

Major Capital Projects¹ - End-of-Project Target Performance

Q2 2015

Project	Description	Direct Capital \$M ²			In-Service Date	
		Target	Forecast	Actual ³	Target	Forecast
Transmission						
Spacer Damper Replacement Program (FY08-12)	Replace all spring type double and triple bundle spacer-dampers on the 500 kV system.	\$ 65.2	\$ 46.2	\$ 46.2	9/30/2012 for 95% completion	4/6/15
Sustain Steel Program Defective Damper Replacements	Replace approximately 1,700 mile of defective PPI spacer dampers.	\$ 34.4	\$ 29.8	\$ 27.6	9/30/14	9/30/16
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.	\$ 41.0	\$ 50.6	\$ 49.9	12/31/13	4/29/16
Fleet Mobile Equipment Replacement FY14-16	Heavy duty and specialized vehicle replacement program for FY14-16	\$ 16.4	\$ 16.4	\$ 1.9	9/30/16	9/30/16
#KC SONET Phase II Spur Healing	Complete the digital microwave and radio conversion in Oregon.	\$ 18.0	\$ 13.1	\$ 12.9	12/31/15	12/29/17
#NC Analog Microwave Replacement	Complete the digital microwave and radio conversion in NW Washington.	\$ 9.5	\$ 8.0	\$ 7.8	12/31/15	12/15/16
Alvey Substation 500 kV Shunt Reactor	Add a 500 kV shunt reactor for voltage stabilization.	\$ 10.9	\$ 10.6	\$ 4.3	4/30/12	12/30/15
NEPA - I-5 Corridor Reinforcement	Conduct NEPA study, preliminary engineering and design.	\$ 85.0	\$ 85.0	\$ 61.9	12/31/15	12/15/15
Big Eddy - Knight (West of McNary Reinforcement Group 2)	New 500 kV substation and 28 miles of 500 kV transmission line.	\$ 180.0	\$ 199.4	\$ 170.9	11/30/14	11/18/16
Synchrophasor Project	5-year effort to acquire, install, test, and implement synchronized Wide Area Measurement (WAM) and control technology at BPA.	\$ 32.5	\$ 31.5	\$ 30.6	9/30/15	9/30/15
Wood Pole Line Sustain Program FY14 - FY15	Implement a stable, sustained wood pole replacement program. The four year plan includes cumulative cost and work plan completion targets.	\$77.9 to \$86.5 for FY14-15	\$ 97.8	\$ 59.9	Achieve 100% of workplan	Achieve 100% of workplan
Steel Lines Sustain Program FY14 - FY15	Implement a stable, sustained steel line replacement program. The four year plan includes cumulative cost and work plan completion targets.	\$25.3 to \$28.1 for FY14-15	\$ 22.8	\$ 19.2	Achieve 100% of workplan	Achieve 70% of workplan
System Protection and Control (SPC) Sustain Program FY14 - FY15	Implement a stable, sustained SPC replacement program. The four year plan includes cumulative cost and work plan completion targets.	\$40.0 to \$44.0 for FY14-15	\$ 52.8	\$ 41.7	Achieve 90% of workplan	Achieve 114% of workplan
Ross - Schultz Fiber Replacement	Replace the obsolete and limited 36 strand fiber with standard 72 strand fiber.	\$ 34.0	\$ 32.1	\$ 6.9	9/15/17	11/20/17
#DC Microwave Analog Spur Replacement	Complete the digital microwave and radio conversion in Northeast Washington.	\$ 39.5	\$ 35.0	\$ 31.1	8/30/17	7/3/17
Central Ferry to Lower Monumental (Little Goose Area Reinforcement)	Construct a 38 mile 500 kV transmission line between Central Ferry and Lower Monumental substations.	\$ 115.0	\$ 113.0	\$ 89.6	12/31/15	12/31/15
Rights-of-Way Access Roads and Land Rights Acquisition Program FY13 to FY15	Implement a stable, sustained ROW program. The three year plan includes cumulative cost and work plan completion targets.	\$63.9 to \$71.0 for FY13-15	\$ 82.4	\$ 57.3	Achieve 100% of workplan	70% of workplan
P25 Two-Way Mobile Radio Upgrade	Replace and upgrade the mobile radio system to P25 technology.	\$ 64.5	\$ 64.5	\$ 4.8	9/30/17	9/30/17
Switchgear Replacement for Fault Duty FY12	Replace under-rated switchgear identified in annual screening process.	\$ 14.9	\$ 18.7	\$ 18.4	12/31/14	3/22/16

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Pacific DC Intertie Upgrade - Station Work	Modernize the Celilo converter terminal and upgrade capacity from 3100 MW to 3220 MW for north to south power flow with a future upgrade path to 3800 MW.	\$ 275.8	\$ 274.4	\$ 186.9	12/20/15	12/20/15
Pacific DC Intertie Upgrade - Line Work		\$ 40.0	\$ 81.1	\$ 39.6	10/31/17	10/31/17
Puget Sound Area Northern Intertie (PSANI) Memorandum of Agreement	Install a 500/230 kV transformer bank addition at Raver Substation.	\$ 56.4	\$ 56.4	\$ 5.3	9/30/16	9/30/16
Lower Valley Area Reinforcement (Hooper Springs)	Construct substation and 24 miles of line to address reliability issues in the Lower Valley Area.	\$ 63.8	\$ 63.8	\$ 21.5	9/30/17	9/30/17
AC Substations Sustain Program FY13-15	Implement a stable AC substation equipment replacement program. The 3 year plan includes cumulative cost and scope/schedule targets.	Up to \$51.0 for FY13-15	\$ 77.1	\$ 41.8	Deliver 100% of workplan	Deliver 100% of workplan
PSC/Telecom Sustain Program FY13-15	Implement a stable PSC/Telecom equipment replacement program. The 3 year plan includes cumulative cost and scope/schedule targets.	Up to \$43.8 for FY13-15	\$ 37.1	\$ 29.0	Deliver 100% of workplan	Deliver 80% of workplan
#JC Microwave Upgrade	Complete the digital conversion for the upper part of the #JC communications ring.	\$ 13.5	\$ 8.9	\$ 3.6	9/1/18	9/1/18
Operational Multi-Gigabit Ethernet Transport (OMET)	Communications upgrade and replacement to ensure adequate capacity and compatibility for emerging requirements.	\$ 43.5	\$ 43.5	\$ 9.4	3/30/17	3/30/17
McNary Substation - Additional 500 kV Transformer	Install an additional transformer bank to handle increased loading.	\$ 20.2	\$ 20.1	\$ 1.8	5/30/17	12/29/17
Umatilla Electric Cooperative (UEC) Line and Load Requests	Construct Longhorn Substation Annex and add three bays at McNary Substation.	\$ 65.0	\$ 69.0	\$ 30.0	7/30/16	12/31/15
Paul Substation Shunt Reactor Addition	Install an additional reactor in the Portland area for voltage control.	\$ 9.5	\$ 9.5	\$ 2.0	4/30/16	4/16/16
Raver Substation - Replace Reactor	Replace the failed 180 MVAR reactor with a 300 MVAR unit.	\$ 7.2	\$ 6.3	\$ 1.7	6/30/15	9/30/15
Control House Upgrades	Expand or replace ten substation control houses to replacing failing or inadequate units.	\$ 13.3	\$ 13.3	\$ 0.7	6/15/16	8/31/18
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.	\$ 18.6	\$ 18.6	\$ 0.0	10/15/18	10/15/18
Federal Hydro						
Grand Coulee and Hungry Horse SCADA Replacement	Replace SCADA systems at Grand Coulee and Hungry Horse.	\$ 46.8	\$ 69.2	\$ 42.9	9/30/15	9/30/20
Grand Coulee 500kV Switchyard Relay Replacement	Replace relays and transfer trip between the TPP and 500kV switchyard and between the 230kV and 500kV switchyards.	\$ 8.5	\$ 9.6	\$ 8.2	4/30/15	12/31/14
Grand Coulee Pre Overhaul - Winding Replacement G19, G20	Replace the stator core and windings on units G19 and G20.	N/A ⁴	N/A ⁴	\$ 1.9	5/31/13	12/31/18

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Grand Coulee Stator Windings, Cores and Spare G1-G18	Replace 14 stator cores and windings. G4,5,7,9 were previously replaced.	N/A ⁴	N/A ⁴	\$ -	12/2/23	12/2/23
Grand Coulee Exciter Replacements G1-G18	Replace the excitation equipment for all 18 units.	N/A ⁴	N/A ⁴	\$ 0.1	12/2/23	12/3/23
Grand Coulee Governor Replacements G1-G18	Replace the governors and related equipment for all 18 units.	N/A ⁴	N/A ⁴	\$ -	12/2/23	12/3/23
Grand Coulee Transformer Replacements G11-G18	Replace 24 single-phase transformers in the Right Powerhouse.	N/A ⁴	N/A ⁴	\$ 0.2	10/31/18	10/31/18
Grand Coulee - Keys Pump Generating Station - Reliability	Replacements and upgrades to maintain current station capability.	N/A ⁴	N/A ⁴	\$ 6.4	9/30/24	9/30/24
Grand Coulee G22 - G23 Wicket Gate Replacements	Replace the deteriorating wicket gates.	N/A ⁴	N/A ⁴	\$ 0.9	11/1/18	11/1/18
Chief Joseph Turbine Runner Replacements Units 1 - 16	Replace the turbine runners and rehabilitate the turbines on units 1 - 16.	\$ 166.0	\$ 161.9	\$ 128.6	9/30/17	9/30/17
Chief Joseph Exciter Replacement	Replace excitation units (17 to 27) that have reached the end of their useful lives.	\$ 9.2	\$ 9.2	\$ 8.9	12/30/15	3/6/15
Chief Joseph Governor Replacement	Upgrade the 27 governors with digital controls and replace associated equipment.	\$ 10.7	\$ 10.7	\$ 4.5	8/19/17	1/22/16
The Dalles Transformer Replacements	Replace 7 transformer banks - TA, T1, T3, T5, T6, T7, T8	\$ 37.0	\$ 37.0	\$ -	5/9/19	5/9/19
McNary Main Unit 1-4, 7-12 Stator Winding Replacement	Replace stator windings that are over 50 years old.	\$ 80.0	\$ 80.0	\$ 74.6	12/31/14	12/1/15
McNary Governor Replacement	Upgrade the 14 governors in the McNary powerhouse with digital controls.	N/A ⁴	N/A ⁴	\$ 1.7	1/29/18	4/2/18
McNary 4160/480V Station Service Upgrade	Replace and upgrade the station service distribution system.	\$ 36.0	\$ 45.1	\$ 7.1	12/3/18	12/3/18
Bonneville Powerhouse 1 Main Unit Breakers and Station Service	Replace oil-filled original equipment breakers and reconfigure and modernize the station service.	N/A ⁴	N/A ⁴	\$ 2.5	4/20/18	3/20/18
John Day Governor Upgrade	Upgrade of the governors with digital controls and replacement of associated components.	N/A ⁴	N/A ⁴	\$ 4.8	10/26/16	7/7/16
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.	\$ 39.3	\$ 39.3	\$ 0.6	12/31/18	12/31/18
Ice Harbor Turbine Runner Replacement	Replace poor condition turbine runners in units 1, 2 & 3 with a more fish-friendly design.	\$ 97.0	\$ 97.0	\$ 13.7	10/1/18	10/1/18
Lower Granite U1 Linkage Upgrade	Upgrade the U1 turbine linkage to restore full Kaplan capability.	\$ 7.6	\$ 7.6	\$ -	9/9/16	9/9/16
Lower Monumental U1 Linkage Refurbishment	Refurbish turbine linkage and rewind generator.	N/A ⁴	N/A ⁴	\$ 1.4	3/1/16	5/1/17
Hungry Horse Station Service Replacement	Replace station service switchgear distribution board/feeder cables and upgrade relay protection/metering.	N/A ⁴	N/A ⁴	\$ 6.3	1/31/15	9/30/16

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Hills Creek Powerhouse Turbine and Unit Rehabilitation	Replace turbine runners and generator windings on units 1 and 2 at Hills Creek.	\$ 24.1	\$ 24.1	\$ 15.9	8/12/14	4/4/16
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 ⁴	N/A ⁴	\$ 7.1	12/31/14	12/31/18
Palisades Turbine Rehabilitation and Runner Replacement	Replace the turbine runners and rehabilitate the turbines on the four Palisades units.	\$ 28.8	\$ 30.3	\$ 23.3	5/31/16	5/31/16

IT						
IT Virtualization and Consolidation Project (IVC)	Replace and modernize server infrastructure for non-critical business systems.	\$ 21.8	\$ 26.8	\$ 24.7	9/30/14	9/30/15
Columbia Vista Short Term Replacement (CV-STR)	Replace the current hydro modeling functionality and associated database tool.	\$ 7.1	\$ 7.8	\$ 6.1	9/25/15	9/25/15

Facilities						
Eastside Alternate Operating Facility	Spokane-area facility for redundant transmission and power scheduling functions and alarm monitoring.	\$ 17.5	\$ 23.6	\$ 21.8	9/30/14	6/30/15
Tri Cities Maintenance Headquarters and Franklin Yard	Construct Tri-Cities maintenance HQ, heat line for spare transformers and a spare parts yard at Franklin.	\$ 14.2	\$ 17.1	\$ 14.8	12/31/13	9/30/15
Ross Maintenance Headquarters	Construct a maintenance HQ office building, high-bay structure and lay-down storage area on the Ross complex.	\$ 15.5	\$ 15.5	\$ 0.6	8/1/17	12/12/17

Summary			
Transmission	\$ 1,712.0	\$ 1,788.7	\$ 1,116.3
Federal Hydro	591.0	621.0	361.6
IT	28.9	34.6	30.8
Facilities	47.2	56.2	37.2
Total	\$ 2,379.1	\$ 2,500.5	\$ 1,545.9

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