e-FILING REPORT COVER SHEET

REPORT NAME: **RE – 18 (4)** 2016 New Construction Budget Report

COMPANY NAME: PORTLAND GENERAL ELECTRIC COMPANY

DOES REPORT CONTAIN CONFIDENTIAL INFORMATION? ☒ No ☐ Yes

If yes, please submit only the cover letter electronically.

Submit confidential information as directed OAR 860-001-0070 or the terms of an applicable PROTECTIVE ORDER.

If known, please select designation: ☒ RE (Electric)

Report is required by: ☐ OAR

☒ Statute **ORS 757.105 and ORS 759.100**

☐ Order **Send to Melanie Forsyth**

☐ Other **Utility Program**

Is this report associated with a specific docket/case? ☒ No ☐ Yes

If Yes, enter docket number: Not Applicable

Key words: Electric Utility Annual New Construction Report

If known, please select the PUC Section to which the report should be directed:

☐ Economic and Policy Analysis

☒ Electric and Natural Gas Revenue Requirements

Portland General Electric Company
121 SW Salmon Street • Portland, Oregon 97204
PortlandGeneral.com

March 29, 2016

E-Filed only
Puc.filingcenter@state.or.us

Public Utility Commission of Oregon
201 High St. SE, Suite 100
PO Box 1088
Salem, OR 97308-1088

Attn: Filing Center

RE: **Report 18 (4) – PGE New Construction Budget Report**

Enclosed for filing is Portland General Electric Company's New Construction Budget Report for the 2016 calendar year. This report is being provided per OAR 860-027-0015 and the 2016 OPUC E-Report Filing requirements. No hardcopy will be submitted.

Should you have any questions, please contact me at (503) 464-8937 or Tamara Neitzke, Director, Corporate Planning, Performance & Supply Chain at (503) 464-7129.

Sincerely,

Stefan Brown
Manager, Regulatory Affairs

SB/sp
Encls.

cc: Chris Liddle
Tammy Neitzke

PUBLIC UTILITY COMMISSION OF OREGON
3930 FAIRVIEW INDUSTRIAL DRIVE, SE
PO BOX 1088, SALEM OR 97308-1088

ELECTRIC COMPANY NEW CONSTRUCTION BUDGET FOR 2016

GENERAL INSTRUCTIONS

1. EACH ENERGY AND LARGE TELECOMMUNICATIONS UTILITY OPERATING WITHIN THE STATE OF OREGON AND HAVING GROSS OPERATING REVENUES OF $50,000 OR MORE PER YEAR IS REQUIRED TO FILE A NEW CONSTRUCTION BUDGET ANNUALLY ON OR BEFORE DECEMBER 31ST, AND REPORT INFORMATION ON NEW CONSTRUCTION, EXTENSION, AND NEW ADDITIONS TO PROPERTY OF THE UTILITY IN ACCORDANCE WITH OREGON ADMINISTRATIVE RULE 860-027-0015.

2. THE CONSTRUCTION BUDGET SHOULD BE RETURNED TO THE PUBLIC UTILITY COMMISSION OF OREGON, 3930 FAIRVIEW INDUSTRIAL DRIVE, PO BOX 1088, SALEM, OR 97308-1088, NO LATER THAN DECEMBER 31ST OF THE YEAR PRECEDING THAT FOR WHICH THE BUDGET IS MADE.

PROJECT NARRATIVE

FOR MAJOR PROJECTS (THE THREE LARGEST PROJECTS IN TERMS OF COST AND ALL PROJECTS GREATER THAN $10 MILLION) A NARRATIVE SUPPLYING THE FOLLOWING INFORMATION IS REQUIRED:

1. PROJECT DESCRIPTION: INCLUDE A BRIEF TECHNICAL SPECIFICATION OF THE PROJECT, OWNERSHIP, IF JOINTLY OWNED, OPERATING DATE, STAGE OF CONSTRUCTION, AND OTHER RELEVANT INFORMATION.
2. NEED FOR THE PROJECT: PROVIDE ALL PREPARED INFORMATION DOCUMENTING THE NEED FOR THE PROJECT, INCLUDING THE SPECIFIC NEED THE PROJECT IS INTENDED TO FILL. ECONOMIC COMPARISONS WITH ALTERNATIVES ARE TO BE PROVIDED. ALL THE UNDERLYING ASSUMPTIONS OF THE ECONOMIC ANALYSES ARE TO BE SPECIFIED.
3. CONTINGENCIES: PROVIDE A LISTING OF EXISTING OR POTENTIAL FUTURE PROBLEMS WHICH MIGHT IMPACT THE FINAL COST OR SUCCESSFUL COMPLETION AND OPERATION OF THE PROJECT, SUCH AS LICENSING PROBLEMS, LABOR DIFFICULTIES, LITIGATION, ETC.
4. RECONCILIATION WITH PRIOR BUDGET: EACH SUCCESSIVE YEAR'S BUDGET CAN BE EXPECTED TO REFLECT DIFFERING ESTIMATES OF PROJECT COSTS AS THE PROJECT PROGRESSES. FOR EACH MAJOR PROJECT, PREPARE A RECONCILIATION WITH THE PRIOR BUDGET'S ESTIMATES AND PROVIDE SPECIFIC REASONS FOR THE CHANGES.

IN ADDITION, PLEASE PROVIDE COPIES OF PREPARED DOCUMENTATION OR PLANS DESCRIBING GENERATION TRANSMISSION, AND GENERAL PLANT PROJECTS EXCEEDING $1,000,000 IN TOTAL COST AND FOR WHICH CONSTRUCTION WILL COMMENCE IN THE BUDGET YEAR. INFORMATION SUBMITTED SHOULD CONTAIN:

1. A BRIEF PROJECT DESCRIPTION: INCLUDE THE PROJECT FUNCTION (E.G., PRODUCTION, TRANSMISSION, DISTRIBUTION, GENERAL PLANT, THERMAL, HYDRO, OR OTHER), PROJECT IDENTIFICATION.
2. LOCATION: INCLUDE A STARTING AND ENDING DATE
3. TOTAL BUDGETED COST.

FULL NAME OF ELECTRIC COMPANY			
Portland General Electric			
ADDRESS: PO BOX OR STREET NUMBER	CITY	STATE	ZIP CODE
121 S.W. Salmon St.	Portland	OR	97204

CERTIFICATION: I CERTIFY THAT THE INFORMATION REPORTED IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE.

SIGNATURE	TITLE	DATE
James F. Lobdell	SVP Finance, CFO Treasurer	3-25-16

SCHEDULE B: ELECTRIC COMPANY NEW CONSTRUCTION BUDGET (SYSTEM)	COMPANY: Portland General Electric	BUDGET YEAR: 2016

INSTRUCTIONS

1. REPORT SIZE OF MAJOR PRODUCTION PROJECTS ONLY, AND PERCENT OWNERSHIP, SCHEDULED OPERATING DATES, AND EXPENDITURES REQUIRED TO COMPLETE PROJECT FOR MAJOR PRODUCTION, TRANSMISSION, AND GENERAL PLANT PROJECTS.

2. MAJOR PROJECTS ARE DEFINED AS THOSE PROJECTS HAVING A TOTAL ESTIMATED COST TO COMPLETION EXCEEDING $10 MILLION.
3. UNDER DISTRIBUTION, REPORT SPECIFIC LINE ITEM EXPENDITURES FOR THE BUDGET YEAR ONLY. ALL EXPENDITURES FOR DISTRIBUTION FOLLOWING THE BUDGET YEAR SHOULD BE AGGREGATED FOR THE YEAR AND ONLY TOTAL DISTRIBUTION EXPENDITURES REPORTED FOR THE PERIOD.
4. NON-MAJOR PROJECT EXPENDITURES WITHIN EACH CATEGORY SHOULD BE AGGREGATED AND ONLY THE TOTALS REPORTED.
5. REPORT ALL EXPENDITURES IN THOUSANDS OF DOLLARS.

DESCRIPTION	SIZE	PERCENT OWNERSHIP %	SCHEDULED OPERATING DATE (MO/YR)	EXPENDITURES (B.Y. = BUDGET YEAR; B.Y. + 1 = THE FIRST YEAR AFTER THE BUDGET YEAR, ETC.) PRIOR TO B.Y. [1]	B.Y. [2]	B.Y. + 1 [3]	B.Y. + 2 [3]	B.Y. + 3 [3]	B.Y. + 4 [3]	REQUIRED TO COMPLETE	TOTAL [5]
MAJOR PRODUCTION PROJECTS [4]:											
Beaver: Replace HRSG Superheaters		100%	Dec-17	2,629	4,652	6,541	0	0	0	0	13,822
Tucannon River Wind Facility	267 MW	100%	Dec-14	467,539	0	0	0	0	0	0	467,539
Carty Generating Facility	440 MW	100%	Jul-16	401,027	43,985	0	0	0	0	0	445,012
Port Westward 2 Construction	220 MW	100%	Jun-15	274,241	6,933	742	690	120	0	0	282,726
North Fork - Down Stream Migrant Surface Collector		100%	Nov-15	46,613	236	0	0	0	0	0	46,849
West Side Hydro Structural/Reliability Upgrades		100.00%	Dec-18	4,726	10,025	13,278	9,204	0	0	0	37,233
NON-MAJOR PRODUCTION PROJECTS [6]					48,523	50,983	53,211	55,010	56,699		264,427
TOTAL PRODUCTION PROJECTS				1,196,775	114,355	71,545	63,105	55,130	56,699	0	1,557,608
MAJOR TRANSMISSION PROJECTS [4]:											
Blue Lake/Gresham - Substation Upgrades		100%	Jun-18	12,485	11,018	6,765	87	0	0	0	30,355
Horizon Phase II Project		100%	Dec-17	725	10,148	5,954	0	0	0	0	16,827
Harborton Reliability Project		100%	Oct-20	0	1,556	13,912	13,813	152	0	0	29,433
NON-MAJOR TRANSMISSION PROJECTS [6]					15,122	15,888	16,583	17,143	17,669		82,405
TOTAL TRANSMISSION PROJECTS				13,210	37,843	42,519	30,483	17,295	17,669	0	159,020
DISTRIBUTION (SEE INSTRUCTION 3): [7]											
STATION EQUIPMENT					34,410						
POLES, TOWERS AND FIXTURES					20,306						
OVERHEAD CONDUCTORS AND DEVICES					32,974						
UNDERGROUND CONDUCTORS AND DEVICES					38,168						
UNDERGROUND CONDUIT					884						
LINE TRANSFORMERS					7,188						
SERVICES					23,656						
METERS					5,779						
STREET LIGHTING AND SIGNAL SYSTEMS					4,698						
OTHER:					152						
TOTAL DISTRIBUTION				160,214	168,214	182,585	190,564	197,005	203,053		1,101,635
MAJOR GENERAL PLANT PROJECTS [4]:											
2020 Vision Next Wave			Nov-15	84,381	0	0	0	0	0	0	84,381
Customer Engagement Transformation			Aug-18	20,670	40,333	47,587	17,418	0	0	0	126,008
Portland Service Center Upgrade			Jun-16	18,365	4,716	0	0	0	0	0	23,081
NON-MAJOR GENERAL PLANT PROJECTS [6]					60,931	64,020	66,817	69,076	71,197		332,040
TOTAL GENERAL PLANT PROJECTS				123,416	105,980	111,607	84,236	69,076	71,197	0	565,511
TOTAL NEW CONSTRUCTION BUDGET				1,493,615	426,393	408,256	368,387	338,505	348,618	0	3,383,774

1) Includes cumulative actual expenditures through Budget Year.
2) Budget includes costs that were approved at the October 2015 Board of Directors meeting and tie to the approved 2016 Operating Plan & Budget. These budgets are subject to change with future Board of Directors approval. Does not include Integrated Resource Plan projects that have not begun construction.
3) Based on 2016 forecast with 2017, 2018, 2019, 2020 trended for inflation by Global Insight Chained Price Index - Public Utilities - Nov 2015 with the exception of Major Projects which forecasts at the time of the time the Operating Plan & Budget was established.
4) Major projects often include work defined in multiple Functional Classes (Production, Transmission, General/Intangible). Major Projects listed under each Functional category have the majority of costs in that category. Each section includes only the actual and budgeted dollars with that classification, with the remainder rolled into the "non Major Project" sections of the other functional categories.
5) Total does not necessarily equal total project cost as projects are broken by Functional category and exclude AFUDC. Full project costs are listed in the Major Project Narrative document.
6) Includes only the non-major projects for the current Budget Year and subsequent four years.
7) Includes the 2016 portion of three major Distribution projects which are detailed in the Major Project narrative (> $10 million): Harborton Reliability Project, West Union 115kV Conversion, and Construct Marquam Substation

SCHEDULE B: ELECTRIC COMPANY NEW CONSTRUCTION BUDGET (SYSTEM)				COMPANY: Portland General Electric						BUDGET YEAR: 2016	
				EXPENDITURES (B.Y. = BUDGET YEAR; B.Y. + 1 = THE FIRST YEAR AFTER THE BUDGET YEAR, ETC.)							
DESCRIPTION	SIZE	PERCENT OWNERSHIP %	SCHEDULED OPERATING DATE (MO/YR)	PRIOR TO B.Y. [1]	B.Y. [2]	B.Y. + 1 [3]	B.Y. + 2 [3]	B.Y. + 3 [3]	B.Y. + 4 [3]	REQUIRED TO COMPLETE	TOTAL [4]
2016 OPUC Construction Budget B											
Trojan Decommissioning:											
Independent Spent Fuel Storage Installation	-	67.5%	-	2,614	3,607	2,827	2,748	2,812	2,803	77,684	95,095
Non-Major Decommissioning Projects	-	67.5%	-	0	0	0	0	0	0	3,580	3,580
Total Decommissioning Projects				2,614	3,607	2,827	2,748	2,812	2,803	81,264	98,675

1) Based on 2015 OPUC Construction Budget Schedule B report.
2) Budget includes costs that are subject to future Board of Directors approval.
3) Based on capital forecast 2017-2020.
4) Total does not necessarily equal total project cost due to timing and expenditures prior to 2015.

Project Narratives

(Project Greater than $10 Million)

Project Narrative
Projects Greater Than $10 Million
(All dollars include Overheads, those with * are Board-approved projects that also include AFUDC)

Title	Start	End	Amount	Notes
West Union - 115kV Conversion (P35570)	1/1/2014	10/14/2016	$12,800,000	This project will convert West Union substation to 115kV. Work includes installing a second transformer, metalclad switchgear, two new feeders, and replacing the existing distribution box structure with a new metalclad switchgear. The second transformer will be the existing Sunset WR1 transformer, which will be replaced under a different project. The purpose of this project is to provide service to new industrial load north of Hwy 26 and offload the heavily-loaded Sunset-Pauling feeder. Currently, West Union substation has two feeders that are mostly overhead; serving urban, rural, and remote locations. West Union substation has only one transformer; N-1 feeder and transformer redundancy is not available. In the event of an extended transformer outage, PGE must roll a mobile substation to West Union, which could result in a 12-18 hour outage. New industrial customers on Jacobson Rd will be served by a feeder that also serves rural and remote load and is primarily overhead. The Sunset-Pauling feeder exceeds its summer planning loading guideline during peak summer conditions. This feeder serves Quality and Reliability Program (QRP) customers in a high-reliability area on Evergreen Parkway. Future load additions to this feeder could result in reliability concerns for customers.
Beaver Plant – Replace HRSG Superheaters (P35150)	1/4/2013	12/15/2017	$13,800,000	The Beaver Generation Plant has six Heat Recovery Steam Generators (HRSGs) that were installed in 1978. Due to the age of the HRSGs, major components including the evaporators, economizers, and outlet stack dampers have been replaced over the past 7 years. The replacement of these components has increased their life expectancy by at least 20 years. The HRSGs super heater sections have not been replaced and are experiencing a significant increase in tube leaks. A thorough investigation and assessment of the HRSG super heater tubes was completed in 2009. Combined visual, metallurgical, u-bend tube wall thickness and rotating ultra-sonic tube wall inspections were performed. Over the years the HRSG super heater u bends have suffered extensive external corrosion, primarily when the plant was idle between 1980 and 1989. This external corrosion has significantly decreased tube wall thickness. Because of this degradation, there is now significant risk that the HRSGs will not be able to

Project Narrative
Projects Greater Than $10 Million
(All dollars include Overheads, those with * are Board-approved projects that also include AFUDC)

Title	Start	End	Amount	Notes
				adequately function in the near future. This project has been revised since its initial creation in 2013 to incorporate scope increases. These include flanged exhaust joint replacement, hot box replacement, blowdown line replacement, access doors to HRSGs, Motor Operated Valve replacement on blowdown lines, and funding for factory acceptance testing. All work is scheduled to complete in 2017.
Blue Lake/Gresham - System Upgrades (P35329) *	1/1/2014	6/1/2018	$20,770,000	This project will construct the new Blue Lake-Gresham 230kV circuit and the new Blue Lake-Troutdale BPA #2 230kV circuit. It also encompasses rebuilding the Blue Lake 230kV substation yard to a 6-position ring bus and adding new breaker positions at Gresham substation. Antiquated and underrated equipment in the Gresham 230kV yard will be replaced. New fiber communications will be constructed between Blue Lake and Gresham and between Blue Lake and Troutdale BPA. The project will go to the Board of Directors in May 2016 to request additional funding.
Portland Service Center Upgrade (P35835)*	5/1/2014	6/30/2016	$22,800,000	This project will upgrade Portland Service Center (PSC) in order to optimize operations and resiliency of the site. PSC is the second largest line center in the PGE service territory and supports the highest density of historical neighborhoods in Portland. The scope includes construction, remodeling, seismic, furniture, IT infrastructure, and temporary lease and relocation costs. In May of 2015 an additional $3.5 million was approved by the Finance Committee of the Board, increasing the total cost of the project to $23.5 (Capital and O&M). The primary drivers of this increase include additional City of Portland requirements (architectural, engineering, and permitting for entire site) and seismic scope changes (foundation and increased labor costs in competitive construction environment in Portland area).
Horizon Phase II Project (P35802)	6/1/2014	12/31/2017	$31,000,000	Additional bulk power transformation in the Hillsboro area is required no later than June, 2018 to accommodate load growth and maintain compliance with the NERC Transmission Planning (TPL) standards. Installing the second 230kV source into Horizon substation eliminates the loss of the entire substation for

Project Narrative
Projects Greater Than $10 Million
(All dollars include Overheads, those with * are Board-approved projects that also include AFUDC)

Title	Start	End	Amount	Notes
				the loss of a transmission circuit. Project scope includes: Install a second bulk power transformer at Horizon substation. Provide a second source to Horizon substation by constructing a new 4.4-mile 230kV line segment to create a Horizon-St Mary's-Trojan 230kV circuit. Replace underrated equipment at Sunset substation and install a second 115kV capacitor bank for voltage support. Replace relays and associated equipment at St Mary's, Trojan, and Orenco substations to support the Horizon and Sunset upgrades. Perform communication upgrades at multiple sites to increase reliability of the communication network. The project total has increased slightly from the prior year due to costs for contract design services.
West Side Hydro Structural/Reliability Upgrades (P35959)	1/1/2015	12/31/2018	$37,200,000	This project provides funding from 2015 to 2018 to enhance the capability of four West Side Hydro Powerhouses and other structures to withstand seismic hazards, improve plant reliability over the duration of the new FERC operating license, and address personnel safety issues during routine and extreme events. The four facilities that are included in the scope of this project are: 1) Sullivan Powerhouse and Facility Improvements 2) River Mill Powerhouse, Gatehouse, and Facility Improvements 3) Faraday Powerhouse Replacement and Facility Improvements 4) Oak Grove Powerhouse and Facility Improvements This budget amount is an increase from last year's Board-approved budget primarily due to bids received for the seismic upgrades to the River Mill Powerhouse being significantly higher than expected.
Harborton Reliability Project (P36039)	7/1/2015	10/31/2020	$44,400,000	The Harborton Reliability Project consolidates the substation equipment into one physical security perimeter, installs a second distribution power transformer, rebuilds the 115kV yard to a breaker-and-one-half configuration, and installs a new breaker-and-one-half 230kV yard with a bulk power transformer. The second distribution transformer provides full transformer redundancy at Harborton substation, which is an electrical island with no ties to other substations.

Project Narrative
Projects Greater Than $10 Million
(All dollars include Overheads, those with * are Board-approved projects that also include AFUDC)

Title	Start	End	Amount	Notes
				The installation of the bulk power transformer provides redundancy for the existing Rivergate VWR1 transformer from a physically diverse source; and addresses transmission operations constraints in the North Portland area. The project routes five 230kV lines into Harborton substation; this will require the expansion of existing Right of Way and subsequent tree removal in Forest Park. The 115kV system will be reconfigured to reduce exposure and provide a stronger source to the NW Portland area. The 115kV circuits from Harborton to Wacker, from Wacker to Station E, and from Station E to Canyon will be reconductored to provide the necessary transmission capacity. Equipment at Wacker and Station E will also be upgraded due to the additional capacity requirements. Communications at Harborton, Wacker, Station E, and Canyon will be improved by bringing the substations up to PGE's current standards. Construction of fiber on the Canyon-E 115kV pole line increases capacity and flexibility on PGE's communications network.
North Fork – Install Down Stream Migrant Surface Collector. (P26389) *	01/01/2004	6/30/2016	$54,000,000	This job constructs and installs a floating fish collector facility, fish transport pipe and a tertiary dewatering facility at North Fork Dam. The floating surface collector will be installed to attract and collect juvenile migrating fish. The existing fish facilities do not meet current regulatory criteria. As part of relicensing and PGE's response to the Endangered Species Act, we will be required to upgrade our facilities. Migrating fish will pass through the surface collector to a new fish transport pipe. The fish pipe will be provided to transport the juvenile fish through the dam and along the backside of the dam to a new tertiary dewatering facility to be constructed on the right bank adjacent to the spillway. Fish exiting this facility will bypass the three Clackamas River dams through the migrant fish by-pass pipe that is to be provided by another job. This job calls for significant design effort beginning about 5 years before the start of construction. This modification is expected to significantly improve the downstream migrant by-pass efficiency at the North Fork Dam in a cost-effective manner.

Project Narrative
Projects Greater Than $10 Million
(All dollars include Overheads, those with * are Board-approved projects that also include AFUDC)

Title	Start	End	Amount	Notes
				Construction of the floating surface collector was completed in September 2015, with final testing, modifications, and site restoration activities expected to be complete by the end of June 2016.
Construct Marquam Substation (P35679)*	1/1/2014	12/31/2018	$60,700,000	This project will construct Marquam substation with a 12-position 115kV Gas Insulated Switchgear (GIS) breaker and a half bus and 3-50 MVA transformers. Harrison substation will also be reconstructed with a six-position ring bus and 1-28 MVA transformer. The work includes an upgrade to the 115kV bus at Eastport substation and replaces motor operated switches with circuit switchers; upgrades relays at Urban substation; installs and reconfigures 115kV transmission lines to serve the new Marquam and upgraded Harrison substations; installs distribution infrastructure and circuits to serve the existing downtown network system currently served by Stephens substation; and installs associated fiber communications and materials. Stephens substation, currently serving approximately 25 MVA in the core network has old, antiquated, non-standard equipment. The growing South Waterfront area currently served by Urban substation will need additional capacity. There is currently no adequate substation backup plan for network substations (Canyon and Stephens). Marquam substation installation will improve on efficiencies by removing non-standard 11kV feeders from the PGE system, providing adequate future backup to the existing core network, and providing future service to the growing South Waterfront district. Construction activities in 2016 are expected to be approximately $19.6 million.
2020 Vision Enterprise Program (P35407)*	10/15/2009	3/31/2016	$88,700,000	The 2020 Vision Enterprise Program modernizes and consolidates Portland General Electric's technology infrastructure to ensure that the future technology path will accommodate the changing needs of PGE and its customers. The 2020 Vision program, comprised of a number of individual projects, represents the transformation of PGE's current Enterprise Technology landscape into a flexible and integrated technology platform that supports PGE's business from end to end. It replaces obsolete technologies and streamlines a number of applications and vendors PGE uses in order to gain efficiencies, better meet customer and PGE needs for accurate "real-time"

Project Narrative
Projects Greater Than $10 Million
(All dollars include Overheads, those with * are Board-approved projects that also include AFUDC)

Title	Start	End	Amount	Notes
				information, and provide a solid foundation for future Smart Grid technologies. Phase I of the 2020 Vision establishes the foundation that underpins all future work and consists of two main components: modernizing PGE's financial systems and creating the foundation for a single enterprise-wide work and asset management system. These two components, along with the Infrastructure and Project Office project, and replacing the company's time collection system comprise the projects necessary to complete Phase I of the 2020 Vision Program. Phase I was completed in mid-2013. The second phase, called the Next Wave of the program will upgrade or replace the following PGE systems at a total estimated Capital cost of $88.7 million (Loaded, including AFUDC). • Maximo Mobile and Scheduling – deployed from November 2014 to February 2015. • Geospatial Information System and Graphic Work Design Replacement (GIS/GWD) – Deployed in August 2015 • Outage Management System Replacement (OMS) – deployed in August 2015 All systems are now in service and in stabilization phase. Trailing costs in 2016 are expected to be approximately $700,000.
Customer Touch Points (P35619)*	1/1/2014	6/30/2019	$137,000,000	The -Customer Touchpoints project replaces PGE's Customer Information System, Meter Data Management system and certain other systems with an integrated software solution that replaces outdated systems, supports our long-term customer strategy, and provides the foundation to help transform how we engage and serve our customers. The project's objectives are to: • Replace the Customer Information System (CIS) and Meter Data Management (MDM) system, along with certain interfacing applications, such as the Power Billing System. • Integrate and synchronize multiple functions with a vendor-supplied, proven software solution that requires minimal customization. • Create a platform that will enable emerging technology, direct access

Project Narrative
Projects Greater Than $10 Million
(All dollars include Overheads, those with * are Board-approved projects that also include AFUDC)

Title	Start	End	Amount	Notes
				and enhanced pricing programs. • Develop new business processes aligned with the needs of the Company and the functionality of the new technology.
Port Westward 2 Construction (P35205)*	1/31/2013	10/31/2018	$312,000,000	Port Westward Unit 2 is a flexible capacity resource for PGE located adjacent to the existing Port Westward Unit 1, with nameplate capacity of 220 MW. The project consists of twelve state-of-the-art, highly efficient natural gas-fired reciprocating engine-generator sets (Wärtsilä model 18V50SG). The engineering, procurement, and construction (EPC) contractor for the project is Columbia River Power Constructors (a joint venture of Black & Veatch Construction Inc. and Harder Mechanical Contractors Inc.). The equipment purchase agreement (EPA) supplier is Wärtsilä North America. The plant was placed into service in December 2014. The project has approximately $6.9 million in capital in 2016, primarily for gas storage and final payments to Wärtsilä and Columbia River Power Constructors. Additional costs in 2017 and 2018 are associated with the NW Natural North Mist Expansion Project (NMEP), which serves Port Westward II. The targeted in service date for NMEP is October 2018.
Carty Generating Plant (P35769)*	6/1/2013	7/30/2016	Estimated at $635,000,000 to $670,000,000	Carty Generating Station is a base load combined cycle gas plant located adjacent to the Boardman Coal Plant, with a nameplate capacity of 441 MW (fired) output. The major equipment for the project will be provided by Mitsubishi, including the 501GAC gas turbine, heat recovery steam generator (HRSG), and steam turbine. As of December 31, 2015, PGE had $424 million, including $41 million of AFDC, included in CWIP for the project. For additional information on Carty construction, refer to PGE's Form 10-K for 2015 issued on February 12, 2016 and 8-K isssued on March 23, 2016.

Project Narratives

(Project Greater than $1 Million, Starting in 2016)

Project Narrative
Projects Greater Than $1.0 Million Starting in 2016
(All costs are fully loaded, excluding AFUDC)

Title	Start	End	Amount	Notes
2016 PGE Facility Fitness[1] (P36067)	1/1/2016	12/31/2016	$1,180,000	This is an ongoing program to ensure life cycle replacement of key building site assets including roofs, emergency generators, HVAC systems, carpet and asphalt, with emphasis on providing sustainable energy efficient improvements. In addition, these funds will support minor electrical upgrades for employee moves and new equipment installation, fire notification systems, and other safety related improvements to remedy hazards or respond to regulatory requirements. Finally, the project supports requests by site users to modify or upgrade facility functionality, such as small construction projects and replacement of building system components not covered under larger projects.
Oak Grove: Switchyard Upgrade (P35941)	1/1/2016	9/30/2017	$1,422,302	This project is to replace oil circuit breakers (OCB) with modern SF6 gas breakers. Associated cap-and-pin insulators and disconnect switches in the Oak Grove 115kV switchyard will also be replaced. Existing string bus and structures will remain unless they are discovered to be damaged/corroded. This project was originally scheduled to begin construction in 2015, but due to conflicting priorities it was deferred to 2016- 2017. The overall project increased approximately $350,000 from the prior year due to added scope to include replacement of protective relays.
2016/2017 Dispatchable Standby Generation (P36105)	1/1/2016	12/31/2017	$1,646,100	This project will fund the expansion of the Dispatchable Standby Generation (DSG) system per the current Integrated Resource Plan to achieve approximately130 MW by 2018. The DSG program is an industry leading program that provides PGE a valuable generation capacity resource and provides DSG customers a valuable service. This capital request will allow the DSG program to continue to grow, adding new DSG sites/generators to the system. The project will install sophisticated controls for the generators that allow remote dispatch from PGE and parallel operation of the machines (i.e. the generators connect to the grid and provide power to the customer site and sometimes export to the grid). As part of the DSG program, PGE partners with the customers to provide

[1] Projects designated as Fitness are those that support the purchase and installation of equipment to maintain base level functionality.

Project Narrative
Projects Greater Than $1.0 Million Starting in 2016
(All costs are fully loaded, excluding AFUDC)

Title	Start	End	Amount	Notes
				maintenance services and fuel for the emergency generator systems, and in return, PGE can operate/dispatch the generators in times of need. Currently PGE uses about $315/kW of capacity when it integrates a new generator into the DSG system.
2016 Cyber Security Fitness[2] (P36054)	12/8/2015	1/3/2017	$1,802,583	This project requests funding for cyber security software and hardware upgrades for six products: 1. Tripwire Vulnerability Management: hardware appliance and associated software 2. Tripwire Configuration Compliance Manager: device profilers (hardware) and central management service (software). 3. QRADAR Security Intelligence and Event Management (SIEM): software that manages hardware flow-collectors 4. Secured Transfer File Protocol (SFTP): Server hardware and software upgrades 5. HP Tipping Point Intrusion Detection and Prevention: software that manages hardware flow-collectors 6. McAfee Products: Security software that acts as an operating system (provides for the operation of hardware). This is expected to be an on-going annual fitness project.
Strategic Asset Management: Rivergate N Substation Rebuild (P36088)	8/1/2015	3/31/2017	$1,903,350	This project emerged from the recommendations of T&D Strategic Asset Management (SAM). SAM's 2016 substation project (Rivergate North 230kV rebuild) was selected based on the project's value and because there is organizational readiness to implement. The project includes rebuilding or replacing the 230kV bus, as the support structure is corroded and needs immediate attention. Should the bus structure fail, the station would experience 30MW of industrial load loss for a major customer served directly off of the 230kV equipment. The transmission system would also go into a non-normal configuration for

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(All costs are fully loaded, excluding AFUDC)

Title	Start	End	Amount	Notes
				several months; three transmission lines and two bulk transformers would be out of service until the work proposed herein could be completed reactively, with limited temporary repair options. The project will also replace four 230kV circuit breakers that are past or nearly past the end of their economic life, replace seven of the 230kV voltage transformers (of these, four have PCB above 15 ppm), replace four station service transformers (two have PCB around 25 ppm), replace all station fencing, upgrade lighting and security features (cameras, etc.) to meet current PGE standards for bulk transmission stations, and complete select repair work to the 115kV bus supports, which according to professional analysis are within one to two years of failure due to corrosion. For all relevant equipment, bracing and upgrades will be installed to bring the 230kV into alignment with current seismic standards for electrical utilities.
Beaver: Upgrade MCCs for HRSGs (P35956)	1/5/2016	9/30/2017	$2,368,883	This project will purchase and install six new arc resistant, 480V, 3 phase, 600 amp bus motor control centers (MCCs), with National Electrical Manufacturers Association (NEMA) 3R walk-in enclosures, to replace Beaver Heat Recovery Steam Generators (HRSG) MCC units 21 through 26. The existing MCCs will be removed and salvaged. The current design scope includes utilizing the existing concrete MCC foundations and existing conduit and conductors. The current budget supports replacement of approximately 50% of the existing circuit conductors from the MCC's. This project was originally slated to begin construction in 2015, but due to the amount of work being performed at Beaver and Port Westward in 2015, it was determined that upgrading the Beaver HRSG MCCs could be deferred to 2016/2017 with minimal risk to reliable operations and allow for additional time to ensure activities could be coordinated with the Beaver HRSG Superheater work to optimize productivity.
Beaver: Combustion Turbine Generator (CTG) Rewind Unit 4 in 2016 (P36061)	1/1/2016	7/31/2017	$2,848,007	This project will rewind the generator stator on Beaver Unit 4. Recent partial discharge tests indicate the generator stator winding insulation is degraded which indicates an unacceptable reduction in the reliability of the

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Projects Greater Than $1.0 Million Starting in 2016
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Title	Start	End	Amount	Notes
				generator. This rewind will be done in the spring of 2016 to support data collection for rewinds of the other five units in 2017 thru 2019.
Transmission Pole Inspection & Replacement (P36089)	1/1/2016	12/31/2017	$3,301,374	This project will cover the inspection and replacement of transmission poles in the service territory. O&M is required for the full pole inspection (FPI) of 1,000 transmission poles, with additional analysis performed on select poles, to determine the effectiveness of borate (boron cobra rod) treatment at slowing the decay in poles with woodpecker cavities or other internal voids. High priority candidate poles are pulled from our previous FPI and Correction Project conducted in years 2009 - 2011. This request assumes inspection and analysis are completed by contractors. Estimated contractor rate for inspection is $200 per pole. This estimate also assumes 50% of poles inspected require analysis at an estimated rate of $200 per analysis. The capital request assumes 10% of poles inspected will require replacement by PGE crews at an estimated rate of $13,000 per pole. Transmission pole replacement designs are assumed to be managed by PGE designers.
Canemah-Sullivan 57kV Project (P36036)	9/1/2015	12/31/2017	$3,418,179	This project will mitigate operational concerns associated with the loss of the Canemah-Sullivan 57kV circuit by installing a second Canemah-Sullivan 57kV circuit. The new circuit requires the construction of new substation equipment at the Canemah and Sullivan substations. Antiquated equipment on the 57kV system at both substations will be addressed as a part of this project, including a breaker at Sullivan substation that has safety and environmental concerns. The line construction required is minimal because the river crossing component is already double-circuited; no work is required on the river crossing as a part of this project. Early authorization was approved in 2015 to procure materials in order to maintain the 2016 project schedule.

Project Narrative
Projects Greater Than $1.0 Million Starting in 2016
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Title	Start	End	Amount	Notes
West Side Hydro: Upgrade Communications Infrastructure (P36133)	1/4/2016	12/31/2017	$4,767,051	This multi-year project will upgrade the existing communications infrastructure of the West Side Hydro project to provide access to fiber-optic connectivity for each of the plant sites. The current scope of work includes installation of a new fiber line from Faraday to Oak Grove (to replace currently leased space on a third party fiber), fiber from Wapinita to Summit (to complete a ring to provide a redundant pathway from Faraday to Oregon City to Timothy Lake), fiber from Timothy Lake to Stone Creek Diversion Dam and Powerhouse, and upgrading the Timothy to Oak Grove microwave link. The 2016 scope of work will be development of detailed design packages and selection of construction contractors for installation in 2017.
Elma Capacity Addition (P36029)	11/1/2015	11/30/2017	$6,005,530	This project will rebuild the Elma substation to provide N-1 redundancy and reduce the amount of asset failure risk the substation carries. Elma BR1 (15 MVA nameplate) and Elma BR2 (16.8 MVA nameplate) will be replaced with 2-28 MVA distribution power transformers. The existing distribution box structures and feeder breakers will be replaced with 2-metal clad switchgear enclosures. The existing motor-operated disconnect switches and fuses will be replaced with circuit switchers, and all additional antiquated equipment will be replaced. Finally, SCADA will be installed, and a new control enclosure will be added. The project start date is in 2015 to enable pre-ordering of equipment. Construction will commence in 2016.
Underground Core Cable Replacement (P35995)	1/1/2016	12/31/2018	$7,113,772	This project will replace lead insulated cable in downtown Portland with poly insulated cable. In December 2013, a lead splice failed, causing an extended outage to the Canyon 3 network. Affected customers included Pioneer Place, City Hall, Standard Insurance, the Portland Building, Multnomah Courthouse, and the Congress Center. These customers were left without power for four to five days. A project has been assembled to replace lead sheath cable and oil filled splices in locations identified as "high priority" sections in the Downtown area.

Project Narrative
Projects Greater Than $1.0 Million Starting in 2016
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Title	Start	End	Amount	Notes
				Project scope includes the replacement of lead insulated primary cable in three separate locations: 2016 - SW 5th Ave between SW Jefferson and SW Taylor (5200') 2017 - SW 6th Ave between SW Alder and SW Oak (4600') 2018 - SW Oak Street between SW 4th and SW 1st (4400')
Wind Generation Fitness[3] Program (P36116)	1/1/2016	12/31/2018	$7,500,000	With the expiration of the Biglow Canyon Phase II and III Service and Maintenance Agreement (SMA) and Guaranteed Availability and Warranty Extension (GAWE), PGE is implementing a new strategy for major maintenance and repairs. PGE is implementing a three-part maintenance and repair strategy that consists of: Third-party scheduled services plus time and materials (ST&M) agreement for non-scheduled maintenance; Annual O&M budgeted for parts; and, this wind-specific capital fitness fund. The ST&M agreement will cover scheduled services, inspections, troubleshooting, and time and materials on specified repairs. PGE will assume the risk and be responsible for purchasing replacement parts and major equipment (e.g., gearbox, main bearing, etc.) as well as the labor associated with major equipment replacement. The Wind Generation Fitness Program is limited to replacement of major components. Small emergent capital projects will continue to be funded via the PGE Generation Fitness Fund. In contrast to the Generation Fitness Fund, individual work orders will range in value from less than $50k (e.g. inverter) to nearly $700k (e.g. gearbox) depending on the failed component.

[3] Projects designated as Fitness are those that support the purchase and installation of equipment to maintain base level functionality.