

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

Q3 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	\$ 32.5	\$ 31.7	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	12/31/19
Fleet Mobile Equipment Replacement FY17-19	Heavy duty and specialized vehicle replacement program for FY17-19	\$ 17.2	\$ 16.4	\$ 10.2	4/1/20	8/30/20
Ross - Schultz Fiber Replacement	Replace the obsolete and limited 36 strand fiber with standard 72 strand fiber.	\$ 34.0	\$ 39.1	\$ 29.0	9/15/18	12/21/21
P25 Two-Way Mobile Radio Upgrade	Replace and upgrade the mobile radio system to P25 technology.	\$ 64.5	\$ 77.4	\$ 23.1	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	\$ 60.1	\$ 42.0	9/30/16	9/30/20
Operational Multi-Gigabit Ethernet Transport (OMET)	Communications upgrade and replacement to ensure adequate capacity and compatibility for emerging requirements.	\$ 43.5	\$ 30.0	\$ 29.4	9/30/17	8/1/21
Paul Substation Shunt Reactor Addition	Install an additional reactor in the Portland area for voltage control.	\$ 10.4	\$ 14.3	\$ 13.9	9/30/16	9/27/19
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	\$ 21.8	\$ 18.6	4/1/19	1/30/21
Quenett Creek Substation L0380	Construct new substation and associated line work to serve additional N. Wasco PUD load.	\$ 44.9	\$ 49.3	\$ 43.0	12/31/19	12/31/19
Avangrid Montague I Wind Project	Interconnection facilities for Avangrid's wind project.	\$ 11.0	\$ 13.4	\$ 10.5	12/28/18	8/31/19
UEC Morrow Flat Phase II	Interconnection facilities for Umatilla Electric Cooperative load service request.	\$ 18.2	\$ 17.4	\$ 16.5	10/1/19	10/1/19
Central Oregon Series Capacitor	Add capacitors at Slatt and Bakeoven to support load growth.	\$ 18.9	\$ 11.0	\$ 8.9	5/30/19	5/30/19
Wheatridge Wind	Interconnection for NextEra's Wheatridge wind project.	\$ 10.1	\$ 9.0	\$ 0.4	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	\$ 11.2	\$ 0.2	12/31/22	12/31/21
Mission Critical IT Infrastructure	Completely replace the Dittmer Data Center IT infrastructure.	\$ 15.9	\$ 14.7	\$ 1.2	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	\$ 11.4	\$ 1.9	12/31/20	12/31/20
Steel Lines Sustain Program FY18-19	Two-year asset replacement plan based on asset strategy analysis.	\$ 44.0	\$ 29.7	\$ 18.2	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	\$ 58.7	\$ 36.8	9/30/19	9/30/19
Access Roads Sustain Program FY18-19	Two-year asset replacement plan based on asset strategy analysis.	\$ 36.7	\$ 29.4	\$ 18.8	9/30/19	9/30/19
Land & Land Rights Sustain Program FY18-19	Two-year asset replacement plan based on asset strategy analysis.	\$ 10.6	\$ 1.8	\$ 0.9	9/30/19	9/30/19
AC Substations Sustain Program FY18-19	Two-year asset replacement plan based on asset strategy analysis.	\$ 83.4	\$ 95.5	\$ 76.0	9/30/19	9/30/19
DC Substations Sustain Program FY18-19	Two-year asset replacement plan based on asset strategy analysis.	\$ 22.1	\$ 17.0	\$ 13.0	9/30/19	9/30/19
System Telecom. Sustain Program FY18-19	Two-year asset replacement plan based on asset strategy analysis.	\$ 32.0	\$ 19.2	\$ 13.9	9/30/19	9/30/19
Power Sys. Control Sustain Program FY18-19	Two-year asset replacement plan based on asset strategy analysis.	\$ 40.7	\$ 27.8	\$ 21.6	9/30/19	9/30/19

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<b>Transmission - continued</b>						
System Protection and Control Sustain Program FY18-19	Two-year asset replacement plan based on asset strategy analysis.	\$ 40.7	\$ 27.2	\$ 22.2	9/30/19	9/30/19
Control Center Sustain Program FY18-19	Two-year asset replacement plan based on asset strategy analysis.	\$ 12.7	\$ 10.6	\$ 7.0	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	\$ 66.5	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.	\$ 28.9	\$ 26.3	\$ 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.	\$ 131.8	\$ 178.6	\$ 0.8	12/2/24	9/29/2038
Grand Coulee Exciter Replacements G1-G18	Replace the excitation equipment for all 18 units.	\$ 51.5	\$ 25.7	\$ 0.6	12/3/24	9/29/2038
Grand Coulee Governor Replacements G1-G18	Replace the governors and related equipment for all 18 units.	\$ 11.9	\$ 20.8	\$ 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	\$ 0.8	3/20/19	1/31/26
Grand Coulee - Keys Pump Generating Station - Reliability	Replacements and upgrades to maintain current station capability.	\$ 66.3	\$ 66.3	\$ 25.8	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	\$ 8.9	5/14/18	11/1/19
Grand Coulee Left and Right Powerhouse Cranes	Replace the four bridge cranes in the left and right powerhouses.	\$ 25.2	\$ 24.0	\$ 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	\$ 1.3	12/29/19	12/1/19
McNary Governor Replacement	Upgrade the 14 governors in the McNary powerhouse with digital controls.	N/A <sup>4</sup>	N/A <sup>4</sup>	\$ 2.4	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>	\$ 1.4	5/26/24	5/26/24
McNary 4160/480V Station Service Upgrade	Replace and upgrade the station service distribution system.	\$ 43.0	\$ 53.1	\$ 49.8	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 <sup>4</sup>	N/A <sup>4</sup>	\$ 6.6	10/7/33	6/30/31
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>	\$ 0.4	3/8/22	3/8/22
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	\$ 9.1	6/30/19	7/17/22
John Day Emergency Gantry Crane Replacement	Replace the 348 ton emergency intake gantry crane.	\$ 25.9	\$ 24.9	\$ 14.9	8/6/20	2/1/20

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<b>Federal Hydro - continued</b>						
John Day SQ Board Replacements	Replace SQ and SU electrical boards, switchgear and related equipment.	\$ 17.0	\$ 16.5	\$ 6.8	2/27/23	8/1/22
John Day Control Room Fire Protection	Upgrade fire protection, ventilation and egress paths in the control room and powerhouse.	\$ 13.3	\$ 13.3	\$ 2.4	10/23/22	10/23/22
The Dalles Transformer Replacements	Replace 7 transformer banks - TA, T1, T3, T5, T6, T7, T8	\$ 41.9	\$ 37.0	\$ 25.5	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	\$ 8.6	2/12/20	9/30/19
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	9/1/23
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	\$ 22.0	3/15/19	10/1/21
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	\$ 69.3	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	\$ 11.1	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	\$ 1.2	9/25/23	9/30/22
Lower Monumental U1 Linkage Refurbishment	Refurbish turbine linkage and rewind generator.	\$ 16.3	\$ 18.4	\$ 17.5	7/29/16	3/31/20
Hungry Horse Crane Replacements	Replace two powerhouse bridge cranes, forebay gantry crane, machine shop crane and valve house crane.	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

<b>Fish &amp; Wildlife</b>						
Steigerwald Floodplain Reconnection	Reconnect 900 acres of the Steigerwald Wildlife Refuge with the Columbia River.	N/A <sup>4</sup>	N/A <sup>4</sup>	\$ 0.0	11/30/22	11/30/22

<b>Facilities</b>						
Ross HMEM Garage	Construct a Heavy Mobile Equipment Mechanic facility on the Ross Complex.	\$ 28.1	\$ 26.3	\$ 11.7	12/31/20	1/30/20

Summary		
Transmission	\$ 872.5	\$ 797.9
Federal Hydro	838.2	874.1
Fish & Wildlife	-	-
Facilities	28.1	26.3
<b>Total</b>	<b>\$ 1,738.8</b>	<b>\$ 1,698.3</b>

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