BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Application of Pacific Gas and Electric Company for Authority, Among Other Things, to Increase Rates and Charges for Electric and Gas Service Effective on January 1, 2017. (U39M)	Application No. 15-09-001 (Filed September 1, 2015)

PACIFIC GAS AND ELECTRIC COMPANY'S (U39M) SPENDING ACCOUNTABILITY REPORT

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Dated: March 30, 2018

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OF THE STATE OF CALIFORNIA

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PACIFIC GAS AND ELECTRIC COMPANY'S (U39M) SPENDING ACCOUNTABILITY REPORT

Pacific Gas and Electric Company (PG&E) submits its attached Spending Accountability Report in Compliance with Decision 17-05-013 authorizing PG&E's General Rate Case Revenue Requirement for 2017-2019 (Report). The Report is appended as Attachment A.

Respectfully Submitted,

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ATTACHMENT A

PACIFIC GAS AND ELECTRIC COMPANY'S
MARCH 30, 2018 SPENDING ACCOUNTABILITY REPORT
IN COMPLIANCE
WITH CALIFORNIA PUBLIC UTILITIES COMMISSION
DECISION 17-05-013

PACIFIC GAS AND ELECTRIC COMPANY'S
MARCH 30, 2018 SPENDING ACCOUNTABILITY REPORT IN COMPLIANCE
WITH CALIFORNIA PUBLIC UTILITIES COMMISSION
DECISION 17-05-013

TABLE OF CONTENTS

Pacific Gas and Electric Company (PG&E) submits this Spending Accountability Report in compliance with the *Decision Authorizing Pacific Gas and Electric Company's General Rate Case Revenue Requirement for 2017-2019,* Decision (D.) D.17-05-013.[1] This report replaces PG&E's annual Budget Compliance Report.

This report is organized as follows:

Part A of this report provides an overview of PG&E's 2017 General Rate Case (GRC) imputed adopted costs and recorded costs for Electric Distribution, Gas Distribution, and Electric Generation for 2017.

Part B contains a detailed comparison of PG&E's 2017 imputed adopted and recorded costs. Specifically, Part B contains:

1) PG&E's imputed adopted and recorded amounts for 2017, by Major Work Category (MWC) for Gas Distribution, Electric Distribution, Nuclear Generation, and Power Generation.
2) PG&E's 2018 budget by MWC as of January 31, 2018, for Gas Distribution, Electric Distribution, Nuclear Generation, and Power Generation.
3) Variance explanations for:
    a) Imputed adopted versus recorded amounts for 2017 by Maintenance Activity Type (MAT) for safety and reliability work for Electric Distribution and Gas Distribution for dollar variances greater than 10 percent, subject to a minimum variance of $1 million for expense and $3 million for capital.
    b) Imputed adopted units versus recorded units for safety and reliability work for Electric Distribution and Gas Distribution for unit variances greater than 20 percent.
    c) Imputed adopted versus recorded amounts for 2017 by MWC for safety and reliability work for Nuclear Generation and Power Generation for variances greater than 10 percent, subject to a minimum variance of $5 million for expense and $10 million for capital.[2]

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1 D.17-05-013, p. 186.

2 Nuclear Generation and Power Generation do not provide unit variances because they do not forecast at the unit cost level since they do not have a large number of like units (such as poles in Electric Distribution). The dollar variance threshold is higher for these LOBs because they do not forecast at the MAT level so they are presented at the MWC level which is a higher level of granularity.

4) Electric Distribution reporting metrics from PG&E's 2017 GRC Settlement Agreement approved in the Decision.[3]

Part C contains 17 of PG&E's safety metrics by month for 2017 as detailed in the Decision.[4]

[3] D.17-05-013, pp. 19-20.

[4] *Id*., p. 193.

PART A – OVERVIEW

A. Part A – OVERVIEW

1. 2017 Expense and Capital Comparison of Imputed Adopted and Recorded Costs

In 2017, PG&E spent $170.9 million more than the imputed regulatory values for expense for Electric Distribution, Gas Distribution, and Electric Generation. The increase was primarily due to severe weather events that required crews to work more than one million additional emergency response hours over originally planned work for Electric Distribution. For capital expenditures, in 2017, PG&E spent $31.1 million less than the imputed regulatory values for Electric Distribution, Gas Distribution, and Electric Generation. The decrease was primarily due to a lower than expected find rate for below ground leak repairs and financial benefits from efficiency initiatives which lowered total project costs in Gas Distribution. This was partially offset by increased capital spending in Electric Distribution, primarily attributable to PG&E's response to extreme weather events.[5] In addition, PG&E's adopted capital in 2017 was higher than the adopted capital for 2018 and 2019. To prevent a ramp up and subsequent ramp down, the capital spending plan was levelized over the 2017-2019 period. This resulted in recorded capital amounts below imputed adopted for 2017; PG&E expects recorded amounts will exceed the imputed adopted values in 2018 and 2019.

For this report, PG&E has translated the 2017 GRC Decision imputed adopted regulatory values (Settlement Agreement, Appendix A) to reflect PG&E's new cost allocation methodology, which was implemented in January 2016, as described in the previous GRC budget compliance reports. Please refer to Appendix A: 2017 GRC Imputed Regulatory Values Methodology for additional details.

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5 PG&E plans to seek Catastrophic Event Memorandum Account (CEMA) recovery for some of the events.

2017 IMPUTED VS. RECORDED EXPENSE BY LINE OF BUSINESS
(MILLIONS OF DOLLARS)

Line No.	Line of Business	2017 Imputed Regulatory Values	2017 Recorded	2017 Recorded vs. Imputed Difference (%)	2017 Recorded vs. Imputed Difference ($)	2018 Budget
1	Gas Distribution	$359.3	$362.1	0.8%	2.8	$323.5
2	Electric Distribution	595.2	$771.7	29.7%	176.5	624.4
3	Nuclear Generation	353.3	$360.1	1.9%	6.8	330.6
4	Power Generation	200.6	$185.4	(7.6%)	(15.2)	162.6
5	Total	$1,508.40	$1,679.30	11.3%	$170.9	$1,441.1

2017 IMPUTED VS. RECORDED CAPITAL BY LINE OF BUSINESS
(MILLIONS OF DOLLARS)

Line No.	Line of Business	2017 Imputed Regulatory Values	2017 Recorded	2017 Recorded vs. Imputed Difference (%)	2017 Recorded vs. Imputed Difference ($)	2018 Budget
1	Gas Distribution	$973.1	$836.1	(14.1%)	($137.0)	$963.5
2	Electric Distribution	1,662.4	1,761.9	6.0%	99.6	1,786.7
3	Nuclear Generation	178.1	195.3	9.7%	17.2	152.7
4	Power Generation	290.6	279.8	(3.7%)	(10.9)	252.5
5	Total	$3,104.2	$3,073.1	(1.0%)	($31.1)	$3,155.4

PART B – 2017 IMPUTED VS. RECORDED COMPARISON

PART B – 2017 IMPUTED VS. RECORDED COMPARISON

Information Technology (IT) and Corporate Real Estate (CRE) costs attributable to the LOBs at issue in this Report are presented in a decentralized fashion, meaning that line of business specific IT and CRE program costs are included in the various lines of business that have initiated the programs.

The significant drivers of the differences between 2017 imputed adopted and recorded costs for each line of business are summarized below.

Gas Distribution

Expense: Gas Distribution's total expenses in 2017 exceeded imputed adopted by $2.8 million or 0.8 percent. For safety and reliability work, 2017 expenses were below imputed values by $1.8 million or 0.7 percent.[1] The decrease was primarily due to a decline in customer service requests, efficiencies and associated workforce reductions in the gas distribution control center, a reduction in the number of leaks found compared to the GRC forecast, and financial benefits realized by various efficiency initiatives. PG&E experienced increased costs due to more reported Underground Service Alert (USA) tickets in response to PG&E's 811 "Call Before You Dig" program, higher than forecasted atmospheric corrosion remediation volume, and severe weather events.

Capital: Gas Distribution's total 2017 capital expenditures were below imputed adopted by $137 million or 14.1 percent. For safety and reliability work, 2017 actual capital expenditures were below imputed regulatory values by $110.2 million or 14.2 percent. This was primarily due to a lower than expected find rate for below ground leak repairs, fewer units for distribution pipeline replacement than 2017 imputed regulatory values, improved load predictions and capacity project forecasting that eliminated the need for certain capacity projects, and financial benefits realized by various efficiency initiatives which lowered total costs per project. This was partially offset by emergency response costs related to severe weather.

Electric Distribution

Electric Distribution's 2017 expense and capital amounts exceeded imputed adopted primarily due to severe weather events in which crews worked more than one million emergency response hours over originally planned work. During 2017, PG&E

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1 Expense amounts include costs to respond to events eligible for recovery under CEMA.

experienced 30 major event days[2] covering 12 events: 6 major storms, 3 heat events, 2 wind events, and devastating fires in northern California.

Expense: Electric Distribution's total expenses in 2017 exceeded imputed adopted by $176.5 million or 29.7 percent. For safety and reliability work, 2017 expenses exceeded imputed adopted by $219.1 million or 41.2 percent. The increase in safety and reliability work was primarily due to emergency response work, including costs to respond to events eligible for recovery under the CEMA mechanism. There were decreases in expenses due to a re-scoping of the surge arrester grounding correction program to replace the arresters with fire safe equipment in conjunction with the corrective grounding work to mitigate wildfire risk (which resulted in a reclassification of the work from expense to capital), and a reduction in non-safety related training activities.

Capital: Electric Distribution's total capital expenditures in 2017 exceeded imputed adopted by $99.6 million or 6.0 percent. For safety and reliability work, 2017 capital expenditures exceeded imputed regulatory values by $147.8 million or 13.2 percent, driven mainly by responding to extreme weather events, including expenditures eligible for CEMA recovery. There were also increased expenditures for substation equipment replacement, response to routine emergencies, and higher costs for pole replacements. The increases were partially offset by reductions in capacity projects, lower expenditures and fewer units completed in reliability and asset replacement programs driven by limited resource availability due to emergency response efforts, and rescheduling and lower development costs of technology projects.

Nuclear Generation

Expense: Nuclear Generation's total expenses in 2017 exceeded imputed adopted by $6.8 million or 1.9 percent. For safety and reliability work, 2017 expenses exceeded imputed regulatory values by $40.3 million or 16.1 percent. The primary drivers included an increase in plant security requirements, an increase in cyber security costs to meet regulatory requirements, and an increase in state fees, material costs and labor costs to support an extended refueling outage. These increases were partially offset by a decrease in costs as a result of levelizing the imputed adopted for the second refueling outage costs over the 3-year GRC period (2017-2019), while the actual costs

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[2] Major event days are days which include unusual events such as major storms which exceed reasonable design and or operational limits of the electric power system.

for the second refueling outage will incur in 2019, when the second refueling outage is scheduled to occur.

Capital: Nuclear Generation's total 2017 capital expenditures exceeded imputed adopted by $17.2 million or 9.7 percent. For safety and reliability work, 2017 capital expenditures exceeded imputed adopted by $24.9 million or 15.4 percent. The primary drivers were an increase in costs due to the reactor baffle former bolt replacement project, additional regulatory work for the National Fire Protection Association (NFPA) 805 fire detection upgrades, and cyber security upgrades.

Power Generation

Expense: Power Generation's total expenses in 2017 were below imputed adopted by $15.2 million or 7.6 percent. For safety and reliability work, 2017 expenses were below imputed regulatory values by $17.3 million or 11.5 percent. The primary driver of this was the Long-Term Service Agreement costs, which were levelized across the 2017 GRC period, however only occur on a periodic basis depending on the operating profile, and did not occur in 2017.

Capital: Power Generation's total 2017 capital expenditures were below imputed adopted by $10.9 million or 3.7 percent. For safety and reliability work, 2017 capital expenditures exceeded imputed adopted by $16.5 million or 6.9 percent. The increased spending in safety and reliability work was primarily due to powerhouse restoration and unexpected road replacement throughout the hydropower territory driven by record high rainfall, flooding, rockslides, and mudslides which caused damage to hydropower infrastructure.

The variance explanations in the discussion below address: (1) Imputed adopted versus recorded amounts for 2017 by MAT and imputed adopted units versus recorded units for safety and reliability work for Electric Distribution and Gas Distribution for dollar variances greater than 10 percent, subject to a minimum variance of $1 million for expense and $3 million for capital, and unit variances greater than 20 percent; and (2) Imputed adopted versus recorded amounts for 2017 by MWC for safety and reliability work for Nuclear Generation and Power Generation for variances greater than 10 percent, subject to a minimum variance of $5 million for expense and $10 million for capital. Additionally, 2018 budget amounts as of January 31, 2018 are provided by line of business and MWC.

The information in this report is arranged by line of business, as follows:

Section 2 – Gas Distribution

Section 3 – Electric Distribution

Section 4 – Nuclear Generation

Section 5 – Power Generation

SECTION 2
Gas Distribution
Imputed Adopted vs. Recorded

PACIFIC GAS AND ELECTRIC COMPANY
2017 GENERAL RATE CASE APPLICATION 15-09-001
GAS DISTRIBUTION

TABLE 2-1
GAS DISTRIBUTION 2017 EXPENSE COMPARISON SUMMARY
(THOUSANDS OF DOLLARS)

Line No.	MWC Description	MWC	2017 Imputed Regulatory Values	2017 Recorded	2017 Difference Higher/(Lower)	2018 Budget
1	Support	AB	$6,262	$43,762	$37,500	$24,445
2	Provide Field Service	DD	48,860	41,649	(7,211)	41,594
3	Leak Survey	DE	19,498	19,853	354	16,283
4	Locate & Mark	DF	23,784	29,904	6,120	29,885
5	Cathodic Protection	DG	9,273	12,142	2,869	18,978
6	Develop & Provide Training	DN	3,915	3,859	(56)	4,699
7	Meter Protection Program	EX	988	239	(749)	346
8	Operate Gas Distribution System	FG	13,099	8,136	(4,963)	9,218
9	Preventive Maintenance (Gas)	FH	14,467	17,410	2,943	17,699
10	Corrective Maintenance (Gas)	FI	85,344	83,160	(2,184)	66,462
11	Gas Mapping	GF	3,853	3,948	95	4,920
12	Gas Distribution Planning & Operations Engineering	GG	7,601	5,720	(1,881)	5,774
13	Manage Energy Efficiency-NonBA	GM	3,563	3,955	392	3,836
14	Gas Research, Development & Demonstration	GZ	1,472	1,665	193	2,200
15	Change/Maintain Used Gas Meters	HY	1,808	3,008	1,200	3,342
16	Gas Distribution Integrity Management (NonBA)	JQ	30,103	31,684	1,581	19,366
17	Gas Distribution Leak Survey & Repair	JU	–	0	0	–
18	Maintain IT Applications & Infrastructure	JV	26,279	19,209	(7,070)	18,870
19	Gas Expense WRO Activities	LK	4,253	4,606	353	5,266
20	Operational Management	OM	14,294	11,628	(2,666)	16,746
21	Operational Support	OS	40,552	16,553	(23,999)	13,594
22	Total		$359,268	$362,088	$2,821	$323,523

PACIFIC GAS AND ELECTRIC COMPANY
2017 GENERAL RATE CASE APPLICATION 15-09-001
GAS DISTRIBUTION

TABLE 2-2
GAS DISTRIBUTION 2017 CAPITAL COMPARISON SUMMARY
(THOUSANDS OF DOLLARS)

Line No.	MWC Description	MWC	2017 Imputed Regulatory Values	2017 Recorded	2017 Difference Higher/(Lower)	2018 Budget
1	Tools and Equipment	05	$2,912	$3,149	$237	$1,798
2	Gas Pipeline Replacement Program	14	386,855	387,853	998	409,217
3	Gas Meter Protection	27	346	733	387	521
4	Gas Distribution Customer Connections	29	75,507	77,824	2,317	75,800
5	NGV – Station Infrastructure	31	3,967	6,747	2,780	3,880
6	Gas Distribution New Capacity	47	44,129	28,754	(15,375)	45,993
7	Gas Distribution Reliability	50	260,449	172,558	(87,891)	258,453
8	Gas Work at the Request of Others	51	59,308	58,438	(870)	63,508
9	Gas Distribution Emergency Response	52	751	10,937	10,185	115
10	Install New Gas Meters	74	2,939	1,475	(1,464)	2,011
11	Manage Buildings	78	16,440	5,592	(10,848)	–
12	Build IT Applications & Infrastructure	2F	40,005	19,680	(20,325)	24,847
13	Gas Distribution Replace/Convert Customer HPRs	2K	40,136	37,649	(2,487)	49,855
14	Gas Distribution Control Operations Assets	4A	39,333	24,738	(14,594)	27,518
15	Total		$973,078	$836,127	($136,950)	$963,517

MWC Descriptions – Expense

MWC AB – Support – encompasses general support of the gas distribution system, as well as a number of smaller programs, including: (1) Miscellaneous expenses such as industry association dues; and (2) Collection point for zero sum allocation type work such as Standard Cost Variance,[1] Blanket Purchase Orders and Working Stock. MWC AB also includes the total planned efficiency offsets from various gas distribution efficiency initiatives.

MWC DD – Provide Field Services – includes customer generated requests for service that require site visit by field technician. Service requests include investigating reports of possible gas leaks, carbon monoxide monitoring, customer requests for stop/starts of gas service, appliance pilot relights, appliance adjustment and safety checks.

MWC DE – Leak Survey – includes periodic or routine leak surveys performed by PG&E on its distribution system that are necessary to comply with pipeline safety regulations. MWC DE also includes special leak surveys conducted by PG&E on its gas distribution system that are outside of the routine leak survey schedule for either operating reasons or to assess the integrity of the pipe.

MWC DF – Locate and Mark – includes the work necessary to comply with federal pipeline safety regulations and state law that requires PG&E to belong to and share the costs of operating the regional "one-call" notification systems. Builders, contractors, and others planning to excavate use these systems to notify underground facility owners, like PG&E, of their intent to excavate. PG&E then provides the excavators with information about the location of its

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1 Standard Cost Variance (SCV) represents the difference between actual costs incurred and the amount charged out by employees at a predetermined rate (i.e., standard cost). Costs charged out are calculated using productive hours multiplied by a planned standard hourly rate. When results match initial estimates, SCV should be minimal. That said, while initial estimates do factor in external factors (e.g., extreme weather) based on historical data, actual results inevitably vary resulting in a SCV.

The following is a simplified example of the standard cost calculation and how SCVs occur. Based on the historic pattern of Team A's productivity and anticipated workload, it is projected that Team A will have a monthly cost of $100,000 for 10 employees and will perform 1,000 hours of work in a month. The resulting standard rate for Team A is $100 per hour ($100,000/1,000 hours). If Team A completes 1,000 hours of work in the month according to plan, Team A will have a zero SCV. However, if Team A does not complete all the planned work, e.g., due to unanticipated bad weather, and only completes 950 hours of work, Team A will have an unfavorable SCV of $5,000 (50 hours × $100 per hour).

underground facilities by visiting the work site and placing color-coded surface markings to show the location of pipes and wires.

MWC DG – Cathodic Protection – includes work related to mitigating the effects of corrosion on metallic gas distribution pipelines. Corrosion of gas piping systems can cause leaks and other potential safety hazards. In the case of steel gas lines, the pipe is coated or wrapped before installation, followed by the application of Cathodic Protection (CP) through the use of either an impressed system or galvanic anodes as required by federal pipeline safety regulations.

MWC DN – Develop and Provide Training – the Gas Training Curriculum Development program creates new, and enables significant revisions to existing training materials ensuring that the Gas Operations workforce is, and remains, competent, safe, and qualified. The Training Curriculum program does not include the general maintenance or delivery of training materials.

MWC EX – Gas Meter Protection Program (MPP) – includes efforts to ensure that gas meter locations that do not conform to current PG&E standards and/or federal pipeline safety regulations are addressed. The program focuses on two types of non-conforming meter locations: those with inadequate protection from potential damage by vehicles; and those with inaccessible service or shutoff valves. The work to correct these non-conforming facilities generally involves one of three work activities: installing barrier posts, installing a new valve or relocating the meter set.

MWC FG – Operate Gas System – includes a broad range of operations to keep the system safe, such as monitoring the system pressures and flows; checking odorant intensity levels for leak detection; operating valves and regulator stations; and changing pressure recorder charts. Additionally, this program includes occasional manual operations to provide necessary capacity during peak demand periods in the morning (e.g., using a compressed (CNG) or liquefied (LNG) natural gas tanker to inject gas, manually opening separation valves to redirect gas, or manually bypassing regulator station equipment to flow more gas).

MWC FH – Preventive Maintenance – is a key system safety and integrity activity and includes work to comply with pipeline safety regulations that require PG&E to conduct periodic or routine maintenance on its gas distribution system.

Preventive maintenance work includes regulator station maintenance, maintenance on mains and services, distribution valve replacement, service valve replacement, and overall preventive gas maintenance support.

MWC FI – Corrective Maintenance – includes work to repair or replace damaged or failed gas facilities. In many cases, the need for such restoration is identified during the preventive maintenance activities described in MWC FH. Corrective maintenance includes leak repair, dig-in repair, cathodic protection restoration, regulator station repair, and distribution valve repair.

MWC GF – Gas Mapping – encompasses tracking the size, material type, location, configuration, and other essential information needed to monitor and identify over thousands of miles of underground gas main and millions of gas services. Gas Mapping updates and maintains the gas distribution system maps and records.

MWC GG – Gas Engineering – includes local gas planning engineers modeling the gas distribution system to ensure a safe, reliable, and cost-effective supply of natural gas to customers and to ensure that the system can accommodate future load growth. By simulating changes in load demand, engineers use modeling to identify potential constraints in the system to support service reliability.

MWC GM – Natural Gas Fueling Facilities Operation and Maintenance (O&M) – includes the work required to maintain and operate existing natural gas fueling facilities. PG&E operates over 800 Natural Gas Vehicles (NGVs) and has over 6,000 customers that use the natural gas fueling facilities. PG&E's network of natural gas fueling stations also serves as a back up to customer owned stations that are not available due to breakdowns or maintenance.

MWC GZ – Gas Research, Development and Demonstration (RD&D) – includes RD&D work in targeted areas of gas distribution. The objectives of gas distribution RD&D are to explore new opportunities, concepts and technologies to continue to provide safe and reliable service to customers at a lower cost, where possible.

MWC HY – Gas Meter Maintenance – the meter set is defined as the facilities between the shut-off valve (i.e., service valve and inlet valve) and service tee or meter outlet valve.

Maintenance includes:

- Corrective Maintenance work performed on meter sets greater than 1,000 CFH and less than or equal to 1,000 CFH. Outlet Valve greater than or equal to 2 inches in diameter and less than 2 inches in diameter.
- Preventive Maintenance work performed on meter sets greater than1,000 CFH. Preventive maintenance work includes: Differential Pressure Tests, Regulator A Inspections, Pressure Verification, Electronic Corrector Maintenance, Turbine Spin Test, Delta A Turbine and Ultra-Sonic Diagnostic Testing.

MWC JQ – Distribution Integrity Management Program (DIMP) – includes efforts to enhance gas distribution system safety by identifying risks to the gas distribution system and addressing those risks. The program is mandated by Federal regulations. The types of work that this funding would cover include development and improvements in the following areas: DIMP program, preventative maintenance, DIMP leak surveys, operator qualifications, training, and programs including the Cross Bore Inspection Program, and Plastics Program. Per Decision 14-08-032, the DIMP balancing account was closed beginning in 2014. MWC JS is no longer used and replaced by MWC JQ.

MWC JU – Gas Distribution Leak Survey & Repair – MWC JU is used to record costs incurred above the Balancing Account cost cap (spending amount and units) for Gas Leak Survey, Gas Leak Repair, Meter Set Gas Leak Repair, Gas Tee-Cap Repair, and Gas Atmospheric Corrosion Inspection.

MWC JV – Maintain Applications and Infrastructure – includes costs for ongoing maintenance, operations and repair for PG&E's IT applications, systems and infrastructure.

MWC KT – Provide Executive Services – includes support for PG&E functions and Utility performance. The chief responsibility of the Utility President is to assure that PG&E's LOBs provide safe and reliable gas and electric service that is affordable and environmentally sound.

MWC LK – Work Requested by Others (WRO) – Gas Maintenance – encompasses work required by tariff, third-party requests, and franchise compliance, including:

- Gas main relocations and rearrangement of gas facilities initiated by customers due to overbuilds (billable to the customer);
- Raise gas valve frame and covers to grade;
- Gas service cutout at property line;

- Provide temporary gas service that is not expected to last more than 1 year (Rule 13) (applicant pays for installation and removal costs); and
- Complete additional work above normal level of mark and locate activities as needed for third-party work. Work will normally be done at applicant's expense unless done to comply with city or county franchise agreements.

MWC OM – Operational Management – includes labor and employee-related costs to provide supervision and management support. MWC OM also includes costs incurred by the administrative staff working for the supervisors/managers.

MWC OS – Operational Support – includes labor and employee-related costs to provide services and support that are unrelated to supervision and management. Examples include Business Finance and Sourcing departments that support the lines of business.

MAT Code Descriptions for Safety and Reliability Work – Expense

MAT DDD – Pilot Relight – Seasonal and other gas pilot relight activities at customer's request. Does not include: (1) Relight for Gas Pipeline Replacement Program; (2) “Off by crew” relights, charge to work order causing pilot off (i.e., Pipeline Replacement); (3) Service restoration following a major gas event, charge to major event. Unit of measure is number of service tickets.

MAT DDE – Appliance Adjustments – includes input, primary air, cleaning burner or pilot, safety checks and energy cost inquiries. Unit of measure is number of service tickets.

MAT DDF – Gas Fumigation Activity – Gas starts/stops to facilitate fumigation work at customer premise. Unit of measure is number of service tickets.

MAT DDG – Gas Leaks & Emergencies – Respond to customer-reported gas emergencies, includes high/low pressure, leaks, fires, explosions, carbon monoxide investigations, etc. on the customer’s side of the gas meter. Includes flame pack call-out initiated by Gas Field Service where no leak is found on the distribution service or main. Does not include: (1) Leak Survey generated Non-hazardous leak repairs at meter; (2) Leak Survey initiated Hazardous gas leak repair at the meter set; (3) Gas dig in response or stand-by, company or non- company equipment; (4) Repair or replacement of gas valve; (5) Replacement of gas regulators; (6) Meter replacement; (7) Leaks on distribution main or service. Unit of measure is number of service tickets.

MAT DDK – Gas Start – Turn-on (start) gas service at customer's request using routine change of account process. Requires site visit and manual operation. Does not include: (1) Company generated field credit activity; (2) New Business generated customer connects. Unit of measure is number of service tickets.

MAT DDL – Gas Stop – Turn-off (stop) gas service at customer's request using routine change of account process. Requires site visit and manual operation. Does not include: (1) Company generated field credit activity; (2) Gas disconnect and removal for obsolete facilities. Unit of measure is number of service tickets.

MAT DEA – Leak Survey – Perform compliance foot and mobile surveys of distribution mains and services only. Includes cost of equipment calibration, e.g., flame pack units. Also includes Atmospheric Corrosion Inspections of exposed mains, exposed services, service risers, and meter sets being conducted in the course of the leak survey. Does not include Grade 1 Leak Standby unless the surveyor is actively helping with the repair (i.e., bar-hole pinpointing, digging etc.). Unit of measure is services surveyed.

MAT DEB – Special Leak Survey – Perform special (non-compliance) foot and mobile leak survey of distribution mains and services, by special request (city paving, customer callout, emergencies, engineering, and risk mitigation). Includes calibration of the instruments associated to this work. Does not include costs to investigate leaks found at or downstream of the service valve. Unit of measure is miles surveyed.

MAT DEC – Downgrade No Repair – Includes instances where a repairable leak (Grade 1,2 or 3)[2] is downgraded to a non-hazardous leak (Grade 3) that does not require repair, the leak is not found (Grade 0) or leak is due to non-PG&E gas. Unit of measure is services surveyed.

MAT DED – Rechecks – Includes routine above and below ground Grade 3 and 2 leak rechecks and/or follow-up Grade 0 rechecks. Does not include: Downgrades to 3, or 0. Unit of measure is number of rechecks performed.

MAT DEE – Customer Calls – Survey/Investigation of leaks found on the distribution system where investigation is initiated by Customer Odor Complaint. Does not include: (1) Leak repair (pinpointing, digging, etc.); (2) Investigation of customer odor complaint where leak is found on the customer side of the service valve (3) Leak repair (no meter exchange/rebuild). Unit of measure is number of customer calls.

MAT DEF – Picarro Rollout – Includes: (1) Use of Picarro Surveyor to perform compliance leak survey (drive) of distribution mains and services only (2) Perform foot survey of leak indication search areas (LISA) and Gap Survey (foot

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[2] Grade 1 leaks (also referred to as “hazardous” leaks) represent existing or probable hazards to persons or property and require immediate repair or continuous action until conditions are no longer hazardous. Grade 2 leaks are non-hazardous to persons or property at the time of detection, but still require a scheduled repair because they present probable future hazards. Grade 3 leaks are non-hazardous at the time of detection and can reasonably be expected to remain non-hazardous.

survey performed for service & mains not in the field of view of Picarro surveyor) (2) Field of View Survey (five feet from building survey sweep). Does not include: If the surveyor is actively helping with the repair (i.e., bar-hole pinpointing, digging etc.). Unit of measure is services surveyed.

MAT DEG – Picarro Special Survey – Includes: (1) Use of Picarro Surveyor to perform special (non-compliance) leak survey of distribution mains and services, by special request (city paving, customer callout, emergencies); (2) Foot survey of Leak indication search areas (LISA) and Gap Survey (foot survey performed for service and mains not in the field of view of Picarro surveyor); (3) Calibration of the instruments associated to this work is charged here. Unit of measure is number of facility site visits.

MAT DFA – Locate and Mark – Locate and Mark underground Gas and Electric Distribution facilities per Underground Service Alert (USA) requests. Preparation of maps, process tickets, and perform administrative work, and Gas and Electric damage prevention activities. Does not include: locate and mark for Gas and Electric Transmission, or fiber optic facilities. Also includes calibration/repair of equipment. Unit of measure is number of USA tags.

MAT DFB – Mark and Locate Standby – Includes observation of work performed within five feet of a gas or electric transmission facility or for excavation activity within close proximity of a critical distribution facility. Unit of measure is number of sites requiring a standby.

MAT DF# – Includes provider cost center standard cost variance aligned with quality assurance/quality control support, and sand, gravel, and spoilage spend related to Locate and Mark.

MAT DGA – Cathodic Protection: Monitoring – Include all types of pipe-to-soil reads, including isolated steel, rectifier reads, and remote monitoring. Also includes remote rectifier monitoring unit communication and software costs, and electric utility costs for rectifiers. Unit of measure is number of monitoring points read (pipe to soil reads).

MAT DGB – Cathodic Protection: Troubleshoot – Includes troubleshooting and identification of problems with down Cathodic Protection Areas (CPA) and performance of any remedial actions. Unit of measure is number of CPA's troubleshot.

MAT DGC – Cathodic Protection: Rectifier Maintenance – Perform rectifier maintenance and associated costs. Unit of measure is number of rectifiers maintained.

MAT DGD – Cathodic Protection: Resurvey – Conduct enhanced cathodic protection survey and associated activities. Unit of measure is number of Cathodic Protection Area miles surveyed.

MAT DGE – Gas Isolated Steel Service Evaluation – Identify and evaluate electrically connected isolated steel services and associated activities. Unit of measure is number of risers surveyed.

MAT DGF – Gas-Unprotected Steel Main Evaluation – Identify and evaluate unprotected steel main as part of the enhanced cathodic protection survey program. Unit of measure is number of miles unprotected pipe surveyed.

MAT EXA – Meter Protection Program Inspections – Inspect the Meter Protection Database or perform a special survey to identify the need for Barrier Posts or Service Valves. Unit of measure is number of inspections.

MAT EXB – Meter Protection Program Protections – Install barrier posts in order to protect above ground gas facilities (meters and risers) from damage by vehicles. Does not include: Relocation requiring re-running the service from the main, charge to MWC 27. Unit of measure is number of locations.

MAT EXC – Meter Program Protection Service Valves – Includes: Installation of a new service valve or the relocation of an existing service valve if the property does not have an accessible service valve (for emergency response). Does not include: Re-running the service from the main which is charged to MWC 27. Unit of measure is number of valves installed.

MAT FGA – Gas Distribution Control Center – Includes gas control personal, contractor support, increased main Remote Terminal Unit (RTU) and Electronic Recorders (ERX), apprentice training program, damage prevention, abnormal conditions, emergency response, compliance, systems operations, data collection, clearance process and benchmarking. This is a non-unitized MAT.

MAT FGB – Operate Distribution-Gas Mains/Services – Includes: Changing winter and station pressure recorder charts (including downloading ERX), performing instrument calibrations (test equipment, gauges, portable pressure

recorders, etc.) operating valves (including changes in emergency zones), removing distribution system pipeline liquids and monitoring system pressure. Does not include: Calibration of Distribution Regulator Station mechanical pressure recorders during station maintenance, distribution Supervisory Control and Data Acquisition (SCADA) including ERX calibrations. Unit of measure is number of charts changed.

MAT FGC – Operate Distribution-Gas Regulator Station General – Control the supply and flow of gas through the distribution system via direction from the Gas Distribution Control Center, adjust and change Distribution Regulator Station pressure set points, maintain station pressure in conjunction with winter or planned operational clearances. Unit of measure is number of operations performed.

MAT FG# – Includes provider cost center standard cost variance aligned with operating the gas distribution system.

MAT FHA – Maintenance-Preventative-Gas Mains – Includes: (1) Non-leak repairs to distribution gas mains; (2) Rewrap, lower, or paint gas distribution mains; (3) Replace cover; protect shallow pipe; (4) Replace/repair pipe hangars; (5) Replace/relocate greater than 100 feet of gas distribution main; (6) Identify pipe; (7) Install Electrical Test Station (ETS) for the purpose of locating the main. Does not include: (1) Main leak repairs; (2) Any work related to gas transmission; (3) Any work caused by work or alteration by a customer or third party; (5) Pothole gas facilities for potential conflicts with third-party work; (6) Third-Party damage; (7) Atmospheric corrosion; (8) Install ETS for purposes of corrosion prevention; (9) Fire valve repair or replacement; (10) Main or service alterations due to “sewer cross-bores”; (11) Any corrective work related to sunk trenches or sunk bell holes. Unit of measure is number of mains maintained.

MAT FHB – Maintenance-Preventative-Gas Regulator Stations – Includes: scheduled maintenance on distribution regulator stations; required maintenance work for all associated equipment inside the district regulator station; and vault dewatering. Does not include: (1) Repairs to inlet and outlet fire valves with a pressure greater than 60 psig; (2) SCADA calibration of Gas Distribution Control Center RTUs and ERXs installed at a regulator station; (3) Calibration of pressure recorders for planning “winter chart” applications (non-Gas Distribution Control Center). Unit of measure is number of operations on equipment.

MAT FHC – Maintenance-Preventative-Gas Farm Tap – Perform atmospheric inspections on customer High Pressure Regulator sets. Inspections set point and lockup checks. Unit of measure is number of inspections.

MAT FHE – Maintenance-Preventative-Gas Services – Includes: (1) Repair non-leaking gas distribution services; (2) Riser replacement; (3) Rewrap, lower, or paint gas distribution services; (4) Clear and/or repair plugged services; (5) Replace cover, protect shallow pipe; (6) Repair, replace, relocate, or cut-off less than a full service; (7) Repair, replace curb valves less than 2 inches; (8) Investigate idle gas stub service cut-offs; (9) Install Electrical Test Station (ETS) for the purpose of locating the service; (10) Installation of EFV (when not related to leak repair). Does not include: (1) Stub or service cut-off; (2) Any work caused by work or alteration by a customer or third party; (3) Third-Party damage; (4) Atmospheric corrosion; (5) Service valve replacement; (6) Work above the service valve; (7) Install ETS for the purpose of corrosion prevention; (8) Service leak repairs; (9) Main or service alterations due to “sewer cross-bores”; (10) Any corrective work related to sunk trenches or sunk bell holes. Unit of measure is number of services repaired.

MAT FHG – Maintenance-Preventative-Gas Valve – Perform scheduled inspection of distribution main valves. Verify operation, identification, and location. Clean/pump out vaults/enclosures. Lubricate/flush valves. Clean/paint valve/frame and cover. Unit of measure is number of valves maintained.

MAT FHI – Maintenance-Corrective-Gas Service Valves – Includes repair or replace inoperative service valves less than 2 inches. Does not include: (1) Valves greater than or equal to 2 inches (should be capitalized against MAT 50E); (2) Work above the service valve. Unit of measure is number of valves replaced.

MAT FHJ – Gas Non-Recurring Projects; preventative maintenance – One-time non-recurring maintenance projects on non-gas carrying facilities. This is a non-unitized MAT.

MAT FHL – Atmospheric Corrosion Main Repairs – Perform expense repair of atmospheric corrosion on mains. Unit of measure is number of spans mitigated.

MAT FHM – Atmospheric Corrosion Service Repairs – Expense repairs of atmospheric corrosion on services to below stopcock. Does not include: Atmospheric corrosion repairs of customer gas regulators and meter sets. Unit of measure is number of riser replacements.

MAT FHN – Atmospheric Corrosion Distribution Regulator Station Repair – Expense repairs of atmospheric corrosion on distribution district regulator stations. Unit of measure is number of stations mitigated.

MAT FHO – Preventative Maintenance Supervisory Control and Data Acquisition (SCADA) – SCADA Preventive Maintenance to RTU, SCADA Transmitters and ERXs. Does not include: Preventative maintenance associated with pressure recorders for planning "winter chart" applications (non-Gas Distribution Control Center). Unit of measure is number of RTUs maintained.

MAT FHP – Corrective Maintenance Supervisory Control and Data Acquisition (SCADA) – SCADA Corrective Maintenance to RTUs, SCADA Transmitters and ERXs. SCADA corrective maintenance of GDCC RTUs and GDCC ERXs. Does not include: Corrective maintenance associated with pressure recorders for planning "winter chart" applications (non-GDCC). Unit of measure is number of RTUs repaired.

MAT FH# – Includes provider cost center standard cost variance aligned with preventive maintenance, quality assurance/ quality control support, and measurement and regulation field support.

MAT FIB – Maintenance-Corrective-Gas Regulators General – Maintain and repair failed or inoperative distribution district regulation equipment. Does not include: Repair of SCADA equipment at a district regulator station; corrective paint work; or repairs for vault lids or station fencing. Unit of measure is number of regulator station repairs.

MAT FIC – Maintenance-Corrective-Gas Farm Tap – Perform repairs on customer High Pressure Regulator sets. Unit of measure is number of farm tap repairs.

MAT FIF – Maintenance -Corrective-Gas Main Valves – Includes (1) Replace valves less than 2 inches; (2) Repair all distribution main valves; (3) Repair / seal vaults and lids; (4) Raise vaults and lids unless due to Work Requested by Others (especially street repaving). Unit of measure is number of valves repaired.

MAT FIG – Maintenance -Corrective-Gas Main Leak – Expense repair of non-dig-in leaks less than 100 feet on any distribution main and appurtenances (flanges, valves, etc.). Includes leak pinpointing. Includes repair of service leak by replacing a portion of main (100 feet or less). If leak on main side of tee, then charge as main repair, if leak on service side of tee, then charge as service repair. Includes repair of leak on existing cut-off service tee (24 inches or less). Does not include: If a suspected leak is excavated and downgraded to a 3 or 0 that won't be repaired; non-PG&E gas; If service tee is cut off within 12 inches of main and no service exists. Unit of measure is number of main leaks repaired.

MAT FIH – Corrective Maintenance: Gas Service Leak Above Ground – Leak pin-pointing and repair of non-dig-in leaks below the service valve on the above ground portion of the service. Does not include: If a suspected leak is excavated and downgraded to a 3 or 0 that won't be repaired; or non-PG&E gas. Unit of measure is number of service leak repairs (above ground).

MAT FII – Maintenance-Corrective-Gas Cathodic Protection – Includes: Repair existing anodes or rectifiers; dig up gas facilities to install insulating material; install new anodes on isolated steel as necessary; Install an Electrical Test Station (ETS); restore a down Cathodic Protection Area without replacing capital plant. Does not include: any cathodic protection remediation or restoration activities. Unit of measure is number of corrosion tags cleared.

MAT FIJ – Maintenance-Corrective-Gas Main Dig-Ins – Expense repair of dig-in leaks and other third-party damage to any distribution main and appurtenances (flanges, valves, etc.). Unit of measure is number of main dig-ins repaired.

MAT FIK – Maintenance-Corrective-Gas Service Dig-Ins – Expense repair of dig-in leaks and other third-party damage to any service (including curb valves). Unit of measure is number of service dig-ins repaired.

MAT FIM – Includes gas major events and emergencies declared by the Governor or President as Catastrophic Event Memorandum Account (CEMA). This is a non-unitized MAT.

MAT FIO – Gas Overbuild – Relocation of partial gas service and/or main (less than 100 feet) due to encroachment condition. Unit of measure is number of services repaired.

MAT FIP – Maintenance-Corrective-Gas Service Leak Below Ground – Leak pinpointing and repair of non-dig in leak on below ground section of any service (includes curb valves) from tee to where riser breaks ground. Includes: (1) Above ground leak that requires below ground repair (i.e., must replace section of below ground pipe or riser); (2) Riser replacement including section of below ground service. Does not include: If a suspected leak is excavated and downgraded to a 3 or 0 or non-PG&E gas. Unit of measure is number of service leak repairs (below ground).

MAT FIQ – Atmospheric Corrosion Monitoring – Inspect atmospherically risers, customer gas regulators (including High Pressure Regulators), and meter sets for atmospheric corrosion where not completed by routine leak survey work. Unit of measure is number of locations inspected.

MAT FIR – Tee-Cap Replacement Program – Projects specified by the plastic tee cap repair team to lower risks in the plastic system. Units: Primary Units equal the number of Tee Cap Replaced/Secondary Unit equals the number of Dry Holes excavated and restored. Unit of measure is number of tee caps replaced.

MAT FIS – Leak Survey Meter Repair – Scheduled repair of Non-Hazardous gas leaks at the meter set. Does not include: (1) Hazardous gas leak repair at the meter set initiated by Leak Survey; (2) Customer generated field orders for gas leak investigation; (3) Repair or replacement of gas valve; (4) Replacement of gas regulators; (5) Meter replacement; (6) Gas leak surveys performed by Leak Surveyors. Unit of measure is number of meters repaired.

MAT FI# – Includes provider cost center standard cost variance aligned with corrective maintenance, quality assurance/ quality control support, and sand, gravel, and spoilage spend.

MAT GFO – Distribution Mapping –Includes: (1) Distribution Mapping activities not directly charged to orders such as Posting Obsolete Orders, Delineations, Data Management Non-Posting and Map Reprographics, Annexations, Posting Corrections, Operating Maps, and Diagrams, Asset Registry and Request for Work, Corrective Action Program Mapping and Information and Data Requests; (2) Special Distribution Mapping projects. This is a non-unitized MAT.

MAT GG# – Engineering Expense: Gas – Preliminary engineering prior to determining the type of work (install vs. repair) to be performed, such as, defining economic alternatives, field checking of asset conditions, approximate scope/cost of work, and economic analysis. This is a non-unitized MAT.

MAT GGA – Gas System Planning: Gas System Operations – Perform hydraulic analysis on gas distribution systems to support operations and long-term design. Build and maintain computer models of the gas distribution system. This is a non-unitized MAT.

MAT HYI – Gas Meter Atmospheric Corrosion (AC) – Perform remediation of atmospheric corrosion on customer gas meters and regulators as identified through the Atmospheric Corrosion Inspection Program Does not include: (1) AC inspection; (2) AC repair on High Pressure Regulators; (3) AC repair on distribution mains, services, valves, etc.; (4) Meter replacement; (5) Regulator replacement. Unit of measure is number of meters repaired.

MAT HY# – Includes provider cost center standard cost variance aligned with gas meter maintenance.

MAT JQA – Distribution Integrity Management Program (DIMP) Leak Survey – Leak Survey enhancements. Unit of measure is number of services surveyed.

MAT JQD – Distribution Integrity Management Program emergent work. This is non-unitized work.

MAT JQE – Plastic Program – Oversees selection, testing and development of plastic materials, tools and associated construction methods for use on the PG&E distribution system. Also includes: Laboratory testing, sample material, and prototype tools and equipment purchases. This is a non-unitized MAT.

MAT JQK – Legacy Cross Bore Sewer Project – Includes: research of records, create and execute legacy storm and sewer inspections. Repair costs to remove legacy cross bores. Does not include: Replacement of gas pipe beyond the cross bore segment. Unit of measure is number of inspections.

MAT JQL – Distribution Integrity Management Program (DIMP) Program Management – Costs for DIMP staff. This is non-unitized work.

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TABLE 2-3
GAS DISTRIBUTION 2017 EXPENSE COMPARISON
BY MAT CODE FOR SAFETY AND RELIABILITY WORK
(THOUSANDS OF DOLLARS)

Line No.	MWC	MAT	2017 Imputed Adopted Units	2017 Imputed Regulatory Values	2017 Recorded Units	2017 Recorded Costs	2017 Difference in Units Higher/(Lower)	2017 Difference in Costs Higher/(Lower)	Explanation[(a)]
1	DD	DDD	186,922	$12,707	172,080	$11,483	(14,842)	($1,224)	Below variance threshold.
2	DD	DDE	11,907	795	14,386	1,033	2,479	238	Actual units exceeded imputed adopted units due to increased customer demand for pilot relights.
3	DD	DDF	33,911	2,505	37,996	2,868	4,085	363	Below variance threshold.
4	DD	DDG	165,461	20,200	166,993	16,697	1,532	(3,504)	Actual costs are below imputed values due to various efficiencies gained to reduce job time and PG&E's ability to meet the immediate response gas odor calls goal without needing additional headcount included in the forecast.
5	DD	DDK	71,488	7,324	53,116	4,730	(18,372)	(2,594)	Actual costs and units were below imputed adopted values due to fewer service requests received in 2017 for start of gas service.
6	DD	DDL	123,171	5,329	109,266	4,593	(13,905)	(736)	Below variance threshold.
7	DD	DDA	–	–	–	246	–	246	Below variance threshold.
8	DE	DEA	494,279	7,276	447,860	6,492	(46,419)	(784)	Below variance threshold.
9	DE	DEB	4,062	63	875	1,916	(3,187)	1,853	Program expenses exceeded imputed adopted values due to an increase in labor and contract costs and complex nature of special surveys related to an over-pressurization event in Folsom and severe weather events. Actual units are below imputed units because the unit of measure in the 2017 GRC was based on services surveyed while the actual units are based on miles surveyed.
10	DE	DEC	7,732	2,079	6,614	1,769	(1,118)	(310)	Below variance threshold.
11	DE	DED	3,981	473	22,797	1,668	18,816	1,194	Program expenses and units exceeded imputed values driven by moving from the

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Line No.	MWC	MAT	2017 Imputed Adopted Units	2017 Imputed Regulatory Values	2017 Recorded Units	2017 Recorded Costs	2017 Difference in Units Higher/(Lower)	2017 Difference in Costs Higher/(Lower)	Explanation[(a)]
									5-year survey cycle to a 4-year survey cycle.
12	DE	DEE	4,478	748	4,459	648	(19)	(100)	Below variance threshold.
13	DE	DEF	638,729	5,476	583,276	6,529	(55,453)	1,053	Program expenses exceeded imputed values due to the expected efficiencies from Picarro not being realized resulting in a higher unit cost. Also, additional survey work was added to PG&E's special leak survey in 2016, resulting in a higher unit cost. This work included an additional third drive to each Picarro survey and a 5-foot survey standard.
14	DE	DEG	36,558	441	–	2	(36,558)	(439)	Actual units were below imputed adopted units because the Picarro leak survey work was reclassified to traditional special leak survey MAT DEB post-2017 GRC application.
15	DE	DE#	–	2,943	–	829	–	(2,113)	Program expenses were below imputed values due to the costs being captured in MAT DEA and DEF.
16	DF	DFA	473,711	21,404	641,275	27,340	167,564	5,936	Program expenses and actual units exceeded imputed values and units due to an increase in reported USA tickets for the work related to locate and mark underground facilities.
17	DF	DFB	2,277	1,330	5,026	1,727	2,749	397	Actual units exceeded imputed adopted units due to an increase in reported USA tickets.
18	DF	DF#	–	1,050	–	836	–	(214)	Below variance threshold.
19	DG	DGA	59,736	1,723	85,656	2,823	25,920	1,100	Program expenses and actual units exceeded imputed values mainly due to more cathodic protection monitoring reading point locations added across the service territory.
20	DG	DGB	7,467	3,549	5,961	3,015	(1,506)	(533)	Actual units were below imputed adopted units due to less cathodic protection troubleshoots generated.
21	DG	DGC	2,964	339	4,456	487	1,492	149	Actual units exceeded imputed units because additional rectifier inspections were added to the system relative to the initial 2017 GRC forecast. In 2017, inspection schedules were updated to align the rectifier maintenance

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Line No.	MWC	MAT	2017 Imputed Adopted Units	2017 Imputed Regulatory Values	2017 Recorded Units	2017 Recorded Costs	2017 Difference in Units Higher/(Lower)	2017 Difference in Costs Higher/(Lower)	Explanation[(a)]
									schedule with new annual cathodic protection anode (CPA) monitoring requirements. This caused additional inspections for some rectifiers to twice a year and as a result, added more units.
22	DG	DGD	717	2,943	759	3,571	42	627	Below variance threshold.
23	DG	DGE	–	–	12,765	509	12,765	509	Below variance threshold.
24	DG	DGH	–	–	6	203	6	203	Below variance threshold.
25	DG	DG#	–	312	–	1,130	–	818	Below variance threshold.
26	DG	DGF	41	407	37	404	(4)	(4)	Below variance threshold.
27	EX	EXA	304	46	1	–	(303)	(46)	Meter inspections completed for 2017 were below the imputed adopted units primarily due to planning efficiencies. These inspections were performed during atmospheric corrosion inspections (MAT FIQ) and Leak survey programs (MAT DEA).
28	EX	EXB	1,630	942	256	217	(1,374)	(724)	Actual units are below imputed units because of resource constraints. The units not completed in 2017 were moved into the 2018 plan for completion.
29	EX	EXC	2	1	7	22	5	21	Actual units exceeded imputed adopted units due to more service valves being found than initially identified in 2017 GRC Application.
30	FG	FGA	–	11,775	–	6,952	–	(4,823)	Program expenses were below imputed values due to a decrease in labor spend in the gas distribution control center.
31	FG	FGB	18,624	1,177	4,709	1,354	(13,915)	177	Actual units (number of charts changed) were below imputed adopted units due to a combination of reasons, including a reduced requirement to change paper charts because of increased use of electronic pressure recording devices currently captured under MAT FHO.
32	FG	FGC	1,186	147	97	136	(1,089)	(11)	Actual units were below imputed adopted units due to the increased visibility at Supervisory

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Line No.	MWC	MAT	2017 Imputed Adopted Units	2017 Imputed Regulatory Values	2017 Recorded Units	2017 Recorded Costs	2017 Difference in Units Higher/(Lower)	2017 Difference in Costs Higher/(Lower)	Explanation[(a)]
									Control and Data Acquisition (SCADA) sites thereby decreasing the need for manual regulator adjustments which control the amount of gas flowing through the regulator.
33	FG	FG#	–	–	–	(306)	–	(306)	Below variance threshold.
34	FH	FHA	456	775	341	1,487	(115)	712	Actual units were below imputed adopted units because fewer items required maintenance than originally planned and forecast.
35	FH	FHB	3,967	2,748	28,192	3,384	24,225	636	Actual units exceeded imputed adopted units due to a different unit of measure than was forecast. The unit of measure included in the 2017 GRC was a district regulator station and now the unit of measure is comprised of individual components of a district regulator station.
36	FH	FHC	1,000	196	963	238	(37)	42	Below variance threshold.
37	FH	FHE	2,320	1,661	1,639	2,962	(681)	1,301	Program expenses exceeded imputed values due to labor and contract costs being higher than anticipated resulting in higher unit costs than planned. Actual units were below imputed adopted units due to the work identified having compliance dates beyond 2017.
38	FH	FHG	6,352	975	6,401	1,018	49	44	Below variance threshold.
39	FH	FHI	15,701	1,275	15,156	1,699	(545)	424	Below variance threshold.
40	FH	FHJ	–	555	1	2,013	1	1,457	Program expenses exceeded imputed values due to material costs for preventative maintenance being greater than expected.
41	FH	FHK	–	–	–	1	–	1	Below variance threshold.
42	FH	FHL	3	2,042	384	858	381	(1,184)	Program expenses were below imputed values due to a MAT restructure that split the work into 3 MAT codes. Atmospheric corrosion mitigation has been split into the following: main spans (FHL), service spans and risers (FHM) and station spans (FHN). In addition, actual units exceeded imputed units

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Line No.	MWC	MAT	2017 Imputed Adopted Units	2017 Imputed Regulatory Values	2017 Recorded Units	2017 Recorded Costs	2017 Difference in Units Higher/(Lower)	2017 Difference in Costs Higher/(Lower)	Explanation[(a)]
									because the unit of measure in the 2017 GRC was based on crew sizing versus the number of main spans mitigated.
43	FH	FHM	–	–	553	368	553	368	Below variance threshold.
44	FH	FHN	–	–	102	1,582	102	1,582	Program expenses exceeded imputed values because work for regulator stations spans was previously included in MAT FHL.
45	FH	FH#	–	3,199	–	1,104	–	(2,095)	#MATs comprise orders that are aligned to MWCs without a MAT code assignment. Types of order costs can include, but are not limited to spoils, sand and gravel, standard cost variance, and quality assurance (QA) / quality control (QC). Program expenses were below imputed values due to a lower amount of orders in these categories.
46	FH	FHO	1,752	286	2,140	393	388	107	Actual units exceeded imputed adopted units due to a greater number of SCADA units to maintain.
47	FH	FHP	1,596	754	251	303	(1,345)	(451)	Actual units were below imputed adopted units due to less corrective maintenance for remote terminal units identified than forecast.
48	FI	FIB	2,338	2,641	817	4,418	(1,521)	1,778	Actual expenses exceeded imputed values due to additional labor related to an over-pressurization event in Folsom. Actual units were below imputed adopted units due to less corrective maintenance identified than forecast. Because the over-pressurization event in Folsom is captured as one unit, the actual dollars exceed imputed values while the actual units are below imputed adopted units.
49	FI	FIC	211	171	12	157	(199)	(13)	Actual units were below imputed adopted units due to less corrective maintenance identified for farm tap repairs than forecast.
50	FI	FIF	395	971	68	545	(327)	(426)	Actual units were below imputed adopted units due to less corrective maintenance identified for valve repairs than forecast.

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Line No.	MWC	MAT	2017 Imputed Adopted Units	2017 Imputed Regulatory Values	2017 Recorded Units	2017 Recorded Costs	2017 Difference in Units Higher/(Lower)	2017 Difference in Costs Higher/(Lower)	Explanation[(a)]
51	FI	FIG	6,426	23,112	1,938	13,508	(4,488)	(9,604)	Program expenses and actual units were below imputed values due to the 2017 leak find rate being lower than forecast.
52	FI	FIH	40,069	5,317	19,301	4,147	(20,768)	(1,170)	Program expenses and actual units were below imputed values due to the 2017 leak find rate being lower than forecast.
53	FI	FII	3,215	3,929	1,704	2,710	(1,511)	(1,219)	Program expenses and units were below imputed values due to less corrective maintenance work being identified than anticipated and additional mitigations through the course of resurvey work.
54	FI	FIJ	172	(36)	278	1,285	106	1,321	Program expenses and actual units exceeded imputed values due to more work created by third-party dig-ins.
55	FI	FIK	1,001	(45)	1,599	804	598	849	Actual units were above imputed adopted units due to more work created by third-party dig-ins.
56	FI	FIM	–	–	–	25,209	–	25,209	Actual costs exceeded imputed values, due to costs associated with work completed in response to the Northern California wildfires.
57	FI	FIO	61	580	80	710	19	130	Actual units exceeded imputed adopted units due to a higher number of overbuilds identified that resulted in more remediation work than forecast.
58	FI	FIP	13,467	20,079	4,239	12,183	(9,228)	(7,896)	Program expenses and actual units were below imputed values due to a lower leak find rate.
59	FI	FIQ	2,343,919	15,617	1,088,412	10,245	(1,255,507)	(5,372)	Program expenses and actual units were below imputed adopted values as a result of completing a substantial portion of 2017 work orders in 2016 in response to an operator qualification issue from 2014. As a result of clearing most 2017 units, there were no additional costs in MAT Code FIQ.
60	FI	FIR	1,165	1,391	900	1,571	(265)	180	Actual units were below imputed values due to higher priority wildfire response work.

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Line No.	MWC	MAT	2017 Imputed Adopted Units	2017 Imputed Regulatory Values	2017 Recorded Units	2017 Recorded Costs	2017 Difference in Units Higher/(Lower)	2017 Difference in Costs Higher/(Lower)	Explanation[(a)]
61	FI	FIS	111,244	9,332	38,938	2,825	(72,306)	(6,507)	Program expenses and actual units were below imputed values due to fewer leaks found than forecast and a decreased unit cost driven by reduced overtime and overheads.
62	FI	FI#	–	2,286	–	2,843	–	557	Below variance threshold.
63	GF	GFO	–	–	–	3,948	–	3,948	Program expenses exceeded imputed values because the work was forecast in GF# but the work is now being performed in GFO.
64	GF	GF#	–	3,853	–	–	–	(3,853)	See variance explanation in MAT GFO above.
65	GG	GG#	–	1,156	–	1,460	–	304	Below variance threshold.
66	GG	GGA	–	6,445	–	4,260	–	(2,185)	Program expenses were below imputed values due to higher charge out of time to other unanticipated work orders (e.g., emergency response jobs, reprioritization of planned work), a lower than forecast application of overhead and indirect costs, and a slight reduction in staff engineers.
67	HY	HYI	44,051	1,808	71,684	2,998	27,633	1,191	Program expenses and actual units exceeded imputed values due to an increase in Atmospheric Corrosion Remediation volume caused by more work being identified than forecast.
68	HY	HY#	–	–	–	9	–	9	Below variance threshold.
69	JQ	JQA	54,000	1,004	32,858	375	(21,142)	(629)	Actual units were below imputed regulatory values because of a change in the Distribution Integrity Management Plan (DIMP) leak survey process and scope. The process no longer uses leak clusters to identify survey areas. Survey areas are now based on mitigation recommendations.
70	JQ	JQC	–	1,478	–	2,261	–	783	Below variance threshold.
71	JQ	JQD	–	3,602	723	2,445	723	(1,157)	Program expenses were below imputed values as the amount of emergent work was less than anticipated.
72	JQ	JQE	–	343	–	285	–	(59)	Below variance threshold.

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Line No.	MWC	MAT	2017 Imputed Adopted Units	2017 Imputed Regulatory Values	2017 Recorded Units	2017 Recorded Costs	2017 Difference in Units Higher/(Lower)	2017 Difference in Costs Higher/(Lower)	Explanation[(a)]
73	JQ	JQK	–	21,113	35,154	22,458	35,154	1,345	Below variance threshold.
74	JQ	JQL	–	2,561	–	3,861	–	1,300	Program expenses exceeded imputed values because the imputed dollars were below the actual budget required for the DIMP staff.
75		Total		**$258,677**		**$256,851**		**($1,826)**	

(a) PG&E continues data validation related to the implementation of a new SAP platform, Asset Maintenance Backbone & Station (AMBBS). This project has a target completion date of third quarter 2018. As such, the recorded costs, recorded units, and variance explanations for MAT codes FGB, FGC, FHB, FHO, FHP, FIB, FIC, and FIF are subject to change. PG&E will update these recorded costs, recorded units, and variance explanations should there be any material differences following the completion of the data validation project.

MWC Descriptions – Capital

MWC 05 – Tools and Equipment – includes the costs of miscellaneous tools and equipment. Regular expenditures are necessary to replace damaged, worn out, or obsolete tools and to ensure specialized tools are available to perform testing and other functions.

MWC 14 – Gas Pipeline Replacement Program (GPRP) – is a key safety and integrity program and primarily encompasses three gas distribution asset replacement programs, the GPRP, Copper Service Replacement Program (CSRP) and Aldyl-A-Plastic Replacement Program. The GPRP targets cast iron and pre-1940 steel gas mains. PG&E uses age, materials, seismic factors, and gas leaks to identify and prioritize gas mains for replacement. In addition to gas main replacement, the program includes related service replacement and meter relocation work. CSRP was added to MWC 14 in 2006 because copper services were determined to have a similar relative risk to GPRP pipe. Subsequently, plastic was added into MWC 14 in 2012 because of increase in the relative risk of vintage plastic material such as Aldyl-A.

MWC 27 – Gas Meter Protection Program (MPP) – includes efforts to ensure that gas meter locations that do not conform to current PG&E standards and/or federal pipeline safety regulations are addressed. The program focuses on two types of non-conforming meter locations: those with inadequate protection from potential damage by vehicles; and those with inaccessible service or shutoff valves. The work to correct these non-conforming facilities generally involves one of three work activities: installing barrier posts, installing a new valve or relocating the meter set.

MWC 29 – Gas Distribution Customer Connections – includes building new gas distribution systems to provide service to new customers and the costs of regulators purchased for emergency response, regulator change outs, and system upgrades.

MWC 31 – Natural Gas Vehicle (NGV) Station Infrastructure – includes keeping PG&E's natural gas fueling infrastructure safe and in compliance for PG&E's fleet and customers. This work includes:

1) Cathodic protection and underground corrosion protection;
2) Upgrading stations from 3,000 psi to 3,600 psi to better serve the vehicles being produced in the market today;

3) Increasing the reliability of stations;

4) Security monitoring as required at some public access stations; and

5) Remote monitoring of stations.

MWC 47 – Gas Distribution New Capacity – includes capacity additions to meet load growth by reinforcing the existing gas systems.

MWC 50 – Gas Distribution Reliability – includes installation or replacement of gas facilities to: improve system safety and reliability, replace aging facilities (which have reached the end of their useful life or have increasing failure rates), and maintain compliance with pipeline safety regulations. Facilities replaced include: mains, services, regulator stations, cathodic protection equipment, electronic chart recorders and remote cathodic protection monitoring equipment.

MWC 51 – Gas Work at the Request of Others – includes relocating gas distribution and service facilities at the request of a governmental agency or other third parties (e.g., customers and developers). This work could be due to road widening, street improvements, sewer improvements and other similar work.

MWC 52 – Gas Distribution Emergency Response – includes work and materials required to replace damaged or failed facilities including replacement of mains and services due to gas dig-ins and external forces such as landslides and earthquakes.

MWC 74 – Gas Metering Capital – includes regulator replacement labor to remove and install new regulators and meters and regulators for new business connections and labor to install.

The meter set is defined as the facilities between the shut-off valve (i.e., service valve and inlet valve) and service tee or meter outlet valve.

Maintenance includes:

1) Compliance – Scheduled Meter Change outs (SMC) < or = 1,000 CFH

2) Compliance – Periodic Meter Change outs, every 10 years (PMC) > 1,000 CFH

3) Corrective Maintenance work with replacement of meter performed on meter sets < or = 1,000 CFH and > 1,000 CFH; Meter outlet valve > or = 2'' diameter
4) Meter removal (retire) < or =1,000 CFH and > 1,000 CFH
5) New Business < 400 CFH and 400 - 1,000 CFH
6) Capital projects (i.e., ECAT Replacement)
7) SmartMeter™ gas module replacements

MWC 78 – Manage Buildings – includes capital buildings projects (i.e., facility upgrades/improvements as well as new construction) for Gas Operations.

MWC 2F – Build Information Technology (IT) Applications and Infrastructure – includes the costs to design, develop and enhance applications, systems and infrastructure technology solutions.

MWC 2K – Gas Distribution Replace/Convert Customer HPRs – is a key safety and integrity program and includes the replacement of gas customer High Pressure Regulators (HPR) or the reconstruction of gas distribution systems to eliminate the need for HPRs.

MWC 4A – Gas Distribution Control Operations Assets – includes costs associated with the installation of Supervisory Control and Data Acquisition devices, electronic recorders, and similar instrumentation assets and related tools. MWC 4A captures costs associated with the development of software tools to support the collection, retention, and presentation of data related to the Control Center. Capital outlays support telecommunication radio system assets to monitor and control the gas distribution network.

MAT Code Descriptions for Safety and Reliability Work – Capital[3]

MAT 14A – Pipeline Replacement Program – Mains and Services – Replace main and services qualifying for replacement under the Gas Pipeline Replacement Program. Does not include: Deactivation of main with no capital main installation (less than 100 feet). Unit of measure is feet of main Installed.

MAT 14B – Copper Service Replacement – Replace copper services identified under the Copper Service Replacement Program. Unit of measure is number of services Installed.

MAT 14C – A-67 Copper Replacement – Replace copper services as a result of leaks and incremental costs for full service replacement. Does not include: Customer-requested copper service replacements. Inaccessible services found under MAT 14B. Unit of measure is Services Installed.

MAT 14D – Plastic Pipe Replacement Main/Service – Replace main and services qualifying for replacement under the Plastic Pipeline Replacement Program. Does not include: Deactivation of main with no capital main installation (less than 100 feet). Unit of measure if Feet of Main Installed.

MAT 2KA – Customer High Pressure Regulator Station (HPR) Main Conversion – Replace or install: greater or equal to 100 feet gas distribution main to eliminate customer High Pressure Regulators. Unit of measure is number of HPR mitigated.

MAT 2KB – Customer High Pressure Regulator Station (HPR) Conversion to Distribution Regulator Station – Replace or install: (1) farm tap to convert to a High Pressure Regulator Station Type district regulator (DR) (2) High Pressure Regulator Type DR to convert to a pilot operated district regulator station. Does not include: Replacement of pilot operated district regulator stations or High Pressure Type DR with regulation 1 inch and above. Unit of measure is number of HPR mitigated.

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3 MWC numbers that include # are not MAT codes. Costs included in # categories reflect orders assigned at a MWC level and do not include a MAT assignment. Therefore, variance explanations are not applicable. # dollar and unit information are provided here for reference.

MAT 2KC – Customer High Pressure Regulator (HPR) Reg Station Replacement – Includes: Replacement of HPR in kind. Unit of measure is number of HPR mitigated.

MAT 27A – Meter Protection-Capital – Includes: (1) Meters that cannot be adequately protected by barrier posts and require relocation with re-running the service from the main; and (2) services with inaccessible service valves (emergency response) that require re-running the service from the main. Does not include: Minor relocations or service valve installations that do not require re-running the service from the main. Unit of measure is number of services corrected.

MAT 4AA – Supervisory Control and Data Acquisition (SCADA) Type 1: High Pressure Regulator Station; 1 Run; With Flow; With Control; Remote Terminal Unit – High Pressure Regulator Station Monitoring and Control-Single Run. Includes upstream, midstream, and downstream pressure, differential pressure, flow and shut-off control. Unit of measure is remote terminal units installed.

MAT 4AB – Supervisory Control and Data Acquisition (SCADA) Type 3: High Pressure Regulator Station; 1 Run; With Flow; No Control; Remote Terminal Unit – High Pressure Regulator Station Monitoring-Single Run: Includes Upstream, midstream, and downstream pressure, differential pressure and flow. Unit of measure is remote terminal units installed.

MAT 4AC – Supervisory Control and Data Acquisition (SCADA) Type 4: High Pressure Regulator Station; No Flow; No Control; Remote Terminal Unit – High Pressure Regulator Station Monitoring: Includes upstream and downstream pressure. Unit of measure is remote terminal units installed.

MAT 4AD – Supervisory Control and Data Acquisition (SCADA): Meter – Meter monitoring.

MAT 4AE – Supervisory Control and Data Acquisition (SCADA) Type 4: Valve; Remote Terminal Unit – Valve monitoring.

MAT 4AF – Supervisory Control and Data Acquisition (SCADA) Type 6: Regulator Station, Hydraulically Independent System (HIS) Pipeline or Valve; electronic recorder Pressure Monitoring – Includes regulator station, HIS pipeline or valve pressure. Unit of measure is number of electronic pressure recorders.

MAT 4AH – Supervisory Control and Data Acquisition (SCADA) Type 1N: High Pressure/Low Pressure Regulator Station; 1 Run; No Flow; With Control; Remote Terminal Unit – High and Low Pressure Regulator Station Monitoring and Control-Single Run: Includes upstream, midstream, and downstream pressure, differential pressure (high pressure only), vault water level (low pressure only) and shut-off control. Unit of measure is remote terminal units installed.

MAT 4AI – Supervisory Control and Data Acquisition (SCADA) Type 1: High Pressure Regulator Station; 2 Runs; With Flow; With Control; Remote Terminal Unit – High Pressure Regulator Station Monitoring and Control-Dual Run. Includes upstream, midstream, and downstream pressure, differential pressure, flow and shut-off control. Unit of measure is remote terminal units installed.

MAT 4AJ – Supervisory Control and Data Acquisition (SCADA) Type 1N: High Pressure/Low Pressure Regulator Station; 2 Runs; No Flow; With Control; Remote Terminal Unit – High and Low Pressure Regulator Station Monitoring and Control-Dual Run: Includes upstream, midstream, and downstream pressure, differential pressure (high pressure only), vault water level (Low pressure only) and shut-off control. Unit of measure is remote terminal units installed.

MAT 4AK – High and Low Pressure Regulator Station Monitoring and Control-Dual Run: Includes upstream, midstream, and downstream pressure, differential pressure (high pressure only), vault water level (low pressure only) and shut-off control – High and Low Pressure Regulator Station Monitoring-Single Run: Includes upstream, midstream, and downstream pressure, differential pressure (high pressure only) and vault water level (low pressure only). Unit of measure is remote terminal units installed.

MAT 4AL – Supervisory Control and Data Acquisition (SCADA) Type 3: High pressure Regulator Station; 2 Runs; With Flow; No Control; Remote Terminal Unit – High Pressure Regulator Station Monitoring-Dual Run: Includes upstream, midstream, and downstream pressure, differential pressure and flow. Unit of measure is remote terminal units installed.

MAT 4AM – Supervisory Control and Data Acquisition (SCADA) Type 3N: High pressure/Low pressure Station; 2 Runs; No Flow; No Control; Remote Terminal Unit – High and Low Regulator Station Monitoring-Dual Run: Includes

upstream, midstream, and downstream pressure; differential pressure (high pressure only) and vault water level (low pressure only). Unit of measure is remote terminal units installed.

MAT 47B – Construction/Acquisition New Facility-Gas-Capital-Mains – Installation of gas main to provide additional capacity. Unit of measure is feet of main installed.

MAT 47C – Construct/Acquire New Facility-Gas-Capacity-Regulator Station – Installation of new district regulator station to provide additional capacity (including cost to install Supervisory Control and Data Acquisition (SCADA). Unit of measure is total number of regulator stations addressed.

MAT 47D – Construct/Acquire New Facility-Gas-Capacity-Replace Regulator Station – Install or replace gas regulation equipment at an existing district regulator station to provide additional capacity. Unit of measure is number of regulator station components.

MAT 47E – Construct/Acquire New Facilities Gas-Capacity-Emergent – Install gas main to provide additional capacity for Emergent Projects. Does not include: Installing new facilities for new customers to fulfill a customer request. Unit of measure is feet of main installed.

MAT 47F – Construct/Acquire New Facility Gas-Capacity-Other – Install or replace facility for capacity. This work is non-unitized.

MAT 50A – Improve Reliability/System Dependencies – Gas Main – Replace/install greater than or equal to 100 feet of gas distribution main due to deterioration or reduced reliability. Does not include: Deactivation of main; shallow mains and services, if the condition was caused by work or alteration by a customer/ third party. Unit of measure is feet of main installed.

MAT 50B – Improve Reliability-Gas Services. Includes: (1) Replace entire service due to deterioration or reduced reliability; (2) re-establishing an existing electronic recorder to a service that is being replaced. Does not include: Capital service leak repairs; opportunistic Service Replacements; idle stub cut-offs; shallow services, if the condition was caused

by work or alteration by a customer/third party; new installations of electronic recorders. Unit of measure is number of services replaced.

MAT 50C – Improve Reliability – Gas Regulation. Replacement of an entire district regulator station (existing pilot operated station and High Pressure Regulator Type stations with regulation 1 inch and above) due to deterioration or reduced reliability. Does not include: replacement of High Pressure Regulators. Unit of measure: number of Regulator Stations Addressed.

MAT 50D – Improve Reliability – Gas Cathodic Protection Systems. Includes: For ETS (Electrical Test Station) greater than or equal to 5 stations at a single location the following – Rectifier; Pipe Coating greater than or equal to 100 feet; Remote Monitoring Units (RMUs); Casing Remediation greater than 100 feet. Does not include: Impressed Current Anodes (Deep or Shallow bed) which is now part of new MAT 50P. Cathodic Protection systems for Electrical (ETS) less than 5 stations at a single location are charged to expense. Unit of measure is number of cathodic protection systems installed.

MAT 50F – Improve Reliability- Gas Other Equipment – Includes: Replace/install/deactivate other units of gas capital; permanent pressure recorders and new pits/vaults; all deactivation-only jobs for Cathodic Protection systems. Does not include: partial pit/vault rebuilds and/or lids only. Units of measure are number of replaced, installed and deactivated and other units of Gas Capital.

MAT 50G – Improve Reliability – Gas Service Replace Leaks. Replace/deactivate entire or stub services due to leaks not due to idle facilities or “dig-ins.” Unit of measure is number of services replaced.

MAT 50H – Improve Reliability – Cut-Off Idle Gas Service – Remove/deactivate entire or stub services due to idle facilities and not due to leaks, overbuilds, “dig-ins.” or demolitions. Does not include: Capital work for demolition. Unit of measure is cut off idle services.

MAT 50I – Improve Reliability – Deactivation Only for Mains, Regulators, and Valves. Deactivate gas main (and the associated services), regulator stations or valves. Does not include: new mains limited to less than 100 feet; those with

greater than or equal to 100 feet; gas service deactivations with no main deactivation. Unit of measure is number of deactivations.

MAT 50J – Gas Overbuild. Relocation/rearrangement of gas main (greater than 100 continuous feet) and/or complete gas service replacement to clear overbuild conflicts. Does not include: customer requested relocations to clear overbuild. Unit of measure is number of relocated/rearranged mains and completed gas services replaced.

MAT 50K – Emergent Leaking Main Replacement – Replace/install greater than or equal to 100 feet of gas distribution main due to leaks. Does not include: Deactivation of main only jobs. Unit of measure is feet of main installed.

MAT 50L – Improve Reliability – Gas Regulator Station Component. Replacement of regulator station component due to deterioration or reduced reliability. Includes valves (both upstream and downstream fire valves and block valves), filters, regulators, and other capital equipment within the station. Unit of measure is number of Regulator Station components replaced within a station.

MAT 50M – Improve Reliability – Gas Service Replace Leaks. Replace/deactivate entire or stub complex services due to leaks not due to idle facilities or “dig-ins.” Also includes large commercial meter sets, and any complex load calculations that require Gas Distribution Engineering and Design. Unit of measure is number of services replaced.

MAT 50P – Improve Reliability /System Dependability – Deep Well Anode. Installation of impressed current ground bed, deep or shallow. Unit of measure is number of cathodic protection new and replaced.

MAT 52B – Emergency Response to Dig-Ins -Services. Replace/deactivate entire or stub services due to “dig-in,” outside forces or third-party damage. Also, includes service cut-offs due to emergencies (i.e., due to fire). Unit of measure is number of services replaced.

MAT 52C – Emergency Response to Dig-Ins -Main – Replace greater than or equal to 100 feet gas distribution main due to dig-in or damage by outside forces or third party. Deactivate greater than or equal to 1 foot gas distribution main due to dig-in or damage by outside forces. Unit of measure is footage of main replaced.

MAT 74A – Gas Regulator Replacement. Labor to replace failed or deteriorating residential and non-residential regulators while performing routine maintenance or other field activity. Includes targeted regulator replacement programs and filter replacement with regulator replacement for large meter work 2” and greater. Does not include: (1) Regulator replacement conjunction with a meter set, charge to meter install/replace MAT's; (2) The cost of the regulator; (3) HPR replacement; (4) Distribution district regulation equipment; and (5) Replacement of strainer. Unit of measure is number of regulators.

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TABLE 2-4
GAS DISTRIBUTION 2017 CAPITAL COMPARISON
BY MAT CODE FOR SAFETY AND RELIABILITY WORK
(THOUSANDS OF DOLLARS)

Line No.	MWC	MAT	2017 Imputed Adopted Units	2017 Imputed Regulatory Values	2017 Recorded Units	2017 Recorded Costs	2017 Difference in Units Higher/(Lower)	2017 Difference in Costs Higher/(Lower)	Explanation
1	14	14A	242,880	$151,004	190,186	$116,638	(52,694)	($34,367)	Program expenditures and units were below imputed values as units were adjusted to 2018 and 2019 to address execution efficiencies in municipalities.
2	14	14B	18	205	185	6,620	167	6,416	Program expenditures and actual units exceeded imputed values due to additional copper services needing replacement after the 2017 GRC forecast was submitted.
3	14	14C	–	–	20	677	20	677	Below variance threshold.
4	14	14D	501,600	235,646	502,143	253,618	543	17,972	Below variance threshold.
5	14	14#	–	–	–	10,299		10,299	#MATs comprise orders that are aligned to MWCs without a MAT code assignment. Types of order costs can include, but are not limited to spoils, sand and gravel, standard cost variance, and quality assurance (QA) / quality control (QC). Therefore, there is usually no forecast associated with MAT# orders.
6	27	27A	27	346	19	733	(8)	387	Actual units were below imputed adopted units due to fewer customer requests and field inspections.
7	2K	2KA	–	–	99	16,996	99	16,996	Variance explanation is not applicable. In the 2017 GRC Application, the HPR forecast was at the MWC level and not at the MAT level. For planning purposes, the work for HPRs is now tracked at the MAT level.
8	2K	2KB	–	–	3	675	3	675	Variance explanation is not applicable. In the 2017 GRC Application, the HPR forecast was at the MWC level and not at the MAT level. For planning purposes, the work for HPRs is now tracked at the MAT level.
9	2K	2KC	–	–	124	19,551	124	19,551	Variance explanation is not applicable. In the 2017

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Line No.	MWC	MAT	2017 Imputed Adopted Units	2017 Imputed Regulatory Values	2017 Recorded Units	2017 Recorded Costs	2017 Difference in Units Higher/(Lower)	2017 Difference in Costs Higher/(Lower)	Explanation
									GRC Application, the HPR forecast was at the MWC level and not at the MAT level. For planning purposes, the work for HPRs is now tracked at the MAT level.
10	2K	2K#	375	40,136	–	427	(375)	(39,709)	In the 2017 GRC Application, the HPR forecast was at the MWC level and not at the MAT level. For planning purposes, the work for HPRs is now tracked at the MAT level.
									Actual units are below imputed regulatory amounts because of various factors that include the Northern California wildfires, and material and resource constraints.
11	47	47B	69,000	30,981	48,157	20,721	(20,843)	(10,260)	Program expenditures and actual units were below imputed values due to Gas System Planning process design changes that facilitated improved load predictions and resulted in fewer capacity projects needed.
12	47	47C	11	8,560	7	6,789	(4)	(1,771)	Installation of regulator stations was below imputed values due to regulator stations being eliminated, existing supply determined to be adequate, or modifications of existing regulator stations to accommodate projected loads.
13	47	47D	20	2,156	9	320	(11)	(1,836)	Program expenditures were below imputed values due to less station rebuild project required than anticipated in the 2017 GRC.
14	47	47E	–	2,003	–	44	–	(1,959)	Program expenditures were below imputed adopted values due to project delays for the Warriors Stadium scheduled for construction in 2018.
15	47	47F	–	429	–	262	–	(167)	Below variance threshold.
16	47	47#	–	-	–	619	–	619	Below variance threshold.

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Line No.	MWC	MAT	2017 Imputed Adopted Units	2017 Imputed Regulatory Values	2017 Recorded Units	2017 Recorded Costs	2017 Difference in Units Higher/(Lower)	2017 Difference in Costs Higher/(Lower)	Explanation
17	4A	4AA	22	4,128	–	1,195	(22)	(2,933)	Program expenditures and units were below imputed values, due to reprioritization related to anticipated need for budget in higher risk areas. In addition, unit costs were higher due to anticipated technology savings not materializing resulting in a slower pace and fewer units being completed. In the 2017 GRC Application, MATs 4AE, 4AH, 4AJ, and 4AI were included in 4AA.
18	4A	4AB	148	25,055	35	6,891	(113)	(18,164)	Program expenditures and units were below imputed values, due to reprioritization related to anticipated need for budget in higher risk areas. In addition, unit costs were higher due to anticipated technology savings not materializing resulting in a slower pace and fewer units being completed. In the 2017 GRC Application, MATs 4AK, 4AL, and 4AM were included in 4AB.
19	4A	4AC	76	4,476	17	3,009	(59)	(1,467)	Program expenditures and units were below imputed values, due to reprioritization related to anticipated need for budget in higher risk areas. In addition, unit costs were higher due to anticipated technology savings not materializing resulting in a slower pace and fewer units being completed.
20	4A	4AF	202	2,700	126	2,569	(76)	(131)	Actual units were below imputed adopted units due to a reduced number of electronic recorders (ERX) needed to obtain the same amount of visibility as originally estimated in the 2017 GRC.
21	4A	4AH	–	–	–	5	–	5	This MAT code was not included in the 2017 GRC. The work recorded in this MAT code was forecast as part of 4AA. See variance explanation in MAT Code 4AA.
22	4A	4AK	–	–	30	5,898	30	5,898	This MAT code was not included in the 2017 GRC. The work recorded in this MAT code was forecast as part of 4AB. See variance explanation in MAT Code 4AB.
23	4A	4AL	–	–	26	3,812	26	3,812	The work recorded in this MAT code was forecast as part of 4AB. See variance explanation in MAT Code 4AB.

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Line No.	MWC	MAT	2017 Imputed Adopted Units	2017 Imputed Regulatory Values	2017 Recorded Units	2017 Recorded Costs	2017 Difference in Units Higher/(Lower)	2017 Difference in Costs Higher/(Lower)	Explanation
24	4A	4AM	–	–	6	899	6	899	The work recorded in this MAT code was forecast as part of 4AB. See variance explanation in MAT Code 4AB.
25	4A	4A#	–	2,975	–	461	–	(2,514)	Below variance threshold.
26	50	50A	79,200	45,796	72,842	40,831	(6,359)	(4,965)	Program expenditures were below imputed values as the mileage needed and costs for repair for main replacement were lower than compared to recent years.
27	50	50B	917	9,854	421	8,350	(496)	(1,505)	Program units were below imputed values due to increased review prior to execution of the work resulting in project cancellation and/or reallocation to other projects in other MAT Codes.
28	50	50C	30	23,685	30	28,570	–	4,884	Program expenditures exceeded imputed values due to additional scope of work and complexity of some regulator stations rebuilt.
29	50	50D	797	20,333	125	7,425	(672)	(12,908)	Program expenditures and units were below imputed values because costs for Deep Well Anode Installation were reallocated to a newly created MAT-50P. In addition, there were cost savings due to increased opportunities to coordinate installation of Remote Monitoring Units by region.
30	50	50E	343	15,226	301	13,588	(42)	(1,638)	Below variance threshold.
31	50	50F	–	1,057	29	457	29	(599)	Below variance threshold.
32	50	50G	10,567	97,355	646	8,769	(9,921)	(88,586)	Program expenditures and actual units were below imputed values due to a low find rate for below-ground leaks.
33	50	50H	900	6,161	407	3,360	(493)	(2,801)	Actual units were below imputed units due to a lower volume of stub services being identified for deactivation.
34	50	50I	53	5,562	15,613	11,454	15,560	5,892	Program expenditures and units exceeded imputed values due to a carryover of maximum allowable operating pressure valve deactivation from 2016.

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Line No.	MWC	MAT	2017 Imputed Adopted Units	2017 Imputed Regulatory Values	2017 Recorded Units	2017 Recorded Costs	2017 Difference in Units Higher/(Lower)	2017 Difference in Costs Higher/(Lower)	Explanation
35	50	50J	492	10,105	696	18,606	204	8,500	Program expenditures and units exceeded imputed adopted values due to more encroachments and mobile home park services identified as well as carryover of work from 2016.
36	50	50K	16,978	10,157	11,587	6,180	(5,391)	(3,977)	Program expenditures and actual units were below imputed values due to a low leak find rate which resulted in less capital work that required main replacements.
37	50	50L	130	7,604	127	10,460	(3)	2,857	Below variance threshold.
38	50	50M	1,188	7,554	83	1,559	(1,105)	(5,995)	Program expenditures and actual units were below imputed values due to a lower leak find rate.
39	50	50P	–	–	128	8,604	128	8,604	Variance explanation is not applicable. This is a new MAT code that was not included in the 2017 GRC.
40	50	50#	–	–	–	4,346	–	4,346	#MATs comprise orders that are aligned to MWCs without a MAT code assignment. Types of order costs can include, but are not limited to spoils, sand and gravel, standard cost variance, and quality assurance (QA) / quality control (QC). Therefore, there is usually no forecast associated with MAT# orders.
41	52	52B	–	751	167	6,320	167	5,569	Program expenditures and actual units exceeded imputed values due to more resources needed than planned in response to wildfire work.
42	52	52C	–	–	3,276	4,617	3,276	4,617	Below variance threshold.
43	74	74A	6,638	2,939	5,354	1,475	(1,284)	(1,464)	Below variance threshold.
54		**Total**		**$774,938**		**$664,696**		**($110,242)**	

SECTION 3
Electric Distribution
Imputed Adopted vs. Recorded and Electric Metrics

PACIFIC GAS AND ELECTRIC COMPANY
2017 GENERAL RATE CASE APPLICATION 15-09-001
ELECTRIC DISTRIBUTION

TABLE 3-1
ELECTRIC DISTRIBUTION 2017 EXPENSE COMPARISON SUMMARY
(THOUSANDS OF DOLLARS)

Line No.	MWC Description	MWC	2017 Imputed Regulatory Values	2017 Recorded	2017 Difference Higher/(Lower)	2018 Budget
1	Support and Emergency Preparedness and Response	AB	$9,436	$18,054	$8,618	$17,495
2	Electric Distribution Operation Activities	BA	26,025	15,676	(10,349)	19,114
3	Perform Reimbursable Work for Others	BC	–	22	22	–
4	Patrols and Inspections	BF	34,764	26,433	(8,330)	29,495
5	Electric Distribution Routine Emergency	BH	51,541	56,888	5,348	54,148
6	Maintenance of Other Equipment	BK	1,877	1,455	(423)	1,551
7	Customer Field Service Work	DD	15,979	19,149	3,170	18,957
8	Develop & Provide Training	DN	7,239	2,962	(4,277)	3,008
9	New Customer Connection Service Inquiry Activities	EV	8,391	10,482	2,090	11,258
10	Work Requested by Others (WRO)	EW	12,895	4,007	(8,887)	4,528
11	Electric Engineering and Planning	FZ	13,919	12,823	(1,096)	15,771
12	Poles-Intrusive Inspection/Test and Treat	GA	13,049	12,272	(777)	10,282
13	Operate and Maintain Substations	GC	25,372	26,569	1,197	27,111
14	Electric Distribution Mapping	GE	5,146	2,249	(2,897)	6,345
15	Electric Distribution Operations Technology	HG	–	469	469	5,096
16	Vegetation Management Balancing Account	HN	201,033	201,456	424	213,375
17	Distribution Automation and Protection Support	HX	1,370	1,911	541	1,895
18	Electric Distribution Major Emergency	IF	51,438	298,102	246,663	109,000
19	Bill Customers	IS	–	1,056	1,056	1,033
20	Maintain IT Applications & Infrastructure	JV	6,182	7,743	1,561	7,250
21	Preventive Maintenance and Equipment Repair, Overhead	KA	46,458	27,436	(19,022)	35,746
22	Preventive Maintenance and Equipment Repair, Underground	KB	15,712	13,643	(2,069)	13,922
23	Preventive Maintenance and Equipment Repair, Network	KC	4,129	3,693	(436)	3,896
24	Operational Management	OM	18,776	7,320	(11,457)	6,197
25	Operational Support	OS	24,432	(212)	(24,644)	7,945
27	Total		$595,163	$771,657	$176,494	$624,420

PACIFIC GAS AND ELECTRIC COMPANY
2017 GENERAL RATE CASE APPLICATION 15-09-001
ELECTRIC DISTRIBUTION

TABLE 3-2
ELECTRIC DISTRIBUTION 2017 CAPITAL COMPARISON SUMMARY
(THOUSANDS OF DOLLARS)

Line No.	MWC Description	MWC	2017 Imputed Regulatory Values	2017 Recorded	2017 Difference Higher/(Lower)	2018 Budget
1	Tools and Equipment	05	$(18,143)	$5,285	$23,428	$7,330
2	Electric Distribution Line and Equipment Capacity	06	89,337	56,068	(33,268)	78,808
3	Pole Replacement	07	86,328	99,395	13,067	173,377
4	Base Reliability Program	08	45,091	26,477	(18,614)	66,767
5	Electric Distribution Automation and Protection	09	48,174	54,625	6,451	63,880
6	Electric Work at the Request of Others	10	76,403	97,207	20,804	108,696
7	Electric Distribution Customer Connections	16	399,720	362,565	(37,155)	396,484
8	Electric Distribution Routine Emergency	17	146,893	183,953	37,060	173,413
9	Emergency Preparedness and Response and Miscellaneous Capital	21	8,022	1,640	(6,383)	(197,815)
10	Implement Real Estate Strategy/Manage Buildings	23	5,652	–	(5,652)	–
11	Electric Distribution Work at the Request by Others – Rule 20A	30	57,919	28,255	(29,664)	53,800
12	Electric Distribution Substation Capacity	46	67,755	17,362	(50,393)	19,736
13	Electric Distribution Replace Substation Equipment	48	80,892	96,332	15,440	117,661
14	Targeted Reliability Program	49	80,428	45,141	(35,286)	80,812
15	Electric Distribution Substation Transformer Replacements	54	42,686	22,274	(20,412)	44,246
16	Electric Distribution Underground Asset Replacement	56	107,750	86,808	(20,942)	123,701
17	Electric Distribution Substation Safety and Security	58	2,315	3,177	862	4,571
18	Electric Distribution Substation Emergency Replacement	59	45,517	82,722	37,205	60,000
19	Electric Operations Control Center Facility	63	1,096	3,724	2,628	19,578
20	Electric Distribution Major Emergency	95	56,474	278,657	222,183	93,800
21	Electric Distribution Preventive Maintenance, Overhead	2A	118,036	114,590	(3,446)	193,615
22	Electric Distribution Preventive Maintenance, Underground	2B	43,748	50,049	6,300	58,254
23	Electric Distribution Preventive Maintenance, Network	2C	20,130	17,490	(2,640)	20,665
24	Build IT Applications & Infrastructure	2F	50,126	28,124	(22,002)	25,326
25	Total		$1,662,351	$1,761,920	$99,569	$1,786,706

MWC Descriptions – Expense

MWC AB – Support and Emergency Preparedness and Response – includes general support of the electric distribution system, including performance improvement initiatives, interdepartmental meter costs, consulting fees, as well as a number of smaller projects such as the Electric Magnetic Fields program. In addition, MWC AB captures standard cost variance of multiple electric distribution workgroups in Electric Operations,[1] a forecast offset for productivity improvements, and costs for fleet services. This major work category also includes costs for PG&E's Emergency Preparedness and Response (EP&R) organization.

MWC BA – Electric Distribution Operation Activities – includes distribution control center and field operations, including work performed by Distribution Operators, and engineers. This work includes operating switches to transfer load between circuits, isolating customers or de-energizing sections of line during planned construction or maintenance, and reconfiguring circuits to mitigate unplanned situations such as dig-ins, car pole accidents and storms. Beginning in 2017, costs for the Dispatch and Scheduling department of work to troublemen in the field are captured in MWC DD.

MWC BC – Perform Reimbursable Work for Others – includes costs and the reimbursable expenses incurred to provide mutual assistance support to other utilities.

MWC BF – Patrols and Inspections – includes patrols and inspections of overhead (OH) and underground (UG) electric distribution facilities per General Order 165; patrols and inspection of OH facilities in wildfire areas; infrared inspections; testing and inspection of OH and UG line equipment; special patrols and inspections; and other work associated with electric distribution system maintenance.

MWC BH – Electric Distribution Routine Emergency – includes response to OH or UG outages that occur during normal conditions including routine emergency response work as well as work issued using PG&E's Field Automation System (FAS) for either emergency response or system reliability.

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1 Standard Cost Variance (SCV) is described in the Gas Distribution expense Section 2 of this Report.

MWC BK – Maintenance of Other Equipment – includes repair of specialized equipment, such as transformers, voltage regulators, circuit reclosers, capacitor banks and line switches, as well as equipment repair activities at the Emeryville repair facility.

MWC DD – Customer Field Service Work – includes Electric Distribution's portion of customer-generated field service activities, specifically start/stop service requests and other customer-generated electric field service requests. Beginning in 2017, this work also includes the dispatch and scheduling of work to troublemen in the field.

MWC DN – Develop and Provide Training – includes revising existing and creating new training materials and course curriculums for PG&E's workforce.

MWC EV – New Customer Connection Service Inquiry Activities – includes processing customer requests related to new business or increased connection capacity (added load) on existing services.

MWC EW – Work Requested by Others (WRO) – Maintenance – encompasses work required by tariff, third-party requests and franchise compliance, including:

- Relocations: Non-plant related relocations of electric facilities; Land Department right-of-way record research requested by third parties that are not project specific; and local division office WRO service inquiries not requiring Land Department involvement. (WRO related to gas service has moved to MWC LK in Gas Operations.)
- Generation Interconnection Services (GIS): Managing the electric interconnection process for CPUC and Federal Energy Regulatory Commission jurisdictional customer generation projects connected at the distribution service level from receipt of the interconnection inquiry through the in-service date of the new generation facility and continuing through billing, settlements and refunds.
- Pre-Parallel Inspections: On-site inspections of distribution voltage interconnections that are funded via Electric Tariff Rule 21. Pre-parallel inspections are performed to ensure safe and reliable operation of customer-owned generators paralleled with PG&E's grid.

MWC FZ – Electric Engineering and Planning – supports many programs that require engineering and planning services, including the Electric Distribution Capacity, Electric Distribution Reliability, and Underground Asset Management programs. This program also supports: investigating secondary voltage complaints that troublemen cannot resolve on

the first visit; investigation of down power lines; electric distribution Diagnostic Center; and operational field work that electric planning personnel initiate, such as phase balancing and replacing fuses that are projected to be overloaded.

MWC GA – Poles – Intrusive Inspection/Test and Treat – includes activities to assess the condition of the lower section of wood poles and preserve the poles' wood strength through the application of chemicals, and restoration of poles as warranted. This program also includes coordination of billing joint owners and tenants for their share of costs for work performed on jointly owned or leased facilities.

MWC GC – Operate and Maintain Distribution Substation Assets – includes operations, preventive maintenance and corrective maintenance of distribution substation assets.

- Preventive maintenance includes: substation facility and equipment inspections; diagnostic testing; overhauls; washing insulators; maintenance of mobile and Capitalized Emergency Material (CEM) equipment; maintaining station logs.
- Corrective maintenance includes: restoration and repair of failed equipment; switching and restoring service to customers; mobile substation and mobile transformer installation costs; and relocation of emergency and surplus equipment.
- Operations in a substation include: activities associated with providing safe working conditions for employees; calibrating and adjusting substation equipment; building maintenance, miscellaneous activities such as yard repairs, janitorial work and landscaping, vegetation management, rental contracts, and system-funded expense projects, such as transformer relocations.

MWC GE – Electric Distribution Mapping – includes providing timely and accurate data and spatial information for PG&E's electric system that supports construction, engineering, estimating, operational, restoration, inspection, and maintenance activities.

MWC HN – Vegetation Management Balancing Account – includes costs necessary to support and execute patrolling, inspecting and maintaining clearances for approximately five million trees along PG&E's OH high voltage distribution lines. The program covers routine tree trimming and removal, vegetation control, contractor quality control, environmental compliance and public education, and fire risk reduction work.

MWC HX –Distribution Automation/SCADA, Protection Support – includes engineering and technical support for automation and protection equipment. Also includes the service and software costs associated with distribution SCADA software. Engineering support consists of three components: (1) Automation Engineering support; (2) Protection Engineering support; and (3) SCADA Specialist support.

MWC IF – Electric Distribution Major Emergency – includes response work to OH or UG outages when a division Operations Emergency Center (OEC) has been activated and consistent with PG&E's Major Emergency Balancing Account Criteria Guidance Document. Beginning in 2014, these costs are included in the two-way Major Emergency Balancing Account (MEBA) authorized by Decision 14-08-032.

MWC IS – Process Customer Bills – includes work in support of streetlight inventory and LS-2 Streetlight Audit Services, and the Light Emitting Diode (LED) and other streetlight programs.

MWC JV – Maintain IT Applications and Infrastructure – includes costs for ongoing maintenance, operations and repair for PG&E's IT applications, systems and infrastructure.

MWC KA – Preventive Maintenance and Equipment Repair, Overhead – includes repair of OH facilities; repair of OH Critical Operating Equipment (COE); repair of streetlights and group streetlight replacements; refurbishment and overhaul of specific types of OH distribution line equipment; repair of OH facilities to address migratory bird requirements; investigate and respond to radio television interference (RTVI) inquiries; wash insulators; investigation of idle facilities; grounding surge arresters; wood pole bridge bonding; and other OH maintenance work.

MWC KB – Preventive Maintenance and Equipment Repair, Underground – includes repair of UG facilities; repair of UG COE; grounding WYE transformers; and other UG line maintenance work.

MWC KC – Preventive Maintenance and Equipment Repair, Network – includes repair of network facilities; repair of network equipment, repair of network SCADA equipment, testing and overhaul of network protectors, transformer oil sampling; and other miscellaneous network maintenance work.

MWC OM – Operational Management – includes labor- and employee-related costs to provide supervision and management support. MWC OM also includes costs incurred by the administrative staff working for the Supervisors/Managers.

MWC OS – Operational Support – includes labor- and employee-related costs that provide services and support that are unrelated to supervision and management.

New MWC Descriptions – Expense

MWC HG – Electric Distribution Operations Technology – covers technical support for Electric Distribution Operations, including but not limited to operational and development support for various control center applications and tools.

MAT Code Descriptions for Safety and Reliability Work – Expense

MAT AB6 – Emergency Preparedness and Response (EP&R) – Created to break out EP&R expense cost.

MAT BF3 – Underground (UG) BART Cable Testing/Inspections – Annual inspections/tests of 34.5 kV Bay Area Rapid Transit (BART) Cable for compliance with Utility Standard TD-2302S.

MAT BF4 – UG Auto Transfer Switch Testing/Inspections – Annual inspection/testing of individual electronic-component style and microprocessor style auto-transfer switches (ATS) for compliance with Utility Standard TD-2302S.

MAT BFA – Poles Patrolled – Visual patrol of overhead distribution facilities to identify obvious structural problems or hazards for compliance with General Order 165 and the Electric Distribution Preventive Maintenance (EDPM) Manual. Patrolled facilities include primary, secondary, and service, and other associated electric distribution facilities outside the substation fence to the end of the line. Towers supporting only distribution facilities are included in the overhead patrol. Patrols can be performed from a vehicle, on foot, or by helicopter. Units measured: Number of poles patrolled.

MAT BFB – Poles Inspected – Detailed inspection of overhead distribution facilities to examine and record any compelling, abnormal conditions that will adversely impact safety or reliability for compliance with General Order 165 and the Electric Distribution Preventive Maintenance (EDPM) Manual. Inspected facilities include PG&E solely and jointly owned poles, including all equipment and facilities on the pole; primary and secondary risers and services; primary and secondary conductor; transmission poles with distribution under build; distribution towers and lattices; streetlights on PG&E solely owned or joint poles; and primary metering. Units measured: Number of poles inspected.

MAT BFC – OH Infrared Inspections – Infrared inspection of overhead distribution facilities to identify pending failure of equipment. Work includes contractor-performed reliability work and internal-performed ad hoc requests.

MAT BFD – Enclosures Patrolled – Visual patrol of underground distribution facilities to identify obvious structural problems or hazards for compliance with General Order 165 and the Electric Distribution Preventive Maintenance (EDPM) Manual. Patrolled facilities include pad-mounted equipment, primary enclosures, and visible secondary enclosures

outside the substation fence to the end of the line. An UG patrol may be performed by walking or driving. Units measured: Number of enclosures patrolled.

MAT BFE – Enclosures Inspected – Detailed inspection of underground distribution facilities to examine and record any compelling, abnormal conditions that will adversely impact safety or reliability for compliance with General Order 165 and the Electric Distribution Preventive Maintenance (EDPM) Manual. Inspected facilities include pad-mounted facilities; all underground equipment, conductors, splices, and elbows within primary enclosures; primary metering that includes all visible, primary cable up to termination point plus the primary metering facilities. An infrared inspection must be performed in conjunction with underground inspections. Units measured: Number of enclosures inspected.

MAT BFF – UG Line Equipment Inspected and Tested – Annual inspections of underground distribution line equipment for compliance with Utility Standard TD-2302S. Facility inspections only include manholes with special equipment (i.e., oil-filled equipment). 34.5 kV BART Cable Inspections and Auto-Transfer Switch Inspections are performed and tracked in MATs BF3 and BF4, respectively. Units measured: Number of UG line equipment inspected and tested.

MAT BFG – OH Line Equipment Inspected and Tested – Annual inspection/testing of overhead, pad-mounted, and underground distribution line equipment for compliance with Utility Standard TD-2302S. Facilities include: capacitors, regulators, reclosers, and SCADA operated switches, interrupters, and sectionalizers. Units measured: Number of OH line equipment inspected and tested.

MAT BFH – CPUC Quality Assurance EDM Audits – Support of California Public Utilities Commission (CPUC) annual GO 165 audits, QA Electric Distribution Audits and ad hoc requests throughout the year. This MAT also includes miscellaneous special projects as requested by Asset Strategy. Projects include inspections or patrols of equipment determined to present safety related conditions. Some projects are multi-year while others are single year. Other projects are related to re-inspections or re-patrols as needed as a result of work verifications and is required by GO 165. Other funding in this MAT is related to UG inspection sticker costs required as part of the UG inspections.

MAT BFJ – OH Patrol Outage Review Team Post Outage – For requested post-outage patrols as an action from an Outage Review Team (ORT) meeting. Work scope (including the area to be patrolled and the volume of poles and enclosures) must be identified during the ORT meeting. This includes UG Infrared requests.

MAT BFL – Santa Barbara Wildfire Poles Patrolled – Annual patrols of overhead distribution facilities in the Santa Barbara Wildfire risk area. Work is performed in two divisions (Los Padres and Kern) in PG&E territory in the Santa Barbara county area. Units measured: Number of poles patrolled.

MAT BFM – Urban and OWF Poles Inspected – Annual inspection of overhead distribution facilities in the designated Urban and Other Wildfire risk areas. These inspections are performed annually as compared to the 5-year overhead cycle to mitigate fire risks. Units measured: Number of poles inspected.

MAT DDH – Outages on Customer Equipment – Part outs or complete outs related to customer equipment. Part outs occur when a customer is only receiving energy to a portion of their home or business (e.g., burnt out fuses, customer wiring, service connection at the weather-head, etc.). Units measured: Number of outages.

MAT DDJ – Swing Service, Disconnects/Reconnects – (1) Swing service: transfer of service from old location to new, using existing wire; (2) Service upgrades; (3) Temporary service disconnect, such as a temporary disconnects at a customer's request to enable tree trimming, weather-head or panel work; and (4) Reconnect service due to disconnects for items such as tree trimming, panel or weather-head work by customer, etc. Units measured: Number of disconnects/reconnects.

MAT DD# – Customer Field Service Work – covers Electric Distribution's portion of customer-generated field service activities, specifically start/stop service requests, emergency response and other customer-generated electric field service requests. The primary work includes addressing: partial and complete outages related to customer equipment; transfers of service; electric service upgrades; and temporary disconnections or reconnections of service. This work was previously included in MWC BA.

MAT FZA – General Engineering – Work primarily covers electric distribution engineering and planning services labor, which includes wires down investigations.

MAT FZB – Voltage Complaints Investigations – Used for investigating secondary voltage complaints that troublemen cannot resolve on the first visit, and the settling of recording volt meters for these voltage complaints.

MAT FZC – Transformer Reports Manage – Used for investigating overloaded and idle transformers.

MAT FZD – Field Work Plan – Used for supporting operational field work that engineering personnel initiate, such as phase balancing, and replacing fuses that are projected to be overloaded.

MAT FZE – Troublemen Field Work – Field Personnel performing seasonal, permanent and emergency load transfer field switching, change settings related to seasonal capacitors, or perform special load/voltage readings/setting changes when specifically requested by the Electric Distribution Engineers and directed by the Distribution Control Center Operator.

MAT GAA – Intrusive Inspection – Intrusive testing and treatment of wood poles. Compliance inspection program for GO95 and GO165. Units measured: Number of inspections.

MAT GAD – Pole Restoration – Reinforce deteriorated, decayed or damaged poles with steel trusses. Program typically follows one year behind Pole Test and Treat program and restores poles to original design strength. Units measured: Number of reinforcements.

MAT GAI – Pole Evaluation – Pole evaluation program to better prioritize pole replacement and reinforcement work. Units measured: Number of evaluations.

MAT GC1 – Electric Distribution Substation-Engineering Maintenance Support – Distribution substation costs in engineering and other maintenance support.

MAT GC2 – Electric Distribution Substation-Major Emergency Corrective Maintenance – Distribution substation costs from major emergencies and emergent work.

MAT GCA – Transformer Preventive Maintenance – Distribution substation costs for transformers, regulators, and load tap changer (LTC) Oil Tests. Units measured: Number of transformers.

MAT GCB – Circuit Breaker Preventive Maintenance – Distribution substation costs for breakers exercises. Units measured: Number of circuit breakers.

MAT GCC – Substation Relay Preventive Maintenance – Distribution substation costs for relay functional tests. Units measured: Number of substation tests.

MAT GCD – Substation Inspections – Distribution substation costs for recurring station inspection of equipment.

MAT GCE – General Station Preventive Maintenance – Distribution substation costs for preventive maintenance tasks on variety of other types of substation equipment. Units measured: Number of tasks.

MAT GCF – Battery Preventive Maintenance – Distribution substation costs for battery tests. Units measured: Number of batteries.

MAT GCG – Vegetation Management – Distribution substation costs in vegetation management to stay compliant and correct customer compliance of outside the fence vegetation. Routine vegetation control, rodent control, mowing and administration of the program.

MAT GCH – Building Maintenance – Distribution substation costs for cost in substation corrective building and yard work such as repair breeches in station fences, roof leaks, plumbing repairs, station security such as lighting and card readers, etc.

MAT GCI – Switch Preventive Maintenance – Distribution substation costs for switch diagnostic/performance tests. Units measured: Number of switches.

MAT GCJ – Distribution Substation: Corrective – Distribution substation costs for various substation equipment corrective repair work.

MAT GCM – Circuit Breaker Mechanism Services – Distribution substation costs for breaker mechanism services, including required breaker oil analysis. Units measured: Number of breakers.

MAT GCO – Transformer Overhaul Inspections – Distribution substation costs for transformer/regulator Load Tap Changer overhaul inspections. Units measured: Number of transformer overhaul inspections.

MAT GCS – Circuit Switcher & Motor-Operated Air Switch (MOAS) Mechanism Services – Distribution substation costs for circuit switcher and MOAS mechanism services. Units measured: Number of services.

MAT GCV – Circuit Breaker Overhauls – Distribution substation costs for circuit breaker overhauls. Units measured: Number of circuit breaker overhauls.

MAT GCW– Distribution Station Washes – Distribution substation costs for station insulator washing.

MAT GEO – Mapping – Electric Distribution Mapping includes activities such as annexations (city/county boundary and tax changes) and delineations (internal mapping information to external agencies, e.g., engineering firms, other utilities). This MAT also includes records management work described in MAT GEP.

MAT GEP – Records Management – Records and Information Management labor for full-time employees (FTE) in execution of the following projects: Field Asset Inventory, Field Records Inventory, Convert Paper Records and Migrate Electronic Records, as well as ongoing business process reviews, change management, process mapping and implementation of Enterprise Records and Information Management program (ERIM) policies and standards. This work is now included in MAT GEO.

MAT KA# – Transformer Labor Expense – Transformer labor expense work replaces failed transformers with refurbished transformers instead of new transformers. Project costs are related to the work to restore existing transformers back to working condition.

MAT KAA – OH Notifications – Repair overhead facilities or replace individual components that are not an imminent hazard, and have not caused an outage. Facilities include: connectors, insulators, low conductors, leaning poles, slack guys, etc. Repair, replace, or install grounds, moldings, leaking bushings, and related work on all OH transformers and equipment associated with transformers. Units measured: Number of notifications.

MAT KAB – Regulators/Reclosers Corrective Maintenance Tag – Regulator and recloser equipment repairs.

MAT KAC – Bird Safe – Repair, replace, or install bird guard materials such as jumper covers, bushing covers, perch guards, or perching platforms on incident and/or adjacent poles in response to a bird electrocution, per U.S. Fish and Wildlife Service (USFWS) and Utility Operating Standard S2321. Units measured: Number of notifications.

MAT KAD – Bird Retrofits – Install bird guard materials such as jumper covers, bushing covers, perch guards, or perching platforms on poles identified in the Annual Pole Retrofit Program to prevent bird electrocutions, per USFWS requirements and Utility Operating Standard S2321. Units measured: Number of notifications.

MAT KAF – OH COE – Repair of Critical Operating Equipment (COE). Also includes ordering batteries for work in MAT BFG. Units measured: Number of notifications.

MAT KAH – Streetlight Burnouts – Repair or replace lamps, photo cells, and related items associated with non-operating streetlights. If the street light head needs replacement, the time and material to replace the head is charged to 2AA. If the burnout is caused by a secondary underground failure, the time and material to make the repair is charged to 2BA. Units measured: Number of burnout repairs.

MAT KAK – Radio and Television Interference (RTVI) Investigations – Investigation of Radio/TV interference (RTVI) where cause is linked to Company equipment. Units measured: Number of investigations.

MAT KAM – Insulator Washing – Washing pole-mounted insulators.

MAT KAO – Idle Facilities Investigations – Investigation by Service planning as to whether identified idle facilities have a foreseeable future use.

MAT KAP –Major Projects OH – Major Projects for the replacement of OH electric facilities that are not an imminent hazard and have not caused an outage. Includes pre-planned major projects.

MAT KAQ – Wood Pole Bridge Bonding – Wood Pole Bonding maintenance activity where an existing wood pole supporting both transmission and distribution line facilities is retrofitted with grounding protection to prevent fires which can occur at the location on the pole where the distribution cross arm is bolted to the pole. Before 2016, this work was accounted for in Electric Transmission.

MAT KAR – Surge Arrester Grounding – installation of a separate ground for surge arresters installed in the same location as distribution transformers where a common ground condition currently exists. Beginning in 2017, this program was re-scoped to replace the arresters with exempt equipment in addition to the grounding work; the combined program will be accounted for in MAT 2AP. Units measured: Number of surge arresters.

MAT KAS – FAS OH Expense – Field Automation System (FAS) Overhead expense is work that is identified during a field job and completed by a single troubleman. Units measured: Number of notifications.

MAT KB# – Unassigned – Transformer labor reclassification costs incurred when a transformer is refurbished and reused instead of being replaced with a new unit. Additionally, this MAT includes costs for sand, gravel, spoils and other oil-filled equipment used on a variety of underground jobs.

MAT KBA – UG Notifications – Repair underground facilities (including UG IR tags) or replace individual components that are not an imminent hazard and have not caused an outage. Includes cleaning enclosures, re-securing equipment, resurfacing lids, and tagging. Repair, replace, or install grounds, moldings, leaking bushings, and related work on all UG transformers and equipment associated with transformers. Units measured: Number of notifications.

MAT KBC – UG COE – Repair of underground Critical Operating Equipment (COE). Units measured: Number of notifications.

MAT KBD – Nitrogen Cylinders – Replacement of Nitrogen Cylinders-San Francisco and East Bay division only-annual nitrogen cylinder replacements.

MAT KBE – BART Cable Repair – Repair of 34.5 kV Bay Area Rapid Transit (BART) Cable issues identified during annual inspections/tests performed under BF3.

MAT KBP – UG Projects – Major Projects for the replacement of underground electric facilities that are not an imminent hazard and have not caused an outage. Includes pre-planned major projects.

MAT KBQ – Elbow/Splices Replace – Costs in this category are for special splicing projects. Splices are performed in order to fix portions of cable rather than replacing the entire cable.

MAT KCA – Network Related EC Notifications – Repairs related to network transformers and network protectors. Does not include oil replacement work. Units measured: Number of notifications.

MAT KCB – Network Transformer Oil Replacement – Replacement of oil in network primary termination chambers or network ground switches. Includes resample of network transformer oil. Units measured: Number of oil replacements.

MAT KCC – Network Vault Cleanup – Vault environmental cleanup. Excludes work associated with network transformers and network protectors. Units measured: Number of vault cleanups.

MAT KCD – Network Transformer Oil Sampling – Annual maintenance on network transformers and associated oil filled chambers. Includes oil sampling on all chambers and pressure testing of units. Units measured: Number of oil samplings.

MAT KCE – Network Protector Maintenance – Routine maintenance of network protectors conducted once every three years (triennial). Excludes repairs in excess of $500 or requiring greater than one hour which are covered by MAT category KCA. Units measured: Number of protector maintenance tags.

MAT KCF – Fiber Optic Repair-SF – Repair of existing network SCADA and fiber optics systems. Includes communication and RT SCADA activities to support the distribution networks.

PACIFIC GAS AND ELECTRIC COMPANY
2017 GENERAL RATE CASE APPLICATION 15-09-001
ELECTRIC DISTRIBUTION

TABLE 3-3
ELECTRIC DISTRIBUTION 2017 EXPENSE COMPARISON
BY MAT CODE FOR SAFETY AND RELIABILITY WORK
(THOUSANDS OF DOLLARS)

Line No.	MWC	MAT	2017 Imputed Adopted Units	2017 Imputed Regulatory Values	2017 Recorded Units	2017 Recorded Costs	2017 Difference in Units Higher/ (Lower)	2017 Difference in Costs Higher/ (Lower)	Explanation
1	AB	N/A	–	$2,011	–	$12,339	–	$10,328	Program expenses exceeded imputed values primarily due to the addition of costs, such as outside services to support business objectives and Applied Technology Services client-driven expenses, which were not previously included in MWC AB. Increase also due to higher interdepartmental energy usage. Additionally, the imputed regulatory value contains an efficiency forecast offset that is realized in other MWCs.
2	AB EP&R	AB6	–	7,425	–	4,715	–	(2,710)	Program expenses were lower than imputed values due to lower than expected headcount and completion of several EP&R initiatives prior to 2017.
3	BA	N/A	–	26,025	–	15,676	–	(10,349)	Program expenses were lower than imputed value due to reclassification of the Schedule & Dispatch group from MWC BA to MWC DD, the SCADA specialist group from MWC BA to MWC HX, and higher than anticipated support for major emergency and capital projects.
4	BC	N/A	–	–	–	22	–	22	Below variance threshold.
5	BF	BF3	–	27	36	2	36	(25)	Below variance threshold.
6	BF	BF4	–	57		60		3	Below variance threshold.
7	BF	BFA	1,148,998	3,308	1,143,750	2,693	(5,248)	(615)	Below variance threshold.
8	BF	BFB	458,301	9,948	454,005	8,546	(4,296)	(1,402)	Actual expenses were lower than imputed value due to unit cost efficiencies as a result of a reduction in contract labor costs.
9	BF	BFC	–	4,001	–	1,788	–	(2,213)	Actual expenses were lower than imputed value due to a reduction in scope of the infrared inspection program to complete fewer miles per year.
10	BF	BFD	238,185	1,670	245,890	1,285	7,705	(385)	Below variance threshold.
11	BF	BFE	139,526	9,483	142,174	8,001	2,648	(1,482)	Actual expenses were lower than imputed value due to improved unit cost efficiencies as a result of a reduction in contract labor costs.

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12	BF	BFF	2,830	690	1,575	477	(1,255)	(212)	Actual underground manhole inspections were lower than imputed adopted units due to a lower number of manholes containing oil-filled equipment in San Francisco as confirmed by a field inventory.
13	BF	BFG	23,452	2,122	24,301	2,286	849	164	Below variance threshold.
14	BF	BFH	–	1,654	1,343	503	–	(1,151)	Actual expenses were below imputed values due to improved work methods on the Pole Loading Assessment project, a reduced volume of ad-hoc requests, and reduced volume of non-wood streetlight inspections.
15	BF	BFJ	–	720	276	89	–	(631)	Below variance threshold.
16	BF	BFL	14,230	49	14,341	20	111	(28)	Below variance threshold.
17	BF	BFM	38,026	1,036	30,192	682	(7,834)	(353)	Lower volume of Urban Wildfire (UWF) and Other Wildfire (OWF) inspections due to more precise alignment of inspection plans with UWF area maps. All planned inspections were completed in 2017.
18	BH	N/A	–	51,541	–	56,888	–	5,348	Program expenses for routine emergency exceeded imputed values due to a high volume of work in different divisions executed at higher unit costs driven by higher contract spend, higher hours per unit in overhead and underground related repairs, and more complex outages.
19	DD	DDH	38,986	5,558	45,064	5,229	6,078	(329)	Below variance threshold.
20	DD	DDJ	78,408	10,421	74,048	8,202	(4,360)	(2,218)	Actual expenses were below imputed values due to unit cost efficiencies driven by improved minutes per unit productivity performance.
21	DD	#	–	–	–	5,718	–	5,718	Actual expenses were higher than imputed values due to the reclassification of the Schedule & Dispatch group from MWC BA to MWC DD.
22	DN	N/A	–	7,239	–	2,962	–	(4,277)	Below variance threshold.
23	FZ	FZA	–	11,131	–	10,465	–	(666)	Below variance threshold.
24	FZ	FZB	–	815	–	517	–	(297)	Below variance threshold.
25	FZ	FZC	–	145	–	-	–	(145)	Below variance threshold.
26	FZ	FZD	–	362	–	532	–	169	Below variance threshold.

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27	FZ	FZE	–	1,466	–	1,309	–	(157)	Below variance threshold.
28	GA	GAA	248,000	12,170	244,479	11,218	(3,521)	(952)	Below variance threshold.
29	GA	GAD	3,979	3,322	4,802	4,856	823	1,533	Actual units were higher than imputed units due to completing some units scheduled for 2018 in 2017. The increase in expense in GAD was partially offset by lower unit cost in other GA MATs.
30	GA	GAI	3,311	480	3,446	493	135	13	Below variance threshold.
31	GC	GC1	–	4,497	–	4,744	–	248	Below variance threshold.
32	GC	GC2	–	2,440	–	3,683	–	1,243	Actual expenses exceeded imputed values due to more emergent and complex corrective work than forecast (e.g., transformer oil leak repairs, animal abatement repairs, asbestos/lead paint abatement at El Cerrito G control building, storm-related grading/drainage repairs).
33	GC	GCA	3,905	743	4,352	720	447	(23)	Below variance threshold.
34	GC	GCB	2,044	994	2,102	718	58	(276)	Below variance threshold.
35	GC	GCC	1,484	1,943	1,559	1,888	75	(55)	Below variance threshold.
36	GC	GCD	8,072	2,474	8,123	2,294	51	(180)	Below variance threshold.
37	GC	GCE	1,029	629	985	379	(44)	(251)	Below variance threshold.
38	GC	GCF	680	305	657	262	(23)	(43)	Below variance threshold.
39	GC	GCG	–	1,146	–	1,499	–	353	Below variance threshold.
40	GC	GCH	–	367	–	928	–	561	Below variance threshold.
41	GC	GCI	80	56	114	66	34	10	Actual units were higher than imputed adopted units due to updated switch maintenance plan.
42	GC	GCJ	–	6,532	4,558	6,779	4,558	247	Below variance threshold.
43	GC	GCM	788	1,354	711	988	(77)	(366)	Below variance threshold.
44	GC	GCO	160	1,571	134	1,129	(26)	(442)	Below variance threshold.
45	GC	GCS	87	170	74	120	(13)	(49)	Below variance threshold.
46	GC	GCV	29	150	12	25	(17)	(125)	Actual circuit breaker overhauls were lower than imputed adopted units due to updates to breaker maintenance plans to reflect current breaker conditions.

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47	GC	GCW	–	–	504	346	504	346	Below variance threshold.
48	GE	GEO	–	3,012	–	2,249	–	(763)	Below variance threshold.
49	GE	GEP	–	2,134	–	–	–	(2,134)	Records Management (Field Asset Inventory) expense was below imputed value due to lower than planned contracted work and project scheduling delays. Additionally, actual costs for this work are now reflected in MAT GEO.
50	HG	N/A	–	–	–	469	–	469	Below variance threshold.
51	HN	N/A	–	201,033	–	201,456	–	424	Below variance threshold.
52	HX	N/A	–	1,370	–	1,911	–	541	Below variance threshold.
53	IF-MEBA	N/A	–	51,438	–	53,488	–	2,050	Below variance threshold.
54	IF CEMA	N/A	–	–	–	244,613	–	244,613	Extraordinary program expenses unusually high due to numerous declared emergencies resulting in major emergency costs eligible for recovery under CEMA.
55	JV	N/A	–	6,182	–	7,743	–	1,561	Below variance threshold.
56	KA	KAA	23,148	15,505	26,825	16,273	3,677	768	Below variance threshold.
57	KA	KAB	–	216	–	(3)	–	(220)	Below variance threshold.
58	KA	KAC	1,642	1,138	755	491	(887)	(647)	Actual units were lower than imputed units due to fewer bird mitigation jobs identified and completed than forecast.
59	KA	KAD	1,000	637	860	533	(140)	(103)	Below variance threshold.
60	KA	KAF	1,828	4,715	1,212	5,143	(616)	429	Actual units lower than imputed adopted units due to fewer COE notifications completed than forecast.
61	KA	KAH	17,673	2,714	15,223	2,057	(2,450)	(658)	Below variance threshold.
62	KA	KAK	346	245	133	64	(213)	(182)	Actual units lower than imputed adopted units due to lower volume of customer complaints regarding radio and television interference than forecast.
63	KA	KAM	–	231	–	108	–	(123)	Below variance threshold.
64	KA	KAO	–	199	–	138	–	(61)	Below variance threshold.
65	KA	KAP	–	355	–	33	–	(322)	Below variance threshold.

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66	KA	KAQ	–	–	–	1	–	1	Below variance threshold.
67	KA	KAR	18,153	18,680	–	529	(18,153)	(18,151)	Actual units and expenses were lower than imputed adopted units and values due to delays caused by resource constraints due to significant winter storms, and a re-scoping of the program to address wildfire risk. Beginning in 2017, PG&E began performing surge arrester grounding work in conjunction with the replacement of surge arresters with a new fire safe exempt arrester approved by CalFIRE. This combined program is accounted for in MAT 2AP.
68	KA	KAS	10,409	1,668	10,706	1,405	297	(262)	Below variance threshold.
69	KA	#	–	155	–	664	–	509	Below variance threshold.
70	KB	KBA	7,018	12,944	7,145	11,857	127	(1,086)	Below variance threshold.
71	KB	KBC	495	2,090	221	635	(274)	(1,454)	Actual units and program expenses lower than imputed adopted units and value due to condition of equipment driving replacement rather than repairs.
72	KB	KBD	–	43	–	28	–	(15)	Below variance threshold.
73	KB	KBE	–	92	–	66	–	(27)	Below variance threshold.
74	KB	KBP	–	265	–	491	–	226	Below variance threshold.
75	KB	KBQ	–	-	–	23	–	23	Below variance threshold.
76	KB	#	–	278	–	543	–	264	Below variance threshold.
77	KC	KCA	230	299	76	293	(154)	(7)	Actual network equipment notifications were lower than imputed due to the forecast being based on a three-year rolling average.
78	KC	KCB	9	31	21	20	12	(11)	Actual units higher than imputed adopted units due to additional work driven by the capital transformer and network protector replacement program. Each unit replaced must be tested 60 days after installation.
79	KC	KCC	79	178	20	39	(59)	(138)	Actual network vault cleanups were lower than imputed adopted units due to forecast based on 3-year rolling average.
80	KC	KCD	3,581	2,827	3,419	2,343	(162)	(484)	Below variance threshold.
81	KC	KCE	387	605	388	462	1	(143)	Below variance threshold.

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82	KC	KCF	–	190	–	537	–	347	Below variance threshold.
83		**Total**		**$531,714**		**$750,844**		**$219,129**	

MWC Descriptions – Capital

MWC 05 – Tools and Equipment – includes the costs of miscellaneous tools and equipment, ATS tools, and of overdrawn materials. ATS tools include the cost of laboratory and test equipment used for field work or in ATS laboratories. This MWC also includes PG&E's forecast for an offset for capital related productivity improvements.

MWC 06 – Electric Distribution Line and Equipment Capacity – includes capacity expansion work outside a substation necessary to correct specific capacity deficiencies or overload conditions on the distribution lines and equipment and includes replacing/upgrading conductors and devices along with installing capacitors, switches or other equipment; establishing new circuit outlets; converting circuit line sections to a higher operating voltage; and reconfiguring primary distribution circuits to redistribute loading.

MWC 07 – Pole Replacement – includes the replacement of poles to support safety and reliability of the electric distribution system.

MWC 08 – Base Reliability Program – includes replacing obsolete switches; rebuilding and reframing OH distribution lines (including the installation of tree-insulated wire); and performing other reliability and system protection improvement work such as replacing annealed OH conductors. Beginning in 2018, this MWC will focus on overhead asset replacement.

MWC 09 – Electric Distribution Automation and Protection – covers investments in field automation and protection devices including installing or replacing substation Remote Terminal Units; installing or replacing supervisory control and data acquisition (SCADA) peripherals; installing or replacing automated line equipment; replacing obsolete protection equipment, primarily relays, in distribution substations; replacing automation or protection equipment due to unanticipated failure.

MWC 10 – Electric Work at the Request of Others (WRO) – includes relocating electric distribution facilities at the request of a governmental agency or other third parties (e.g., customers and developers) and conversion of OH electric facilities to UG under Tariff Rule 20B and Rule 20C.

MWC 16 – Electric Distribution Customer Connections – includes building new UG and OH primary distribution systems, and the associated secondary systems and services to both residential and non-residential customers.

MWC 17 – Emergency – includes facility replacements in response to OH or UG outages that occur during normal conditions.

MWC 21 – Emergency Preparedness & Response – includes costs to build critical infrastructure required for response to catastrophic emergencies. This includes costs for basecamps, facility upgrades, communications and data infrastructure improvements, and also natural disaster models. Beginning in 2016, this MWC may include an offset for capital-related productivity improvements and work execution risk.

MWC 23 – Implement Real Estate Strategy/Manage Buildings – includes the costs for new buildings, yards, and Applied Technology Services (ATS), including the purchase of land and the purchase and installation of furniture, office equipment, and IT Infrastructure, ATS labs, as well as the costs to improve building environmental sustainability, to implement workplace strategy, and to optimize the real estate portfolio. Beginning in 2016, expenditures in this MWC are reflected in the Corporate Real Estate amounts.

MWC 30 – Electric Distribution Work Requested by Others – Rule 20A – conversion of existing OH electric distribution facilities to underground facilities. To qualify under the Rule 20A Tariff, a project must meet certain criteria including being in the general public interest and having sufficient work credits to convert the facilities. Beginning in 2017, these costs are included in the one-way Rule 20A balancing account authorized by Decision 17-05-013.

MWC 46 – Electric Distribution Substation Capacity – includes capacity work within substations including new substations, increased capacity at existing substations, and work on feeders/breakers within a substation.

MWC 48 – Electric Distribution Replace Substation Equipment – includes all major and minor substation equipment replacements not included in MWC 54 (Transformer Program). Specific sub-programs include: (1) Ancillary Substation Equipment Replacement; (2) Ground Grid Replacement; (3) Circuit Breaker Replacement Program; (4) Switch Replacement; (5) Battery Replacement; (6) Civil Structure Replacements; (7) Switchgear Replacement; (8) Regulator

Replacement; (9) Yard Improvement Replacement; (10) Diagnostic Installation Program; (11) Arc Flash Reduction Replacement; (12) Animal Abatement; and (13) Transformer Bushings.

MWC 49 – Targeted Reliability Program – includes OH fuses; UG protective devices; new line reclosers and converting existing reclosers from manual to remote operation (i.e., making them SCADA operable); fault indicators; work to improve service to customers experiencing five or more sustained outages during the year; and expenditures to resolve high-impact reliability issues. This program also includes the purchase of line reclosers (revolving stock), the installation of Fault Location, Isolation, and Service Restoration (FLISR) systems, and the targeted circuit initiative which addresses the least reliable circuits and typically involves a mixture of installing new fuses, reclosers, fault indicators and animal and bird guards, reframing poles to increase phase separation, and repairing or replacing existing equipment.

MWC 54 – Electric Distribution Substation Transformer Replacements – includes maintaining or improving substation reliability by replacing transformers that have the highest risk of failure. This MWC also includes maintaining an adequate supply of emergency transformer stock, mobile transformers, and breakers for emergency response.

MWC 56 – Electric Distribution Underground Asset Replacement – includes reliability related replacement of primary distribution cables (includes tie-cables), primary and secondary Network Cables, non-emergency related failed primary distribution cables, Transfer Ground Rocker Arm Main/Transfer Ground Rocker Arm Line (TGRAM/TGRAL) switches, Load Break Oil Rotary (LBOR) switches, and replacement of failed primary distribution cables. Program also includes performing cable rejuvenation (injection) and testing.

MWC 58 – Electric Distribution Substation Safety and Security – includes substation security, fire protection and suppression work. Also encompasses miscellaneous, unforeseen, short lead-time and emergency environmental work (e.g., removal of an old asbestos panel in a control room that requires special handling).

MWC 59 – Electric Distribution Substation Emergency Replacement – includes replacements for substation equipment that fails or is forced out of service as well as an emergency supply of transformers and other equipment to replace failed equipment.

MWC 63 – Electric Operations Control Center Facility – covers ongoing capital improvements and enhancements to the consolidated control centers, the Fresno Dispatch Facility, and technology and systems for these facilities.

MWC 95 – Electric Distribution Major Emergency – Includes response to OH or UG outages when a division OEC has been activated and consistent with PG&E's Major Emergency Balancing Account Criteria Guidance Document. Beginning in 2014, these costs are included in the Major Emergency balancing account authorized by Decision 14-08-032.

MWC 2A – Electric Distribution Preventive Maintenance, Overhead – includes replacing deteriorated OH facilities on a planned basis where it is not cost effective to repair those facilities. Typical equipment replacements include corroded transformers, deteriorated cross-arms, inoperative line switches, and other OH distribution facilities. Work also includes replacing PG&E owned non-decorative High-Pressure Sodium Vapor (HPSV) streetlights with Light Emitting Diode (LED) streetlights.

MWC 2B – Electric Distribution Preventive Maintenance, Underground – includes replacing deteriorated UG facilities on a planned basis where it is not cost effective to repair those facilities. Typical equipment replacements include corroded transformers, inoperative switches, damaged UG enclosures and other UG distribution facilities.

MWC 2C – Electric Distribution Preventive Maintenance, Network – includes replacing deteriorated network facilities on a planned basis where it is not cost effective to repair those facilities. Typical equipment replacements include corroded transformers, inoperative switches, and other network distribution facilities. Additional work includes safety improvement programs such as High-Rise Building Transformer Replacements, new monitoring system installation and manhole cover replacement program.

MWC 2F – Build IT Applications and Infrastructure – includes the costs to design, develop and enhance applications, systems and infrastructure technology solutions.

MAT Code Descriptions for Safety and Reliability Work – Capital

MAT 2A# – Not assigned.

MAT 2AA – OH General Replace – Replace deteriorated overhead facilities that are not an imminent hazard, and have not caused an outage. Facilities include crossarms, leaking transformers, conductor, capacitors, surge arresters, switches, removal of capital electric idle facilities (including poles), street light heads, and equipment. Units measured: Number of notifications.

MAT 2AB – Bird Safe Install/Replace – Capital modifications to bird-safe incident and/or adjacent poles in response to a bird electrocution, per USFWS requirements and S2321. Units measured: Number of notifications.

MAT 2AC – Bird Safe Install/Replace Annual – Capital work performed as part of annual pole retrofit program to prevent bird electrocutions, per USFWS requirements and S2321. Units measured: Number of notifications.

MAT 2AE – OH COE Replace – Replace overhead equipment classified as Critical Operating Equipment (COE). Units measured: Number of notifications.

MAT 2AF – OH Idle Facility Remove – Removal of Idle Facilities that have been determined to have no likely foreseeable future foreseeable use. Units measured: Number of facilities.

MAT 2AG – San Francisco Series Streetlights – Replacement of the regulated output (RO) streetlights, also referred to as constant current streetlight systems, owned and operated by PG&E in San Francisco. This project will replace the existing RO loops with the type of streetlight circuits used elsewhere is PG&E's system.

MAT 2AH – LED Streetlights – Replacement of PG&E LS-1 non-decorative streetlights with Light Emitting Diode (LED) fixtures and new photocells. Units measured: Number of streetlights.

MAT 2AI – San Francisco Historical Streetlights – Replacement or refurbishment of cast-iron decorative streetlights in the Golden Triangle/Union Square area of San Francisco that have been found to have corroded steel support poles.

MAT 2AP – OH CAP Projects – Major overhead projects, defined as jobs costing more than $100,000 per location. For 2017, this MAT also includes replacement of surge arresters with exempt equipment and associated grounding work.

MAT 2AS – FAS Overhead Capital – Field Automation System (FAS) Overhead capital is work that is identified during a field job and completed by a single troubleman. The work could be replacement or Installations of OH facilities: Electric distribution conductors, components, structures, and associated equipment constructed above ground level. Units measured: Number of notifications.

MAT 2B# – Not assigned – Sand, gravel, spoils and oil-filled equipment used on a variety of underground jobs.

MAT 2BA – UG General Replace – Replace deteriorated underground facilities that are not an imminent hazard, and have not caused an outage. Facilities include leaking transformers, conduit, enclosures, pads, and idle equipment. Units measured: Number of notifications.

MAT 2BB – Fault Indicator Replacements – Replace deteriorated fault indicators that are not an imminent hazard, and have not caused an outage.

MAT 2BD – UG COE Replace – Replace underground equipment. Determined Critical Operating Equipment (COE) by the division operators, Maintenance and Construction, and restoration, and validated by Distribution Engineers. Units measured: Number of notifications.

MAT 2BF – UG Idle Facility Remove – Removal of underground Idle Facilities that have been determined not to have a likely use in the foreseeable future.

MAT 2BP – UG CAP Projects – Major underground projects, defined as jobs costing more than $100,000 per location.

MAT 2C# – Not assigned.

MAT 2CA – Network Miscellaneous – Replacement of individual network protectors or replacement of network protectors as part of planned replacement program. Units measured: Number of replacements.

MAT 2CB – Fiber/SCADA Communication Replace – Installation of new network monitoring systems for the distribution networks including sensor installation, communications, fiber optic replacement and programming activities.

MAT 2CC – Transformer & Protector Replace – Planned Replacement of distribution network transformers including deteriorated, oil related or high rise. Units measured: Number of replacements.

MAT 2CD – Venting Manhole Covers Replace – Replacement of existing manhole covers on the distribution network and distribution radial systems with venting manhole covers. Units measured: Number of replacements.

MAT 2CE – SCADA Communications Upgrade – Includes any upgrade work to the existing network SCADA systems (not part of the new monitoring system as part of MAT 2CB).

MAT 06# – Line Voltage Regulator Revolving Stock – Purchase of Line Voltage Regulator Revolving Stock.

MAT 06A – Feeder Projects Associated with Substation Capacity – Includes installation and replacement of underground cable and overhead conductor associated with a new substation transformer and feeder.

MAT 06B – Transformer Replace Overloaded – Replacement of Transformers identified through overload reports using SmartMeter™ data, recorded high oil temperature indicators, or multiple thermal protective device operations during peak load periods. This does not include replacement of transformers identified via the new business, WRO or any other process. Units measured: Number of transformers.

MAT 06D – Circuits Reinforce-DP Managed – Installation of new overhead and underground facilities or reconductoring of existing facilities with larger wire to meet capacity needs or voltage support. These upgrades are performed to address one of the possible scenarios: (1) Line Capacity Overload; (2) Under or Over-Voltage Conditions; (3) Operational or Emergency Capacity; and (4) Future Underground Facilities in Joint Trench Projects. This MAT covers circuit reinforcement projects managed by Distribution Planning (DP).

MAT 06E – Circuits Reinforce-PS Managed – Installation of new overhead and underground facilities or reconductoring of existing facilities with larger wire to meet capacity needs or voltage support. These upgrades are performed to address one of the possible scenarios: (1) Line Capacity Overload; (2) Under or Over-Voltage Conditions; (3) Operational or Emergency Capacity; and (4) Future Underground Facilities in Joint Trench Projects. This MAT covers circuit reinforcement projects managed by Project Services (PS).

MAT 06H – Distribution Line New Business Performance – Includes projects identified to address capacity deficiencies for a specific New Business customer(s) demand increase.

MAT 06I – Distribution Line Operational Capacity – Includes overhead or underground new facilities or reconductoring of existing facilities with large wire to improve reliability and enhance operational flexibility of the system.

MAT 06P – Enable Distributed Generation Distribution Line – Includes distribution line upgrades for the DER Integration Capacity Program. The primary purpose of the program is to upgrade the distribution system to enable two-way power flow in order to facilitate interconnection by DER customers.

MAT 07C – Special Criteria Pole Replacement – Replace all wooden center-bore poles in the system.

MAT 07D – Pole Replacement – Replace poles identified as deteriorated/damaged and in need of replacement. Units measured: Number of poles.

MAT 08J – Annealed Conductors Replace – Replace annealed/deteriorated conductor. Units measured: Number of circuit miles.

MAT 08S – Replace Obsolete OH Switches – Replace “grasshopper” switches installed between 1950 and 1970 to minimize potential safety issues during routine and emergency switching operations, and improve reliability. This work was previously done under PG&E’s OH Maintenance Program, but has been given its own sub-program in order to target these specific switches. Units measured: Number of switches.

MAT 08W – Wires Down Generated Projects – PG&E’s Wires-Down Program addresses conductors that fail and result in a contact with the ground, a vehicle or other object. The program consists of the following actions: (1) Post wire-down investigation; and (2) Splice data review. Units measured: Number of circuit miles.

MAT 09A – ED Line SCADA Install/Replace – This includes the Distribution Automation (DA) Initiative, installing new Remote Terminal Units (RTU) to improve visibility, reliability, and operations, and continuing to upgrade and replace obsolete, deficient, and failed automation and protection equipment.

MAT 09B – ED Substation SCADA/RTU Replace – Replace outmoded RTU in distribution substations to provide visibility and remote controllability to Operation.

MAT 09D – ED Substation SCADA/RTU Install – Install additional SCADA RTU (Remote Terminal Unit) in distribution substations to provide visibility and remote controllability to Operation.

MAT 09E – ED Substation Protective Relay Install/Replace – Install and replace protective relays in distribution substations to maintain optimal system protection and reliability.

MAT 09F – ED Substation SCADA Emergency Replace – Miscellaneous and emergency replacement projects initiated and funded by System Automation & Protection program.

MAT 46A – Substation General Install/Replace – Projects to support general distribution substation capacity increases for banks, bus, feeders, or other substation components that do not fall into one of the other MWC 46 MATs.

MAT 46F – Distribution Substation Emergency and Operational Capacity– Projects identified in this MAT increase the distribution capacity by upgrading banks, bus, feeders, or other substation component to improve reliability by providing emergency capacity and/or operational flexibility at the bank and feeder level.

MAT 46H – Distribution Substation New Business Perf – These projects are similar to other projects under MWC 46, however these projects have been identified to address capacity deficiencies for specific New Business customers' demand increase.

MAT 46N – Distribution Substation New Substation – Includes projects to increase area distribution substation capacity by siting, permitting, and constructing new substations.

MAT 46T – Distribution Substation Support Transmission or Substation Related Work – Projects identified in this MAT replace or relocate distribution substation equipment to support a related Transmission bus reconfiguration or voltage conversion or Substation condition based replacement projects.

MAT 48A – Replace Distribution Substation Other Equipment – Replace other distribution substation equipment such as ancillary equipment, ground grids, etc. Includes replacement projects with complex or wide-ranging scope of work that include various equipment types.

MAT 48B – Replace Distribution Substation Regulators – Replace regulators that are distribution substation assets, mainly distribution class (less than 50 kV), single-phase or three-phase.

MAT 48C – Replace Distribution Substation Batteries – Replace battery system at distribution substation. Units measured: Number of batteries.

MAT 48D – Replace Distribution Substation Breakers – Replace distribution substation circuit breakers.

MAT 48E – Replace Distribution Substation Switches – Replace distribution substation disconnect switches.

MAT 48F – Replace Distribution Substation Switchgear – Replace distribution substation switchgear equipment.

MAT 48H – Replace Distribution Substation Civil Structures – Replace civil structures (structures, foundation, etc.) that are distribution substation assets.

MAT 48L – Distribution Line Work Support Substation – Includes work required on distribution lines associated with substation equipment replacement work.

MAT 48N – Distribution Substation Insulators – Replacement of distribution insulators that have reached end-of-life.

MAT 48R – Distribution Substation Reactors – Replacement of distribution reactors that have reached end-of-life.

MAT 48X – Distribution Substation Animal Abatement – Animal abatement program retroactively mitigates substations that have previously had animal contacts. Units measured: Number of locations.

MAT 49# – Line Reclosers Revolving Stock – Purchase Line Reclosers Revolving Stock.

MAT 49B – Recloser Control Upgrades – Strategic upgrade of recloser controls (units in-service, NOT deteriorated or damaged), includes minor communication, or other minor upgrades to expand or improve SCADA coverage and improve reliability. Units measured: Number of recloser controls.

MAT 49C – OH Fuses Install/Replace – Install New OH Fuses to improve reliability. Units measured: Number of fuses.

MAT 49D – OH Recloser/Sectionalizers/Switch Install/Replace – Install New Reclosers, Sectionalizers, OH Switches or solid blade disconnects to improve reliability. Units measured: Number of devices.

MAT 49E – Targeted Circuits Program – Line work that typically includes reliability work, such as protective devices, reframing lines, installing tree wire, etc.: Targeted Circuit Program, as well as system or city/community programs to improve reliability. Units measured: Number of circuits.

MAT 49F – UG Fuses Install/Replace – Install or replace UG fuses to improve reliability. Units measured: Number of fuses.

MAT 49G – UG Recloser/Sectionalizers/Switch Install/Replace – Install or replace UG interrupters to improve reliability. Units measured: Number of devices.

MAT 49H – UG Fault Indicator Install/Replace – Install or replace UG fault indicators to improve reliability. Units measured: Number of indicators.

MAT 49I – Fault Indicators / Line Sensors – Install new OH fault indicators or line sensors to improve reliability. Units measured: Number of devices.

MAT 49S – FLISR Systems – The FLISR automation system reduces the effect of outages to customers by quickly opening and closing automated switches. This is the same automation work done previously under the Cornerstone project. Units measured: Number of circuits.

MAT 49T – Distribution Trip Saver Cutout Mounted Line Recloser – Install new TripSaver equipment. Units measured: Number of devices.

MAT 49X – Emerging Distribution Reliability Improvements – Emergent Reliability projects focused on addressing localized reliability issues not covered by broad, system-wide reliability programs.

MAT 56A – UG Cable Other Replace – Capital work associated with underground primary cable systems, including replacement of underground cable and associated components. Units measured: Number of miles.

MAT 56B – UG Cable Rejuvenation and Testing – Rejuvenation (injection) of primary underground cables to restore insulation integrity, and testing of primary underground cables for targeted replacement work performed under MAT 56A.

MAT 56C – UG Cable COE Replace – Primary underground cable replacement required to address failed primary cable sections noted on the Critical Operating Equipment (COE) list. Units measured: Number of projects.

MAT 56D – TGRAM/TGRAL Switch Replacement – Replacement of underground TGRAM/TGRAL switches. Units measured: Number of replacements.

MAT 56N – Network Cable Replacement – Systematic replacement of network cable assets in San Francisco and Oakland. The work involves replacing primary and secondary cables, and installing new equipment.

MAT 56S – Replace Obsolete UG Switches – Proactive replacement of underground oil-filled switches whose condition warrants replacement in order to avoid potential failures. Units measured: Number of replacements.

MAT 58A – Distribution Substation Safety, Environmental, Fire Protection – Replace or install fire protection in distribution substation assets.

MAT 58S – Distribution Substation Security Upgrades – Replace or install security in distribution substation assets.

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TABLE 3-4
ELECTRIC DISTRIBUTION 2017 CAPITAL COMPARISON
BY MAT CODE FOR SAFETY AND RELIABILITY WORK
(THOUSANDS OF DOLLARS)

Line No.	MWC	MAT	2017 Imputed Adopted Units	2017 Imputed Regulatory Values	2017 Recorded Units	2017 Recorded Costs	2017 Difference in Units Higher/ (Lower)	2017 Difference in Costs Higher/ (Lower)	Explanation
1	05	N/A	–	$(18,143)	–	$5,285	–	$23,428	Program expenditures exceeded imputed regulatory values due to capital-related productivity improvements planned in MWC 05 which are realized in other MWCs.
2	06	06A	–	6,072	–	7,276	–	1,204	Below variance threshold.
3	06	06B	250	3,292	3	672	(247)	(2,620)	Actual transformer replacements were lower than imputed adopted units due to resource constraints caused by higher than normal emergency response requirements.
4	06	06D	–	5,103	–	2,503	–	(2,600)	Below variance threshold.
5	06	06E	–	22,000	–	9,927	–	(12,073)	Actual expenditures were lower than imputed value due to some work being realized in new MAT Code 06I, and planned work not executed due to resource constraints driven by higher than expected emergency work deployment.
6	06	06H	–	41,546	–	24,381	–	(17,165)	Actual expenditures lower than imputed value due to reduction in new business-related work primarily caused by increased rainfall reducing work required for drought-related agricultural pumping. In addition, some planned work was not executed due to resource constraints caused by higher than expected emergency deployment.
7	06	06I	–	–	–	2,221	–	2,221	Below variance threshold.
8	06	06P	–	–	–	16	–	16	Below variance threshold.
9	06	06#	–	7,333	–	7,117	–	(216)	Below variance threshold.
10	07	07C	–	–	–	200	–	200	Below variance threshold.
11	07	07D	6,672	86,328	6,407	98,528	(265)	12,200	Program expenditures exceeded imputed value due to a higher volume of poles being executed in higher unit cost divisions. Higher unit costs were driven by work readiness issues and major emergency impacts contributing to a limited ability to bundle work to improve efficiencies.

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Line No.	MWC	MAT	2017 Imputed Adopted Units	2017 Imputed Regulatory Values	2017 Recorded Units	2017 Recorded Costs	2017 Difference in Units Higher/ (Lower)	2017 Difference in Costs Higher/ (Lower)	Explanation
12	08	08J	82	35,775	45	22,769	(37)	(13,006)	Actual miles of overhead conductor replaced and expenditures were less than imputed adopted units and values due to construction constraints as resources were shifted to address higher priority emergency work.
13	08	08S	30	1,334	11	723	(19)	(610)	Actual switch replacements were less than imputed adopted units and values due to construction constraints as resources were shifted to address higher priority emergency work.
14	08	08W	18	7,983	7	3,434	(11)	(4,549)	Actual miles of overhead conductor replaced and expenditures were less than imputed adopted units and values due to construction constraints as resources were shifted to address higher priority emergency work.
15	09	09A	–	2,865	–	1,882	–	(983)	Below variance threshold.
16	09	09B	–	9,663	–	3,515	–	(6,148)	Actual expenditures were lower than imputed values due to funding shift to SCADA installation projects to achieve full SCADA penetration in 2019 and slower ramp up of the SCADA replacement program.
17	09	09D	–	33,206	–	45,162	–	11,956	Actual expenditures higher than imputed values due to SCADA installation projects cost increases due to project complexity; partially offset by reductions in SCADA Remote Terminal Unit (RTU) replacements.
18	09	09E	–	2,197	–	1,917	–	(280)	Below variance threshold.
19	09	09F	–	243	–	2,144	–	1,901	Below variance threshold.
20	17	N/A	–	146,893	–	183,953	–	37,060	Program expenditures exceeded imputed values due to a high volume of work in different divisions executed at higher unit costs. This was driven by higher contract spend and higher hours per unit. Complexity of outages also was a contributing factor to the increase in unit cost.
21	21	N/A	–	8,022	–	1,640	–	(6,383)	Below variance threshold.
22	23	N/A	–	5,652	–	–	–	(5,652)	Below variance threshold.
23	2A	2AA	10,698	49,739	11,366	56,139	668	6,401	Program expenditures were higher than imputed value due to increased tag volume and higher than forecast unit costs for cross arm replacements.

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Line No.	MWC	MAT	2017 Imputed Adopted Units	2017 Imputed Regulatory Values	2017 Recorded Units	2017 Recorded Costs	2017 Difference in Units Higher/ (Lower)	2017 Difference in Costs Higher/ (Lower)	Explanation
24	2A	2AB	1,532	4,137	892	2,130	(640)	(2,007)	Actual units were lower than imputed units due to fewer bird mitigation jobs identified and completed than forecast.
25	2A	2AC	1,000	2,739	1,302	2,767	302	28	Actual units were higher than imputed due to a higher than forecast volume of capital retrofits identified and completed.
26	2A	2AE	947	19,424	1,235	25,934	288	6,509	Actual units and program expenditures were higher than imputed adopted units and value due to an increased volume of capital Critical Operating Equipment (COE) replacements completed as compared to the volume forecast.
27	2A	2AF	985	3,422	1,035	3,651	50	229	Below variance threshold.
28	2A	2AG	–	7,935	–	6,277	–	(1,657)	Below variance threshold.
29	2A	2AH	60,302	25,434	41,259	10,815	(19,043)	(14,619)	Actual LED streetlight installations were lower than imputed due to delays due to storm response in the first part of the year, and some customers deciding not to opt into the program. The program will continue into 2018. In addition to the lower unit volume, program expenditures were lower than imputed value due to material and contract labor savings.
30	2A	2AI	–	3,486	–	579	–	(2,907)	Below variance threshold.
31	2A	2AP	–	993	–	5,918	–	4,924	Program expenditures higher than imputed value due to the completion of 617 surge arrester replacements, including corrective grounding work, in 2017. The corrective grounding work was forecast in the 2017 GRC as an expense program in MAT KAR.
32	2A	2AS	2,244	725	2,091	601	(153)	(124)	Below variance threshold.
33	2A	2A#	–	–	–	(222)	–	(222)	Below variance threshold.
34	2B	2BA	6,388	36,062	2,585	41,336	(3,803)	5,275	Actual units were lower than imputed adopted units because the GRC forecast included fault indicator units in MAT 2BA which have been moved to MAT 2BB. Program expenditures were higher than imputed value due to higher unit costs for enclosures and padmount replacements.
35	2B	2BB	–	–	3,988	981	3,988	981	Actual units were higher than imputed adopted units because the 2017 GRC forecast included fault indicator units in MAT 2BA whereas 2017 actual spending records the majority of the fault indicator units in MAT 2BB.

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Line No.	MWC	MAT	2017 Imputed Adopted Units	2017 Imputed Regulatory Values	2017 Recorded Units	2017 Recorded Costs	2017 Difference in Units Higher/ (Lower)	2017 Difference in Costs Higher/ (Lower)	Explanation
36	2B	2BD	124	4,424	136	4,641	12	217	Below variance threshold.
37	2B	2BF	–	388	36	359	–	(29)	Below variance threshold.
38	2B	2BP	–	2,378	12	2,192	–	(186)	Below variance threshold.
39	2B	2B#	–	497	–	539	–	43	Below variance threshold.
40	2C	2CA	30	421	30	263	–	(158)	Below variance threshold.
41	2C	2CB	–	218	–	147	–	(71)	Below variance threshold.
42	2C	2CC	28	5,848	27	4,683	(1)	(1,165)	Below variance threshold.
43	2C	2CD	1,500	3,706	137	3,004	(1,363)	(703)	Actual units below imputed units because venting manhole replacements have become more complex due to non-standard designs and locations requiring vault repairs. Project complexity significantly impacted unit production. PG&E is working with cover manufacturers to engineer solutions for non-standard designs.
44	2C	2CE	–	9,936	–	9,575	–	(361)	Below variance threshold.
45	2C	2C#	–	–	–	(182)	–	(182)	Below variance threshold.
46	2F	N/A	–	50,126	–	28,124	–	(22,002)	Actual expenditures were lower than imputed values due to slight delays and lower development costs for mobile products and services as well as rescheduling of the SCADA/Distribution Management System (DMS) and Distribution Control Center (DCC) solutions to better align on requirements and approach. The IT costs related to planning and analyzing the SCADA/DMS, DCC solutions are being recorded in MWC 63.
47	46	46A	–	–	–	6,658	–	6,658	Actual expenditures were higher than imputed values due to a change in MAT code alignment since the 2017 GRC was filed. The general substation capacity work transferred from MAT 46T was lower than imputed adopted amounts because the current load forecast did not support moving forward with some previously identified projects.
48	46	46F	–	790	–	1,292	–	501	Below variance threshold.

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Line No.	MWC	MAT	2017 Imputed Adopted Units	2017 Imputed Regulatory Values	2017 Recorded Units	2017 Recorded Costs	2017 Difference in Units Higher/ (Lower)	2017 Difference in Costs Higher/ (Lower)	Explanation
49	46	46H	–	31,192	–	4,273	–	(26,919)	Actual expenditures were below imputed values due to a decrease in agricultural related capacity work caused by higher than normal rainfall during the 2016/2017 winter. In addition, some other New Business growth materialized more slowly than forecast.
50	46	46N	–	6,335	–	5,199	–	(1,136)	Below variance threshold.
51	46	46T	–	28,820	–	(60)	–	(28,880)	Actual expenditures were lower than imputed values due to a change in MAT code alignment since the 2017 GRC was filed. Work originally forecast in this MAT code is now in MATs 46A and 46F.
52	48	48A	–	3,697	–	7,599	–	3,902	Actual expenditures higher than imputed values due to work activities at Stockton A Substation for breaker replacement and Mission Substation.
53	48	48B	–	–	–	645	–	645	Below variance threshold.
54	48	48C	11	1,008	1	142	(10)	(866)	Actual battery replacements lower than imputed due to rescheduling of projects to future years.
55	48	48D	–	7,006	–	7,292	–	286	Below variance threshold.
56	48	48E	–	535	–	1,835	–	1,300	Below variance threshold.
57	48	48F	–	59,744	–	60,080	–	337	Below variance threshold.
58	48	48H	–	6,118	–	3,517	–	(2,601)	Below variance threshold.
59	48	48L	–	–	–	6,930	–	6,930	Actual expenditures higher than imputed value because this MAT code was created after the 2017 GRC was filed. Work in this MAT code is for distribution line work associated with substation projects that was included in the forecast for other projects in MWC 48.
60	48	48N	–	320	–	2,128	–	1,808	Below variance threshold.
61	48	48R	–	–	–	(130)	–	(130)	Below variance threshold.
62	48	48X	30	2,464	6	6,318	(24)	3,854	Actual animal abatement locations completed were lower than imputed adopted units due to some jobs continuing into 2018. Actual expenditures higher than imputed values due to more animal abatement work done at various substations.

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Line No.	MWC	MAT	2017 Imputed Adopted Units	2017 Imputed Regulatory Values	2017 Recorded Units	2017 Recorded Costs	2017 Difference in Units Higher/ (Lower)	2017 Difference in Costs Higher/ (Lower)	Explanation
63	49	49B	31	547	7	115	(24)	(432)	Actual recloser controls lower than imputed adopted units due to construction constraints as resources were shifted to address higher priority emergency work.
64	49	49C	300	3,915	137	1,661	(163)	(2,254)	Actual overhead fuses lower than imputed values due to construction constraints as resources were shifted to address higher priority emergency work.
65	49	49D	102	4,510	15	997	(87)	(3,513)	Actual overhead devices and expenditures lower than imputed values due to construction constraints as resources were shifted to address higher priority emergency work.
66	49	49E	37	26,036	12	8,279	(25)	(17,757)	Actual circuits and expenditures lower than imputed values due to construction constraints as resources were shifted to address higher priority emergency work.
67	49	49F	11	2,275	2	400	(9)	(1,875)	Actual underground fuses lower than imputed values due to construction constraints as resources were shifted to address higher priority emergency work.
68	49	49G	5	1,078	12	3,148	7	2,071	Actual underground devices a higher than imputed values due to carryover work and increased availability of underground construction resources necessary to execute this work.
69	49	49H	–	–	–	416	–	416	Below variance threshold.
70	49	49I	1,113	4,446	54	1,831	(1,059)	(2,614)	Actual devices lower than imputed values due to technological challenges resulting in a delay in program implementation.
71	49	49S	116	22,516	92	9,050	(88)	(13,465)	Actual FLISR circuits and expenditures lower than imputed values due to construction constraints as resources were shifted to address higher priority emergency work.
72	49	49T	–	–	4	7,313	4	7,313	Actual units and expenditures higher than imputed adopted units and value due to implementation of new TripSaver program not forecast in the 2017 GRC.
73	49	49X	–	4,579	–	5,451	–	872	Below variance threshold.
74	49	49#	–	10,525	–	6,479	–	(4,046)	Actual expenditures lower than imputed values due to fewer recloser purchases for reliability work.
75	54	N/A	–	42,686	–	22,274	–	(20,412)	Actual expenditures were lower than imputed values due to funding allocation to higher priority projects in MWC 48, and adjustments to project schedules.

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Line No.	MWC	MAT	2017 Imputed Adopted Units	2017 Imputed Regulatory Values	2017 Recorded Units	2017 Recorded Costs	2017 Difference in Units Higher/ (Lower)	2017 Difference in Costs Higher/ (Lower)	Explanation
76	56	56A	32	35,671	9	28,279	(23)	(7,392)	Actual miles of underground cable replaced and expenditures lower than imputed adopted units and values due to construction constraints as resources were shifted to address higher priority emergency work.
77	56	56B	–	2,157	–	2,295	–	137	Below variance threshold.
78	56	56C	272	32,008	214	36,315	(58)	4,307	Actual COE replacement jobs lower than imputed adopted units due to construction constraints as resources were shifted to address higher priority work. Actual expenditures were higher due to increased project unit costs, as well as preliminary work performed on some uncompleted projects
79	56	56D	–	–	6	2,237	6	2,237	Actual units and expenditures higher than imputed due to carryover/close out work associated with 2016 projects on switch replacement program.
80	56	56N	–	29,142	–	19,893	–	(9,249)	Actual expenditures lower than imputed values due to construction constraints as resources were shifted to address higher priority emergency work.
81	56	56S	160	8,772	8	182	(152)	(8,590)	Actual switch replacements and expenditures lower than imputed adopted units and values due to construction constraints as resources were shifted to address higher priority emergency work.
82	58	58A	–	882	–	2,919	–	2,036	Below variance threshold.
83	58	58S	–	1,433	–	258	–	(1,174)	Below variance threshold.
84	59	N/A	–	45,517	–	82,722	–	37,205	Actual expenditures higher than imputed due to higher than forecast emergency work at several substations (Spaulding, Cressey, Antelope, Bowles, Coalinga, and Cottles).
85	95-MEBA	N/A	–	56,474	–	63,430	–	6,956	Below variance threshold.
86	95-CEMA	N/A	–	–	–	215,227	–	215,227	Extraordinary program expenditures unusually high due to numerous declared emergencies resulting in major emergency costs eligible for recovery under the CEMA.
87		**Total**		**$1,122,603**		**$1,270,409**		**$147,806**	

TABLE 3-5
ELECTRIC DISTRIBUTION 2017 UNIT REPORT

Line No.	Description	2017 Recorded Units
1	Poles replaced through the Pole Replacement and other Company programs	23,043
2	Stand-alone circuit breakers replaced or installed across all Company programs	38
3	Miles of paper-insulated lead sheath cable (PILC) replaced across all Company programs[1]	13.25
4	Miles of HMWPE cable, respectively, replaced across all Company programs[2]	37.74
5	Miles of overhead conductor replaced across in the Reliability program[3]	83
6	Grasshopper switches replaced across all Company programs	11
7	FLISR installations in the Reliability Program	92
8	Overhead fuse installations across all Company programs	2,047

1 PILC cables are not injectable using current rejuvenation technology. Units do not include network cable.

2 No HMWPE cables were rejuvenated in 2017. Units do not include network cable.

3 PG&E will provide miles replaced across all Company programs in its 2020 GRC.

TABLE 3-5
2017 SURGE ARRESTER PROGRESS REPORT
(THOUSANDS OF NOMINAL DOLLARS)

Line No.	Description	Amount
1	Expense (MAT KAR)	$529
2	Capital (MAT 2AP)	4,400
3	Total Program Spend:	$4,929
4	Units Completed	617
5	Locations in PG&E's survey identified as not requiring work:	0

TABLE 3-6
ELECTRIC DISTRIBUTION WOOD POLE COUNT BY AGE

	Wood Pole Count by Age	
Line No.	Age (Years)	Number of Poles
1	1-5	103,993
2	6-10	76,544
3	11-15	54,364
4	16-20	122,327
5	21-25	112,552
6	26-30	161,453
7	31-35	168,558
8	36-40	180,014
9	41-45	203,977
10	46-50	167,045
11	51-55	176,740
12	56-60	203,519
13	61-65	179,087
14	66-70	131,870
15	71-75	52,805
16	76-80	12,783
17	81-85	5,714
18	86-90	4,475
19	91-95	970
20	96-100	–
21	Unavailable[4]	128,853
22	Total	2,247,643

[4] Pole age data is being updated as part of the ongoing Field Asset Inventory project.

SECTION 4
Nuclear Generation
Imputed Adopted vs. Recorded

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NUCLEAR GENERATION

TABLE 4-1
NUCLEAR GENERATION 2017 EXPENSE COMPARISON SUMMARY
(THOUSANDS OF DOLLARS)

Line No.	MWC Description	MWC	2017 Imputed Regulatory Values	2017 Recorded Costs	2017 Difference Higher/ (Lower)	2018 Budget
1	Support	AB	$19,656	$(50)	$(19,706)	–
2	Manage Environmental Operations	AK	2,733	2,147	(586)	1,865
3	Manage DCPP Business	BP	10,913	15,542	4,628	15,535
4	DCPP Loss Prevention	BQ	37,299	52,330	15,031	48,118
5	Operate DCPP Plant	BR	70,002	76,220	6,218	78,418
6	Maintain DCPP Plant Assets	BS	112,192	116,534	4,342	103,272
7	Enhance DCPP Personnel Performance	BT	16,848	13,995	(2,853)	13,064
8	Procure DCPP Materials & Services	BU	–	98	98	(0)
9	Maintain DCPP Plant Configuration	BV	39,364	38,608	(755)	37,725
10	Manage Waste Disposal & Transportation	CR	105	–	(105)	–
11	Provide Nuclear Support	EO	172	(55)	(227)	60
12	Manage Various Balancing Acct Processes	IG	9,165	20,001	10,836	5,900
13	Maintain IT Apps & Infra	JV	2,045	690	(1,355)	1,303
14	Operational Management	OM	10,397	9,347	(1,049)	7,951
15	Operational Support	OS	22,371	14,688	(7,683)	17,394
16	Total		$353,261	$360,096	$6,835	$330,603

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TABLE 4-2
NUCLEAR GENERATION 2017 CAPITAL COMPARISON SUMMARY
(THOUSANDS OF DOLLARS)

Line No.	MWC Description	MWC	2017 Imputed Regulatory Values	2017 Recorded Costs	2017 Difference Higher/ (Lower)	2018 Budget
1	Office Furniture and Equipment	03	$243	$350	$107	$268
2	Fleet/Auto Equipment	04	881	1	(881)	–
3	Tools and Equipment	05	1,402	4,048	2,646	497
4	DCPP Capital Projects	20	147,340	158,069	10,729	132,235
5	Build IT Applications & Infrastructure	2F	14,318	4,777	(9,541)	9,443
6	Nuclear Safety and Security	3I	13,891	28,059	14,169	10,300
7	Total		$178,075	$195,304	$17,229	$152,743

MWC Descriptions – Expense

MWC AB – Support – includes miscellaneous support cost from both within and outside of Nuclear Generation. Also, used for GRC imputed adopted for levelizing the cost of nuclear refueling outages when two outages are forecast to occur in a single year. Refueling outage recorded costs are recorded in other MWCs as appropriate.

MWC AK – Manage Environmental Operations – includes managing the environmental protection programs mandated by federal, state, and local regulations.

MWC BP – Manage DCPP Business – includes: (1) all activities associated with representing the Company and providing technical input to committees, owners groups, industry, professional and trade associations that support electric utilities; (2) dues to the Institute of Nuclear Power Operators, Nuclear Energy Institute, Strategic Teaming and Resource Sharing, and Diablo Canyon Independent Safety Committee; (3) land management activities; and (4) planned emergent work funding for the entire Nuclear Generation organization.

MWC BQ – DCPP Loss Prevention – includes support for the management and implementation of the Security, Industrial Safety and Health, Emergency Preparedness and Fire Protection programs.

MWC BR – Operate DCPP Plant – includes all activities to operate the plant, radiation control, monitoring of plant chemistry, managing radioactive waste and hazardous waste generation, nuclear fuel movement, and reactor physics testing.

MWC BS – Maintain DCPP Plant Assets – includes all preventative and corrective maintenance activities for systems, structures, and components at the plant.

MWC BT – Enhance DCPP Personnel Performance – includes all training programs for license and non-license operator, maintenance, engineering, and all general employee training development and delivery.

MWC BU – Procure DCPP Materials & Services – includes cost for under/over clearing of material burden.

MWC BV – Maintain DCPP Plant Configuration – includes design engineering, system engineering, component engineering, reactor engineering, in-service testing and inspection, reliability engineering, and fire protection engineering.

MWC CR – Manage Waste Disposal and Transportation – includes cost for disposal and transportation of site hazardous waste.

MWC EO – Provide Nuclear Support – includes cost for plant support provided by PG&E's Corporate Support organizations such as security and communications.

MWC IG – Manage Balancing Account Processes – includes costs subject to the 2-way balancing account established for Nuclear Safety and Security regulatory-mandated projects.

MWC JV – Maintain Applications and Infrastructure – includes costs for ongoing maintenance, operations and repair for PG&E's IT applications, systems and infrastructure.

MWC OM – Operational Management – includes labor- and employee-related costs to provide supervision and management support. MWC OM also includes costs incurred by the administrative staff working for the supervisors/ managers.

MWC OS – Operational Support – includes labor- and employee-related costs to provide services and support that are unrelated to supervision and management. Examples include Business Finance and Sourcing that support the lines of business.

PACIFIC GAS AND ELECTRIC COMPANY
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NUCLEAR GENERATION

TABLE 4-3
NUCLEAR GENERATION 2017 EXPENSE COMPARISON
BY MWC FOR SAFETY AND RELIABILITY WORK
(THOUSANDS OF DOLLARS)

Line No.	MWC	2017 Imputed Regulatory Values	2017 Recorded Costs	2017 Difference Higher/ (Lower)	Explanation
1	AB	$19,656	$(50)	$(19,706)	Actual expenses were below imputed values due to the GRC adopted costs of the second refueling outage being levelized over the 3-year GRC period (2017-2019) while actual costs were not incurred in 2017. Actual costs for this outage are forecast to occur in 2019.
2	BR	70,002	76,220	6,218	Below variance threshold.
3	BS	112,192	116,534	4,342	Below variance threshold.
4	BV	39,364	38,608	(755)	Below variance threshold.
5	IG	9,165	20,001	10,836	Actual expenses exceeded imputed values due to additional Nuclear Regulatory Commission (NRC) regulatory requirements to implement a cyber security project.
6	Total	$250,379	$251,313	$40,347	

MWC Descriptions – Capital

MWC 03 – Office Furniture and Equipment – includes capital costs to replace office furniture and equipment.

MWC 04 – Fleet/Auto Equipment – includes replacement of station fleet/auto equipment which has been in use longer than their useful life.

MWC 05 – Tools and Equipment – includes replacement of tools and shop equipment.

MWC 20 – DCPP Capital Projects – includes replacement of capital structures, systems and components that no longer can be maintained to safely and reliably operate and protect the plant. There are three major drivers to these replacements: (1) reliability has degraded to cause replacement to be needed; (2) obsolete replacement material, not allowing proper maintenance to continue; and (3) regulatory driven (NRC) requirements.

MWC 2F – Build Applications and Infrastructure – includes the costs to design, develop and enhance applications, systems and infrastructure technology solutions.

MWC 3I – Nuclear Safety and Security – includes DCPP capital projects subject to the 2-way balancing account established for Nuclear Safety and Security regulatory-mandated projects.

PACIFIC GAS AND ELECTRIC COMPANY
2017 GENERAL RATE CASE APPLICATION 15-09-001
NUCLEAR GENERATION

TABLE 4-4
NUCLEAR GENERATION 2017 CAPITAL COMPARISON
BY MWC FOR SAFETY AND RELIABILITY WORK
(THOUSANDS OF DOLLARS)

Line No.	MWC	2017 Imputed Regulatory Values	2017 Recorded Costs	2017 Difference Higher/ (Lower)	Explanation
1	20	$147,340	$158,069	$10,729	Below variance threshold.
2	3I	13,891	28,059	14,169	Actual expenditures exceeded imputed values primarily due to additional regulatory work for the NFPA 805 fire detection upgrades and cyber security upgrades.
3	Total	$161,231	$186,128	$24,898	

SECTION 5
Power Generation
Imputed Adopted vs. Recorded

PACIFIC GAS AND ELECTRIC COMPANY
2017 GENERAL RATE CASE APPLICATION 15-09-001
POWER GENERATION

TABLE 5-1
POWER GENERATION 2017 EXPENSE COMPARISON SUMMARY
(THOUSANDS OF DOLLARS)

Line No.	MWC Description	MWC	2017 Imputed Regulatory Values	2017 Recorded Costs	2017 Difference Higher/ (Lower)	2018 Budget
1	Business/Miscellaneous Expense (Hydro)	AB	$2,045	$5,025	$2,980	$3,257
2	Manage Environmental Operations (Hydro)	AK	1,021	813	(208)	1,092
3	Maintain Hydro Reservoirs, Dams & Waterways (Hydro)	AX	23,398	26,883	3,485	18,224
4	Habitat and Species Protection (Hydro)	AY	153	89	(64)	129
5	Perform Reimbursable Work for Others (Hydro)	BC	–	(77)	(77)	–
6	Manage Property & Buildings (Hydro)	EP	1,368	1,028	(340)	934
7	Implement Environment Projects (Hydro)	ES	104	555	451	196
8	Manage Var Balancing Account Processes (Hydro)	IG	3,443	7,873	4,430	3,833
9	Maintain IT Applications & Infrastructure (Hydro)	JV	2,337	1,086	(1,251)	969
10	Operate Hydro Electric Generation (Hydro)	KG	35,681	31,685	(3,996)	28,863
11	Maintain Hydro Electric Generating Equipment (Hydro)	KH	23,402	21,444	(1,958)	18,081
12	Maintain Hydro Electric Generation Buildings, Grounds & Infrastructure (Hydro)	KI	10,998	12,485	1,487	8,221
13	Regulatory Compliance Hydro Electric Generation (Hydro)	KJ	33,205	32,447	(758)	32,026
14	Operational Management (Hydro)	OM	4,409	3,353	(1,056)	3,124
15	Operational Support (Hydro)	OS	1,908	4,606	2,698	5,876
16	Business/Miscellaneous Expense (Fossil)	AB	–	14	14	130
17	Manage Environmental Operations (Fossil)	AK	2,663	2,397	(266)	2,504
18	Maintain IT Applications & Infrastructure (Fossil)	JV	–	294	294	477
19	Operate Fossil Generation (Fossil)	KK	13,022	11,949	(1,073)	12,241
20	Maintain Fossil Generating Equipment (Fossil)	KL	33,507	14,546	(18,961)	14,319
21	Maintain Fossil Generation Buildings, Grounds & Infrastructure (Fossil)	KM	2,728	2,308	(421)	2,793
22	Operate Alternative Generation (Fossil)	KQ	594	1,156	562	791
23	Maintain Alternative Generation Generating Equipment (Fossil)	KR	2,818	2,156	(662)	2,744
24	Maintain Alternative Generation Building, Ground, Infrastructure (Fossil)	KS	609	371	(238)	483
25	Operational Management (Fossil)	OM	310	265	(46)	260
26	Operational Support (Fossil)	OS	911	668	(244)	1,013
27	Total		$200,636	$185,418	$(15,218)	$162,579

PACIFIC GAS AND ELECTRIC COMPANY
2017 GENERAL RATE CASE APPLICATION 15-09-001
POWER GENERATION

TABLE 5-2
POWER GENERATION 2017 CAPITAL COMPARISON SUMMARY
(THOUSANDS OF DOLLARS)

Line No.	MWC Description	MWC	2017 Imputed Regulatory Values	2017 Recorded Costs	2017 Difference Higher/ (Lower)	2018 Budget
1	IT – Desktop Computers (Hydro)	01	–	–	–	–
2	Office Furniture & Equipment (Hydro)	03	–	$238	$238	$15
3	Tools & Equipment (Hydro)	05	$1,052	1,173	121	1,010
4	Relicensing Hydro Generation (Hydro)	11	766	843	76	1,254
5	Implement Environment Projects (Hydro)	12	4,046	2,089	(1,957)	481
6	Build IT Applications & Infrastructure (Hydro)	2F	20,025	10,886	(9,139)	10,180
7	Install/Replace for Hydro Generation Safety & Regulatory Requirements (Hydro)	2L	38,015	49,859	11,844	23,219
8	Install/Replace Hydro Generating Equipment (Hydro)	2M	105,226	115,184	9,958	90,584
9	Install/Replace Reservoirs, Dams & Waterways (Hydro)	2N	67,117	50,414	(16,703)	51,952
10	Install/Replace Hydro Generation Buildings, Grounds & Infrastructure (Hydro)	2P	12,808	33,525	20,718	36,953
11	Install/Replace Fossil Generating Equipment (Hydro)	2S	–	68	68	–
12	Hydro Elec License & License Conditions (Hydro)	3H	26,506	8,110	(18,396)	29,933
13	Office Furniture & Equipment (Fossil)	03	50	66	16	190
14	Tools & Equipment (Fossil)	05	352	273	(79)	352
15	Build IT Applications & Infrastructure (Fossil)	2F	–	1,739	1,739	2,429
16	Install/Replace Fossil Generating Safety & Regulatory Requirements (Fossil)	2R	2,977	1	(2,976)	100
17	Install/Replace Fossil Generating Equipment (Fossil)	2S	11,234	4,427	(6,807)	3,036
18	Install/Replace Fossil Generation Buildings, Grounds & Infrastructure (Fossil)	2T	152	363	211	350
19	Install/Replace Alternative Generation Safety and Regulation (Fossil)	3A	30	438	407	23
20	Install/Replace Alternative Generation Equipment (Fossil)	3B	288	72	(216)	481
21	Total		$290,645	$279,768	$(10,877)	$252,543

MWC Descriptions – Expense

MWC AB – Business / Miscellaneous Expense – includes costs associated with efficiency savings, Land Conservation Commitment, Contracts and Consulting Services, and miscellaneous support costs.

MWC AK – Manage Environmental Operations – includes costs associated with managing environmental operations.

MWC AX – Maintain Hydro Reservoirs, Dams & Waterways – includes costs associated with maintenance of hydroelectric reservoirs, dams, and water conveyance systems. These maintenance activities also ensure safety through routine and preventive maintenance.

MWC AY – Habitat and Species Protection – includes compliance with regulations to protect endangered species and sensitive habitats as part of PG&E's broader Environmental Stewardship Program.

MWC BC – Perform Reimbursable Work for Others – includes costs associated with managing the irrigation district contracts and the reimbursable expenses incurred to perform maintenance on behalf of the irrigation districts. Also includes reimbursable work for other third parties.

MWC EP – Manage Property & Buildings – includes costs associated with managing land rights and property leases in support of the operation of hydro power plants.

MWC ES – Implement Environmental Projects – includes costs associated with the implementing environmental projects and programs.

MWC IG – Balancing Account – Regulatory Compliance Hydro Electric Generation – includes costs to maintain FERC license compliance to support hydroelectric generation activities for licenses received after January 1, 2014.

MWC JK – Manage Environmental Remediation (Earnings impacted) – includes costs for the cleanup of contaminated sites which are not recovered through the Hazardous Substance Mechanism (HSM), decommissioning accounts, or at shareholder expense. These include internal labor and expenses associated with management and support of the site remediation as well as contractor and legal fees.

MWC JV – Maintain Applications and Infrastructure – includes costs for ongoing maintenance, operations and repair for PG&E's IT applications, systems and infrastructure.

MWC KG – Operate Hydro Electric Generation – includes costs to operate hydroelectric power generating stations and associated facilities.

MWC KH – Maintain Hydro Electric Generating Equipment – includes costs to maintain generating equipment or components to support hydroelectric generation activities.

MWC KI – Maintain Hydro Electric Generation Buildings, Grounds & Infrastructure – includes costs to maintain buildings, grounds and infrastructure to support hydroelectric generation activities, including roads and bridges.

MWC KJ – Regulatory Compliance Hydro Electric Generation – includes costs to maintain Federal Energy Regulatory Commission (FERC) license compliance to support hydroelectric generation activities for licenses received prior to January 1, 2014.

MWC KK – Operate Fossil Generation – includes costs to operate fossil power generating stations.

MWC KL – Maintain Fossil Generating Equipment – includes costs to maintain fossil power generating station equipment.

MWC KM – Maintain Fossil Generation Buildings, Grounds & Infrastructure – includes costs to maintain buildings, grounds and infrastructure on the plant site to support fossil generation activities, including buildings and facilities, roadways, landscaping, retaining walls, fencing, and yard lighting systems.

MWC KQ – Operate Alternative Generation – includes costs to operate alternative generation sites.

MWC KR – Maintain Alternative Generation Generating Equipment – includes costs to maintain alternative power generating station equipment.

MWC KS - Maintain Alternative Generation Building, Ground, Infrastructure – includes costs to maintain photovoltaic and fuel cell generation common facilities.

MWC OM – Operational Management – includes labor and employee related costs to provide supervision and management support. MWC OM also includes costs incurred by the administrative staff working for the supervisors/managers.

MWC OS – Operational Support – includes labor and employee related costs to provide services and support that are unrelated to supervision and management. Examples include Business Finance and Sourcing that support the lines of business.

PACIFIC GAS AND ELECTRIC COMPANY
2017 GENERAL RATE CASE APPLICATION 15-09-001
POWER GENERATION

TABLE 5-3
POWER GENERATION 2017 EXPENSE COMPARISON
BY MWC FOR SAFETY AND RELIABILITY WORK
(THOUSANDS OF NOMINAL DOLLARS)

Line No.	MWC	2017 Imputed Regulatory Values	2017 Recorded Costs	2017 Difference Higher/ (Lower)	Explanation
1	AX	$23,398	$26,883	$3,485	Below variance threshold.
2	IG	3,443	7,873	4,430	Below variance threshold.
3	KG	35,681	31,685	(3,996)	Below variance threshold.
4	KH	23,402	21,444	(1,958)	Below variance threshold.
5	KI	10,998	12,485	1,487	Below variance threshold.
6	KK	13,022	11,949	(1,073)	Below variance threshold.
7	KL	33,507	14,546	(18,961)	Actual expenses were below imputed values due to the Long-Term Service Agreement costs, which are levelized in the GRC forecast; however, only occur on a periodic basis once every 4 to 5 years depending on operating profile and did not occur in 2017.
8	KM	2,728	2,308	(421)	Below variance threshold.
9	KQ	594	1,156	562	Below variance threshold.
10	KR	2,818	2,156	(662)	Below variance threshold.
11	KS	609	371	(238)	Below variance threshold.
12	Total	$150,202	$132,856	$(17,346)	

MWC Descriptions – Capital

MWC 01 – IT Computing Equipment – includes capital costs to replace computing equipment.

MWC 03 – Office Furniture & Equipment – includes capital costs to replace office furniture and equipment.

MWC 05 – Tools & Equipment – includes purchase of tools and equipment required to perform various functions to maintain the safety and reliability of fossil and hydro electric generation operations.

MWC 11 – Relicensing and License Compliance Hydro Electric Generation – includes costs for complying with the conditions required by FERC licenses received prior to January 1, 2014, and other compliance work generally related to facility safety.

MWC 12 – Implement Environmental Projects – includes costs for capital projects to comply with water and air quality regulations and various oil spill prevention projects.

MWC 2F – Build Applications and Infrastructure – includes the costs to design, develop and enhance applications, systems and infrastructure technology solutions.

MWC 2L – Install/Replace for Hydro Electric Generation Safety & Regulatory Requirements – includes capital costs primarily related to employee or public safety and regulatory requirements that are not connected with relicensing for hydroelectric generation.

MWC 2M – Install/Replace Hydro Electric Generating Equipment – includes capital costs to install/replace generating equipment or components to support hydroelectric generation activities.

MWC 2N – Install/Replace Reservoirs, Dams & Waterways – includes capital costs to support the operation of reservoirs, dams and waterways.

MWC 2P – Install/Replace Hydro Electric Generation Buildings, Grounds & Infrastructure – includes capital costs to install/replace buildings, grounds and infrastructure to support hydroelectric generation activities, including roads and bridges.

MWC 2R – Install/Replace Fossil Generating Safety & Regulatory Requirements – includes capital costs primarily related to employee safety or regulatory requirements for fossil generation.

MWC 2S – Install/Replace Fossil Generating Equipment – includes capital costs to install new or replace existing generating equipment or components to support fossil generation activities.

MWC 2T – Install/Replace Fossil Generation Buildings, Grounds & Infrastructure – includes capital costs to install or replace new buildings, grounds and infrastructure on the plant site to support fossil generation activities.

MWC 3A – Install/Replace Alternative Fossil Generation Safety and Regulation – includes capital costs associated with the installation and/or replacement of safety equipment for alternative generation.

MWC 3B – Install/Replace Alternative Generation Equipment – includes capital costs associated with the installation of solar photovoltaic generation equipment.

MWC 3C – Install/Replace Alternative Generation Buildings, Grounds & Infrastructure – includes capital costs to install or replace new buildings, grounds and infrastructure on the plant site to support Alternative Generation activities.

MWC 3H – Balancing Account – Relicensing Hydro Electric Generation – includes costs for relicensing existing FERC licenses; obtaining major license amendments; surrendering licenses for facilities that are no longer economic; complying with the conditions required by existing and newly issued FERC licenses and major license amendments; and anticipated to be required by pending new FERC licenses for licenses. This includes costs for all pending licenses as of January 1, 2014, and new licenses applied for after January 1, 2014.

PACIFIC GAS AND ELECTRIC COMPANY
2017 GENERAL RATE CASE APPLICATION 15-09-001
POWER GENERATION

TABLE 5-4
POWER GENERATION 2017 CAPITAL COMPARISON
BY MWC FOR SAFETY AND RELIABILITY WORK
(THOUSANDS OF DOLLARS)

Line No.	MWC	2017 Imputed Regulatory Values	2017 Recorded Costs	2017 Difference Higher/ (Lower)	Explanation
1	2L	$38,015	$49,859	$11,844	Actual expenditures exceeded imputed values due to emergent road and generating asset replacements throughout the hydro system driven by record high rainfall, flooding, rockslides, and mudslides which caused significant damage to hydro assets.
2	2M	105,226	115,184	9,958	Below variance threshold.
3	2N	67,117	50,414	(16,703)	Actual expenditures were below imputed values due to rescheduling work from 2017 to 2018 and 2019 in order to complete emergent work in MWC 2L resulting from record high rainfall and flooding. In addition, affordability efforts also contributed to lower spend.
4	2P	12,808	33,525	20,718	Actual expenditures exceeded imputed values due to emergent road and generating asset replacements throughout the hydro system driven by record high rainfall, flooding, rockslides, and mudslides which caused significant damage to hydro assets.
5	2S (Hydro)	–	68	68	Below variance threshold.
6	2R	2,977	1	(2,976)	Below variance threshold.
7	2S (Fossil)	11,234	4,427	(6,807)	Below variance threshold.
8	2T	152	363	211	Below variance threshold.
9	3A	30	438	407	Below variance threshold.
10	3B	288	72	(216)	Below variance threshold.
11	Total	$237,848	$254,352	$16,505	

PART C – SAFETY METRICS

PACIFIC GAS AND ELECTRIC COMPANY
2017 GENERAL RATE CASE APPLICATION 15-09-001
SAFETY METRICS

TABLE 1
(TOTAL COMPANY SAFETY METRICS)

	Metric Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	T&D Wires Down	277	379	375	238	261	237	227	214	231	210	240	158
2	911 Emergency Response	95.84%	94.73%	98.08%	93.31%	98.41%	98.16%	98.39%	97.85%	96.49%	96.62%	98.08%	98.03%
3	Dig-In Reductions	1.05	1.29	1.87	1.75	2.02	2.13	2.47	2.26	1.96	1.90	1.58	1.87
4	Gas Emergency Response	20.2	19.9	19.7	19.8	20.0	20.5	21.1	20.8	21.1	20.9	20.8	21.0
5	DCPP Reliability and Safety Indicator: Unit 1	100.0	100.0	100.0	100.0	100.0	97.1	96.9	97.0	97.0	97.0	97.0	97.0
6	DCPP Reliability and Safety Indicator: Unit 2	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
7	Hydro Public Safety Actions Index	22%	22%	22%	40%	40%	40%	93%	93%	93%	94%	94%	94%
8	Lost Workday Case Rate	0.205	0.318	0.415	0.637	0.423	0.400	0.682	0.677	0.641	0.464	0.434	0.581
9	OSHA Recordable Rate	0.513	2.121	2.123	5.577	3.811	2.447	4.093	3.482	3.418	3.110	3.688	3.196
10	Near-Hits Reported	183	234	258	204	206	219	168	167	144	172	153	146
11	PMVI Rate	1.478	2.800	2.274	1.309	2.479	2.985	3.032	3.328	2.145	3.053	2.273	2.088
12	SPMVI Rate	0.092	0.090	0.244	0.087	0.256	0.439	0.379	0.597	0.330	0.372	0.284	0.261
13	Contractor Lost Workdays	0.37	0.15	0.39	0.21	0.38	0.21	0.5	0.39	0.54	0.22	0.3	0.26
14	Contractor Days Away	0.74	0.23	0.63	0.35	0.84	0.48	0.87	0.39	0.6	0.33	0.89	0.51
15	Contractor OSHA Recordable Rate	1.03	0.53	1.02	0.77	1.29	0.69	1.01	0.58	1.14	0.71	1.33	0.85
16	Fire Ignitions	5	2	5	17	40	91	94	70	63	Not Reported	20	18
17	Number of Employee Serious Injuries & Fatalities	–	3	–	2	–	1	1	–	–	–	–	–

Note: Table one shows total Company metrics. To the extent these metrics could be broken out by line of business, we have done so in tables two through six below.

PACIFIC GAS AND ELECTRIC COMPANY
2017 GENERAL RATE CASE APPLICATION 15-09-001
SAFETY METRICS

TABLE 2
(LOST WORKDAY CASE RATE METRIC BY LOB)

	Lost Workday Case Rate	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	Gas Operations	0.455	0.000	0.789	0.467	0.837	0.870	0.000	0.808	1.131	0.919	0.442	0.953
2	Electric Operations	0.301	0.648	0.152	0.869	0.321	0.646	1.270	0.461	0.324	0.285	0.874	0.368
3	Generation	0.000	1.169	0.490	0.000	0.000	0.000	0.624	0.536	0.600	0.526	0.000	0.000
4	Others	0.000	0.000	0.375	0.755	0.414	0.000	0.637	0.816	0.619	0.278	0.156	0.670

TABLE 3
(OSHA RECORDABLE RATE METRIC BY LOB)

	OSHA Rate	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	Gas Operations	1.138	2.589	1.974	9.582	6.699	5.218	7.149	4.849	4.751	3.678	5.968	4.525
2	Electric Operations	0.451	2.918	2.132	6.607	4.010	2.098	4.355	3.070	4.046	3.711	5.068	3.682
3	Generation	0.591	1.169	1.959	1.382	1.002	0.923	1.871	1.609	1.801	1.052	0.000	0.000
4	Others	0.148	1.337	2.252	3.471	2.895	1.416	2.389	3.401	2.322	2.641	1.869	2.678

TABLE 4
(PMVI RATE METRIC BY LOB)

	PMVI Rate	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	Gas Operations	1.758	3.653	2.702	0.804	2.747	4.194	2.750	5.378	1.445	3.720	2.580	2.632
2	Electric Operations	1.224	2.365	2.625	1.951	2.422	2.262	3.042	2.736	2.777	2.512	2.826	2.840
3	Generation	1.696	0.000	1.419	1.532	0.000	1.615	0.000	0.000	2.981	1.488	1.684	0.000
4	Others	1.565	3.068	1.155	0.812	2.827	2.760	4.204	1.959	1.913	3.282	0.910	1.057

TABLE 5
(SPMVI RATE METRIC BY LOB)

	SPMVI Rate	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	Gas Operations	0.000	0.000	0.000	0.000	0.250	0.524	0.275	0.978	0.000	0.413	0.258	0.526
2	Electric Operations	0.000	0.215	0.219	0.217	0.220	0.452	0.761	0.000	0.641	0.386	0.514	0.000
3	Generation	0.000	0.000	1.419	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4	Others	0.522	0.000	0.385	0.000	0.404	0.394	0.000	1.175	0.383	0.365	0.000	0.352

PACIFIC GAS AND ELECTRIC COMPANY
2017 GENERAL RATE CASE APPLICATION 15-09-001
SAFETY METRICS

TABLE 6
(NEAR HITS METRIC BY LOB)

	Near Hits	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	Gas Operations	19	17	15	18	17	19	15	15	10	8	13	14
2	Electric Operations	77	73	71	75	85	68	59	47	69	56	50	39
3	Generation	4	13	9	8	8	7	3	5	5	3	4	6
4	Others	83	131	163	103	96	125	91	100	60	105	86	87

Metric Descriptions

T&D Wires Down – Number of instances where an electric transmission or primary distribution conductor is broken and falls from its intended position to rest on the ground or a foreign object; excludes down secondary distribution wires and "Major Event Days" (typically due to severe storm events) as defined by the Institute of Electrical and Electronics Engineers (IEEE).

911 Emergency Response – The percent of time PG&E personnel respond (are on-site) within one hour after receiving a 911 (electric related) call, with on-site defined as arriving at the premises where the 911 agency personnel are standing by.

Dig-In Reductions – The total number of third-party dig-ins to PG&E gas assets per 1,000 USA tickets. A dig-in refers to any damage (impact or exposure) that results in a repair or replacement of an underground facility as a result of an excavation.

Gas Emergency Response – The average response time (in number of minutes) that a Gas Service Representative or a qualified first responder (e.g., Gas Crew, Leak Surveyor) takes to respond to the site of an immediate response gas emergency order. Excludes area odor complaints, duplicate and cancelled orders, and multiple calls on a multi-meter manifold.

DCPP Reliability and Safety Indicator: Unit 1 – The year-end score as reported to the Institute of Nuclear Power Operations (INPO) for PG&E's DCPP Units 1 and 2, based on 11 performance indicators for nuclear power generation, including unit capability, radiation exposure, and safety accident rate.

DCPP Reliability and Safety Indicator: Unit 2 – The year-end score as reported to INPO for PG&E's DCPP Units 1 and 2, based on 11 performance indicators for nuclear power generation, including unit capability, radiation exposure, and safety accident rate.

Hydro Public Safety Actions Index – Composite measure of milestones achieved on hydro public safety initiatives. This metric was updated in 2017 to incorporate information on health of high-risk hydro assets, safety training, and

information sharing, along with the index components previously reported. Name change from Hydro Public Safety Awareness Index to Hydro Public Safety Actions Index reflects new components.

Lost Workday (LWD) Case Rate – The number of LWD cases incurred per 200,000 hours worked, or for approximately every 100 employees. Excludes fatalities.

Occupational Safety and Health Administration (OSHA) Recordable Rate – An OSHA Recordable incident is an occupational (job related) injury or illness that requires medical treatment beyond first aid, or results in work restrictions, death or loss of consciousness.

Calculation: Count of OSHA cases *200,000/ Productive Labor Hours

Near-Hits Reported – An unplanned event that did not result in harm or injury to employees, contractors or the public, but had the potential to do so. This metric is a count of Near Hits reported by employees.

Preventable Motor Vehicle Incident (PMVI) Rate – A “Preventable” incident is one where the PG&E driver could have, but failed to take reasonable steps to prevent the incident. The term “Preventable” should not be confused with “fault” or “liability”. An incident can be considered “Preventable” even if the PG&E driver is not legally at fault. The determining factor is whether or not the PG&E driver could have reasonably prevented the incident.

Serious PMVI (SPMVI) Rate – The total number of SPMVIs that the PG&E driver could have reasonably avoided, per 1 million miles driven. SPMVIs involve significant human injury or vehicle damage. Minimum vehicle damage limit is $5,000.

Contractor Lost Workdays – A Lost Workday Case is a current year OSHA Recordable incident that has resulted in at least one lost workday. Excludes fatalities.

Calculation: Count of LWD Cases *200,000/Productive Labor Hours

Contractor Days Away – Days Away, Restricted and Transfer (DART) Cases include OSHA-recordable injuries that result in lost time or restricted duty.

Calculation: Count of DART Cases *200,000/Productive Labor Hours

Contractor OSHA Recordable Rate – An OSHA Recordable incident is an occupational (job related) injury or illness that requires medical treatment beyond first aid, or results in work restrictions, death or loss of consciousness.

Calculation: Count of OSHA cases *200,000/ Productive Labor Hours

Fire Ignitions – The number of powerline-involved fire incidents annually reportable to the California Public Utilities Commission per Decision 14-02-015. A reportable fire incident includes the following: (1) ignition is associated with PG&E powerlines and (2) something other than PG&E facilities burned and (3) the resulting fire traveled more than one meter from the ignition point.

Number of Employee Serious Injuries & Fatalities – A work-related injury or illness that results in a fatality, inpatient hospitalization for more than 24 hours (other than for observation purposes), a loss of any member of the body, or any serious degree of permanent disfigurement.

PACIFIC GAS AND ELECTRIC COMPANY

APPENDIX A

2017 GRC IMPUTED REGULATORY VALUES METHODOLOGY

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APPENDIX A
2017 GRC IMPUTED REGULATORY VALUES METHODOLOGY

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PACIFIC GAS AND ELECTRIC COMPANY
APPENDIX A
2017 GRC IMPUTED REGULATORY VALUES METHODOLOGY

A. Introduction

Decision 17-05-013 (the Decision) adopted, with some modifications, a Settlement Agreement which included 2017 revenue requirements for the electric generation, electric distribution and gas distribution functions, and attrition increases by function for 2018 through 2019.[1]

Adopted revenue requirements reflect Decision-approved cost forecasts originally prepared by PG&E in 2015 using its former cost allocation (budgeting) methodology. Effective January 1, 2016, the Company's budget and recorded costs reflect PG&E's new cost allocation methodology.

The section below describes the methodology used by PG&E to develop expense and capital regulatory values (i.e., imputed adopted amounts) in the old cost allocation methodology, consistent with the format used to prepare the 2017 GRC application forecast. For comparability purposes, PG&E translated the 2017-2019 regulatory values to the new cost allocation methodology to be consistent with the budgeted and recorded costs.

1. 2017 Test Year

The Decision adopted 2017 test year operations and maintenance (O&M) and administrative and general (A&G) expense values at the Major Work Category (MWC) and/or Organizational level, and capital expenditure values at the MWC level. The adopted test year expense and capital costs at the MWC and/or Organizational levels are included in the Settlement Agreement, Appendix A.

2. 2018 to 2019 Post Test Year

a. Background and Summary

The Decision adopted 2018 and 2019 functional revenue requirements based on the attrition increases included in the Settlement Agreement for the 2018 and 2019 post-test year by the functional areas. These adopted

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1 D.17-05-013, Appendix A: Table 6.

revenue requirements were negotiated with the Settling Parties, and were not derived through Results of Operation modeling. The Settlement Agreement did not provide specific MWC values for 2018 and 2019.

On October 31, 2016, at the request of the Administrative Law Judge, PG&E filed Late Exhibit (PG&E-46) to provide imputed regulatory values resulting from the Settlement Agreement revenue requirements. Exhibit 46 provides an overview of PG&E's post-test year imputation methodology used to calculate detailed 2018 and 2019 imputed regulatory values that conform to the overall Settlement revenue requirements. These calculated imputed regulatory values at the MWC and/or Organizational levels, presented in Appendix A of Exhibit 46 in the old cost allocation methodology, are not a part of the Settlement Agreement.

Exhibit 46 was filed before the CPUC issued the 2017 GRC Decision, which adopted the overall functional level Settlement Agreement test year revenue requirements and post-test year amounts included in the Settlement Agreement Appendix A and Joint Comparison Exhibit, Chapter 5, Volume II.

b. Details

1) Imputation Methodology

As mentioned above, the Decision adopted 2017 test year O&M and A&G expense values at the MWC and/or Organizational level, and capital expenditure values at the MWC level. For the post-test years, the Settlement Agreement provides only functional level 2018 and 2019 revenue requirement attrition amounts, as described in Exhibit 46. Unlike the adopted test year amounts, these amounts are not broken down by expense and capital and by MWC. The Settlement Agreement does not specify how to impute regulatory values for 2018 and 2019 that conform to the Settlement Agreement parameters, nor does the Settlement Agreement instruct how to allocate the imputed expense and capital revenue requirements to the function-specific MWC and/or Organizational level by line of business (LOB). Therefore, the regulatory values imputation process included in Exhibit (PG&E-46) and summarized below is separate from the Settlement Agreement.

2) Capital vs. Expense

2017 adopted expenses were escalated to 2018 then to 2019 based on agreed on labor and non-labor escalation rates. The remaining available revenue requirements were allocated to capital.

3) Capital regulatory values by LOB

To impute capital functional level revenue requirements based on available capital revenue requirements, PG&E reduced its 2017 capital net additions by approximately 7 percent in 2018 and an additional 2-3 percent in 2019, as compared to 2017 adopted capital net additions. This additions pattern reflects a gradual decline in year-over-year additions.

4) Expense regulatory values by LOB

PG&E subtracted the function-specific capital-related revenue requirement increases from the overall function-specific revenue requirement increases prescribed in the Settlement Agreement to calculate the function-specific expense revenue requirement increases for 2018 and 2019.

5) 2018 and 2019 Expense and Capital by MWC and/or Organization Levels

PG&E further broke down the function-specific expense and capital expenditure amounts by MWC, consistent with PG&E's 2017 GRC presentation format in the Application filing. For capital expenditures, PG&E used the 2017 capital net addition to capital expenditure ratios to calculate the corresponding capital expenditures at the MWC level for 2018 and 2019. For expense, PG&E allocated the 2018 and 2019 function-specific post-test year expense adjustments to each MWC in proportion to the total function-specific (i.e., Line of Business) amount.

3. Imputation Methodology (MAT Level for Electric Distribution and Gas Distribution)

To impute regulatory values for 2017 at the MAT code level, PG&E applied program specific MAT code adjustments to PG&E's request for the test year, as appropriate, based on the specification described in the Decision, Joint Comparison Exhibit and/or Settlement Agreement. For any adjustments that

were not specifically identified at the MAT code level, PG&E prorated the adjustments to PG&E's request for each MWC to all MAT codes, as applicable, using the MAT code to MWC ratios from PG&E's Application forecast. To impute associated 2017 MAT units of work, PG&E divided the 2017 imputed MAT code values by the forecast MAT code unit cost. The imputed 2017 MAT code unit cost was then calculated as the imputed MAT code values divided by imputed units.

To impute regulatory values for 2018 and 2019 by MAT code, PG&E used the 2018 and 2019 MWC imputed values from Exhibit PG&E-46 and prorated the amounts by MAT code based on the MAT code to MWC ratios from PG&E's 2017 imputed adopted values. To calculate the adopted units of work, as applicable, PG&E divided the post-test year imputed MAT code regulatory values by the escalated unit cost.

4. 2017-2019 Imputed Regulatory Values using PG&E's New Cost Allocation Methodology

PG&E's 2017 GRC cost forecast was presented using the Company's former cost allocation methodology. As a result, the Decision and adopted values also reflect the old cost allocation methodology. Effective January 1, 2016, PG&E's budget and recorded costs reflect the Company's new cost allocation methodology, which was described in PG&E's 2017 GRC testimony, as well as in PG&E's March 31, 2016 and July 10, 2017 Budget Compliance Reports. In brief, the new cost allocation methodology uses a "labor only" rate which no longer includes support and overhead costs. These costs, which include benefits and payroll taxes, are budgeted and recorded through separate line items for the expense programs. For capital projects, consistent with Federal Energy Regulatory Commission Uniform System of Accounts rules, the new cost allocation methodology allocates the proportionate amount of support and overhead costs to the capital project work. Accounting for existing balancing account activities is treated similar to capital work to ensure balancing accounts reflect fully allocated costs consistent with prior Commission decisions. To properly compare 2017 recorded costs, which reflect the new cost allocation methodology versus the adopted values, PG&E has translated the adopted values from the Decision to the new cost allocation

methodology using the 2015 recorded costs conversion factors. The translated adopted amounts are referred to as imputed regulatory values.

PACIFIC GAS AND ELECTRIC COMPANY

APPENDIX B

2017-2019 IMPUTED REGULATORY VALUES BY LINE OF BUSINESS

2017 GRC BUSINESS UNITS EXPENSE IMPUTED ADOPTED REGULATORY VALUES
NEW COST MODEL VIEW
(THOUSANDS OF NOMINAL DOLLARS)

Line	Exhibit	Chapter	MWC	MWC Description	2017 Imputed	2018 Imputed	2019 Imputed
Gas Distribution (Exhibit 3)							
1	3	4	EX	EX G Dist Meter Protection	988	916	881
2	3	4	FI	FI G Dist Corrective Maint	1,971	1,837	1,774
3	3	4	JQ	JQ G Dist Integrity Mgt (Non Bal)	30,103	27,766	26,599
4	3	5	GM	GM Manage Energy Efficiency-NonBA	3,563	3,301	3,172
5	3	6A	DD	DD Provide Field Service	48,860	45,818	44,431
6	3	6A	DF	DF G&E T&D Locate and Mark	23,784	23,902	24,238
7	3	6A	FH	FH G Dist Preventive Maint	12,425	11,614	11,235
8	3	6A	FI	FI G Dist Corrective Maint	13,114	12,225	11,804
9	3	6A	HY	HY Change/Maint Used Gas Meters	1,808	1,695	1,644
10	3	6B	DG	DG G Dist Cathodic Protection	9,273	8,661	8,373
11	3	6B	FH	FH G Dist Preventive Maint	2,042	1,909	1,847
12	3	6B	FI	FI G Dist Corrective Maint	19,546	18,221	17,594
13	3	6C	DE	DE G Dist Leak Survey	19,498	18,184	17,564
14	3	6C	FI	FI G Dist Corrective Maint	50,713	47,276	45,647
15	3	7	FG	FG G Dist Operate System	13,099	12,193	11,760
16	3	7	GG	GG Gas Trans & Dist Sys Modeling	7,601	7,148	6,945
17	3	8	LK	LK G Dist WRO - Maintenance	4,253	3,814	3,600
18	3	9	GZ	GZ R&D Non-Balancing Account	1,472	1,359	1,303
19	3	9	JV	JV Maintain IT Apps & Infra	26,279	24,373	23,445
20	3	10	AB	AB Misc Expense	6,262	5,802	5,577
21	3	10	DN	DN Develop & Provide Training	3,915	3,590	3,424
22	3	10	GF	GF Gas Trans & Dist Sys Mapping	3,853	3,606	3,492
23	3	3	OM	OM Operational Management	14,294	13,416	13,017
24	3	3	OS	OS Operational Support	40,552	38,063	36,929
25				**Total Exhibit (PG&E-3)**	**359,268**	**336,688**	**326,295**
Electric Distribution (Exhibit 4)							
26	4	3	AB	AB Emer. Prep. & Response	7,425	7,611	7,796
27	4	4	BH	BH E Dist Routine Emergency	51,541	54,526	56,990
28	4	4	IF	IF E Dist Major Emergency	51,438	54,412	56,846
29	4	5	BA	BA E Dist Operate System	25,964	27,360	28,537
30	4	5	DD	DD Provide Field Service	15,979	16,858	17,593
31	4	6	BF	BF E T&D Patrol/Insp	34,764	36,756	38,391
32	4	6	BK	BK Maint Other Equip	1,877	1,982	2,069
33	4	6	KA	KA E Dist Maint OH General	46,458	49,175	51,383
34	4	6	KB	KB E Dist Maint UG	15,712	16,602	17,337
35	4	6	KC	KC E Dist Maint Network	4,129	4,364	4,558
36	4	7	HN	HN E Dist Tree Trim Bal Acct	201,033	213,371	223,172
37	4	8	GA	GA E T&D Maint OH Poles	13,049	14,032	14,817
38	4	10	HX	HX E T&D Automation & Protection	1,370	1,447	1,511
39	4	12	GC	GC E Dist Subst O&M	25,372	26,810	27,996
40	4	13	BA	BA E Dist Operate System	61	64	67
41	4	13	JV	JV Maintain IT Apps & Infra	343	363	379
42	4	14	FZ	FZ E Dist Planning & Ops Engineer	13,919	14,678	15,314
43	4	15	JV	JV Maintain IT Apps & Infra	5,840	6,181	6,458
44	4	16	GE	GE E Dist Mapping	5,146	5,437	5,678
45	4	17	EV	EV Manage Service Inquiries	8,391	8,852	9,237
46	4	17	EW	EW E TD WRO - Maintenance	12,895	13,854	14,645
47	4	19	AB	AB Misc Expense	2,011	2,125	2,218
48	4	19	DN	DN Develop & Provide Training	7,239	7,686	8,040
49	4	4	IS	IS Bill Customers	N/A	N/A	N/A
50	4	4	OM	OM Operational Management	18,776	19,869	20,768
51	4	4	OS	OS Operational Support	24,432	25,853	27,024
52				**Total Exhibit (PG&E-4)**	**595,163**	**630,269**	**658,823**

2017 GRC BUSINESS UNITS EXPENSE IMPUTED ADOPTED REGULATORY VALUES
NEW COST MODEL VIEW
(THOUSANDS OF NOMINAL DOLLARS)
(CONTINUED)

Line	Exhibit	Chapter	MWC	MWC Description	2017 Imputed	2018 Imputed	2019 Imputed
Energy Supply (Exhibit 5)							
		Nuclear Generation					
53	5	3	AB	AB Misc Expense	19,656	20,174	20,564
54	5	3	AK	AK Manage Environmental Oper	2,733	2,937	3,082
55	5	3	BP	BP Manage DCPP Business	10,913	11,708	12,282
56	5	3	BQ	BQ DCPP Support Services	37,299	39,843	41,727
57	5	3	BR	BR Operate DCPP Plant	70,002	74,828	78,387
58	5	3	BS	BS Maintain DCPP Plant Assets	112,192	120,133	125,924
59	5	3	BT	BT Nuclear Generation Fees	16,848	18,125	19,032
60	5	3	BV	BV Maintain DCPP Plant Configurtn	39,364	42,130	44,153
61	5	3	CR	CR Mnge Waste Disp & Transp	105	113	119
62	5	3	EO	EO Provide Nuclear Support	172	184	193
63	5	3	IG	IG Manage Var Bal Acct Processes	9,165	9,848	10,337
64	5	3	JV	JV Maintain IT Apps & Infra	2,045	2,202	2,314
65	5	3	OM	OM Operational Management	10,397	11,151	11,703
66	5	3	OS	OS Operational Support	22,371	23,994	25,183
67				**Sub-total Nuclear Generation**	**353,261**	**377,370**	**395,000**
		Hydro Generation					
68	5	4	AB	AB Misc Expense	2,045	2,198	2,309
69	5	4	AK	AK Manage Environmental Oper	1,021	1,099	1,156
70	5	4	AX	AX Maint Resv	23,398	25,134	26,409
71	5	4	AY	AY Habitat and Species Protection	153	164	172
72	5	4	EP	EP Manage Property & Bldgs	1,368	1,470	1,545
73	5	4	ES	ES Implement Environment Projects	104	111	117
74	5	4	IG	IG Manage Var Bal Acct Processes	3,443	3,695	3,881
75	5	4	JV	JV Maintain IT Apps & Infra	2,337	2,516	2,645
76	5	4	KG	KG Operate Hydro Generation	35,681	38,204	40,070
77	5	4	KH	KH Maint Hydro Generating Equip	23,402	25,052	26,274
78	5	4	KI	KI Maint Hydro Bldg	10,998	11,821	12,424
79	5	4	KJ	KJ License Compliance Hydro Gen	33,205	35,789	37,672
80	5	4	OM	OM Operational Management	4,409	4,732	4,969
81	5	4	OS	OS Operational Support	1,908	2,048	2,151
82				**Sub-total Hydro Generation**	**143,472**	**154,033**	**161,792**
		Fossil Generation					
83	5	5	AB	AB Misc Expense	N/A	N/A	N/A
84	5	5	AK	AK Manage Environmental Oper	2,663	2,868	3,014
85	5	5	KK	KK Operate Fossil Generation	13,022	13,950	14,628
86	5	5	KL	KL Maint Fossil Generating Equip	33,507	36,133	37,993
87	5	5	KM	KM Maint Fossil Bldg	2,728	2,944	3,096
88	5	5	KQ	KQ Operate Alternative Gen	594	641	674
89	5	5	KR	KR Maint AltGen Generating Equip	2,818	3,025	3,175
90	5	5	KS	KS Maint AltGen Bldg	609	657	691
91	5	5	OM	OM Operational Management	310	334	351
92	5	5	OS	OS Operational Support	911	981	1,030
93				**Sub-total Fossil Generation**	**57,164**	**61,533**	**64,652**
94				**Sub-total Power Generation**	**200,636**	**215,565**	**226,444**

2017 GRC BUSINESS UNITS CAPITAL IMPUTED ADOPTED REGULATORY VALUES
NEW COST MODEL VIEW
(THOUSANDS OF NOMINAL DOLLARS)

Line	Exhibit	Chapter	MWC	MWC Description	2017 Imputed	2018 Imputed	2019 Imputed
Gas Distribution (Exhibit 3)							
1	3	4	14	G Dist Pipeline Repl Program	386,855	361,387	353,800
2	3	4	27	Gas Meter Protection-Capital	346	323	316
3	3	4	50	G Dist Reliability General	93,762	87,590	85,751
4	3	5	31	NGV - Station Infrastructure	3,967	3,706	3,628
5	3	5	50	G Dist Reliability General	31,289	29,229	28,615
6	3	5	2K	G Dist Repl/Convert Cust HPR	40,136	37,493	36,706
7	3	6A	74	Install New Gas Meters	2,939	2,745	2,687
8	3	6B	50	G Dist Reliability General	20,333	18,994	18,596
9	3	6C	50	G Dist Reliability General	115,065	107,490	105,234
10	3	6C	52	G Dist Leak Repl/Emergency	751	700	685
11	3	7	47	G Dist Capacity	44,129	41,224	40,358
12	3	7	4A	G Dist Control Operations Assets	39,333	36,743	35,971
13	3	8	29	G Dist Customer Connects	75,507	70,536	69,056
14	3	8	51	G Dist WRO	59,308	55,403	54,240
15	3	9	2F	Build IT Apps & Infra	40,005	37,371	36,587
16	3	10	5	Tools & Equipment	2,912	2,699	2,628
17	3	10	78	Manage Buildings	16,440	15,234	14,838
18				**Sub-total Gas Distribution**	**973,078**	**908,867**	**889,696**
Electric Distribution (Exhibit 4)							
19	4	3	21	Emergency Preparedness and Response	8,022	7,434	7,241
20	4	4	17	E Dist Routine Emergency	146,893	136,457	132,051
21	4	4	95	E Dist Major Emergency	56,474	52,462	50,768
22	4	5	63	E T&D Control System/ Facility	1,096	1,019	986
23	4	6	2A	E Dist Installation/Repl OH General	118,036	109,649	106,109
24	4	6	2B	E Dist Install/Repl Underground	43,748	40,640	39,328
25	4	6	2C	E Dist Install/Repl Network	20,130	18,700	18,096
26	4	8	7	E Dist Install/Repl OH Poles	86,328	68,557	76,503
27	4	9	8	E Dist Reliability Base	45,091	41,888	40,535
28	4	9	49	E Dist Reliability Circuit/Zone	80,428	74,713	72,301
29	4	10	9	E Dist Automation & Protection	48,174	44,751	43,306
30	4	11	56	E Dist Repl Underground Asset-Generation	107,750	100,094	96,862
31	4	12	48	E Dist Subst Repl Other Equipment	80,892	75,145	72,718
32	4	12	54	E Dist Subst Repl Transformer	42,686	39,654	38,373
33	4	12	58	E Dist Repl Substation Safety	2,315	2,151	2,081
34	4	12	59	E Dist Substation Emergency Repl	45,517	42,283	40,918
35	4	13	6	E Dist Line Capacity	89,337	82,989	80,310
36	4	13	46	E Dist Substation Capacity	67,755	62,942	60,909
37	4	13	2F	Build IT Apps & Infra	3,365	3,126	3,025
38	4	15	2F	Build IT Apps & Infra	46,761	43,439	42,036
39	4	17	10	E Dist Work at the Request of Others General	76,403	70,975	68,683
40	4	17	16	E Dist Customer Connects	399,720	371,321	359,331
41	4	18	30	E Dist Work at the Request of Others Rule 20A	57,919	53,804	52,067
42	4	19	5	Tools & Equipment	(18,143)	(16,832)	(16,346)
43	4	19	23	Implement Real Estate Strategy	5,652	5,238	5,102
44				**Sub-total Elec. Distribution**	**1,662,351**	**1,532,598**	**1,493,292**

2017 GRC BUSINESS UNITS CAPITAL IMPUTED ADOPTED REGULATORY VALUES
NEW COST MODEL VIEW
(THOUSANDS OF NOMINAL DOLLARS)
(CONTINUED)

Line	Exhibit	Chapter	MWC	MWC Description	2017 Imputed	2018 Imputed	2019 Imputed
Energy Supply (Exhibit 5)							
		Nuclear Generation					
45	5	3	3	Office Furniture & Equipment	243	225	219
46	5	3	4	Fleet / Auto Equip	881	817	795
47	5	3	5	Tools & Equipment	1,402	1,299	1,265
48	5	3	20	DCPP Capital	147,340	137,659	135,005
49	5	3	3I	Nuclear Safety and Security	13,891	12,978	12,728
50	5	N/A	2F	Build IT Apps & Infra	14,318	13,452	13,194
51				**Sub-total Nuclear Generation**	**178,075**	**166,430**	**163,206**
		Hydro Generation					
52	5	4	5	Tools & Equipment	1,052	976	951
53	5	4	11	Relicensing Hydro Gen	766	717	703
54	5	4	12	Implement Environment Projects	4,046	3,785	3,714
55	5	4	2L	Instl/Rpl for Hydro Safety&Reg	38,015	35,559	34,894
56	5	4	2M	Instal/Repl Hydro Gneratng Eqp	105,226	98,428	96,586
57	5	4	2N	Instal/Repl Resv,Dams&Waterway	67,117	62,781	61,606
58	5	4	2P	Instl/Repl Hydr BldgGrndInfrst	12,808	11,980	11,756
59	5	4	3H	Hydroelectric Lic & Lic Conditions	26,506	25,258	24,920
60	5	N/A	2F	Build IT Apps & Infra	20,025	18,814	18,452
61				**Sub-total Hydro Generation**	**275,562**	**258,298**	**253,583**
		Fossil Generation					
62	5	5	3	Office Furniture & Equipment	50	46	45
63	5	5	5	Tools & Equipment	352	326	318
64	5	5	2R	Instl/Rpl for Fosil Safety&Reg	2,977	2,790	2,737
65	5	5	2S	Instal/Repl Fosil Gneratng Eqp	11,234	10,527	10,329
66	5	5	2T	Instl/Repl Fosl BldgGrndInfrst	152	142	140
67	5	5	3A	Instl/Rpl for AltGen Safty&Reg	30	28	28
68	5	5	3B	Instal/Repl AltGen GneratngEqp	288	270	265
69				**Sub-total Fossil Generation**	**15,083**	**14,130**	**13,861**
70				**Sub-total Power Generation**	290,645	272,428	267,444