

Major Capital Projects¹ - End-of-Project Target Performance

Q1 2019

Project	Description	Direct Capital (\$M) ²			In-Service Date	
		Authorized	Forecast	Actual ²	Authorized	Forecast
Transmission						
Sustain Steel Program Defective Damper Replacements	Replace approximately 1,700 miles of defective PPI spacer dampers.	\$ 34.4	\$ 31.7	\$ 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	\$ 15.2	\$ 9.2	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	\$ 38.9	\$ 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	\$ 69.6	\$ 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	\$ 54.8	\$ 36.9	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	\$ 47.0	\$ 27.7	9/30/17	5/1/21
Paul Substation Shunt Reactor Addition	Install an additional reactor in the Portland area for voltage control.	\$ 10.4	\$ 14.8	\$ 12.9	9/30/16	3/29/19
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	\$ 20.1	\$ 17.0	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	\$ 50.1	\$ 25.2	12/31/19	6/30/19
Avangrid Montague I Wind Project	Interconnection facilities for Avangrid's wind project.	\$ 11.0	\$ 10.2	\$ 5.9	12/28/18	7/31/19
UEC Morrow Flat Phase II	Interconnection facilities for Umatilla Electric Cooperative load service request.	\$ 18.2	\$ 12.6	\$ 6.7	10/1/19	9/1/19
Central Oregon Series Capacitor	Add capacitors at Slatt and Bakeoven to support load growth.	\$ 18.9	\$ 10.1	\$ 3.3	6/30/19	5/30/19
Wheatridge Wind	Interconnection for NextEra's Wheatridge wind project.	\$ 10.1	\$ 8.7	\$ -	12/31/19	10/1/20
Summit Ridge Wind	Interconnection for Pattern Energy's Summit Ridge wind project.	\$ 22.2	\$ -	\$ 0.0	10/30/21	6/30/21
Fairview Reactor and Transformer	Install a reactor to address high voltages on the Fairview 230 kV bus and replace an aging transformer.	\$ 14.3	\$ 11.0	\$ 0.1	12/31/22	12/31/21
Mission Critical IT Infrastructure	Completely replace the Dittmer Data Center IT infrastructure.	\$ 15.9	\$ 14.7	\$ 0.0	12/30/22	6/30/22
Steel Lines Sustain Program FY18-19	Two-year asset replacement plan based on asset strategy analysis.	\$ 44.0	\$ 34.3	\$ 16.4	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	\$ 32.9	9/30/19	9/30/19
Access Roads Sustain Program FY18-19	Two-year asset replacement plan based on asset strategy analysis.	\$ 36.7	\$ 32.2	\$ 17.4	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	\$ 4.4	\$ 1.0	9/30/19	9/30/19
AC Substations Sustain Program FY18-19	Two-year asset replacement plan based on asset strategy analysis.	\$ 83.4	\$ 97.3	\$ 59.1	9/30/19	9/30/19
DC Substations Sustain Program FY18-19	Two-year asset replacement plan based on asset strategy analysis.	\$ 22.1	\$ 17.8	\$ 5.3	9/30/19	9/30/19
System Telecom. Sustain Program FY18-19	Two-year asset replacement plan based on asset strategy analysis.	\$ 32.0	\$ 19.7	\$ 11.6	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	\$ 29.7	\$ 16.4	9/30/19	9/30/19

This information has been made publicly available by BPA on 2/6/2019 and contains information not sourced directly from BPA financial statements.

¹ Includes capital projects authorized at the agency level greater than \$10 million in direct capital costs (excludes AFUDC and overheads)

² Actual costs are project costs to date.

³ Contracts have not been awarded - cost estimates are confidential

Major Capital Projects¹ - End-of-Project Target Performance

Q1 2019

Project	Description	Direct Capital (\$M) ²			In-Service Date	
		Authorized	Forecast	Actual ²	Authorized	Forecast
Transmission - continued						
System Protection and Control Sustain Program FY18-19	Two-year asset replacement plan based on asset strategy analysis.	\$ 40.7	\$ 32.6	\$ 15.9	9/30/19	9/30/19
Control Center Sustain Program FY18-19	Two-year asset replacement plan based on asset strategy analysis.	\$ 12.7	\$ 8.6	\$ 4.7	9/30/19	9/30/19
Federal Hydro						
Grand Coulee and Hungry Horse SCADA Replacement	Replace SCADA systems at Grand Coulee and Hungry Horse.	\$ 51.9	\$ 70.0	\$ 64.2	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 ³	N/A ³	\$ 2.0	7/31/13	12/31/18
Grand Coulee Stator Windings, Cores and Spare G1-G18	Replace 14 stator cores and windings. G4,5,7,9 were previously replaced.	N/A ³	N/A ³	\$ 0.8	12/2/24	9/29/2038
Grand Coulee Exciter Replacements G1-G18	Replace the excitation equipment for all 18 units.	N/A ³	N/A ³	\$ 0.6	12/3/24	12/31/30
Grand Coulee Governor Replacements G1-G18	Replace the governors and related equipment for all 18 units.	N/A ³	N/A ³	\$ 0.5	12/3/24	12/31/30
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	\$ 21.6	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	\$ 7.7	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 ³	N/A ³	\$ 0.3	7/30/20	3/1/22
Grand Coulee Third Powerhouse Roof	Replace the third powerhouse roof, including seismic, lighting and safety upgrades.	N/A ³	N/A ³	\$ 0.6	12/29/19	10/1/19
The Dalles Transformer Replacements	Replace 7 transformer banks - TA, T1, T3, T5, T6, T7, T8	\$ 41.9	\$ 37.0	\$ 22.8	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	\$ 5.9	2/12/20	5/1/20
The Dalles Emergency Gantry Crane Replacement	Replace the emergency intake gantry crane.	N/A ³	N/A ³	\$ 0.9	2/1/23	9/1/22
McNary Governor Replacement	Upgrade the 14 governors in the McNary powerhouse with digital controls.	N/A ³	N/A ³	\$ 2.3	11/25/18	4/27/23
McNary 4160/480V Station Service Upgrade	Replace and upgrade the station service distribution system.	\$ 43.0	\$ 53.6	\$ 47.4	5/26/20	8/30/19
McNary Turbine Design and Replacement	Replace turbine runners 1 - 14 and rewind units 5, 13 and 14.	N/A ³	N/A ³	\$ 5.8	10/7/33	6/30/31
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	\$ 7.3	6/30/19	7/17/22

This information has been made publicly available by BPA on 2/6/2019 and contains information not sourced directly from BPA financial statements.

¹ Includes capital projects authorized at the agency level

² Direct capital costs exclude AFUDC and overhead

³ Actual costs are project costs to date.

⁴ Contracts have not been awarded - cost estimates are confidential

Major Capital Projects¹ - End-of-Project Target Performance

Q1 2019

Project	Description	Direct Capital (\$M) ²			In-Service Date	
		Authorized	Forecast	Actual ²	Authorized	Forecast
Federal Hydro - continued						
John Day Draft Tube Bulkheads and Intake Gates	Purchase two sets of draft tube bulkheads and one set of intake gates for additional de-watering.	\$ 12.2	\$ 9.9	\$ 9.9	10/21/18	9/1/18
John Day Emergency Gantry Crane Replacement	Replace the 348 ton emergency intake gantry crane.	\$ 25.9	\$ 24.9	\$ 10.3	8/6/20	2/1/20
John Day SQ Board Replacements	Replace SQ and SU electrical boards, switchgear and related equipment.	N/A ³	N/A ³	\$ 2.2	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	\$ 63.4	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	\$ 9.4	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	\$ 16.5	\$ 13.3	7/29/16	9/30/19
Hungry Horse Crane Replacements	Replace two powerhouse bridge cranes, forebay gantry crane, machine shop crane and valve house crane.	N/A ³	N/A ³	\$ 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 ³	N/A ³	\$ 7.2	7/31/15	9/1/21
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

Facilities						
Ross HMEM Garage	Construct a Heavy Mobile Equipment Mechanic facility on the Ross Complex.	\$ 28.1	\$ 25.6	\$ 5.8	12/31/20	12/31/19

Summary		
Transmission	\$ 880.7	\$ 801.6
Federal Hydro	587.4	592.4
Facilities	28.1	25.6
Total	\$ 1,496.2	\$ 1,419.6

This information has been made publicly available by BPA on 2/6/2019 and contains information not sourced directly from BPA financial statements.

¹ Includes capital projects authorized at the agency level

³ Actual costs are project costs to date.

² Direct capital costs exclude AFUDC and overhead

⁴ Contracts have not been awarded - cost estimates are confidential