5	\$ 1.6	12/31/20	12/31/20
Steel Lines Sustain Program FY18-19	Two-year asset replacement plan based on asset strategy analysis.	\$ 44.0	\$ 30.3	\$ 17.1	9/30/19	9/30/19
Wood Pole Lines Sustain Program FY18-19	Two-year asset replacement plan based on asset strategy analysis.	\$ 77.5	\$ 63.5	\$ 33.3	9/30/19	9/30/19
Access Roads Sustain Program FY18-19	Two-year asset replacement plan based on asset strategy analysis.	\$ 36.7	\$ 31.8	\$ 17.6	9/30/19	9/30/19
Land and Land Rights Sustain Program FY18-19	Two-year asset replacement plan based on asset strategy analysis.	\$ 10.6	\$ 4.1	\$ 1.3	9/30/19	9/30/19
AC Substations Sustain Program FY18-19	Two-year asset replacement plan based on asset strategy analysis.	\$ 83.4	\$ 97.9	\$ 64.6	9/30/19	9/30/19
DC Substations Sustain Program FY18-19	Two-year asset replacement plan based on asset strategy analysis.	\$ 22.1	\$ 17.1	\$ 7.8	9/30/19	9/30/19
System Telecommunications Sustain Program	Two-year asset replacement plan based on asset strategy analysis.	\$ 32.0	\$ 19.9	\$ 12.0	9/30/19	9/30/19
Power Systems Control Sustain Program FY18-19	Two-year asset replacement plan based on asset strategy analysis.	\$ 40.7	\$ 35.8	\$ 18.4	9/30/19	9/30/19

This information has been made publicly available by BPA on 5/1/2019 and contains information not sourced directly from BPA financial statements.

<sup>1</sup> Includes capital projects authorized at the agency level

<sup>2</sup> Direct capital costs exclude AFUDC and overhead

<sup>3</sup> Actual costs are project costs to date.

<sup>4</sup> Contracts have not been awarded - cost estimates are confidential

# Major Capital Projects<sup>1</sup> - End-of-Project Target Performance

Q2 2019

Project	Description	Direct Capital (\$M) <sup>2</sup>			In-Service Date	
		Authorized	Forecast	Actual <sup>3</sup>	Authorized	Forecast
<b>Transmission - continued</b>						
System Protection and Control Sustain Program FY18-19	Two-year asset replacement plan based on asset strategy analysis.	\$ 40.7	\$ 34.8	\$ 18.7	9/30/19	9/30/19
Control Center Sustain Program FY18-19	Two-year asset replacement plan based on asset strategy analysis.	\$ 12.7	\$ 11.0	\$ 5.7	9/30/19	9/30/19
<b>Federal Hydro</b>						
Grand Coulee and Hungry Horse SCADA Replacement	Replace SCADA systems at Grand Coulee and Hungry Horse.	\$ 51.9	\$ 70.6	\$ 65.2	3/28/16	9/1/20
Grand Coulee Pre Overhaul - Winding Replacement G19, G20	Replace the stator core and windings on units G19 and G20.	N/A <sup>4</sup>	N/A <sup>4</sup>	\$ 2.0	N/A	N/A
Grand Coulee Stator Windings, Cores and Spare G1-G18	Replace 14 stator cores and windings. G4,5,7,9 were previously replaced.	N/A <sup>4</sup>	N/A <sup>4</sup>	\$ 0.8	12/2/24	9/29/2038
Grand Coulee Exciter Replacements G1-G18	Replace the excitation equipment for all 18 units.	N/A <sup>4</sup>	N/A <sup>4</sup>	\$ 0.6	12/3/24	9/29/2038
Grand Coulee Governor Replacements G1-G18	Replace the governors and related equipment for all 18 units.	N/A <sup>4</sup>	N/A <sup>4</sup>	\$ 0.5	12/3/24	9/29/2038
Grand Coulee Transformer Replacements G11-G18	Replace 24 single-phase transformers in the Right Powerhouse.	\$ 33.3	\$ 57.2	\$ 0.7	3/20/19	12/2/24
Grand Coulee - Keys Pump Generating Station - Reliability	Replacements and upgrades to maintain current station capability.	\$ 66.3	\$ 66.3	\$ 23.8	9/30/25	3/31/24
Grand Coulee Firehouse	Build a stand-alone fire station to replace the facility currently housed in the pump-generating plant.	\$ 15.1	\$ 15.8	\$ 8.3	5/14/18	8/29/19
Grand Coulee Left and Right Powerhouse Cranes	Replace the four bridge cranes in the left and right powerhouses.	N/A <sup>4</sup>	N/A <sup>4</sup>	\$ 0.4	7/30/20	3/1/22
Grand Coulee Third Powerhouse Roof	Replace the third powerhouse roof, including seismic, lighting and safety upgrades.	\$ 14.2	\$ 15.4	\$ 0.7	12/29/19	12/1/19
The Dalles Transformer Replacements	Replace 7 transformer banks - TA, T1, T3, T5, T6, T7, T8	\$ 41.9	\$ 37.0	\$ 24.4	7/2/20	6/4/21
The Dalles Fish Unit Breaker Replacement	Replace the two fish attraction unit breakers and associated bus work.	\$ 13.6	\$ 12.8	\$ 7.4	2/12/20	5/1/19
The Dalles Emergency Gantry Crane Replacement	Replace the emergency intake gantry crane.	N/A <sup>4</sup>	N/A <sup>4</sup>	\$ 1.0	2/1/23	9/1/22
McNary Governor Replacement	Upgrade the 14 governors in the McNary powerhouse with digital controls.	N/A <sup>4</sup>	N/A <sup>4</sup>	\$ 2.3	2/22/24	11/1/23
McNary Exciters Upgrade	Replace the exciters to ensure reliability and support the other electrical powertrain upgrades.	N/A <sup>4</sup>	N/A <sup>4</sup>	\$ 1.0	8/24/24	8/24/24
McNary Powerhouse Controls Upgrade	Replace the generally original controls to improve reliability and performance.	N/A <sup>4</sup>	N/A <sup>4</sup>	\$ 1.3	5/26/24	5/26/24
McNary 4160/480V Station Service Upgrade	Replace and upgrade the station service distribution system.	\$ 43.0	\$ 53.1	\$ 48.6	5/26/20	8/30/19
McNary Turbine Design and Replacement	Replace turbine runners 1 - 14 and rewind units 5, 13 and 14.	\$ 553.1	\$ 498.5	\$ 6.1	10/7/33	6/30/31

This information has been made publicly available by BPA on 5/1/2019 and contains information not sourced directly from BPA financial statements.

<sup>1</sup> Includes capital projects authorized at the agency level

<sup>2</sup> Direct capital costs exclude AFUDC and overhead

<sup>3</sup> Actual costs are project costs to date.

<sup>4</sup> Contracts have not been awarded - cost estimates are confidential

# Major Capital Projects<sup>1</sup> - End-of-Project Target Performance

Q2 2019

Project	Description	Direct Capital (\$M) <sup>2</sup>			In-Service Date	
		Authorized	Forecast	Actual <sup>3</sup>	Authorized	Forecast
<b>Federal Hydro - continued</b>						
McNary Intake Gantry Crane 5	Replace the 1953 vintage intake gantry crane. Upgrade the hoist capability to match current needs.	N/A <sup>4</sup>	N/A <sup>4</sup>	\$ 0.3	3/8/22	3/8/22
Bonneville Powerhouse 1 Main Unit Breakers and Station Service	Replace oil-filled original equipment breakers and reconfigure and modernize the station service.	\$ 46.4	\$ 36.0	\$ 21.0	3/15/19	10/1/21
John Day Turbine Hub Upgrades	Rebuild and upgrade up to five turbine runner hubs. Four additional hubs may be rebuilt under a future amendment to this project.	\$ 40.9	\$ 33.7	\$ 7.9	6/30/19	7/17/22
John Day Emergency Gantry Crane Replacement	Replace the 348 ton emergency intake gantry crane.	\$ 25.9	\$ 24.9	\$ 12.2	8/6/20	2/1/20
John Day SQ Board Replacements	Replace SQ and SU electrical boards, switchgear and related equipment.	\$ 17.0	\$ 16.5	\$ 4.3	2/27/23	8/1/22
Ice Harbor Turbine Runner Replacement	Replace poor condition turbine runners in units 1, 2 & 3 with a more fish-friendly design.	\$ 113.8	\$ 102.6	\$ 65.7	3/31/21	12/31/21
Ice Harbor Stator Winding Replacements	Replace the stator windings for units 1,2 and 3.	\$ 24.1	\$ 15.5	\$ 9.8	3/31/21	2/25/21
Lower Granite DC System and LV Switchgear	Upgrade DC system, governor oil pump system and low voltage switchgear.	\$ 11.9	\$ 9.6	\$ 1.1	9/25/23	9/30/22
Lower Monumental U1 Linkage Refurbishment	Refurbish turbine linkage and rewind generator.	\$ 16.3	\$ 18.4	\$ 16.0	7/29/16	9/30/19
Hungry Horse Crane Replacements	Replace two powerhouse bridge cranes, forebay gantry crane, machine	N/A <sup>4</sup>	N/A <sup>4</sup>	\$ 0.8	4/30/21	5/27/21
Black Canyon Third Generating Unit	Add a third generating unit at Black Canyon. The capacity of the unit will be between 10 and 15 MW.	N/A <sup>4</sup>	N/A <sup>4</sup>	\$ 7.2	N/A	N/A
Foster Electrical Reliability Upgrades	Replace the station service distribution equipment, emergency generator and air compressors.	N/A <sup>4</sup>	N/A <sup>4</sup>	\$ 1.8	10/2/23	10/2/23
Palisades Turbine Rehabilitation and Runner Replacement	Replace the turbine runners and rehabilitate the turbines on the four Palisades units.	\$ 30.8	\$ 31.0	\$ 30.8	11/30/16	3/31/19

<b>Facilities</b>						
Ross HMEM Garage	Construct a Heavy Mobile Equipment Mechanic facility on the Ross Complex.	\$ 28.1	\$ 26.0	\$ 7.9	12/31/20	1/30/20

<b>Summary</b>			
Transmission	\$	872.5	\$ 830.4
Federal Hydro		1,159.5	1,114.9
Facilities		28.1	26.0
<b>Total</b>	<b>\$</b>	<b>2,060.1</b>	<b>\$ 1,971.3</b>

This information has been made publicly available by BPA on 5/1/2019 and contains information not sourced directly from BPA financial statements.

<sup>1</sup> Includes capital projects authorized at the agency level

<sup>2</sup> Direct capital costs exclude AFUDC and overhead

<sup>3</sup> Actual costs are project costs to date.

<sup>4</sup> Contracts have not been awarded - cost estimates are confidential