

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

Q1 2015

| Project   | Description   | Direct Capital \$M <sup>2</sup> |          |                     | In-Service Date                 |                          |
|---|---|---------------------------------|----------|---------------------|---------------------------------|--------------------------|
|   |   | Target                          | Forecast | Actual <sup>3</sup> | Target                          | Forecast                 |
| <b>Transmission</b>   |   |                                 |          |                     |                                 |                          |
| Spacer Damper Replacement Program (FY08-12)                                 | Replace all spring type double and triple bundle spacer-dampers on the 500 kV system.   | \$ 65.2                         | \$ 46.6  | \$ 46.2             | 9/30/2012<br>for 95% completion | 8/28/15                  |
| Sustain Steel Program Defective Damper Replacements                         | Replace approximately 1,700 mile of defective PPI spacer dampers.   | \$ 34.4                         | \$ 31.0  | \$ 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                         | \$ 48.7  | \$ 48.1             | 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  | \$ 0.9              | 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  | \$ 12.7             | 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                         | \$ 10.4  | \$ 4.1              | 4/30/12                         | 12/30/15                 |
| NEPA - I-5 Corridor Reinforcement   | Conduct NEPA study, preliminary engineering and design.   | \$ 85.0                         | \$ 85.0  | \$ 54.0             | 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                        | \$ 189.0 | \$ 162.3            | 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                         | \$ 31.6  | \$ 30.3             | 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    | \$ 96.3  | \$ 46.1             | 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    | \$ 25.6  | \$ 19.2             | Achieve 100% of workplan        | Achieve 100% 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    | \$ 50.1  | \$ 35.3             | Achieve 90% of workplan         | Achieve 128% of workplan |
| Ross - Schultz Fiber Replacement  | Replace the obsolete and limited 36 strand fiber with standard 72 strand fiber.   | \$ 34.0                         | \$ 30.5  | \$ 5.3              | 9/15/17                         | 11/20/17                 |
| #DC Microwave Analog Spur Replacement                                       | Complete the digital microwave and radio conversion in Northeast Washington.  | \$ 39.5                         | \$ 34.2  | \$ 30.1             | 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 | \$ 75.0             | 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    | \$ 86.5  | \$ 46.8             | Achieve 100% of workplan        | 76% of workplan          |
| P25 Two-Way Mobile Radio Upgrade  | Replace and upgrade the mobile radio system to P25 technology.  | \$ 64.5                         | \$ 64.0  | \$ 3.8              | 9/30/17                         | 9/30/17                  |

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| <b>Transmission - continued</b>                                    |   |                                 |          |                     |                          |                          |
| Switchgear Replacement for Fault Duty FY12                         | Replace under-rated switchgear identified in annual screening process.  | \$ 14.9                         | \$ 18.5  | \$ 17.9             | 12/31/14                 | 3/22/16                  |
| 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                        | \$ 274.0 | \$ 139.0            | 12/20/15                 | 12/20/15                 |
| Pacific DC Intertie Upgrade - Line Work                            |   | \$ 40.0                         | \$ 78.4  | \$ 38.8             | 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  | \$ 4.5              | 9/30/16                  | 9/30/16                  |
| Horse Butte Wind Interconnection                                   | Interconnect UAMPS wind project.  | \$ 10.2                         | \$ 8.2   | \$ 8.2              | 11/30/12                 | 12/15/14                 |
| MT to WA Transmission System Upgrade - NEPA                        | NEPA and preliminary engineering and design for the former CUP West project.  | \$ 7.2                          | \$ 5.0   | \$ 1.3              | 3/31/15                  | 12/30/16                 |
| Lower Valley NEPA (Hooper Springs)                                 | NEPA and preliminary engineering and design work for the Lower Valley Area Reinforcement project.   | \$ 19.1                         | \$ 20.9  | \$ 20.5             | 11/1/13                  | 3/30/15                  |
| 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        | \$ 78.2  | \$ 35.2             | 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        | \$ 37.2  | \$ 24.1             | Deliver 100% of workplan | Deliver 78% of workplan  |
| #JC Microwave Upgrade  | Complete the digital conversion for the upper part of the #JC communications ring.  | \$ 13.5                         | \$ 8.3   | \$ 2.6              | 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  | \$ 8.6              | 3/30/17                  | 3/30/17                  |
| McNary Substation - Additional 500 kV Transformer                  | Install an additional transformer bank to handle increased loading.   | \$ 20.2                         | \$ 19.1  | \$ 0.4              | 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                         | \$ 65.0  | \$ 20.7             | 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   | \$ 1.8              | 4/30/16                  | 4/16/16                  |
| Raver Substation - Replace Reactor                                 | Replace the failed 180 MVAR reactor with a 300 MVAR unit.   | \$ 7.2                          | \$ 6.0   | \$ 1.1              | 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                  | 9/14/16                  |
| 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  | \$ 0.7              | 10/15/18                 | 10/15/18                 |
| Grand Coulee and Hungry Horse SCADA Replacement                    | Replace SCADA systems at Grand Coulee and Hungry Horse.   | \$ 46.8                         | \$ 76.3  | \$ 43.4             | 9/30/15                  | 9/30/20                  |

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| <b>Federal Hydro</b>   |   |                                 |                  |                     |                 |          |
| Grand Coulee Left Powerhouse Transformer Replacement           | Replace transformer banks K1, K5, K7, K8 and purchase one spare transformer bank.   | \$ 15.7                         | \$ 15.7          | \$ 15.6             | 10/31/14        | 10/19/14 |
| Grand Coulee 500kV Switchyard Relay Replacement                | Replace relays and transfer trip between the TPP and 500kV switchyard and between the 230kV and 500kV switchyards.                | \$ 7.6                          | \$ 9.6           | \$ 7.7              | 9/30/14         | 4/5/15   |
| 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> | \$ 1.5              | 5/31/13         | 4/29/18  |
| Grand Coulee Stator Windings, Cores and Spare G1-G18           | Replace 14 stator cores and windings. G4,5,7,9 were previously replaced.  | N/A <sup>4</sup>                | N/A <sup>4</sup> | \$ -                | 12/2/23         | 12/2/23  |
| Grand Coulee Exciter Replacements G1-G18                       | Replace the excitation equipment for all 18 units.  | N/A <sup>4</sup>                | N/A <sup>4</sup> | \$ -                | 12/2/23         | 12/3/23  |
| 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> | \$ -                | 12/2/23         | 12/3/23  |
| Grand Coulee Transformer Replacements G11-G18                  | Replace 24 single-phase transformers in the Right Powerhouse.   | N/A <sup>4</sup>                | N/A <sup>4</sup> | \$ 0.1              | 10/31/18        | 10/31/18 |
| Grand Coulee - Keys Pump Generating Station - Reliability      | Replacements and upgrades to maintain current station capability.   | N/A <sup>4</sup>                | N/A <sup>4</sup> | \$ -                | 9/30/24         | 9/30/24  |
| Grand Coulee G22 - G23 Wicket Gate Replacements                | Replace the deteriorating wicket gates.   | N/A <sup>4</sup>                | N/A <sup>4</sup> | \$ 1.1              | 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                        | \$ 166.0         | \$ 118.1            | 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           | \$ 8.5              | 12/30/15        | 3/2/15   |
| Chief Joseph Governor Replacement                              | Upgrade the 27 governors with digital controls and replace associated equipment.  | \$ 10.7                         | \$ 10.7          | \$ 3.4              | 8/19/17         | 9/30/17  |
| McNary Main Unit 1-4, 7-12 Stator Winding Replacement          | Replace stator windings that are over 50 years old.   | \$ 80.0                         | \$ 80.0          | \$ 71.1             | 12/31/14        | 8/1/15   |
| McNary Governor Replacement                                    | Upgrade the 14 governors in the McNary powerhouse with digital controls.  | N/A <sup>4</sup>                | N/A <sup>4</sup> | \$ 1.5              | 1/29/18         | 1/29/18  |
| McNary 4160/480V Station Service Upgrade                       | Replace and upgrade the station service distribution system.  | \$ 36.0                         | \$ 45.0          | \$ 4.3              | 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 <sup>4</sup>                | N/A <sup>4</sup> | \$ 0.3              | 4/20/18         | 3/20/18  |
| John Day Governor Upgrade                                      | Upgrade of the governors with digital controls and replacement of associated components.  | N/A <sup>4</sup>                | N/A <sup>4</sup> | \$ 3.5              | 10/26/16        | 10/26/16 |
| 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          | \$ 11.8             | 10/1/18         | 10/1/18  |

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| <b>Federal Hydro - continued</b>                        |  |                                 |                  |                     |                 |          |
| Lower Monumental U1 Linkage Refurbishment               | Refurbish turbine linkage and rewind generator.  | N/A <sup>4</sup>                | N/A <sup>4</sup> | \$ 1.2              | 3/1/16          | 3/1/16   |
| Hungry Horse Station Service Replacement                | Replace station service switchgear distribution board/feeder cables and upgrade relay protection/metering. | N/A <sup>4</sup>                | N/A <sup>4</sup> | \$ 5.7              | 1/31/15         | 9/30/16  |
| 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          | \$ 14.9             | 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 <sup>4</sup>                | N/A <sup>4</sup> | \$ 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          | \$ 22.6             | 5/31/16         | 11/30/16 |

|   |  |         |         |         |         |         |
|---|--|---------|---------|---------|---------|---------|
| <b>IT</b>   |  |         |         |         |         |         |
| IT Virtualization and Consolidation Project (IVC) | Replace and modernize server infrastructure for non-critical business systems. | \$ 21.8 | \$ 24.4 | \$ 22.0 | 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  | \$ 7.5  | \$ 3.8  | 9/25/15 | 9/25/15 |

|   |   |         |         |         |          |         |
|---|---|---------|---------|---------|----------|---------|
| <b>Facilities</b>                                     |   |         |         |         |          |         |
| Eastside Alternate Operating Facility                 | Spokane-area facility for redundant transmission and power scheduling functions and alarm monitoring.         | \$ 17.5 | \$ 22.7 | \$ 21.8 | 9/30/14  | 5/29/15 |
| 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 | \$ 15.5 | \$ 13.3 | 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 | \$ 0.5  | 8/1/17   | 8/1/17  |

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