Application: 17-11-009
(U 39 G)
Exhibit No.:
Date: September 14, 2018
Witness(es): Kevin Armato

PACIFIC GAS AND ELECTRIC COMPANY

2019 GAS TRANSMISSION AND STORAGE RATE CASE

NOVEMBER 17, 2017 WORKPAPERS WITH ERRATA SUPPORTING

CHAPTER 9
OPERATIONS AND MAINTENANCE

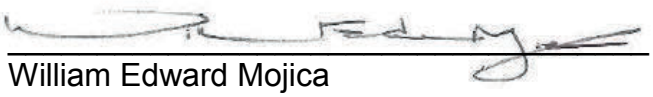


PACIFIC GAS AND ELECTRIC COMPANY
2019 GAS TRANSMISSION AND STORAGE RATE CASE

WORKPAPERS SUPPORTING
CHAPTER 9
OPERATIONS AND MAINTENANCE

TABLE OF CONTENTS

Workpaper Title	Page No.
Summary of Expenses in New Cost Model	WP 9-1
EXPENSES	
Detail of Expenses 2016 to 2019 in New Cost Model	WP 9-2
Detail of Expenses 2012 to 2015 Old Cost Model to New Cost Model Conversion	WP 9-43
Locate and Mark	
Locate and Mark Summary	WP 9-64
Locate and Mark Cost Calculator	WP 9-66
Leak Management	
Leak Management Summary	WP 9-67
Leak Management Cost Calculator	WP 9-70
Pipeline Patrol	
Pipeline Patrol Summary	WP 9-72
Pipeline Patrol Cost Calculator	WP 9-74
Pipeline Maintenance	
Pipeline Maintenance Summary	WP 9-75
Pipeline Maintenance Cost Calculator	WP 9-77
Station Maintenance	
Station Maintenance Summary	WP 9-80
Station Maintenance Cost Calculator	WP 9-81
Right-of-Way Maintenance	
Right-of-Way Maintenance Summary	WP 9-86
Right-of-Way Maintenance Cost Calculator	WP 9-88



William Edward Mojica

October 20, 2017
Date

Workpaper Table 9-1
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Summary of Expenses and Capital Expenditures
in New Cost Model

Line No.	Description	2012 Recorded	2013 Recorded	2014 Recorded	2015 Recorded	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
1	Locate & Mark (DFA)	1,105,705	1,524,986	1,249,474	1,090,802	1,057,361	900,000	1,252,946	1,320,757
2	Locate & Mark, Standby (DFB)	3,844,308	5,853,978	4,395,922	4,618,999	9,540,814	8,689,000	11,302,609	11,913,287
3	Locate & Mark, Other (DF#)	-	-	5,825	(41,627)	58,073	-	-	-
4	Ground Leak Survey (JOE)	1,658,164	1,499,471	1,573,523	1,842,329	1,902,878	3,269,537	1,238,849	1,268,086
5	Leak Rechecks (JOR)	29,141	17,651	92,405	135,360	372,815	194,087	123,382	126,293
6	Aerial Leak Survey (JOW)	381,553	496,186	306,480	1,843,421	1,274,598	696,269	1,732,248	1,773,129
7	Corrective Maintenance Gas Main Leak (JOP)	694,971	847,431	619,773	946,791	2,551,032	24,837,133	3,039,796	2,904,844
8	Required Ground Pipeline Patrol (JOF)	389,753	1,033,282	844,384	777,856	1,097,024	1,124,673	1,281,113	1,311,347
9	Required Aerial Pipeline Patrol (JOV)	530	72,115	2,251	5,684,247	5,628,644	5,311,811	5,068,305	5,187,917
10	GT Pipeline Maintenance Other (JO#)	-	-	443	95,320	508,756	31,545	-	-
11	Preventative Maintenance SCADA (JO1)	16,668	50,340	78,274	110,023	1,347,187	162,839	638,037	678,705
12	Corrective Maintenance SCADA (JO2)	34,921	62,566	112,376	58,875	338,933	254,664	352,288	360,602
13	Preventative Maintenance Gas Regulator Station General (JOG)	1,129,656	678,257	936,116	1,077,890	1,400,850	2,730,000	1,375,552	1,408,015
14	Preventative Maintenance Gas Pipeline Valve Manual (JOH)	335,296	440,534	593,141	701,819	983,767	1,258,000	1,017,547	1,041,562
15	Preventative Maintenance Gas Pipeline Valve Automated (JOI)	39,449	65,792	111,188	253,412	105,091	32,836	172,561	180,129
16	Gas Holders Maintenance (JOJ)	115,540	135,797	173,833	191,994	177,530	100,000	184,839	189,201
17	Operate Transmission Pipelines (JOK)	366,170	1,187,622	1,485,340	1,193,355	1,011,508	1,000,000	1,046,139	1,070,828
18	Operate Transmission Regulator Station (JOL)	105,921	2,581,801	3,579,309	3,278,391	1,335,337	2,355,000	2,767,748	2,833,067
19	Corrective Maintenance Gas Regulator General (JOM)	311,534	559,632	449,804	397,738	422,984	1,093,562	425,644	435,689
20	Corrective MaintenanceGas Pipeline Valve Manual (JON)	492,719	385,484	454,791	395,003	680,752	1,400,000	715,492	732,377
21	Corrective MaintenanceGas Pipeline Valve Automated (JOO)	12,426	48,528	32,902	44,846	14,480	200,000	24,278	24,851
22	Preventative Maintenance Meter Maintenance (JOX)	94,215	142,491	149,441	272,666	1,029,311	435,686	575,959	589,552
23	Corrective Maintenance Meter Maintenance (JOY)	180,673	90,255	18,184	55,950	115,776	102,308	116,616	119,368
24	Preventative Maintenance StorCompStat Piping Assets (JPA)	-	101,272	538,382	584,541	691,697	800,000	728,604	745,799
25	Corrective MaintenanceStorCompStat Piping Assets (JPB)	-	91,264	180,915	196,582	163,286	191,186	165,509	169,415
26	Preventative Maintenance StorCompStat GasProcess (JPC)	-	537,823	1,198,451	987,807	845,544	1,130,000	866,590	887,042
27	Preventative Maintenance StorCompStat GasCompressor (JPD)	-	588,829	1,309,562	1,317,855	1,144,938	1,163,614	1,174,885	1,202,612
28	Preventative Maintenance Storage/Compressor Station Support (JPE)	-	1,313,989	2,060,001	2,170,158	1,808,187	1,744,549	2,375,450	2,431,510
29	Preventative Maintenance StorCompStat Other (JPF)	-	189,182	333,708	466,927	459,370	216,000	-	-
30	Corrective MaintenanceStorCompStat GasProcess (JPG)	-	458,662	818,659	895,563	941,337	669,972	985,110	1,008,358
31	Corrective MaintenanceStorCompStat GasCompress (JPH)	3,026	784,358	1,585,365	1,207,484	1,271,200	1,086,902	1,305,832	1,336,649
32	Corrective Maintenance Storage/Compressor Station Support (JPI)	68,452	508,659	936,701	1,077,331	1,471,463	464,500	1,570,085	1,607,139
33	Corrective MaintenanceStorCompStat Other (JPJ)	-	5,924	19,729	19,620	34,841	1,499,707	-	-
34	Preventative Maintenance Power Units (JPK)	-	99,531	151,669	142,553	169,439	111,131	175,141	179,275
35	Corrective MaintenancePower Units (JPL)	-	62,116	130,067	181,786	159,674	192,261	193,569	198,137
36	Station Operations (JPN)	16,187,503	11,008,627	5,199,179	5,801,102	6,255,945	6,916,000	6,555,442	6,710,151
37	Preventative Maintenance Storage Wells (JPO)	-	21,982	54,277	91,612	1,963,852	1,042,000	2,045,438	2,093,711
38	Corrective MaintenanceStorage Wells (JPP)	-	9,582	6,244	51,177	502,054	154,946	523,862	536,226
39	Station Maintenance, Other (JP#)	-	-	(19,966)	(17,708)	421,338	-	-	-
40	Storage Wells (JTG)	638,327	1,093,883	94,107	182,098	206,873	-	-	-
41	Pipeline Marker Maintenance (JOS)	406,956	189,714	148,969	111,613	64,787	66,699	923,815	945,617
42	Routine Weed Abatement (JOT)	92,032	149,671	253,407	423,591	105,593	59,000	275,101	281,593
43	Station Compress Overhaul Inspection (JTF)	1,142,638	338,519	4,984	-	51,265	20,000	-	-
44	Vegetation Management Project (JTK)	1,594,779	101,335	207,284	457,162	2,635,192	2,535,000	8,848,618	9,093,317
45	Encroachments (JTO)	25,496	27,891	1,281,651	41,966	110,811	245,857	903,218	925,559
46	StanPac Expense (34A, 34#)	138,160	173,155	154,619	164,766	80,969	-	136,139	139,352
47	**Total Expenses**	**31,636,681**	**35,630,167**	**33,913,145**	**41,581,049**	**54,515,157**	**76,488,274**	**64,204,355**	**65,961,067**

Note #1	Please see Workpaper Table 9-5 on pages WP 9-70 to WP 9-71 for the 2016 recorded adjusted amounts for the Leak Management Program shown in lines 4-7.
Note #2	Please see Workpaper Table 9-6 on pages WP 9-74 for the 2016 recorded adjusted amounts for the Pipeline Patrol Program shown in lines 8-9.
Note #3	Please see Workpaper Table 9-7 on pages WP 9-77 to WP 9-79 for the 2016 recorded adjusted amounts for the Pipeline Maintenance Program shown in lines 11-23.
Note #4	Please see Workpaper Table 9-8 on pages WP 9-81 to WP 9-85 for the 2016 recorded adjusted amounts for the Station Maintenance Program shown in lines 24-38.
Note #5	Certain 2015 and 2016 recorded amounts related to MAT Codes JOE, JOK, JOL, JPC, JPE, JPF, and JPJ were recorded in MAT Code AKA and JTH. PG&E is accounting for $20,367 in 2015 and $49,398 in 2016 as an adjustment to the total expense in Chapter 9 workpapers on lines 4, 17, 18, 26, 28, 29, and 33.

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
1	5015300	Mark & Locate - Burney	DFA	274	-	324	342
2	5015301	Mark & Locate - Hinkley	DFA	25,437	15,913	30,142	31,773
3	5015302	Mark & Locate - Kettleman	DFA	211,134	7,272	250,188	263,728
4	5015303	Mark & Locate - Los Medanos	DFA	5,656	-	6,702	7,064
5	5015304	Mark & Locate - McDonald Island	DFA	5,696	-	6,749	7,115
6	5015305	Mark & Locate - Meridian/Orland	DFA	3,582	63	4,244	4,474
7	5015306	Mark & Locate - Milpitas	DFA	2,580	-	3,058	3,223
8	5015307	Mark & Locate - Topock	DFA	12,423	6,071	14,721	15,517
9	5015308	Mark & Locate - Rio Vista	DFA	13,832	4,327	16,391	17,278
10	5015349	Mark & Locate - Tracy	DFA	235	-	278	294
11	5015350	Mark & Locate - Willows	DFA	8,034	4,260	9,520	10,035
12	5016661	GT MARK & LOCATE - PN	DFA	78,744	12,654	93,309	98,359
13	5016675	GT MARK & LOCATE - SF	DFA	5,489	19,208	6,504	6,856
14	5016689	GT MARK & LOCATE - DI	DFA	138,356	68,831	163,948	172,821
15	5016703	GT MARK & LOCATE - EB	DFA	63,604	11,266	75,369	79,448
16	5016717	GT MARK & LOCATE - MI	DFA	9,872	4,504	11,698	12,331
17	5016732	GT MARK & LOCATE - CC	DFA	6,012	5,689	7,124	7,510
18	5016746	GT MARK & LOCATE - DA	DFA	30,083	1,802	35,648	37,577
19	5016760	GT MARK & LOCATE - SJ	DFA	14,609	7,871	17,312	18,249
20	5016774	GT MARK & LOCATE - FR	DFA	12,942	53,898	15,336	16,166
21	5016788	GT MARK & LOCATE - KE	DFA	27,388	48,150	32,455	34,211
22	5016802	GT MARK & LOCATE - ST	DFA	38,531	23,816	45,658	48,129
23	5016816	GT MARK & LOCATE - YO	DFA	147,064	56,997	174,267	183,699
24	5016830	GT MARK & LOCATE - NV	DFA	46,653	11,964	55,282	58,274
25	5016845	GT MARK & LOCATE - SA	DFA	87,913	35,098	104,175	109,813
26	5016860	GT MARK & LOCATE - SI	DFA	35,707	14,898	42,312	44,602
27	5016890	GT MARK & LOCATE - HB	DFA	2,872	22,129	3,404	3,588
28	5016962	GT MARK & LOCATE - SO	DFA	16,372	11,513	19,400	20,450
29	5028796	FORECAST ONLY - DFA - GT ONLY	DFA	-	451,642	-	-
30	5030869	GT MARK & LOCATE - HB	DFA	6,268	131	7,427	7,829
31	5254792	Locate & Mark Efficiency	DFA	-	34	-	-
32		**Locate & Mark**		**1,057,361**	**900,000**	**1,252,946**	**1,320,757**
33	5015353	STANDBY - HINKLEY	DFB	9,472	7,217	11,222	11,828
34	5015354	STANDBY - KETTLEMAN	DFB	89,986	726	106,603	112,362

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
35	5015355	STANDBY - LOS MEDANOS	DFB	4,359	-	5,164	5,443
36	5015356	STANDBY - MCDONALD ISLAND	DFB	2,257	-	2,674	2,818
37	5015357	StandBy - Meridian/Orland	DFB	1,130	-	1,339	1,411
38	5015358	StandBy - Milpitas/Hollister	DFB	3,361	-	3,982	4,197
39	5015360	STANDBY - RIO VISTA	DFB	2,097	-	2,484	2,619
40	5015362	STANDBY - WILLOWS	DFB	845	-	1,001	1,055
41	5016662	GT MARK & LOCATE STANDBY - PN	DFB	499,754	311,327	592,037	624,025
42	5016676	GT MARK & LOCATE STANDBY - SF	DFB	156,703	92,554	185,640	195,670
43	5016690	GT MARK & LOCATE STANDBY - DI	DFB	411,615	220,977	487,624	513,970
44	5016704	GT MARK & LOCATE STANDBY - EB	DFB	360,609	231,071	427,198	450,280
45	5016718	GT MARK & LOCATE STANDBY - MI	DFB	1,054,888	259,876	1,249,683	1,317,203
46	5016733	GT MARK & LOCATE STANDBY - CC	DFB	329,384	174,032	390,208	411,291
47	5016747	GT MARK & LOCATE STANDBY - DA	DFB	260,900	267,753	309,077	325,777
48	5016761	GT MARK & LOCATE STANDBY - SJ	DFB	778,194	321,318	921,895	971,704
49	5016775	GT MARK & LOCATE STANDBY - FR	DFB	739,364	577,264	875,894	923,218
50	5016789	GT MARK & LOCATE STANDBY - KE	DFB	793,567	769,319	940,107	990,900
51	5016803	GT MARK & LOCATE STANDBY - ST	DFB	347,142	257,691	411,245	433,465
52	5016817	GT MARK & LOCATE STANDBY - YO	DFB	445,285	238,195	527,511	556,012
53	5016831	GT MARK & LOCATE STANDBY - NV	DFB	291,688	79,345	345,551	364,221
54	5016846	GT MARK & LOCATE STANDBY - SA	DFB	1,694,000	624,673	2,006,812	2,115,240
55	5016861	GT MARK & LOCATE STANDBY - SI	DFB	380,512	202,586	450,777	475,132
56	5016876	GT MARK & LOCATE STANDBY - NB	DFB	289,991	73,795	343,540	362,101
57	5016891	GT MARK & LOCATE STANDBY - HB	DFB	20,028	5,469	23,726	25,008
58	5016963	GT MARK & LOCATE STANDBY - SO	DFB	573,681	95,578	679,616	716,336
59	5026441	Locate & Mark Standby-LTRAN	DFB	-	336	-	-
60	5027951	FORECAST ONLY - DFB - GT ONLY	DFB	-	3,877,897	-	-
61		**Locate & Mark, Standby**		**9,540,814**	**8,689,000**	**11,302,609**	**11,913,287**
62	5016845	GT MARK & LOCATE - SA	DF#	16,288	-	-	-
63	5028239	GT - Standard Cost Variance - DF	DF#	58,073	-	-	-
64	5030869	GT MARK & LOCATE - HB	DF#	(16,288)	-	-	-
65		**Locate & Mark, Other**		**58,073**	**-**	**-**	**-**
66	5016651	GT LEAK SURVEY - GROUND - PN	JOE	59,183	21,171	-	-
67	5016665	GT LEAK SURVEY - GROUND - SF	JOE	18,177	6,899	-	-
68	5016679	GT LEAK SURVEY - GROUND - DI	JOE	85,548	25,665	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
69	5016693	GT LEAK SURVEY - GROUND - EB	JOE	55,943	22,755	-	-
70	5016707	GT LEAK SURVEY - GROUND - MI	JOE	76,955	27,781	-	-
71	5016721	GT LEAK SURVEY - GROUND - CC	JOE	128,027	42,934	-	-
72	5016736	GT LEAK SURVEY - GROUND - DA	JOE	29,747	1,533	-	-
73	5016750	GT LEAK SURVEY - GROUND - SJ	JOE	71,426	24,006	-	-
74	5016764	GT LEAK SURVEY - GROUND - FR	JOE	58,096	33,932	-	-
75	5016778	GT LEAK SURVEY - GROUND - KE	JOE	81,486	21,815	-	-
76	5016792	GT LEAK SURVEY - GROUND - ST	JOE	88,727	32,484	-	-
77	5016806	GT LEAK SURVEY - GROUND - YO	JOE	173,952	58,248	-	-
78	5016820	GT LEAK SURVEY - GROUND - NV	JOE	129,634	35,759	-	-
79	5016834	GT LEAK SURVEY - GROUND - SA	JOE	309,304	114,540	-	-
80	5016849	GT LEAK SURVEY - GROUND - SI	JOE	104,339	48,431	-	-
81	5016864	GT LEAK SURVEY - GROUND - NB	JOE	73,241	29,130	-	-
82	5016879	GT LEAK SURVEY - GROUND - HB	JOE	40,219	13,441	-	-
83	5016952	GT LEAK SURVEY - GROUND - SO	JOE	100,627	50,923	-	-
84	5020331	PM PIPELINE LEAK SURVEY-GROUND-BN	JOE	55,197	3,241	-	-
85	5020332	PM PIPELINE LEAK SURVEY-GROUND-HN	JOE	48,901	24,453	-	-
86	5020333	PM PIPELINE LEAK SURVEY-GROUND-KT	JOE	8,623	11,059	-	-
87	5020334	PM PIPELINE LEAK SURVEY-GROUND-LM	JOE	14,830	3,055	-	-
88	5020335	PM PIPELINE LEAK SURVEY-GROUND-MD	JOE	17,891	9,626	-	-
89	5020336	PM PIPELINE LEAK SURVEY-GROUND-ME	JOE	3,845	2,780	-	-
90	5020337	PM PIPELINE LEAK SURVEY-GROUND-MH	JOE	20,056	8,033	-	-
91	5020338	PM PIPELINE LEAK SURVEY-GROUND-RV	JOE	8,484	2,894	-	-
92	5020339	PM PIPELINE LEAK SURVEY-GROUND-TP	JOE	23,887	6,509	-	-
93	5020340	PM PIPELINE LEAK SURVEY-GROUND-TY	JOE	7,148	10,197	-	-
94	5020341	PM PIPELINE LEAK SURVEY-GROUND-WL	JOE	704	2,576	-	-
95	5023507	GT LEAK SURVEY - AERIAL - LM	JOE	61	-	-	-
96	5023523	GT LEAK SURVEY - AERIAL - TY	JOE	490	-	-	-
97	5023851	GT OPER TRANSM REGULATOR STATION - WL	JOE	686	-	-	-
98	5026821	Leak Survey-BALOP	JOE	-	-	27,582	28,233
99	5026822	Leak Survey-GATHR	JOE	-	-	4,222	4,321
100	5026823	Leak Survey-L401	JOE	-	-	80,249	82,143
101	5026824	Leak Survey-LTRAN	JOE	-	-	813,528	832,727
102	5026825	Leak Survey-NPATH L2	JOE	-	-	22,365	22,893
103	5026826	Leak Survey-NPATH	JOE	-	-	56,023	57,345
104	5026828	Leak Survey-SPATH	JOE	-	-	190,334	194,825

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
105	5026829	Leak Survey-STOR	JOE	-	-	8,206	8,399
106	5027986	FORECAST ONLY - JOE	JOE	-	2,457,388	-	-
107	5030734	GT LEAK SURVEY - GROUND - HR	JOE	4,453	993	-	-
108	5030750	GT Lk Survey Sched & Data Mgmt	JOE	2,712	115,284	-	-
109	5042029	PSEP Ground Leak Survey	JOE	-	-	36,341	37,198
110	5247152	11-19-14 Hayward EQ - Drill (JOE)	JOE	199	-	-	-
111		**Ground Leak Survey**		**1,902,798**	**3,269,537**	**1,238,849**	**1,268,086**
112	5018995	Leak Rechecks - CC	JOR	1,427	16,151	-	-
113	5018996	Leak Rechecks - DA	JOR	115	71	-	-
114	5018997	Leak Rechecks - DI	JOR	1,935	8,019	-	-
115	5018998	Leak Rechecks - EB	JOR	178,357	23,024	-	-
116	5018999	Leak Rechecks - FR	JOR	3,002	10,845	-	-
117	5019000	Leak Rechecks - HB	JOR	10,929	1,208	-	-
118	5019001	Leak Rechecks - KE	JOR	763	-	-	-
119	5019002	Leak Rechecks - MI	JOR	864	3,335	-	-
120	5019003	Leak Rechecks - NB	JOR	4,539	72	-	-
121	5019004	Leak Rechecks - NV	JOR	4,725	4,137	-	-
122	5019005	Leak Rechecks - PN	JOR	21,005	7,392	-	-
123	5019006	Leak Rechecks - SA	JOR	107,751	3,906	-	-
124	5019007	Leak Rechecks - SF	JOR	33	300	-	-
125	5019008	Leak Rechecks - SI	JOR	7,544	2,404	-	-
126	5019009	Leak Rechecks - SJ	JOR	3,000	2,068	-	-
127	5019010	Leak Rechecks - SO	JOR	3,280	2,042	-	-
128	5019011	Leak Rechecks - ST	JOR	1,798	1,539	-	-
129	5019012	Leak Rechecks - YO	JOR	6,158	3,823	-	-
130	5023854	LEAK RECHECKS - HN	JOR	4,675	1,750	-	-
131	5023855	LEAK RECHECKS - KT	JOR	2,501	1,678	-	-
132	5023856	LEAK RECHECKS - LM	JOR	4,396	362	-	-
133	5023858	LEAK RECHECKS - ME	JOR	10	-	-	-
134	5023859	LEAK RECHECKS - MH	JOR	36	-	-	-
135	5023860	LEAK RECHECKS - RV	JOR	1,198	-	-	-
136	5023861	LEAK RECHECKS - TP	JOR	-	11,876	-	-
137	5023862	LEAK RECHECKS - TY	JOR	1,088	351	-	-
138	5023863	LEAK RECHECKS - WL	JOR	603	-	-	-
139	5026812	Leak Rechecks-BALOP	JOR	-	-	2,747	2,812

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
140	5026813	Leak Rechecks-GATHR	JOR	-	-	420	430
141	5026814	Leak Rechecks-L401	JOR	-	-	7,992	8,181
142	5026815	Leak Rechecks-LTRAN	JOR	-	-	84,642	86,639
143	5026816	Leak Rechecks-NPATH L2	JOR	-	-	2,227	2,280
144	5026817	Leak Rechecks-NPATH	JOR	-	-	5,580	5,711
145	5026819	Leak Rechecks-SPATH	JOR	-	-	18,956	19,403
146	5026820	Leak Rechecks-STOR	JOR	-	-	817	837
147	5030735	Leak Rechecks - HR	JOR	1,083	-	-	-
148	5030899	FORECAST ONLY - JOR	JOR	-	87,733	-	-
149		**Leak Rechecks**		**372,815**	**194,087**	**123,382**	**126,293**
150	5023497	GT LEAK SURVEY - AERIAL - BN	JOW	39,018	33,893	-	-
151	5023498	GT LEAK SURVEY - AERIAL - CC	JOW	84,387	51,049	-	-
152	5023499	GT LEAK SURVEY - AERIAL - DA	JOW	20,415	174	-	-
153	5023500	GT LEAK SURVEY - AERIAL - DI	JOW	25,650	19,935	-	-
154	5023501	GT LEAK SURVEY - AERIAL - EB	JOW	3,600	2,745	-	-
155	5023502	GT LEAK SURVEY - AERIAL - FR	JOW	66,226	49,356	-	-
156	5023504	GT LEAK SURVEY - AERIAL - HN	JOW	59,234	40,305	-	-
157	5023505	GT LEAK SURVEY - AERIAL - KE	JOW	74,409	46,456	-	-
158	5023507	GT LEAK SURVEY - AERIAL - LM	JOW	8,310	-	-	-
159	5023509	GT LEAK SURVEY - AERIAL - ME	JOW	295	-	-	-
160	5023511	GT LEAK SURVEY - AERIAL - MI	JOW	27,655	16,123	-	-
161	5023512	GT LEAK SURVEY - AERIAL - NB	JOW	22,971	13,982	-	-
162	5023513	GT LEAK SURVEY - AERIAL - NV	JOW	112,223	66,332	-	-
163	5023514	GT LEAK SURVEY - AERIAL - PN	JOW	5,611	3,355	-	-
164	5023515	GT LEAK SURVEY - AERIAL - RV	JOW	418	-	-	-
165	5023516	GT LEAK SURVEY - AERIAL - SA	JOW	152,896	93,573	-	-
166	5023517	GT LEAK SURVEY - AERIAL - SF	JOW	19,694	17,433	-	-
167	5023518	GT LEAK SURVEY - AERIAL - SI	JOW	40,641	20,816	-	-
168	5023519	GT LEAK SURVEY - AERIAL - SJ	JOW	17,295	15,049	-	-
169	5023520	GT LEAK SURVEY - AERIAL - SO	JOW	30,343	12,752	-	-
170	5023521	GT LEAK SURVEY - AERIAL - ST	JOW	30,467	30,010	-	-
171	5023522	GT LEAK SURVEY - AERIAL - TP	JOW	25,615	27,847	-	-
172	5023525	GT LEAK SURVEY - AERIAL - YO	JOW	70,885	59,584	-	-
173	5031074	GT PSEP SURVEY - AERIAL	JOW	335,541	22,332	-	-
174	5031473	FORECAST ONLY - JOW	JOW	-	53,169	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
175	5035323	TIMP Transfer to HPE from JOW	JOW	799	-	-	-
176	5036669	GT LEAK SURVEY-BALOP	JOW	-	-	38,568	39,478
177	5036670	GT LEAK SURVEY-GATHR	JOW	-	-	5,903	6,042
178	5036671	GT LEAK SURVEY-L401	JOW	-	-	112,210	114,858
179	5036672	GT LEAK SURVEY-LTRAN	JOW	-	-	1,188,347	1,216,392
180	5036673	GT LEAK SURVEY-NPATH L2	JOW	-	-	31,273	32,011
181	5036674	GT LEAK SURVEY-NPATH	JOW	-	-	78,336	80,184
182	5036676	GT LEAK SURVEY-SPATH	JOW	-	-	266,138	272,419
183	5036677	GT LEAK SURVEY-STOR	JOW	-	-	11,474	11,745
184		**Aerial Leak Survey**		**1,274,598**	**696,269**	**1,732,248**	**1,773,129**
185	5016659	GT CORR MAINT - G MAIN LEAK - PN	JOP	19,731	38,967	-	-
186	5016687	GT CORR MAINT - G MAIN LEAK - DI	JOP	25,011	199,647	-	-
187	5016701	GT CORR MAINT - G MAIN LEAK - EB	JOP	124,862	11,463	-	-
188	5016715	GT CORR MAINT - G MAIN LEAK - MI	JOP	53,791	20,088	-	-
189	5016730	GT CORR MAINT - G MAIN LEAK - CC	JOP	128,954	35,407	-	-
190	5016744	GT CORR MAINT - G MAIN LEAK - DA	JOP	6,031	7,643	-	-
191	5016758	GT CORR MAINT - G MAIN LEAK - SJ	JOP	106,494	24,754	-	-
192	5016772	GT CORR MAINT - G MAIN LEAK - FR	JOP	49,792	(5,175)	-	-
193	5016786	GT CORR MAINT - G MAIN LEAK - KE	JOP	183	820	-	-
194	5016800	GT CORR MAINT - G MAIN LEAK - ST	JOP	66,149	305,315	-	-
195	5016814	GT CORR MAINT - G MAIN LEAK - YO	JOP	37,196	9,757	-	-
196	5016824	GT Oper Transm Pipelines - NV	JOP	352	-	-	-
197	5016828	GT CORR MAINT - G MAIN LEAK - NV	JOP	5,412	2,445	-	-
198	5016843	GT CORR MAINT - G MAIN LEAK - SA	JOP	259,435	127,342	-	-
199	5016858	GT CORR MAINT - G MAIN LEAK - SI	JOP	26,059	5,652	-	-
200	5016873	GT CORR MAINT - G MAIN LEAK - NB	JOP	100,786	12,380	-	-
201	5016888	GT CORR MAINT - G MAIN LEAK - HB	JOP	14,739	779,757	-	-
202	5016960	GT CORR MAINT - G MAIN LEAK - SO	JOP	170,520	34,113	-	-
203	5020334	PM PIPELINE LEAK SURVEY-GROUND-LM	JOP	178	-	-	-
204	5023496	GT CORR MAINT-G MAIN VALVE-AUTOMATED-YO	JOP	279	-	-	-
205	5023816	GT CORR MAINT - G MAIN LEAK - BN	JOP	825	-	-	-
206	5023817	GT CORR MAINT - G MAIN LEAK - HN	JOP	222,573	20,124	-	-
207	5023818	GT CORR MAINT - G MAIN LEAK - KT	JOP	83,413	6,799	-	-
208	5023819	GT CORR MAINT - G MAIN LEAK - LM	JOP	4,409	6,913	-	-
209	5023820	GT CORR MAINT - G MAIN LEAK - MD	JOP	547	-	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
210	5023821	GT CORR MAINT - G MAIN LEAK - ME	JOP	1,362	1,164	-	-
211	5023822	GT CORR MAINT - G MAIN LEAK - MH	JOP	22,472	7,888	-	-
212	5023823	GT CORR MAINT - G MAIN LEAK - RV	JOP	1,373	165	-	-
213	5023824	GT CORR MAINT - G MAIN LEAK - TP	JOP	1,048	4,749	-	-
214	5023825	GT CORR MAINT - G MAIN LEAK - TY	JOP	79,519	7,350	-	-
215	5023826	GT CORR MAINT - G MAIN LEAK - WL	JOP	850	-	-	-
216	5026735	CM Main Leak-BALOP	JOP	-	-	67,680	64,675
217	5026736	CM Main Leak-GATHR	JOP	-	-	10,359	9,899
218	5026737	CM Main Leak-L401	JOP	-	-	196,909	188,167
219	5026738	CM Main Leak-LTRAN	JOP	-	-	2,085,344	1,992,765
220	5026739	CM Main Leak-NPATH L2	JOP	-	-	54,879	52,442
221	5026740	CM Main Leak-NPATH	JOP	-	-	137,465	131,363
222	5026742	CM Main Leak-SPATH	JOP	-	-	467,026	446,293
223	5026743	CM Main Leak-STOR	JOP	-	-	20,135	19,241
224	5028124	GRADE 1 LKS-GT CORR MAINT-G MAIN LEAK-SF	JOP	785	9,420	-	-
225	5028125	GRADE 1 LKS-GT CORR MAINT-G MAIN LEAK-DI	JOP	1,669	3,617	-	-
226	5028128	GRADE 1 LKS-GT CORR MAINT-G MAIN LEAK-CC	JOP	775	-	-	-
227	5028131	GRADE 1 LKS-GT CORR MAINT-G MAIN LEAK-FR	JOP	71,039	18,963	-	-
228	5028134	GRADE 1 LKS-GT CORR MAINT-G MAIN LEAK-YO	JOP	108,770	997	-	-
229	5028137	GRADE 1 LKS-GT CORR MAINT-G MAIN LEAK-SI	JOP	275,727	40,378	-	-
230	5028139	GRADE 1 LKS-GT CORR MAINT-G MAIN LEAK-HB	JOP	180,611	19,863	-	-
231	5028140	GRADE 1 LKS-GT CORR MAINT-G MAIN LEAK-SO	JOP	6,654	261	-	-
232	5030900	FORECAST ONLY - JOP	JOP	-	23,018,328	-	-
233	5037069	GT CORR MAINT LK RPR - BGG3	JOP	30,246	-	-	-
234	5037829	Known Leak Investigation	JOP	260,408	59,782	-	-
235		**CM Gas Main Leak**		**2,551,032**	**24,837,133**	**3,039,796**	**2,904,844**
236	5016651	GT LEAK SURVEY - GROUND - PN	JOF	58	-	-	-
237	5016652	Ground Investigations	JOF	8,632	475	-	-
238	5016722	Ground Investigations - CC	JOF	276	-	-	-
239	5016751	Ground Investigations - SJ	JOF	-	119	-	-
240	5016779	Ground Investigations - KE	JOF	2,638	-	-	-
241	5016821	Ground Investigations - NV	JOF	394	-	-	-
242	5016835	Ground Investigations - SA	JOF	543	-	-	-
243	5016865	Ground Investigations - NB	JOF	985	-	-	-
244	5016880	Ground Investigations - HB	JOF	909	3,218	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
245	5020346	Ground Investigations - Mcdonald Island	JOF	105	5,102	-	-
246	5020347	Ground Investigations - Meridian	JOF	418	-	-	-
247	5020348	Ground Investigations - Milpitas	JOF	1,003	514	-	-
248	5020349	Ground Investigations - Rio Vista	JOF	2,585	1,962	-	-
249	5020351	Ground Investigations - Tracy	JOF	-	2,019	-	-
250	5020352	Ground Investigations - Willows	JOF	1,676	-	-	-
251	5023849	GT OPER TRANSM REGULATOR STATION - TP	JOF	19	-	-	-
252	5026788	Ground Patrol-BALOP	JOF		-	33,666	34,460
253	5026789	Ground Patrol-GATHR	JOF	-	-	4,602	4,710
254	5026790	Ground Patrol-L401	JOF	-	-	77,262	79,085
255	5026791	Ground Patrol-LTRAN	JOF	-	-	861,987	882,330
256	5026792	Ground Patrol-NPATH L2	JOF	-	-	25,794	26,403
257	5026793	Ground Patrol-NPATH	JOF	-	-	53,163	54,417
258	5026794	Ground Patrol-NSPATH	JOF	-	-	46,381	47,476
259	5026795	Ground Patrol-SPATH	JOF	-	-	168,450	172,425
260	5026796	Ground Patrol-STOR	JOF	-	-	9,809	10,041
261	5028837	FORECAST ONLY - JOF	JOF	-	547,277	-	-
262	5030734	GT LEAK SURVEY - GROUND - HR	JOF	393	-	-	-
263	5035288	Ground Patrols-Centralized	JOF	911,609	481,196	-	-
264	5035293	Ground Patrols-Periphery	JOF	12,838	6,019	-	-
265	5035294	Ground Patrols-Reserve	JOF	151,944	76,772	-	-
266		**Required Ground Pipeline Patrol**		**1,097,024**	**1,124,673**	**1,281,113**	**1,311,347**
267	5023682	GT REQUIRED PIPELINE PATROL-AERIAL-LM	JOV	159	-	-	-
268	5023693	GT REQUIRED PIPELINE PATROL-AERIAL	JOV	5,628,485	2,553,666	-	-
269	5026682	Aerial Pipeline Patrol-BALOP	JOV	-	-	133,187	136,331
270	5026683	Aerial Pipeline Patrol-GATHR	JOV	-	-	18,205	18,635
271	5026684	Aerial Pipeline Patrol-L401	JOV	-	-	305,660	312,874
272	5026685	Aerial Pipeline Patrol-LTRAN	JOV	-	-	3,410,171	3,490,651
273	5026686	Aerial Pipeline Patrol-NPATH L2	JOV	-	-	102,046	104,455
274	5026687	Aerial Pipeline Patrol-NPATH	JOV	-	-	210,321	215,285
275	5026688	Aerial Pipeline Patrol-NSPATH	JOV	-	-	183,492	187,822
276	5026689	Aerial Pipeline Patrol-SPATH	JOV	-	-	666,416	682,143
277	5026690	Aerial Pipeline Patrol-STOR	JOV	-	-	38,806	39,722
278	5028838	FORECAST ONLY - JOV	JOV	-	2,758,145	-	-
279		**Required Aerial Pipeline Patrol**		**5,628,644**	**5,311,811**	**5,068,305**	**5,187,917**

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
280	5028238	GT - Standard Cost Variance - JO	JO#	508,756	9,870	-	-
281	5030915	FORECAST ONLY - JO#	JO#	-	21,675	-	-
282		**GT Pipeline Maintenance Other**		**508,756**	**31,545**	**-**	**-**
283	5016726	GT Oper Transm Pipelines - CC	JO1	769	-	-	-
284	5016780	GT PREV MAINT - G REGULATOR GENL - KE	JO1	2,391	-	-	-
285	5016781	GT PREV MAINT - G MAIN VALVE-MANUAL - KE	JO1	4,216	-	-	-
286	5016812	GT CORR MAINT - G REGULATOR GENL - YO	JO1	772	-	-	-
287	5016836	GT PREV MAINT - G REGULATOR GENL - SA	JO1	457	-	-	-
288	5016851	GT PREV MAINT - G REGULATOR GENL - SI	JO1	609	-	-	-
289	5016854	GT Oper Transm Pipelines - SI	JO1	152	-	-	-
290	5016954	GT PREV MAINT - G REGULATOR GENL - SO	JO1	1,117	-	-	-
291	5020362	PM PIPELINE VALVE-MANUAL - TY	JO1	883	-	-	-
292	5020364	PM PIPESTAT REGMONRELIEF - BN	JO1	1,459	-	-	-
293	5020365	PM PIPESTAT REGMONRELIEF - HN	JO1	708	-	-	-
294	5020366	PM PIPESTAT REGMONRELIEF - KT	JO1	2,459	-	-	-
295	5020371	PM PIPESTAT REGMONRELIEF - RV	JO1	237	-	-	-
296	5020372	PM PIPESTAT REGMONRELIEF - TP	JO1	261	-	-	-
297	5020373	PM PIPESTAT REGMONRELIEF - TY	JO1	430	-	-	-
298	5023437	GT CM PIPELINE STATION -KT	JO1	697	-	-	-
299	5023567	GT PM GAS COMPRESSOR-HN	JO1	224	-	-	-
300	5023578	GT PM GAS PROCESSING-HN	JO1	298	-	-	-
301	5023632	GT PREV MAINT-G MAIN VALVE-AUTOMATED-BN	JO1	1,910	-	-	-
302	5023645	GT PREV MAINT-G MAIN VALVE-AUTOMATED-MH	JO1	13,710	-	-	-
303	5023650	GT PREV MAINT-G MAIN VALVE-AUTOMATED-RV	JO1	4,323	-	-	-
304	5023651	GT PREV MAINT-G MAIN VALVE-AUTOMATED-SA	JO1	2,390	-	-	-
305	5023653	GT PREV MAINT-G MAIN VALVE-AUTOMATED-SI	JO1	1,367	-	-	-
306	5023658	GT PREV MAINT-G MAIN VALVE-AUTOMATED-TY	JO1	3,138	-	-	-
307	5023659	GT PREV MAINT-G MAIN VALVE-AUTOMATED-WL	JO1	7	-	-	-
308	5023660	GT PREV MAINT-G MAIN VALVE-AUTOMATED-YO	JO1	2,209	-	-	-
309	5023841	GT OPER TRANSM REGULATOR STATION - BN	JO1	73,173	-	-	-
310	5023842	GT OPER TRANSM REGULATOR STATION - HN	JO1	66,968	-	-	-
311	5023843	GT OPER TRANSM REGULATOR STATION - KT	JO1	297,260	-	-	-
312	5023844	GT OPER TRANSM REGULATOR STATION - AT	JO1	8,442	-	-	-
313	5023846	GT OPER TRANSM REGULATOR STATION - ME	JO1	71,024	-	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
314	5023847	GT OPER TRANSM REGULATOR STATION - MH	JO1	182,594	-	-	-
315	5023850	GT OPER TRANSM REGULATOR STATION - TY	JO1	9,553	-	-	-
316	5029441	GT OPER TRANSM REGULATOR STATION - HR	JO1	7,560	-	-	-
317	5029446	GT PREV MAINT-G MAIN VALVE-AUTOMATED-RD	JO1	208	-	-	-
318	5031109	PM SCADA Maintenance - HR	JO1	9,293	4,945	-	-
319	5031110	CM SCADA Maintenance - HR	JO1	78	-	-	-
320	5031111	PM SCADA Maintenance - RD	JO1	16,387	3,770	-	-
321	5031113	PM SCADA Maintenance - WL	JO1	12,614	-	-	-
322	5031115	PM SCADA Maintenance - TY	JO1	29,465	1,615	-	-
323	5031117	PM SCADA Maintenance - TP	JO1	5,184	-	-	-
324	5031119	PM SCADA Maintenance - RV	JO1	14,117	-	-	-
325	5031121	PM SCADA Maintenance - MH	JO1	49,111	2,521	-	-
326	5031122	CM SCADA Maintenance - MH	JO1	1,491	-	-	-
327	5031123	PM SCADA Maintenance - ME	JO1	7,727	3,315	-	-
328	5031127	PM SCADA Maintenance - AT	JO1	330	-	-	-
329	5031129	PM SCADA Maintenance - KT	JO1	88,296	7,113	-	-
330	5031131	PM SCADA Maintenance - HN	JO1	4,669	-	-	-
331	5031133	PM SCADA Maintenance - BN	JO1	9,994	-	-	-
332	5031135	PM SCADA Maintenance - SO	JO1	12,812	812	-	-
333	5031137	PM SCADA Maintenance - HB	JO1	11,568	4,220	-	-
334	5031139	PM SCADA Maintenance - NB	JO1	22,327	1,476	-	-
335	5031141	PM SCADA Maintenance - SI	JO1	8,802	3,680	-	-
336	5031143	PM SCADA Maintenance - SA	JO1	50,140	17,987	-	-
337	5031145	PM SCADA Maintenance - NV	JO1	25,156	8,837	-	-
338	5031147	PM SCADA Maintenance - YO	JO1	36,355	3,871	-	-
339	5031149	PM SCADA Maintenance - ST	JO1	28,704	1,827	-	-
340	5031151	PM SCADA Maintenance - KE	JO1	12,907	2,328	-	-
341	5031153	PM SCADA Maintenance - FR	JO1	21,812	2,216	-	-
342	5031155	PM SCADA Maintenance - SJ	JO1	20,563	1,217	-	-
343	5031157	PM SCADA Maintenance - DA	JO1	3,173	-	-	-
344	5031159	PM SCADA Maintenance - CC	JO1	30,752	5,538	-	-
345	5031161	PM SCADA Maintenance - MI	JO1	13,012	1,876	-	-
346	5031163	PM SCADA Maintenance - EB	JO1	1,900	166	-	-
347	5031165	PM SCADA Maintenance - DI	JO1	9,521	4,338	-	-
348	5031167	PM SCADA Maintenance - PN	JO1	7,867	4,201	-	-
349	5031169	PM Meter Maintenance - HR	JO1	556	-	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
350	5031173	PM Meter Maintenance - WL	JO1	584	-	-	-
351	5031175	PM Meter Maintenance - TY	JO1	1,984	-	-	-
352	5031177	PM Meter Maintenance - TP	JO1	19	-	-	-
353	5031179	PM Meter Maintenance - RV	JO1	2,991	-	-	-
354	5031181	PM Meter Maintenance - MH	JO1	341	-	-	-
355	5031183	PM Meter Maintenance - ME	JO1	4,339	-	-	-
356	5031189	PM Meter Maintenance - KT	JO1	5,148	-	-	-
357	5031191	PM Meter Maintenance - HN	JO1	745	-	-	-
358	5031195	PM Meter Maintenance - SO	JO1	152	-	-	-
359	5031204	PM Meter Maintenance - SA	JO1	228	-	-	-
360	5031234	PM SCADA Maintenance - SF	JO1	-	845	-	-
361	5031471	FORECAST ONLY - JO1	JO1	-	74,126	-	-
362	5035650	PM Scada Maintenance - BALOP	JO1	-	-	14,206	15,111
363	5035651	PM Scada Maintenance - GATHR	JO1	-	-	2,174	2,313
364	5035652	PM Scada Maintenance - L401	JO1	-	-	41,330	43,964
365	5035653	PM Scada Maintenance - LTRAN	JO1	-	-	437,702	465,601
366	5035654	PM Scada Maintenance - NPATH	JO1	-	-	11,519	12,253
367	5035655	PM Scada Maintenance - NPATH	JO1	-	-	28,853	30,692
368	5035656	PM Scada Maintenance - SPATH	JO1	-	-	21,110	22,456
369	5035657	PM Scada Maintenance - SPATH	JO1	-	-	76,916	81,819
370	5035658	PM Scada Maintenance - STOR	JO1	-	-	4,226	4,496
371		**Preventative Maintenance SCADA**		**1,347,187**	**162,839**	**638,037**	**678,705**
372	5020315	CM PIPESTAT REGMONRELIEF - MH	JO2	375	-	-	-
373	5020373	PM PIPESTAT REGMONRELIEF - TY	JO2	78	-	-	-
374	5023477	GT CORR MAINT-G MAIN VALVE-AUTOMATED-KT	JO2	3,950	-	-	-
375	5031110	CM SCADA Maintenance - HR	JO2	8,108	79	-	-
376	5031112	CM SCADA Maintenance - RD	JO2	885	2,683	-	-
377	5031114	CM SCADA Maintenance - WL	JO2	305	733	-	-
378	5031116	CM SCADA Maintenance - TY	JO2	29,767	6,175	-	-
379	5031118	CM SCADA Maintenance - TP	JO2	7,347	7,291	-	-
380	5031120	CM SCADA Maintenance - RV	JO2	6,571	1,342	-	-
381	5031122	CM SCADA Maintenance - MH	JO2	71,113	15,044	-	-
382	5031124	CM SCADA Maintenance - ME	JO2	492	-	-	-
383	5031128	CM SCADA Maintenance - AT	JO2	11,858	-	-	-
384	5031130	CM SCADA Maintenance - KT	JO2	72,991	8,774	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
385	5031132	CM-SCADA Maintenance - HN	JO2	13,689	11,793	-	-
386	5031136	CM SCADA Maintenance - SO	JO2	1,565	5,051	-	-
387	5031138	CM SCADA Maintenance - HB	JO2	10,997	5,468	-	-
388	5031140	CM SCADA Maintenance - NB	JO2	462	13,936	-	-
389	5031142	CM SCADA Maintenance - SI	JO2	718	2,125	-	-
390	5031144	CM SCADA Maintenance - SA	JO2	46,747	19,140	-	-
391	5031146	CM SCADA Maintenance - NV	JO2	6,580	4,351	-	-
392	5031148	CM SCADA Maintenance - YO	JO2	7,788	796	-	-
393	5031150	CM SCADA Maintenance - ST	JO2	4,672	162	-	-
394	5031152	CM SCADA Maintenance - KE	JO2	5,304	1,460	-	-
395	5031154	CM SCADA Maintenance - FR	JO2	3,572	2,571	-	-
396	5031156	CM SCADA Maintenance - SJ	JO2	3,524	3,717	-	-
397	5031158	CM SCADA Maintenance - DA	JO2	609	568	-	-
398	5031160	CM SCADA Maintenance - CC	JO2	4,669	1,345	-	-
399	5031162	CM SCADA Maintenance - MI	JO2	1,561	406	-	-
400	5031164	CM SCADA Maintenance - EB	JO2	1,439	1,553	-	-
401	5031166	CM SCADA Maintenance - DI	JO2	4,660	2,248	-	-
402	5031168	CM SCADA Maintenance - PN	JO2	5,070	3,928	-	-
403	5031180	CM Meter Maintenance - RV	JO2	76	-	-	-
404	5031182	CM Meter Maintenance - MH	JO2	262	-	-	-
405	5031211	CM Meter Maintenance - ST	JO2	157	-	-	-
406	5031235	CM SCADA Maintenance - SF	JO2	-	2,083	-	-
407	5031472	FORECAST ONLY - JO2	JO2	-	129,843	-	-
408	5032111	M&C Station Work Except ECA	JO2	972	-	-	-
409	5035659	CM Scada Maintenance - BALOP	JO2	-	-	7,844	8,029
410	5035660	CM Scada Maintenance - GATHR	JO2	-	-	1,200	1,229
411	5035661	CM Scada Maintenance - L401	JO2	-	-	22,820	23,359
412	5035662	CM Scada Maintenance - LTRAN	JO2	-	-	241,675	247,378
413	5035663	CM Scada Maintenance - NPATH	JO2	-	-	6,360	6,510
414	5035664	CM Scada Maintenance - NPATH	JO2	-	-	15,931	16,307
415	5035665	CM Scada Maintenance - SPATH	JO2	-	-	11,656	11,931
416	5035666	CM Scada Maintenance - SPATH	JO2	-	-	42,469	43,471
417	5035667	CM Scada Maintenance - STOR	JO2	-	-	2,333	2,389
418		**Corrective Maintenance SCADA**		**338,933**	**254,664**	**352,288**	**360,602**
419	5002470	GSMTS, Standing, Hinkley	JOG	311	-	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
420	5016653	GT PREV MAINT - G REGULATOR GENL - PN	JOG	16,313	4,237	-	-
421	5016654	GT PREV MAINT - G MAIN VALVE-MANUAL - PN	JOG	114	-	-	-
422	5016681	GT PREV MAINT - G REGULATOR GENL - DI	JOG	42,322	15,551	-	-
423	5016684	GT Oper Transm Regulator Station - DI	JOG	1,113	-	-	-
424	5016695	GT PREV MAINT - G REGULATOR GENL - EB	JOG	26,395	8,885	-	-
425	5016709	GT PREV MAINT - G REGULATOR GENL - MI	JOG	61,958	29,851	-	-
426	5016723	GT PREV MAINT - G REGULATOR GENL - CC	JOG	47,790	40,462	-	-
427	5016738	GT PREV MAINT - G REGULATOR GENL - DA	JOG	1,462	5,519	-	-
428	5016752	GT PREV MAINT - G REGULATOR GENL - SJ	JOG	71,453	33,274	-	-
429	5016766	GT PREV MAINT - G REGULATOR GENL - FR	JOG	56,153	47,056	-	-
430	5016780	GT PREV MAINT - G REGULATOR GENL - KE	JOG	9,761	33,505	-	-
431	5016794	GT PREV MAINT - G REGULATOR GENL - ST	JOG	10,965	18,893	-	-
432	5016808	GT PREV MAINT - G REGULATOR GENL - YO	JOG	51,778	39,457	-	-
433	5016822	GT PREV MAINT - G REGULATOR GENL - NV	JOG	33,740	33,523	-	-
434	5016836	GT PREV MAINT - G REGULATOR GENL - SA	JOG	131,747	59,548	-	-
435	5016837	GT PREV MAINT - G MAIN VALVE-MANUAL - SA	JOG	152	-	-	-
436	5016838	GT Prev Maint - Gas Holders - SA	JOG	479	-	-	-
437	5016851	GT PREV MAINT - G REGULATOR GENL - SI	JOG	31,687	31,489	-	-
438	5016866	GT PREV MAINT - G REGULATOR GENL - NB	JOG	45,025	37,993	-	-
439	5016881	GT PREV MAINT - G REGULATOR GENL - HB	JOG	22,736	34,998	-	-
440	5016954	GT PREV MAINT - G REGULATOR GENL - SO	JOG	32,383	15,968	-	-
441	5020333	PM PIPELINE LEAK SURVEY-GROUND-KT	JOG	1,019	-	-	-
442	5020339	PM PIPELINE LEAK SURVEY-GROUND-TP	JOG	143	-	-	-
443	5020354	PM PIPELINE VALVE-MANUAL - HN	JOG	484	-	-	-
444	5020355	PM PIPELINE VALVE-MANUAL - KT	JOG	40	-	-	-
445	5020356	PM PIPELINE VALVE-MANUAL - AT	JOG	457	-	-	-
446	5020360	PM PIPELINE VALVE-MANUAL - RV	JOG	146	-	-	-
447	5020362	PM PIPELINE VALVE-MANUAL - TY	JOG	276	-	-	-
448	5020364	PM PIPESTAT REGMONRELIEF - BN	JOG	14,492	51,964	-	-
449	5020365	PM PIPESTAT REGMONRELIEF - HN	JOG	43,443	35,457	-	-
450	5020366	PM PIPESTAT REGMONRELIEF - KT	JOG	140,897	82,220	-	-
451	5020367	PM PIPESTAT REGMONRELIEF - AT	JOG	30,855	31,655	-	-
452	5020368	PM PIPESTAT REGMONRELIEF - MD	JOG	690	-	-	-
453	5020369	PM PIPESTAT REGMONRELIEF - ME	JOG	35,266	13,702	-	-
454	5020370	PM PIPESTAT REGMONRELIEF - MH	JOG	87,067	113,891	-	-
455	5020371	PM PIPESTAT REGMONRELIEF - RV	JOG	50,585	39,435	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
456	5020372	PM PIPESTAT REGMONRELIEF - TP	JOG	21,032	22,066	-	-
457	5020373	PM PIPESTAT REGMONRELIEF - TY	JOG	111,332	74,695	-	-
458	5020374	PM PIPESTAT REGMONRELIEF - WL	JOG	12,671	20,745	-	-
459	5023457	GT CM STOR COMPRESS STATIONS OTHER-BN	JOG	584	-	-	-
460	5023526	GT OPERATIONS OTHER-BN	JOG	2,885	-	-	-
461	5023536	GT OPERATIONS OTHER-WL	JOG	2,228	-	-	-
462	5023633	GT PREV MAINT-G MAIN VALVE-AUTOMATED-CC	JOG	10,637	-	-	-
463	5023636	GT PREV MAINT-G MAIN VALVE-AUTOMATED-EB	JOG	1,024	-	-	-
464	5023637	GT PREV MAINT-G MAIN VALVE-AUTOMATED-FR	JOG	1,113	-	-	-
465	5023641	GT PREV MAINT-G MAIN VALVE-AUTOMATED-KT	JOG	3,948	-	-	-
466	5023642	GT PREV MAINT-G MAIN VALVE-AUTOMATED-AT	JOG	2,067	-	-	-
467	5023645	GT PREV MAINT-G MAIN VALVE-AUTOMATED-MH	JOG	183	-	-	-
468	5023646	GT PREV MAINT-G MAIN VALVE-AUTOMATED-MI	JOG	816	-	-	-
469	5023647	GT PREV MAINT-G MAIN VALVE-AUTOMATED-NB	JOG	432	-	-	-
470	5023650	GT PREV MAINT-G MAIN VALVE-AUTOMATED-RV	JOG	1,048	-	-	-
471	5023651	GT PREV MAINT-G MAIN VALVE-AUTOMATED-SA	JOG	5,388	-	-	-
472	5023654	GT PREV MAINT-G MAIN VALVE-AUTOMATED-SJ	JOG	954	-	-	-
473	5023655	GT PREV MAINT-G MAIN VALVE-AUTOMATED-SO	JOG	358	-	-	-
474	5023658	GT PREV MAINT-G MAIN VALVE-AUTOMATED-TY	JOG	2,709	-	-	-
475	5023660	GT PREV MAINT-G MAIN VALVE-AUTOMATED-YO	JOG	1,232	-	-	-
476	5023840	GT OPER TRANSM PIPELINES - WL	JOG	1,850	-	-	-
477	5023841	GT OPER TRANSM REGULATOR STATION - BN	JOG	2,584	-	-	-
478	5023842	GT OPER TRANSM REGULATOR STATION - HN	JOG	3,532	-	-	-
479	5023843	GT OPER TRANSM REGULATOR STATION - KT	JOG	6,245	-	-	-
480	5023844	GT OPER TRANSM REGULATOR STATION - AT	JOG	3,189	-	-	-
481	5023846	GT OPER TRANSM REGULATOR STATION - ME	JOG	6,530	-	-	-
482	5023847	GT OPER TRANSM REGULATOR STATION - MH	JOG	8,586	-	-	-
483	5023848	GT OPER TRANSM REGULATOR STATION - RV	JOG	6,349	-	-	-
484	5023849	GT OPER TRANSM REGULATOR STATION - TP	JOG	15,285	-	-	-
485	5023850	GT OPER TRANSM REGULATOR STATION - TY	JOG	14,645	-	-	-
486	5023851	GT OPER TRANSM REGULATOR STATION - WL	JOG	1,352	-	-	-
487	5023854	LEAK RECHECKS - HN	JOG	298	-	-	-
488	5026910	PM Regulator-BALOP	JOG	-	-	30,626	31,349
489	5026911	PM Regulator-GATHR	JOG	-	-	4,687	4,798
490	5026912	PM Regulator-L401	JOG	-	-	89,104	91,207
491	5026913	PM Regulator-LTRAN	JOG	-	-	943,648	965,918

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
492	5026914	PM Regulator-NPATH L2	JOG	-	-	24,833	25,419
493	5026915	PM Regulator-NPATH	JOG	-	-	62,205	63,673
494	5026916	PM Regulator-NSPATH	JOG	-	-	45,511	46,585
495	5026917	PM Regulator-SPATH	JOG	-	-	165,825	169,738
496	5026918	PM Regulator-STOR	JOG	-	-	9,111	9,326
497	5027987	FORECAST ONLY - JOG	JOG	-	1,706,736	-	-
498	5029441	GT OPER TRANSM REGULATOR STATION - HR	JOG	1,936	-	-	-
499	5029444	GT PREV MAINT - G REGULATOR GENL - RD	JOG	23,009	26,697	-	-
500	5029452	PM PIPESTAT REGMONRELIEF - HR	JOG	17,749	20,529	-	-
501	5031171	PM Meter Maintenance - RD	JOG	1,097	-	-	-
502	5031173	PM Meter Maintenance - WL	JOG	160	-	-	-
503	5031179	PM Meter Maintenance - RV	JOG	1,296	-	-	-
504	5031183	PM Meter Maintenance - ME	JOG	821	-	-	-
505		**Preventative Maintenance Gas Regulator Station General**		**1,400,850**	**2,730,000**	**1,375,552**	**1,408,015**
506	5016654	GT PREV MAINT - G MAIN VALVE-MANUAL - PN	JOH	35,180	23,318	-	-
507	5016668	GT PREV MAINT - G MAIN VALVE-MANUAL - SF	JOH	454	332	-	-
508	5016682	GT PREV MAINT - G MAIN VALVE-MANUAL - DI	JOH	35,105	16,240	-	-
509	5016696	GT PREV MAINT - G MAIN VALVE-MANUAL - EB	JOH	17,937	3,353	-	-
510	5016710	GT PREV MAINT - G MAIN VALVE-MANUAL - MI	JOH	40,167	21,963	-	-
511	5016724	GT PREV MAINT - G MAIN VALVE-MANUAL - CC	JOH	33,902	39,155	-	-
512	5016739	GT PREV MAINT - G MAIN VALVE-MANUAL - DA	JOH	19,067	10,337	-	-
513	5016753	GT PREV MAINT - G MAIN VALVE-MANUAL - SJ	JOH	41,094	34,606	-	-
514	5016767	GT PREV MAINT - G MAIN VALVE-MANUAL - FR	JOH	17,249	9,356	-	-
515	5016781	GT PREV MAINT - G MAIN VALVE-MANUAL - KE	JOH	22,663	10,576	-	-
516	5016795	GT PREV MAINT - G MAIN VALVE-MANUAL - ST	JOH	41,423	27,586	-	-
517	5016808	GT PREV MAINT - G REGULATOR GENL - YO	JOH	854	-	-	-
518	5016809	GT PREV MAINT - G MAIN VALVE-MANUAL - YO	JOH	90,317	51,660	-	-
519	5016823	GT PREV MAINT - G MAIN VALVE-MANUAL - NV	JOH	46,358	28,295	-	-
520	5016837	GT PREV MAINT - G MAIN VALVE-MANUAL - SA	JOH	120,371	69,792	-	-
521	5016842	GT CORR MAINT - G MAIN VALVE-MANUAL - SA	JOH	2,324	-	-	-
522	5016851	GT PREV MAINT - G REGULATOR GENL - SI	JOH	795	-	-	-
523	5016852	GT PREV MAINT - G MAIN VALVE-MANUAL - SI	JOH	47,776	32,494	-	-
524	5016867	GT PREV MAINT - G MAIN VALVE-MANUAL - NB	JOH	46,763	18,297	-	-
525	5016881	GT PREV MAINT - G REGULATOR GENL - HB	JOH	609	-	-	-
526	5016882	GT PREV MAINT - G MAIN VALVE-MANUAL - HB	JOH	27,486	19,189	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
527	5016955	GT PREV MAINT - G MAIN VALVE-MANUAL - SO	JOH	33,959	17,663	-	-
528	5020353	PM PIPELINE VALVE-MANUAL - BN	JOH	8,118	1,115	-	-
529	5020354	PM PIPELINE VALVE-MANUAL - HN	JOH	21,730	27,328	-	-
530	5020355	PM PIPELINE VALVE-MANUAL - KT	JOH	2,057	41,237	-	-
531	5020356	PM PIPELINE VALVE-MANUAL - AT	JOH	29,438	6,644	-	-
532	5020357	PM PIPELINE VALVE-MANUAL - MD	JOH	-	360	-	-
533	5020358	PM PIPELINE VALVE-MANUAL - ME	JOH	60,912	56,293	-	-
534	5020359	PM PIPELINE VALVE-MANUAL - MH	JOH	12,712	12,551	-	-
535	5020360	PM PIPELINE VALVE-MANUAL - RV	JOH	11,606	10,523	-	-
536	5020361	PM PIPELINE VALVE-MANUAL - TP	JOH	13,430	11,613	-	-
537	5020362	PM PIPELINE VALVE-MANUAL - TY	JOH	24,901	31,274	-	-
538	5020363	PM PIPELINE VALVE-MANUAL - WL	JOH	9,294	8,879	-	-
539	5020369	PM PIPESTAT REGMONRELIEF - ME	JOH	2,272	-	-	-
540	5020371	PM PIPESTAT REGMONRELIEF - RV	JOH	595	-	-	-
541	5020373	PM PIPESTAT REGMONRELIEF - TY	JOH	157	-	-	-
542	5023637	GT PREV MAINT-G MAIN VALVE-AUTOMATED-FR	JOH	324	-	-	-
543	5023839	GT OPER TRANSM PIPELINES - TY	JOH	2,305	-	-	-
544	5023843	GT OPER TRANSM REGULATOR STATION - KT	JOH	752	-	-	-
545	5023846	GT OPER TRANSM REGULATOR STATION - ME	JOH	361	-	-	-
546	5023848	GT OPER TRANSM REGULATOR STATION - RV	JOH	1,659	-	-	-
547	5023849	GT OPER TRANSM REGULATOR STATION - TP	JOH	149	-	-	-
548	5023850	GT OPER TRANSM REGULATOR STATION - TY	JOH	3,443	-	-	-
549	5026899	PM Main Valve Manual-BALOP	JOH	-	-	22,655	23,190
550	5026900	PM Main Valve Manual-GATHR	JOH	-	-	3,467	3,549
551	5026901	PM Main Valve Manual-L401	JOH	-	-	65,914	67,469
552	5026902	PM Main Valve Manual-LTRAN	JOH	-	-	698,052	714,526
553	5026903	PM Main Valve Manual-NPATH L2	JOH	-	-	18,370	18,804
554	5026904	PM Main Valve Manual-NPATH	JOH	-	-	46,015	47,101
555	5026905	PM Main Valve Manual-NSPATH	JOH	-	-	33,666	34,461
556	5026906	PM Main Valve Manual-SPATH	JOH	-	-	122,667	125,562
557	5026907	PM Main Valve Manual-STOR	JOH	-	-	6,740	6,899
558	5027988	FORECAST ONLY - JOH	JOH	-	602,528	-	-
559	5029443	GT PREV MAINT - G MAIN VALVE-MANUAL - RD	JOH	16,121	7,275	-	-
560	5029451	PM PIPELINE VALVE-MANUAL - HR	JOH	39,577	6,171	-	-
561		**PM Gas Pipeline Valve Manual**		**983,767**	**1,258,000**	**1,017,547**	**1,041,562**

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
562	5023466	GT CM STOR COMPRESS STATIONS OTHER-TY	JOI	252	-	-	-
563	5023632	GT PREV MAINT-G MAIN VALVE-AUTOMATED-BN	JOI	610	-	-	-
564	5023635	GT PREV MAINT-G MAIN VALVE-AUTOMATED-DI	JOI	318	-	-	-
565	5023636	GT PREV MAINT-G MAIN VALVE-AUTOMATED-EB	JOI	1,436	-	-	-
566	5023637	GT PREV MAINT-G MAIN VALVE-AUTOMATED-FR	JOI	414	-	-	-
567	5023638	GT PREV MAINT-G MAIN VALVE-AUTOMATED-HB	JOI	1,661	-	-	-
568	5023639	GT PREV MAINT-G MAIN VALVE-AUTOMATED-HN	JOI	4,625	-	-	-
569	5023640	GT PREV MAINT-G MAIN VALVE-AUTOMATED-KE	JOI	4,661	1,179	-	-
570	5023641	GT PREV MAINT-G MAIN VALVE-AUTOMATED-KT	JOI	3,723	-	-	-
571	5023642	GT PREV MAINT-G MAIN VALVE-AUTOMATED-AT	JOI	11,316	-	-	-
572	5023643	GT PREV MAINT-G MAIN VALVE-AUTOMATED-MD	JOI	3,603	317	-	-
573	5023644	GT PREV MAINT-G MAIN VALVE-AUTOMATED-ME	JOI	6,555	-	-	-
574	5023645	GT PREV MAINT-G MAIN VALVE-AUTOMATED-MH	JOI	22,880	1,331	-	-
575	5023646	GT PREV MAINT-G MAIN VALVE-AUTOMATED-MI	JOI	5,978	-	-	-
576	5023648	GT PREV MAINT-G MAIN VALVE-AUTOMATED-NV	JOI	330	-	-	-
577	5023650	GT PREV MAINT-G MAIN VALVE-AUTOMATED-RV	JOI	774	2,096	-	-
578	5023653	GT PREV MAINT-G MAIN VALVE-AUTOMATED-SI	JOI	517	-	-	-
579	5023656	GT PREV MAINT-G MAIN VALVE-AUTOMATED-ST	JOI	2,572	-	-	-
580	5023657	GT PREV MAINT-G MAIN VALVE-AUTOMATED-TP	JOI	10,134	579	-	-
581	5023658	GT PREV MAINT-G MAIN VALVE-AUTOMATED-TY	JOI	989	-	-	-
582	5023659	GT PREV MAINT-G MAIN VALVE-AUTOMATED-WL	JOI	8,699	-	-	-
583	5023660	GT PREV MAINT-G MAIN VALVE-AUTOMATED-YO	JOI	1,382	-	-	-
584	5023847	GT OPER TRANSM REGULATOR STATION - MH	JOI	150	-	-	-
585	5023848	GT OPER TRANSM REGULATOR STATION - RV	JOI	161	-	-	-
586	5023849	GT OPER TRANSM REGULATOR STATION - TP	JOI	2,009	-	-	-
587	5023850	GT OPER TRANSM REGULATOR STATION - TY	JOI	6,576	-	-	-
588	5023851	GT OPER TRANSM REGULATOR STATION - WL	JOI	73	-	-	-
589	5026890	PM Main Valve Automated-BALOP	JOI	-	-	3,842	4,010
590	5026891	PM Main Valve Automated-GATHR	JOI	-	-	588	614
591	5026892	PM Main Valve Automated-L401	JOI	-	-	11,178	11,668
592	5026893	PM Main Valve Automated-LTRAN	JOI	-	-	118,379	123,571
593	5026894	PM Main Valve Automated-NPATH L2	JOI	-	-	3,115	3,252
594	5026895	PM Main Valve Automated-NPATH	JOI	-	-	7,804	8,146
595	5026896	PM Main Valve Automated-NSPATH	JOI	-	-	5,709	5,960
596	5026897	PM Main Valve Automated-SPATH	JOI	-	-	20,803	21,715
597	5026898	PM Main Valve Automated-STOR	JOI	-	-	1,143	1,193

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
598	5027989	FORECAST ONLY - JOI	JOI	-	26,817	-	-
599	5029441	GT OPER TRANSM REGULATOR STATION - HR	JOI	900	-	-	-
600	5029445	GT PREV MAINT-G MAIN VALVE-AUTOMATED-HR	JOI	1,490	518	-	-
601	5029446	GT PREV MAINT-G MAIN VALVE-AUTOMATED-RD	JOI	304	-	-	-
602		**Preventative Maintenance Gas Pipeline Valve Automated**		**105,091**	**32,836**	**172,561**	**180,129**
603	5016725	GT Prev Maint - Gas Holders - CC	JOJ	7,499	6,354	-	-
604	5016836	GT PREV MAINT - G REGULATOR GENL - SA	JOJ	723	-	-	-
605	5016838	GT Prev Maint - Gas Holders - SA	JOJ	108,506	22,066	-	-
606	5016842	GT CORR MAINT - G MAIN VALVE-MANUAL - SA	JOJ	4,839	-	-	-
607	5016851	GT PREV MAINT - G REGULATOR GENL - SI	JOJ	750	-	-	-
608	5016853	GT Prev Maint - Gas Holders - SI	JOJ	54,814	23,947	-	-
609	5023487	GT CORR MAINT-G MAIN VALVE-AUTOMATED-SA	JOJ	397	-	-	-
610	5026884	PM Gas Holders-LTRAN	JOJ	-	-	184,839	189,201
611	5027990	FORECAST ONLY - JOJ	JOJ	-	47,633	-	-
612		**Gas Holders Maintenance**		**177,530**	**100,000**	**184,839**	**189,201**
613	5016655	GT Oper Transm Pipelines - PN	JOK	20,769	12,624	-	-
614	5016669	GT Oper Transm Pipelines - SF	JOK	-	12,185	-	-
615	5016683	GT Oper Transm Pipelines - DI	JOK	74,575	40,079	-	-
616	5016697	GT Oper Transm Pipelines - EB	JOK	29,604	6,713	-	-
617	5016711	GT Oper Transm Pipelines - MI	JOK	2,915	1,055	-	-
618	5016726	GT Oper Transm Pipelines - CC	JOK	25,176	28,093	-	-
619	5016740	GT Oper Transm Pipelines - DA	JOK	6,808	12,815	-	-
620	5016754	GT Oper Transm Pipelines - SJ	JOK	62,334	28,620	-	-
621	5016768	GT Oper Transm Pipelines - FR	JOK	18,769	6,678	-	-
622	5016782	GT Oper Transm Pipelines - KE	JOK	2,195	21,424	-	-
623	5016796	GT Oper Transm Pipelines - ST	JOK	474	-	-	-
624	5016824	GT Oper Transm Pipelines - NV	JOK	76,923	27,847	-	-
625	5016836	GT PREV MAINT - G REGULATOR GENL - SA	JOK	38	-	-	-
626	5016839	GT Oper Transm Pipelines - SA	JOK	74,649	45,121	-	-
627	5016851	GT PREV MAINT - G REGULATOR GENL - SI	JOK	521	-	-	-
628	5016854	GT Oper Transm Pipelines - SI	JOK	27,341	20,191	-	-
629	5016869	GT Oper Transm Pipelines - NB	JOK	41,431	12,807	-	-
630	5016881	GT PREV MAINT - G REGULATOR GENL - HB	JOK	972	-	-	-
631	5016884	GT Oper Transm Pipelines - HB	JOK	1,463	-	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
632	5016956	GT Oper Transm Pipelines - SO	JOK	8,980	5,119	-	-
633	5020314	CM PIPESTAT REGMONRELIEF - ME	JOK	73	-	-	-
634	5020315	CM PIPESTAT REGMONRELIEF - MH	JOK	433	-	-	-
635	5020332	PM PIPELINE LEAK SURVEY-GROUND-HN	JOK	82	-	-	-
636	5020336	PM PIPELINE LEAK SURVEY-GROUND-ME	JOK	80	-	-	-
637	5020366	PM PIPESTAT REGMONRELIEF - KT	JOK	75	-	-	-
638	5023459	GT CM STOR COMPRESS STATIONS OTHER-KT	JOK	41	-	-	-
639	5023536	GT OPERATIONS OTHER-WL	JOK	1,310	-	-	-
640	5023588	GT PM INSTRUMENTATION CONTROL-BN	JOK	948	-	-	-
641	5023590	GT PM INSTRUMENTATION CONTROL-KT	JOK	1,416	-	-	-
642	5023591	GT PM INSTRUMENTATION CONTROL-LM	JOK	51	-	-	-
643	5023830	GT OPER TRANSM PIPELINES - BN	JOK	21,862	11,468	-	-
644	5023831	GT OPER TRANSM PIPELINES - HN	JOK	17,173	15,045	-	-
645	5023832	GT OPER TRANSM PIPELINES - KT	JOK	19,037	11,339	-	-
646	5023833	GT OPER TRANSM PIPELINES - AT	JOK	3,087	2,848	-	-
647	5023834	GT OPER TRANSM PIPELINES - MD	JOK	2,521	-	-	-
648	5023835	GT OPER TRANSM PIPELINES - ME	JOK	148,026	26,187	-	-
649	5023836	GT OPER TRANSM PIPELINES - MH	JOK	78,769	21,260	-	-
650	5023837	GT OPER TRANSM PIPELINES - RV	JOK	39,946	29,270	-	-
651	5023838	GT OPER TRANSM PIPELINES - TP	JOK	13,232	30,849	-	-
652	5023839	GT OPER TRANSM PIPELINES - TY	JOK	64,333	24,057	-	-
653	5023840	GT OPER TRANSM PIPELINES - WL	JOK	81,827	29,914	-	-
654	5023841	GT OPER TRANSM REGULATOR STATION - BN	JOK	500	-	-	-
655	5023842	GT OPER TRANSM REGULATOR STATION - HN	JOK	1,388	-	-	-
656	5023843	GT OPER TRANSM REGULATOR STATION - KT	JOK	2,806	-	-	-
657	5023844	GT OPER TRANSM REGULATOR STATION - AT	JOK	801	-	-	-
658	5023846	GT OPER TRANSM REGULATOR STATION - ME	JOK	266	-	-	-
659	5023848	GT OPER TRANSM REGULATOR STATION - RV	JOK	857	-	-	-
660	5023849	GT OPER TRANSM REGULATOR STATION - TP	JOK	382	-	-	-
661	5023850	GT OPER TRANSM REGULATOR STATION - TY	JOK	3,375	-	-	-
662	5026151	Operate Transmission Pipelines-LTRAN	JOK	-	-	717,666	734,603
663	5026775	CM StorCompStat InstrumentCtrl	JOK	540	-	-	-
664	5026838	Operate Transmission Pipelines-BALOP	JOK	-	-	23,292	23,842
665	5026839	Operate Transmission Pipelines-GATHR	JOK	-	-	3,565	3,649
666	5026840	Operate Transmission Pipelines-L401	JOK	-	-	67,766	69,365
667	5026841	Operate Transmission Pipelines-NPATH L2	JOK	-	-	18,886	19,332

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
668	5026842	Operate Transmission Pipelines-NPATH	JOK	-	-	47,308	48,425
669	5026843	Operate Transmission Pipelines-NSPATH	JOK	-	-	34,612	35,429
670	5026844	Operate Transmission Pipelines-SPATH	JOK	-	-	126,114	129,090
671	5026845	Operate Transmission Pipelines-STOR	JOK	-	-	6,929	7,093
672	5027991	FORECAST ONLY - JOK	JOK	-	510,805	-	-
673	5029439	GT OPER TRANSM PIPELINES - HR	JOK	26,655	5,588	-	-
674	5029441	GT OPER TRANSM REGULATOR STATION - HR	JOK	2,147	-	-	-
675		**Operate Transmission Pipelines**		**1,009,975**	**1,000,000**	**1,046,139**	**1,070,828**
676	5016684	GT Oper Transm Regulator Station - DI	JOL	128	-	-	-
677	5016726	GT Oper Transm Pipelines - CC	JOL	114	-	-	-
678	5016727	GT Oper Transm Regulator Station - CC	JOL	5,410	2,336	-	-
679	5016755	GT Oper Transm Regulator Station - SJ	JOL	2,489	1,859	-	-
680	5016780	GT PREV MAINT - G REGULATOR GENL - KE	JOL	176	-	-	-
681	5016797	GT Oper Transm Regulator Station - ST	JOL	4,542	3,991	-	-
682	5016811	GT Oper Transm Regulator Station - YO	JOL	16,756	7,139	-	-
683	5016825	GT Oper Transm Regulator Station - NV	JOL	12,871	2,913	-	-
684	5016836	GT PREV MAINT - G REGULATOR GENL - SA	JOL	114	-	-	-
685	5016840	GT Oper Transm Regulator Station - SA	JOL	49,282	24,263	-	-
686	5016842	GT CORR MAINT - G MAIN VALVE-MANUAL - SA	JOL	1,129	-	-	-
687	5016855	GT Oper Transm Regulator Station - SI	JOL	86	1,560	-	-
688	5016870	GT Oper Transm Regulator Station - NB	JOL	34,894	17,397	-	-
689	5016885	GT Oper Transm Regulator Station - HB	JOL	2,333	1,465	-	-
690	5016957	GT Oper Transm Regulator Station - SO	JOL	397	-	-	-
691	5020316	CM PIPESTAT REGMONRELIEF - RV	JOL	295	-	-	-
692	5023841	GT OPER TRANSM REGULATOR STATION - BN	JOL	35,923	69,713	-	-
693	5023842	GT OPER TRANSM REGULATOR STATION - HN	JOL	67,494	49,332	-	-
694	5023843	GT OPER TRANSM REGULATOR STATION - KT	JOL	39,148	140,285	-	-
695	5023844	GT OPER TRANSM REGULATOR STATION - AT	JOL	68,623	67,602	-	-
696	5023846	GT OPER TRANSM REGULATOR STATION - ME	JOL	308,764	211,425	-	-
697	5023847	GT OPER TRANSM REGULATOR STATION - MH	JOL	214,297	142,745	-	-
698	5023848	GT OPER TRANSM REGULATOR STATION - RV	JOL	75,609	122,121	-	-
699	5023849	GT OPER TRANSM REGULATOR STATION - TP	JOL	7,931	53,633	-	-
700	5023850	GT OPER TRANSM REGULATOR STATION - TY	JOL	129,468	131,998	-	-
701	5023851	GT OPER TRANSM REGULATOR STATION - WL	JOL	205,041	94,506	-	-
702	5026846	Operate Transmission Regs-BALOP	JOL	-	-	61,623	63,077

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
703	5026847	Operate Transmission Regs-GATHR	JOL	-	-	9,432	9,654
704	5026848	Operate Transmission Regs-L401	JOL	-	-	179,286	183,517
705	5026849	Operate Transmission Regs-LTRAN	JOL	-	-	1,898,715	1,943,525
706	5026850	Operate Transmission Regs-NPATH L2	JOL	-	-	49,967	51,146
707	5026851	Operate Transmission Regs-NPATH	JOL	-	-	125,163	128,117
708	5026852	Operate Transmission Regs-NSPATH	JOL	-	-	91,573	93,734
709	5026853	Operate Transmission Regs-SPATH	JOL	-	-	333,656	341,531
710	5026854	Operate Transmission Regs-STOR	JOL	-	-	18,333	18,765
711	5027992	FORECAST ONLY - JOL	JOL	-	1,177,595	-	-
712	5029441	GT OPER TRANSM REGULATOR STATION - HR	JOL	35,628	31,123	-	-
713	5031175	PM Meter Maintenance - TY	JOL	679	-	-	-
714	5031204	PM Meter Maintenance - SA	JOL	266	-	-	-
715	5031208	PM Meter Maintenance - YO	JOL	304	-	-	-
716		**Operate Transmission Regulator Station**		**1,320,191**	**2,355,000**	**2,767,748**	**2,833,067**
717	5016657	GT CORR MAINT - G REGULATOR GENL - PN	JOM	5,490	214	-	-
718	5016671	GT CORR MAINT - G REGULATOR GENL - SF	JOM	1,113	-	-	-
719	5016681	GT PREV MAINT - G REGULATOR GENL - DI	JOM	2,067	-	-	-
720	5016685	GT CORR MAINT - G REGULATOR GENL - DI	JOM	2,328	6,061	-	-
721	5016699	GT CORR MAINT - G REGULATOR GENL - EB	JOM	804	1,274	-	-
722	5016713	GT CORR MAINT - G REGULATOR GENL - MI	JOM	14,910	28,111	-	-
723	5016728	GT CORR MAINT - G REGULATOR GENL - CC	JOM	839	975	-	-
724	5016742	GT CORR MAINT - G REGULATOR GENL - DA	JOM	-	705	-	-
725	5016756	GT CORR MAINT - G REGULATOR GENL - SJ	JOM	22,062	28,697	-	-
726	5016770	GT CORR MAINT - G REGULATOR GENL - FR	JOM	8,217	5,230	-	-
727	5016784	GT CORR MAINT - G REGULATOR GENL - KE	JOM	1,466	2,045	-	-
728	5016798	GT CORR MAINT - G REGULATOR GENL - ST	JOM	636	2,654	-	-
729	5016812	GT CORR MAINT - G REGULATOR GENL - YO	JOM	2,712	8,521	-	-
730	5016826	GT CORR MAINT - G REGULATOR GENL - NV	JOM	795	12,470	-	-
731	5016841	GT CORR MAINT - G REGULATOR GENL - SA	JOM	33,360	23,713	-	-
732	5016856	GT CORR MAINT - G REGULATOR GENL - SI	JOM	-	1,702	-	-
733	5016871	GT CORR MAINT - G REGULATOR GENL - NB	JOM	20,152	610	-	-
734	5016886	GT CORR MAINT - G REGULATOR GENL - HB	JOM	11,229	358	-	-
735	5016958	GT CORR MAINT - G REGULATOR GENL - SO	JOM	7,337	-	-	-
736	5020306	CM PIPELINE VALVE - MANUAL - TP	JOM	389	-	-	-
737	5020309	CM PIPESTAT REGMONRELIEF - BN	JOM	3,251	-	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
738	5020310	CM PIPESTAT REGMONRELIEF - HN	JOM	17,856	28,764	-	-
739	5020311	CM PIPESTAT REGMONRELIEF - KT	JOM	39,592	20,154	-	-
740	5020312	CM PIPESTAT REGMONRELIEF - AT	JOM	16,210	2,346	-	-
741	5020313	CM PIPESTAT REGMONRELIEF - MD	JOM	1,907	-	-	-
742	5020314	CM PIPESTAT REGMONRELIEF - ME	JOM	10,882	74,561	-	-
743	5020315	CM PIPESTAT REGMONRELIEF - MH	JOM	41,554	34,192	-	-
744	5020316	CM PIPESTAT REGMONRELIEF - RV	JOM	39,101	108,659	-	-
745	5020317	CM PIPESTAT REGMONRELIEF - TP	JOM	15,640	549	-	-
746	5020318	CM PIPESTAT REGMONRELIEF - TY	JOM	25,982	19,532	-	-
747	5020319	CM PIPESTAT REGMONRELIEF - WL	JOM	246	3,998	-	-
748	5020365	PM PIPESTAT REGMONRELIEF - HN	JOM	2,918	-	-	-
749	5023483	GT CORR MAINT-G MAIN VALVE-AUTOMATED-NB	JOM	152	-	-	-
750	5023534	GT OPERATIONS OTHER-TP	JOM	58	-	-	-
751	5026764	CM Regulator General-BALOP	JOM	-	-	9,477	9,700
752	5026765	CM Regulator General-GATHR	JOM	-	-	1,450	1,485
753	5026766	CM Regulator General-L401	JOM	-	-	27,572	28,223
754	5026767	CM Regulator General-LTRAN	JOM	-	-	291,998	298,889
755	5026768	CM Regulator General-NPATH L2	JOM	-	-	7,684	7,866
756	5026769	CM Regulator General-NPATH	JOM	-	-	19,248	19,703
757	5026770	CM Regulator General-NSPATH	JOM	-	-	14,083	14,415
758	5026771	CM Regulator General-SPATH	JOM	-	-	51,312	52,523
759	5026772	CM Regulator General-STOR	JOM	-	-	2,819	2,886
760	5027993	FORECAST ONLY - JOM	JOM	-	632,364	-	-
761	5029430	CM PIPESTAT REGMONRELIEF - HR	JOM	15,351	25,344	-	-
762	5029436	GT CORR MAINT - G REGULATOR GENL - RD	JOM	44,981	19,758	-	-
763	5029437	GT CORR MAINT-G MAIN VALVE-AUTOMATED-HR	JOM	3,347	-	-	-
764	5030817	JPP-CM Storage Wells-Test	JOM	3,670	-	-	-
765	5031192	CM Meter Maintenance - HN	JOM	1,939	-	-	-
766	5035727	CM Storage Wells - STOR	JOM	2,442	-	-	-
767		**Corrective Maintenance Gas Regulator General**		**422,984**	**1,093,562**	**425,644**	**435,689**
768	5016658	GT CORR MAINT - G MAIN VALVE-MANUAL - PN	JON	28,035	11,999	-	-
769	5016672	GT CORR MAINT - G MAIN VALVE-MANUAL - SF	JON	-	9,040	-	-
770	5016686	GT CORR MAINT - G MAIN VALVE-MANUAL - DI	JON	3,276	85,684	-	-
771	5016699	GT CORR MAINT - G REGULATOR GENL - EB	JON	79	-	-	-
772	5016700	GT CORR MAINT - G MAIN VALVE-MANUAL - EB	JON	1,815	51,801	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
773	5016714	GT CORR MAINT - G MAIN VALVE-MANUAL - MI	JON	8,762	41,888	-	-
774	5016729	GT CORR MAINT - G MAIN VALVE-MANUAL - CC	JON	58,255	17,047	-	-
775	5016743	GT CORR MAINT - G MAIN VALVE-MANUAL - DA	JON	3,156	1,383	-	-
776	5016757	GT CORR MAINT - G MAIN VALVE-MANUAL - SJ	JON	7,298	76,365	-	-
777	5016771	GT CORR MAINT - G MAIN VALVE-MANUAL - FR	JON	4,801	2,285	-	-
778	5016785	GT CORR MAINT - G MAIN VALVE-MANUAL - KE	JON	49,340	156,549	-	-
779	5016799	GT CORR MAINT - G MAIN VALVE-MANUAL - ST	JON	134,437	3,806	-	-
780	5016813	GT CORR MAINT - G MAIN VALVE-MANUAL - YO	JON	38,146	16,111	-	-
781	5016827	GT CORR MAINT - G MAIN VALVE-MANUAL - NV	JON	812	10,516	-	-
782	5016842	GT CORR MAINT - G MAIN VALVE-MANUAL - SA	JON	214,388	22,176	-	-
783	5016857	GT CORR MAINT - G MAIN VALVE-MANUAL - SI	JON	19,040	25,865	-	-
784	5016872	GT CORR MAINT - G MAIN VALVE-MANUAL - NB	JON	8,865	5,117	-	-
785	5016887	GT CORR MAINT - G MAIN VALVE-MANUAL - HB	JON	15,476	3,458	-	-
786	5016959	GT CORR MAINT - G MAIN VALVE-MANUAL - SO	JON	9,441	16,741	-	-
787	5020298	CM PIPELINE VALVE - MANUAL - BN	JON	13,853	3,524	-	-
788	5020299	CM PIPELINE VALVE - MANUAL - HN	JON	1,463	4,633	-	-
789	5020300	CM PIPELINE VALVE - MANUAL - KT	JON	2,327	3,292	-	-
790	5020301	CM PIPELINE VALVE - MANUAL - AT	JON	1,906	7,395	-	-
791	5020303	CM PIPELINE VALVE - MANUAL - ME	JON	10,173	14,593	-	-
792	5020304	CM PIPELINE VALVE - MANUAL - MH	JON	10,470	25,495	-	-
793	5020305	CM PIPELINE VALVE - MANUAL - RV	JON	11,848	2,084	-	-
794	5020306	CM PIPELINE VALVE - MANUAL - TP	JON	1,910	474	-	-
795	5020307	CM PIPELINE VALVE - MANUAL - TY	JON	1,093	21,872	-	-
796	5020308	CM PIPELINE VALVE - MANUAL - WL	JON	8,619	498	-	-
797	5020314	CM PIPESTAT REGMONRELIEF - ME	JON	729	-	-	-
798	5023487	GT CORR MAINT-G MAIN VALVE-AUTOMATED-SA	JON	457	-	-	-
799	5023490	GT CORR MAINT-G MAIN VALVE-AUTOMATED-SJ	JON	457	-	-	-
800	5023848	GT OPER TRANSM REGULATOR STATION - RV	JON	323	-	-	-
801	5026753	CM Main Valve Manual-BALOP	JON	-	-	15,930	16,306
802	5026754	CM Main Valve Manual-GATHR	JON	-	-	2,438	2,496
803	5026755	CM Main Valve Manual-L401	JON	-	-	46,347	47,441
804	5026756	CM Main Valve Manual-LTRAN	JON	-	-	490,838	502,422
805	5026757	CM Main Valve Manual-NPATH L2	JON	-	-	12,917	13,222
806	5026758	CM Main Valve Manual-NPATH	JON	-	-	32,356	33,120
807	5026759	CM Main Valve Manual-NSPATH	JON	-	-	23,673	24,231
808	5026760	CM Main Valve Manual-SPATH	JON	-	-	86,254	88,289

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
809	5026761	CM Main Valve Manual-STOR	JON	-	-	4,739	4,851
810	5027994	FORECAST ONLY - JON	JON	-	709,001	-	-
811	5029429	CM PIPELINE VALVE - MANUAL - HR	JON	8,433	12,233	-	-
812	5029435	GT CORR MAINT - G MAIN VALVE-MANUAL - RD	JON	403	37,074	-	-
813	5031182	CM Meter Maintenance - MH	JON	864	-	-	-
814		**Corrective Maintenance Gas Pipeline Valve Manual**		**680,752**	**1,400,000**	**715,492**	**732,377**
815	5023468	GT CORR MAINT-G MAIN VALVE-AUTOMATED-BN	JOO	1,219	634	-	-
816	5023469	GT CORR MAINT-G MAIN VALVE-AUTOMATED-CC	JOO	-	1,982	-	-
817	5023471	GT CORR MAINT-G MAIN VALVE-AUTOMATED-DI	JOO	333	5,721	-	-
818	5023473	GT CORR MAINT-G MAIN VALVE-AUTOMATED-FR	JOO	-	485	-	-
819	5023475	GT CORR MAINT-G MAIN VALVE-AUTOMATED-HN	JOO	225	-	-	-
820	5023476	GT CORR MAINT-G MAIN VALVE-AUTOMATED-KE	JOO	-	1,344	-	-
821	5023477	GT CORR MAINT-G MAIN VALVE-AUTOMATED-KT	JOO	-	17,688	-	-
822	5023478	GT CORR MAINT-G MAIN VALVE-AUTOMATED-AT	JOO	749	3,028	-	-
823	5023481	GT CORR MAINT-G MAIN VALVE-AUTOMATED-MH	JOO	1,875	14,293	-	-
824	5023482	GT CORR MAINT-G MAIN VALVE-AUTOMATED-MI	JOO	-	490	-	-
825	5023483	GT CORR MAINT-G MAIN VALVE-AUTOMATED-NB	JOO	-	1,137	-	-
826	5023486	GT CORR MAINT-G MAIN VALVE-AUTOMATED-RV	JOO	625	2,891	-	-
827	5023487	GT CORR MAINT-G MAIN VALVE-AUTOMATED-SA	JOO	1,582	23,019	-	-
828	5023490	GT CORR MAINT-G MAIN VALVE-AUTOMATED-SJ	JOO	-	722	-	-
829	5023491	GT CORR MAINT-G MAIN VALVE-AUTOMATED-SO	JOO	159	724	-	-
830	5023493	GT CORR MAINT-G MAIN VALVE-AUTOMATED-TP	JOO	195	-	-	-
831	5023494	GT CORR MAINT-G MAIN VALVE-AUTOMATED-TY	JOO	6,235	7,601	-	-
832	5023495	GT CORR MAINT-G MAIN VALVE-AUTOMATED-WL	JOO	610	2,641	-	-
833	5023496	GT CORR MAINT-G MAIN VALVE-AUTOMATED-YO	JOO	-	6,465	-	-
834	5026744	CM Main Valve Automated-BALOP	JOO	-	-	541	553
835	5026745	CM Main Valve Automated-GATHR	JOO	-	-	83	85
836	5026746	CM Main Valve Automated-L401	JOO	-	-	1,573	1,610
837	5026747	CM Main Valve Automated-LTRAN	JOO	-	-	16,655	17,048
838	5026748	CM Main Valve Automated-NPATH L2	JOO	-	-	438	449
839	5026749	CM Main Valve Automated-NPATH	JOO	-	-	1,098	1,124
840	5026750	CM Main Valve Automated-NSPATH	JOO	-	-	803	822
841	5026751	CM Main Valve Automated-SPATH	JOO	-	-	2,927	2,996
842	5026752	CM Main Valve Automated-STOR	JOO	-	-	161	165
843	5027995	FORECAST ONLY - JOO	JOO	-	100,472	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
844	5029437	GT CORR MAINT-G MAIN VALVE-AUTOMATED-HR	JOO	674	8,664	-	-
845		**CM Gas Pipeline Valve Automated**		**14,480**	**200,000**	**24,278**	**24,851**
846	5016723	GT PREV MAINT - G REGULATOR GENL - CC	JOX	2,884	-	-	-
847	5016836	GT PREV MAINT - G REGULATOR GENL - SA	JOX	1,542	-	-	-
848	5016853	GT Prev Maint - Gas Holders - SI	JOX	397	-	-	-
849	5016881	GT PREV MAINT - G REGULATOR GENL - HB	JOX	687	-	-	-
850	5020314	CM PIPESTAT REGMONRELIEF - ME	JOX	164	-	-	-
851	5020333	PM PIPELINE LEAK SURVEY-GROUND-KT	JOX	265	-	-	-
852	5020334	PM PIPELINE LEAK SURVEY-GROUND-LM	JOX	342	-	-	-
853	5020362	PM PIPELINE VALVE-MANUAL - TY	JOX	84	-	-	-
854	5020373	PM PIPESTAT REGMONRELIEF - TY	JOX	337	-	-	-
855	5023420	GT CM GAS PROCESSING-RV	JOX	305	-	-	-
856	5023589	GT PM INSTRUMENTATION CONTROL-HN	JOX	354	-	-	-
857	5023590	GT PM INSTRUMENTATION CONTROL-KT	JOX	84	-	-	-
858	5023594	GT PM INSTRUMENTATION CONTROL-MH	JOX	337	-	-	-
859	5023596	GT PM INSTRUMENTATION CONTROL-TP	JOX	14,772	-	-	-
860	5023597	GT PM INSTRUMENTATION CONTROL-TY	JOX	150	-	-	-
861	5023604	GT PM PIPELINE STATION INSTR-ME	JOX	960	-	-	-
862	5023835	GT OPER TRANSM PIPELINES - ME	JOX	36	-	-	-
863	5023837	GT OPER TRANSM PIPELINES - RV	JOX	484	-	-	-
864	5023841	GT OPER TRANSM REGULATOR STATION - BN	JOX	22,278	-	-	-
865	5023842	GT OPER TRANSM REGULATOR STATION - HN	JOX	4,052	-	-	-
866	5023843	GT OPER TRANSM REGULATOR STATION - KT	JOX	30,495	-	-	-
867	5023844	GT OPER TRANSM REGULATOR STATION - AT	JOX	5,879	-	-	-
868	5023846	GT OPER TRANSM REGULATOR STATION - ME	JOX	135,148	-	-	-
869	5023847	GT OPER TRANSM REGULATOR STATION - MH	JOX	1,093	-	-	-
870	5023848	GT OPER TRANSM REGULATOR STATION - RV	JOX	224,938	-	-	-
871	5023849	GT OPER TRANSM REGULATOR STATION - TP	JOX	12,101	-	-	-
872	5023850	GT OPER TRANSM REGULATOR STATION - TY	JOX	38,071	-	-	-
873	5023851	GT OPER TRANSM REGULATOR STATION - WL	JOX	547	-	-	-
874	5029441	GT OPER TRANSM REGULATOR STATION - HR	JOX	631	-	-	-
875	5029444	GT PREV MAINT - G REGULATOR GENL - RD	JOX	1,748	-	-	-
876	5031169	PM Meter Maintenance - HR	JOX	8,469	4,056	-	-
877	5031171	PM Meter Maintenance - RD	JOX	36,932	14,056	-	-
878	5031173	PM Meter Maintenance - WL	JOX	19,474	14,901	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
879	5031175	PM Meter Maintenance - TY	JOX	68,123	20,059	-	-
880	5031177	PM Meter Maintenance - TP	JOX	7,510	4,405	-	-
881	5031179	PM Meter Maintenance - RV	JOX	23,585	34,105	-	-
882	5031181	PM Meter Maintenance - MH	JOX	15,771	13,041	-	-
883	5031183	PM Meter Maintenance - ME	JOX	12,741	42,935	-	-
884	5031185	PM Meter Maintenance - MD	JOX	2,669	4,181	-	-
885	5031187	PM Meter Maintenance - AT	JOX	9,217	11,947	-	-
886	5031189	PM Meter Maintenance - KT	JOX	37,219	63,376	-	-
887	5031191	PM Meter Maintenance - HN	JOX	15,086	13,337	-	-
888	5031193	PM Meter Maintenance - BN	JOX	5,814	5,961	-	-
889	5031195	PM Meter Maintenance - SO	JOX	15,109	6,571	-	-
890	5031198	PM Meter Maintenance - HB	JOX	31,689	7,690	-	-
891	5031200	PM Meter Maintenance - NB	JOX	6,064	2,795	-	-
892	5031202	PM Meter Maintenance - SI	JOX	35,775	13,120	-	-
893	5031204	PM Meter Maintenance - SA	JOX	46,014	6,427	-	-
894	5031206	PM Meter Maintenance - NV	JOX	42,319	21,682	-	-
895	5031208	PM Meter Maintenance - YO	JOX	8,037	8,416	-	-
896	5031210	PM Meter Maintenance - ST	JOX	1,553	406	-	-
897	5031212	PM Meter Maintenance - KE	JOX	4,128	10,748	-	-
898	5031214	PM Meter Maintenance - FR	JOX	4,113	1,742	-	-
899	5031216	PM Meter Maintenance - SJ	JOX	2,772	2,200	-	-
900	5031218	PM Meter Maintenance - DA	JOX	-	1,380	-	-
901	5031220	PM Meter Maintenance - CC	JOX	18,104	2,661	-	-
902	5031222	PM Meter Maintenance - MI	JOX	18,943	9,299	-	-
903	5031226	PM Meter Maintenance - DI	JOX	30,352	17,495	-	-
904	5031232	PM Storage Wells - LM	JOX	562	-	-	-
905	5031474	FORECAST ONLY - JOX	JOX	-	76,693	-	-
906	5035668	PM Meters and Chromatograph - BALOP	JOX	-	-	12,824	13,126
907	5035709	PM Meters and Chromatograph - GATHR	JOX	-	-	1,963	2,009
908	5035710	PM Meters and Chromatograph - L401	JOX	-	-	37,309	38,189
909	5035711	PM Meters and Chromatograph - LTRAN	JOX	-	-	395,116	404,441
910	5035712	PM Meters and Chromatograph - NPATH	JOX	-	-	10,398	10,643
911	5035713	PM Meters and Chromatograph - NPATH	JOX	-	-	26,046	26,661
912	5035714	PM Meters and Chromatograph - SPATH	JOX	-	-	19,056	19,506
913	5035715	PM Meters and Chromatograph - SPATH	JOX	-	-	69,433	71,071
914	5035716	PM Meters and Chromatograph - STOR	JOX	-	-	3,815	3,905

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
915		**Preventative Maintenance Meter Maintenance**		**1,029,311**	**435,686**	**575,959**	**589,552**
916	5010512	Gas Measurement and Chromatograph	JOY	463	320	-	-
917	5020305	CM PIPELINE VALVE - MANUAL - RV	JOY	419	-	-	-
918	5020314	CM PIPESTAT REGMONRELIEF - ME	JOY	1,798	-	-	-
919	5020316	CM PIPESTAT REGMONRELIEF - RV	JOY	146	-	-	-
920	5023435	GT CM PIPELINE STATION -BN	JOY	960	-	-	-
921	5030811	JOY-CM Meter Maintenance-Test	JOY	831	487	-	-
922	5031144	CM SCADA Maintenance - SA	JOY	2,159	-	-	-
923	5031170	CM Meter Maintenance - HR	JOY	225	-	-	-
924	5031172	CM Meter Maintenance - RD	JOY	839	2,607	-	-
925	5031174	CM Meter Maintenance - WL	JOY	2,667	-	-	-
926	5031176	CM Meter Maintenance - TY	JOY	4,438	317	-	-
927	5031178	CM Meter Maintenance - TP	JOY	1,114	-	-	-
928	5031179	PM Meter Maintenance - RV	JOY	533	-	-	-
929	5031180	CM Meter Maintenance - RV	JOY	28,571	20,745	-	-
930	5031182	CM Meter Maintenance - MH	JOY	10,992	74	-	-
931	5031184	CM Meter Maintenance - ME	JOY	3,023	6,605	-	-
932	5031188	CM Meter Maintenance - AT	JOY	333	-	-	-
933	5031190	CM Meter Maintenance - KT	JOY	6,994	325	-	-
934	5031192	CM Meter Maintenance - HN	JOY	9,299	19,825	-	-
935	5031205	CM Meter Maintenance - SA	JOY	1,270	-	-	-
936	5031207	CM Meter Maintenance - NV	JOY	-	1,867	-	-
937	5031211	CM Meter Maintenance - ST	JOY	-	17	-	-
938	5031213	CM Meter Maintenance - KE	JOY	1,754	2,953	-	-
939	5031215	CM Meter Maintenance - FR	JOY	556	325	-	-
940	5031221	CM Meter Maintenance - CC	JOY	678	-	-	-
941	5031227	CM Meter Maintenance - DI	JOY	18,553	13,546	-	-
942	5031229	CM Meter Maintenance - PN	JOY	14,605	51	-	-
943	5031475	FORECAST ONLY - JOY	JOY	-	32,245	-	-
944	5035717	CM Meters and Chromatograph - BALOP	JOY	-	-	2,596	2,658
945	5035718	CM Meters and Chromatograph - GATHR	JOY	-	-	397	407
946	5035719	CM Meters and Chromatograph - L401	JOY	-	-	7,554	7,732
947	5035720	CM Meters and Chromatograph - LTRAN	JOY	-	-	80,000	81,888
948	5035721	CM Meters and Chromatograph - NPATH	JOY	-	-	2,105	2,155
949	5035722	CM Meters and Chromatograph - NPATH	JOY	-	-	5,274	5,398

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
950	5035723	CM Meters and Chromatograph - SPATH	JOY	-	-	3,858	3,949
951	5035724	CM Meters and Chromatograph - SPATH	JOY	-	-	14,058	14,390
952	5035725	CM Meters and Chromatograph - STOR	JOY	-	-	772	791
953	5254387	Odorization Process	JOY	2,554	-	-	-
954		**Corrective Maintenance Meter Maintenance**		**115,776**	**102,308**	**116,616**	**119,368**
955	5023443	GT CM PIPELINE STATION -TP	JPA	224	-	-	-
956	5023566	GT PM GAS COMPRESSOR-BN	JPA	18	-	-	-
957	5023578	GT PM GAS PROCESSING-HN	JPA	298	-	-	-
958	5023579	GT PM GAS PROCESSING-KT	JPA	4,265	-	-	-
959	5023585	GT PM GAS PROCESSING-TP	JPA	39	-	-	-
960	5023597	GT PM INSTRUMENTATION CONTROL-TY	JPA	235	-	-	-
961	5023599	GT PM PIPELINE STATION INSTR-BN	JPA	52,686	61,914	-	-
962	5023600	GT PM PIPELINE STATION INSTR-HN	JPA	38,203	17,132	-	-
963	5023601	GT PM PIPELINE STATION INSTR-KT	JPA	69,844	29,231	-	-
964	5023602	GT PM PIPELINE STATION INSTR-LM	JPA	97,369	50,984	-	-
965	5023603	GT PM PIPELINE STATION INSTR-MD	JPA	226,178	150,152	-	-
966	5023604	GT PM PIPELINE STATION INSTR-ME	JPA	5,257	3,994	-	-
967	5023605	GT PM PIPELINE STATION INSTR-MH	JPA	32,505	3,623	-	-
968	5023606	GT PM PIPELINE STATION INSTR-RV	JPA	751	-	-	-
969	5023607	GT PM PIPELINE STATION INSTR-TP	JPA	43,687	13,732	-	-
970	5023608	GT PM PIPELINE STATION INSTR-TY	JPA	77,047	7,239	-	-
971	5023609	GT PM PIPELINE STATION INSTR-WL	JPA	38,330	40,109	-	-
972	5023622	GT PM STOR COMPRESS STATIONS OTHER-HN	JPA	410	-	-	-
973	5023631	GT PM STOR COMPRESS STATIONS OTHER-WL	JPA	401	-	-	-
974	5023658	GT PREV MAINT-G MAIN VALVE-AUTOMATED-TY	JPA	470	-	-	-
975	5023839	GT OPER TRANSM PIPELINES - TY	JPA	117	-	-	-
976	5023842	GT OPER TRANSM REGULATOR STATION - HN	JPA	224	-	-	-
977	5023843	GT OPER TRANSM REGULATOR STATION - KT	JPA	42	-	-	-
978	5023849	GT OPER TRANSM REGULATOR STATION - TP	JPA	39	-	-	-
979	5026421	Pipeline Other-LT	JPA	272	-	-	-
980	5026908	PM PipeStat Instrument	JPA	-	-	728,604	745,799
981	5028001	FORECAST ONLY - JPA	JPA	-	421,890	-	-
982	5031191	PM Meter Maintenance - HN	JPA	1,192	-	-	-
983	5042311	GT PM PIPELINE STATION INSTR-SR	JPA	582	-	-	-
984	5240340	OP & Maint MD	JPA	1,012	-	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
985		**Preventative Maintenance StorCompStat Piping Assets**		**691,697**	**800,000**	**728,604**	**745,799**
986	5023421	GT CM GAS PROCESSING-TP	JPB	112	-	-	-
987	5023432	GT CM INSTRUMENTATION CONTROL-TP	JPB	37	-	-	-
988	5023433	GT CM INSTRUMENTATION CONTROL-TY	JPB	313	-	-	-
989	5023435	GT CM PIPELINE STATION -BN	JPB	4,589	-	-	-
990	5023436	GT CM PIPELINE STATION -HN	JPB	24,702	6,099	-	-
991	5023437	GT CM PIPELINE STATION -KT	JPB	11,467	11,637	-	-
992	5023438	GT CM PIPELINE STATION -LM	JPB	22,786	123	-	-
993	5023439	GT CM PIPELINE STATION -MD	JPB	55,301	13,506	-	-
994	5023440	GT CM PIPELINE STATION -ME	JPB	2,392	-	-	-
995	5023441	GT CM PIPELINE STATION -MH	JPB	1,582	316	-	-
996	5023442	GT CM PIPELINE STATION -RV	JPB	5,230	13,664	-	-
997	5023443	GT CM PIPELINE STATION -TP	JPB	10,396	27,968	-	-
998	5023444	GT CM PIPELINE STATION -TY	JPB	8,252	1,986	-	-
999	5023445	GT CM PIPELINE STATION -WL	JPB	7,269	487	-	-
1000	5023457	GT CM STOR COMPRESS STATIONS OTHER-BN	JPB	784	-	-	-
1001	5023458	GT CM STOR COMPRESS STATIONS OTHER-HN	JPB	560	-	-	-
1002	5023460	GT CM STOR COMPRESS STATIONS OTHER-LM	JPB	150	-	-	-
1003	5023461	GT CM STOR COMPRESS STATIONS OTHER-MD	JPB	412	-	-	-
1004	5023466	GT CM STOR COMPRESS STATIONS OTHER-TY	JPB	350	-	-	-
1005	5023842	GT OPER TRANSM REGULATOR STATION - HN	JPB	559	-	-	-
1006	5026762	CM Pipeline Stations	JPB	-	327	165,509	169,415
1007	5027493	Station Valves & Actuator C&P-Remap	JPB	5,528	-	-	-
1008	5028002	FORECAST ONLY - JPB	JPB	-	115,074	-	-
1009	5031191	PM Meter Maintenance - HN	JPB	19	-	-	-
1010	5031192	CM Meter Maintenance - HN	JPB	58	-	-	-
1011	5031195	PM Meter Maintenance - SO	JPB	159	-	-	-
1012	5031211	CM Meter Maintenance - ST	JPB	278	-	-	-
1013		**CM StorCompStat Piping Assets**		**163,286**	**191,186**	**165,509**	**169,415**
1014	5023567	GT PM GAS COMPRESSOR-HN	JPC	2,000	-	-	-
1015	5023569	GT PM GAS COMPRESSOR-LM	JPC	75	-	-	-
1016	5023574	GT PM GAS COMPRESSOR-TP	JPC	1,728	-	-	-
1017	5023575	GT PM GAS COMPRESSOR-TY	JPC	603	-	-	-
1018	5023577	GT PM GAS PROCESSING-BN	JPC	6,911	4,044	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
1019	5023578	GT PM GAS PROCESSING-HN	JPC	203,856	104,925	-	-
1020	5023579	GT PM GAS PROCESSING-KT	JPC	25,154	37,585	-	-
1021	5023580	GT PM GAS PROCESSING-LM	JPC	152,677	98,154	-	-
1022	5023581	GT PM GAS PROCESSING-MD	JPC	165,517	130,247	-	-
1023	5023582	GT PM GAS PROCESSING-ME	JPC	475	389	-	-
1024	5023583	GT PM GAS PROCESSING-MH	JPC	489	-	-	-
1025	5023585	GT PM GAS PROCESSING-TP	JPC	198,555	101,727	-	-
1026	5023586	GT PM GAS PROCESSING-TY	JPC	4,412	6,865	-	-
1027	5023587	GT PM GAS PROCESSING-WL	JPC	33,445	28,242	-	-
1028	5023589	GT PM INSTRUMENTATION CONTROL-HN	JPC	1,863	-	-	-
1029	5023596	GT PM INSTRUMENTATION CONTROL-TP	JPC	311	-	-	-
1030	5023597	GT PM INSTRUMENTATION CONTROL-TY	JPC	352	-	-	-
1031	5023601	GT PM PIPELINE STATION INSTR-KT	JPC	224	-	-	-
1032	5023603	GT PM PIPELINE STATION INSTR-MD	JPC	6,968	-	-	-
1033	5023607	GT PM PIPELINE STATION INSTR-TP	JPC	2,198	-	-	-
1034	5023608	GT PM PIPELINE STATION INSTR-TY	JPC	298	-	-	-
1035	5023609	GT PM PIPELINE STATION INSTR-WL	JPC	948	-	-	-
1036	5023622	GT PM STOR COMPRESS STATIONS OTHER-HN	JPC	298	-	-	-
1037	5023625	GT PM STOR COMPRESS STATIONS OTHER-MD	JPC	2,362	-	-	-
1038	5023630	GT PM STOR COMPRESS STATIONS OTHER-TY	JPC	256	-	-	-
1039	5023641	GT PREV MAINT-G MAIN VALVE-AUTOMATED-KT	JPC	2,646	-	-	-
1040	5023642	GT PREV MAINT-G MAIN VALVE-AUTOMATED-AT	JPC	235	-	-	-
1041	5023658	GT PREV MAINT-G MAIN VALVE-AUTOMATED-TY	JPC	146	-	-	-
1042	5023842	GT OPER TRANSM REGULATOR STATION - HN	JPC	391	-	-	-
1043	5023843	GT OPER TRANSM REGULATOR STATION - KT	JPC	899	-	-	-
1044	5023849	GT OPER TRANSM REGULATOR STATION - TP	JPC	113	-	-	-
1045	5026920	PM StorCompStat GasProcess	JPC	-	-	866,590	887,042
1046	5028003	FORECAST ONLY - JPC	JPC	-	481,848	-	-
1047	5240340	OP & Maint MD	JPC	7,699	111,539	-	-
1048	5240369	Well O&M LM	JPC	21,437	24,435	-	-
1049		**Preventative Maintenance StorCompStat GasProcess**		**845,544**	**1,130,000**	**866,590**	**887,042**
1050	5023446	GT CM POWER UNITS-BN	JPD	22,998	-	-	-
1051	5023536	GT OPERATIONS OTHER-WL	JPD	1,966	-	-	-
1052	5023566	GT PM GAS COMPRESSOR-BN	JPD	60,048	40,600	-	-
1053	5023567	GT PM GAS COMPRESSOR-HN	JPD	563,679	335,943	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
1054	5023568	GT PM GAS COMPRESSOR-KT	JPD	145,579	50,922	-	-
1055	5023569	GT PM GAS COMPRESSOR-LM	JPD	53,182	7,742	-	-
1056	5023570	GT PM GAS COMPRESSOR-MD	JPD	32,304	4,055	-	-
1057	5023574	GT PM GAS COMPRESSOR-TP	JPD	104,313	49,056	-	-
1058	5023575	GT PM GAS COMPRESSOR-TY	JPD	39,812	9,889	-	-
1059	5023576	GT PM GAS COMPRESSOR-WL	JPD	112,375	53,050	-	-
1060	5023578	GT PM GAS PROCESSING-HN	JPD	56	-	-	-
1061	5023585	GT PM GAS PROCESSING-TP	JPD	234	-	-	-
1062	5023588	GT PM INSTRUMENTATION CONTROL-BN	JPD	146	-	-	-
1063	5023597	GT PM INSTRUMENTATION CONTROL-TY	JPD	982	-	-	-
1064	5023599	GT PM PIPELINE STATION INSTR-BN	JPD	36	-	-	-
1065	5023621	GT PM STOR COMPRESS STATIONS OTHER-BN	JPD	2,325	-	-	-
1066	5023622	GT PM STOR COMPRESS STATIONS OTHER-HN	JPD	1,248	-	-	-
1067	5023623	GT PM STOR COMPRESS STATIONS OTHER-KT	JPD	430	-	-	-
1068	5023625	GT PM STOR COMPRESS STATIONS OTHER-MD	JPD	150	-	-	-
1069	5023629	GT PM STOR COMPRESS STATIONS OTHER-TP	JPD	418	-	-	-
1070	5023630	GT PM STOR COMPRESS STATIONS OTHER-TY	JPD	1,990	-	-	-
1071	5023631	GT PM STOR COMPRESS STATIONS OTHER-WL	JPD	406	-	-	-
1072	5026919	PM StorCompStat GasCompressor	JPD	-	-	1,174,885	1,202,612
1073	5028004	FORECAST ONLY - JPD	JPD	-	612,358	-	-
1074	5240340	OP & Maint MD	JPD	262	-	-	-
1075		**Preventative Maintenance StorCompStat GasCompressor**		**1,144,938**	**1,163,614**	**1,174,885**	**1,202,612**
1076	5016665	GT LEAK SURVEY - GROUND - SF	JPE	78	-	-	-
1077	5023443	GT CM PIPELINE STATION -TP	JPE	328	-	-	-
1078	5023567	GT PM GAS COMPRESSOR-HN	JPE	974	-	-	-
1079	5023569	GT PM GAS COMPRESSOR-LM	JPE	75	-	-	-
1080	5023572	GT PM GAS COMPRESSOR-MH	JPE	825	-	-	-
1081	5023574	GT PM GAS COMPRESSOR-TP	JPE	6,200	-	-	-
1082	5023575	GT PM GAS COMPRESSOR-TY	JPE	617	-	-	-
1083	5023585	GT PM GAS PROCESSING-TP	JPE	149	-	-	-
1084	5023588	GT PM INSTRUMENTATION CONTROL-BN	JPE	277,687	120,499	-	-
1085	5023589	GT PM INSTRUMENTATION CONTROL-HN	JPE	219,039	146,279	-	-
1086	5023590	GT PM INSTRUMENTATION CONTROL-KT	JPE	364,467	122,594	-	-
1087	5023591	GT PM INSTRUMENTATION CONTROL-LM	JPE	238,962	186,218	-	-
1088	5023592	GT PM INSTRUMENTATION CONTROL-MD	JPE	10,436	60,325	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
1089	5023594	GT PM INSTRUMENTATION CONTROL-MH	JPE	937	79	-	-
1090	5023595	GT PM INSTRUMENTATION CONTROL-RV	JPE	11,446	-	-	-
1091	5023596	GT PM INSTRUMENTATION CONTROL-TP	JPE	156,112	39,653	-	-
1092	5023597	GT PM INSTRUMENTATION CONTROL-TY	JPE	68,020	25,799	-	-
1093	5023598	GT PM INSTRUMENTATION CONTROL-WL	JPE	338,828	216,736	-	-
1094	5023599	GT PM PIPELINE STATION INSTR-BN	JPE	274	-	-	-
1095	5023600	GT PM PIPELINE STATION INSTR-HN	JPE	168	-	-	-
1096	5023603	GT PM PIPELINE STATION INSTR-MD	JPE	1,601	-	-	-
1097	5023607	GT PM PIPELINE STATION INSTR-TP	JPE	599	-	-	-
1098	5023608	GT PM PIPELINE STATION INSTR-TY	JPE	214	-	-	-
1099	5023609	GT PM PIPELINE STATION INSTR-WL	JPE	511	-	-	-
1100	5023621	GT PM STOR COMPRESS STATIONS OTHER-BN	JPE	7,850	-	-	-
1101	5023622	GT PM STOR COMPRESS STATIONS OTHER-HN	JPE	3,241	-	-	-
1102	5023623	GT PM STOR COMPRESS STATIONS OTHER-KT	JPE	15,604	-	-	-
1103	5023624	GT PM STOR COMPRESS STATIONS OTHER-LM	JPE	4,480	-	-	-
1104	5023625	GT PM STOR COMPRESS STATIONS OTHER-MD	JPE	4,029	-	-	-
1105	5023629	GT PM STOR COMPRESS STATIONS OTHER-TP	JPE	5,656	-	-	-
1106	5023630	GT PM STOR COMPRESS STATIONS OTHER-TY	JPE	1,279	-	-	-
1107	5023631	GT PM STOR COMPRESS STATIONS OTHER-WL	JPE	3,606	-	-	-
1108	5023831	GT OPER TRANSM PIPELINES - HN	JPE	75	-	-	-
1109	5023832	GT OPER TRANSM PIPELINES - KT	JPE	149	-	-	-
1110	5023842	GT OPER TRANSM REGULATOR STATION - HN	JPE	818	-	-	-
1111	5023843	GT OPER TRANSM REGULATOR STATION - KT	JPE	623	-	-	-
1112	5023844	GT OPER TRANSM REGULATOR STATION - AT	JPE	2,207	-	-	-
1113	5023846	GT OPER TRANSM REGULATOR STATION - ME	JPE	438	-	-	-
1114	5023847	GT OPER TRANSM REGULATOR STATION - MH	JPE	9,639	-	-	-
1115	5023849	GT OPER TRANSM REGULATOR STATION - TP	JPE	662	-	-	-
1116	5023850	GT OPER TRANSM REGULATOR STATION - TY	JPE	1,197	-	-	-
1117	5026921	PM StorCompStat InstrumentCtrl	JPE	-	-	2,375,450	2,431,510
1118	5028005	FORECAST ONLY - JPE	JPE	-	819,730	-	-
1119	5042314	GT PM INSTRUMENTATION CONTROL-MH	JPE	39,936	6,637	-	-
1120	5240340	OP & Maint MD	JPE	538	-	-	-
1121	5240369	Well O&M LM	JPE	762	-	-	-
1122		**Preventative Maintenance Storage/Compressor Station Support**		**1,801,329**	**1,744,549**	**2,375,450**	**2,431,510**
1123	5023621	GT PM STOR COMPRESS STATIONS OTHER-BN	JPF	15,307	95	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
1124	5023622	GT PM STOR COMPRESS STATIONS OTHER-HN	JPF	22,167	8,287	-	-
1125	5023623	GT PM STOR COMPRESS STATIONS OTHER-KT	JPF	23,310	962	-	-
1126	5023624	GT PM STOR COMPRESS STATIONS OTHER-LM	JPF	576	869	-	-
1127	5023625	GT PM STOR COMPRESS STATIONS OTHER-MD	JPF	358,766	62,757	-	-
1128	5023626	GT PM STOR COMPRESS STATIONS OTHER-ME	JPF	845	-	-	-
1129	5023627	GT PM STOR COMPRESS STATIONS OTHER-MH	JPF	213	-	-	-
1130	5023628	GT PM STOR COMPRESS STATIONS OTHER-RV	JPF	45	-	-	-
1131	5023629	GT PM STOR COMPRESS STATIONS OTHER-TP	JPF	3,732	100	-	-
1132	5023630	GT PM STOR COMPRESS STATIONS OTHER-TY	JPF	532	81	-	-
1133	5023631	GT PM STOR COMPRESS STATIONS OTHER-WL	JPF	9,844	-	-	-
1134	5028006	FORECAST ONLY - JPF	JPF	-	142,849	-	-
1135		**Preventative Maintenance StorCompStat Other**		**435,336**	**216,000**	**-**	**-**
1136	5020306	CM PIPELINE VALVE - MANUAL - TP	JPG	19	-	-	-
1137	5023413	GT CM GAS PROCESSING-BN	JPG	4,806	5,749	-	-
1138	5023414	GT CM GAS PROCESSING-HN	JPG	58,270	21,855	-	-
1139	5023415	GT CM GAS PROCESSING-KT	JPG	15,368	32,339	-	-
1140	5023416	GT CM GAS PROCESSING-LM	JPG	35,335	48,873	-	-
1141	5023417	GT CM GAS PROCESSING-MD	JPG	310,774	105,030	-	-
1142	5023418	GT CM GAS PROCESSING-ME	JPG	606	317	-	-
1143	5023420	GT CM GAS PROCESSING-RV	JPG	2,694	-	-	-
1144	5023421	GT CM GAS PROCESSING-TP	JPG	449,300	29,536	-	-
1145	5023422	GT CM GAS PROCESSING-TY	JPG	78	142	-	-
1146	5023423	GT CM GAS PROCESSING-WL	JPG	45,378	-	-	-
1147	5023432	GT CM INSTRUMENTATION CONTROL-TP	JPG	766	-	-	-
1148	5023446	GT CM POWER UNITS-BN	JPG	455	-	-	-
1149	5023458	GT CM STOR COMPRESS STATIONS OTHER-HN	JPG	298	-	-	-
1150	5023460	GT CM STOR COMPRESS STATIONS OTHER-LM	JPG	2,889	-	-	-
1151	5023461	GT CM STOR COMPRESS STATIONS OTHER-MD	JPG	6,147	-	-	-
1152	5023465	GT CM STOR COMPRESS STATIONS OTHER-TP	JPG	7,293	-	-	-
1153	5023526	GT OPERATIONS OTHER-BN	JPG	861	-	-	-
1154	5026774	CM StorCompStat GasProcess	JPG	-	-	985,110	1,008,358
1155	5028007	FORECAST ONLY - JPG	JPG	-	426,131	-	-
1156		**Corrective Maintenance StorCompStat GasProcess**		**941,337**	**669,972**	**985,110**	**1,008,358**
1157	5023402	GT CM GAS COMPRESSOR-BN	JPH	69,070	23,355	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
1158	5023403	GT CM GAS COMPRESSOR-HN	JPH	485,259	219,652	-	-
1159	5023404	GT CM GAS COMPRESSOR-KT	JPH	20,793	22,264	-	-
1160	5023405	GT CM GAS COMPRESSOR-LM	JPH	84,943	60,326	-	-
1161	5023406	GT CM GAS COMPRESSOR-MD	JPH	25,756	4,061	-	-
1162	5023410	GT CM GAS COMPRESSOR-TP	JPH	391,389	147,530	-	-
1163	5023411	GT CM GAS COMPRESSOR-TY	JPH	49,950	4,855	-	-
1164	5023412	GT CM GAS COMPRESSOR-WL	JPH	95,285	7,249	-	-
1165	5023414	GT CM GAS PROCESSING-HN	JPH	684	-	-	-
1166	5023421	GT CM GAS PROCESSING-TP	JPH	19	-	-	-
1167	5023422	GT CM GAS PROCESSING-TY	JPH	39	-	-	-
1168	5023425	GT CM INSTRUMENTATION CONTROL-HN	JPH	75	-	-	-
1169	5023432	GT CM INSTRUMENTATION CONTROL-TP	JPH	1,155	-	-	-
1170	5023447	GT CM POWER UNITS-HN	JPH	379	-	-	-
1171	5023454	GT CM POWER UNITS-TP	JPH	78	-	-	-
1172	5023455	GT CM POWER UNITS-TY	JPH	1,907	-	-	-
1173	5023457	GT CM STOR COMPRESS STATIONS OTHER-BN	JPH	763	-	-	-
1174	5023458	GT CM STOR COMPRESS STATIONS OTHER-HN	JPH	7,880	-	-	-
1175	5023460	GT CM STOR COMPRESS STATIONS OTHER-LM	JPH	825	-	-	-
1176	5023461	GT CM STOR COMPRESS STATIONS OTHER-MD	JPH	7,195	-	-	-
1177	5023465	GT CM STOR COMPRESS STATIONS OTHER-TP	JPH	3,259	-	-	-
1178	5023466	GT CM STOR COMPRESS STATIONS OTHER-TY	JPH	7,607	-	-	-
1179	5023478	GT CORR MAINT-G MAIN VALVE-AUTOMATED-AT	JPH	39	-	-	-
1180	5023527	GT OPERATIONS OTHER-HN	JPH	298	-	-	-
1181	5023534	GT OPERATIONS OTHER-TP	JPH	2,975	-	-	-
1182	5023536	GT OPERATIONS OTHER-WL	JPH	5,379	-	-	-
1183	5026773	CM StorCompStat GasCompress	JPH	-	-	1,305,832	1,336,649
1184	5028008	FORECAST ONLY - JPH	JPH	-	597,610	-	-
1185	5240347	Station Compress Overhaul_Insp-Hinkley	JPH	8,199	-	-	-
1186		**Corrective Maintenance StorCompStat GasCompress**		**1,271,200**	**1,086,902**	**1,305,832**	**1,336,649**
1187	5020310	CM PIPESTAT REGMONRELIEF - HN	JPI	298	-	-	-
1188	5023421	GT CM GAS PROCESSING-TP	JPI	1,756	-	-	-
1189	5023424	GT CM INSTRUMENTATION CONTROL-BN	JPI	25,738	814	-	-
1190	5023425	GT CM INSTRUMENTATION CONTROL-HN	JPI	161,419	86,974	-	-
1191	5023426	GT CM INSTRUMENTATION CONTROL-KT	JPI	48,608	5,660	-	-
1192	5023427	GT CM INSTRUMENTATION CONTROL-LM	JPI	66,208	28,916	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
1193	5023428	GT CM INSTRUMENTATION CONTROL-MD	JPI	561,562	19,846	-	-
1194	5023430	GT CM INSTRUMENTATION CONTROL-MH	JPI	5,948	-	-	-
1195	5023431	GT CM INSTRUMENTATION CONTROL-RV	JPI	748	165	-	-
1196	5023432	GT CM INSTRUMENTATION CONTROL-TP	JPI	270,291	137,065	-	-
1197	5023433	GT CM INSTRUMENTATION CONTROL-TY	JPI	19,742	1,027	-	-
1198	5023434	GT CM INSTRUMENTATION CONTROL-WL	JPI	201,372	14,138	-	-
1199	5023447	GT CM POWER UNITS-HN	JPI	701	-	-	-
1200	5023454	GT CM POWER UNITS-TP	JPI	486	-	-	-
1201	5023457	GT CM STOR COMPRESS STATIONS OTHER-BN	JPI	3,295	-	-	-
1202	5023458	GT CM STOR COMPRESS STATIONS OTHER-HN	JPI	3,082	-	-	-
1203	5023459	GT CM STOR COMPRESS STATIONS OTHER-KT	JPI	353	-	-	-
1204	5023461	GT CM STOR COMPRESS STATIONS OTHER-MD	JPI	10,220	-	-	-
1205	5023463	GT CM STOR COMPRESS STATIONS OTHER-MH	JPI	6,781	-	-	-
1206	5023465	GT CM STOR COMPRESS STATIONS OTHER-TP	JPI	11,815	-	-	-
1207	5023466	GT CM STOR COMPRESS STATIONS OTHER-TY	JPI	1,636	-	-	-
1208	5023467	GT CM STOR COMPRESS STATIONS OTHER-WL	JPI	1,585	-	-	-
1209	5023527	GT OPERATIONS OTHER-HN	JPI	224	-	-	-
1210	5023529	GT OPERATIONS OTHER-LM	JPI	627	-	-	-
1211	5026775	CM StorCompStat InstrumentCtrl	JPI	66,541	-	1,570,085	1,607,139
1212	5028009	FORECAST ONLY - JPI	JPI	-	169,895	-	-
1213	5031118	CM SCADA Maintenance - TP	JPI	428	-	-	-
1214		**Corrective Maintenance Storage/Compressor Station Support**		**1,471,463**	**464,500**	**1,570,085**	**1,607,139**
1215	5023457	GT CM STOR COMPRESS STATIONS OTHER-BN	JPJ	-	98,463	-	-
1216	5023458	GT CM STOR COMPRESS STATIONS OTHER-HN	JPJ	-	98,057	-	-
1217	5023459	GT CM STOR COMPRESS STATIONS OTHER-KT	JPJ	-	17,154	-	-
1218	5023460	GT CM STOR COMPRESS STATIONS OTHER-LM	JPJ	-	130,814	-	-
1219	5023461	GT CM STOR COMPRESS STATIONS OTHER-MD	JPJ	-	159,699	-	-
1220	5023465	GT CM STOR COMPRESS STATIONS OTHER-TP	JPJ	-	4,350	-	-
1221	5023466	GT CM STOR COMPRESS STATIONS OTHER-TY	JPJ	33,093	28,980	-	-
1222	5023467	GT CM STOR COMPRESS STATIONS OTHER-WL	JPJ	-	35,410	-	-
1223	5026776	CM StorCompStat Other	JPJ	-	276	-	-
1224	5028010	FORECAST ONLY - JPJ	JPJ	-	926,506	-	-
1225		**Corrective Maintenance StorCompStat Other**		**33,093**	**1,499,707**	**-**	**-**
1226	5016954	GT PREV MAINT - G REGULATOR GENL - SO	JPK	705	-	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
1227	5023447	GT CM POWER UNITS-HN	JPK	367	-	-	-
1228	5023610	GT PM POWER UNITS-BN	JPK	15,023	4,022	-	-
1229	5023611	GT PM POWER UNITS-HN	JPK	65,451	16,724	-	-
1230	5023612	GT PM POWER UNITS-KT	JPK	20,153	4,819	-	-
1231	5023613	GT PM POWER UNITS-LM	JPK	10,362	2,626	-	-
1232	5023614	GT PM POWER UNITS-MD	JPK	24,961	11,479	-	-
1233	5023618	GT PM POWER UNITS-TP	JPK	15,487	1,230	-	-
1234	5023619	GT PM POWER UNITS-TY	JPK	9,952	1,075	-	-
1235	5023620	GT PM POWER UNITS-WL	JPK	6,261	1,958	-	-
1236	5023839	GT OPER TRANSM PIPELINES - TY	JPK	78	-	-	-
1237	5023841	GT OPER TRANSM REGULATOR STATION - BN	JPK	639	-	-	-
1238	5026909	PM Power Units	JPK	-	-	175,141	179,275
1239	5028011	FORECAST ONLY - JPK	JPK	-	67,196	-	-
1240		**Preventative Maintenance Power Units**		**169,439**	**111,131**	**175,141**	**179,275**
1241	5023416	GT CM GAS PROCESSING-LM	JPL	637	-	-	-
1242	5023446	GT CM POWER UNITS-BN	JPL	9,668	20,826	-	-
1243	5023447	GT CM POWER UNITS-HN	JPL	70,114	17,819	-	-
1244	5023448	GT CM POWER UNITS-KT	JPL	-	413	-	-
1245	5023449	GT CM POWER UNITS-LM	JPL	2,718	633	-	-
1246	5023450	GT CM POWER UNITS-MD	JPL	10,169	237	-	-
1247	5023454	GT CM POWER UNITS-TP	JPL	56,881	33,334	-	-
1248	5023455	GT CM POWER UNITS-TY	JPL	3,918	15,818	-	-
1249	5023456	GT CM POWER UNITS-WL	JPL	3,745	8,082	-	-
1250	5023457	GT CM STOR COMPRESS STATIONS OTHER-BN	JPL	519	-	-	-
1251	5023461	GT CM STOR COMPRESS STATIONS OTHER-MD	JPL	187	-	-	-
1252	5023849	GT OPER TRANSM REGULATOR STATION - TP	JPL	518	-	-	-
1253	5023850	GT OPER TRANSM REGULATOR STATION - TY	JPL	600	-	-	-
1254	5026763	CM Power Units	JPL	-	317	193,569	198,137
1255	5028012	FORECAST ONLY - JPL	JPL	-	94,783	-	-
1256		**Corrective Maintenance Power Units**		**159,674**	**192,261**	**193,569**	**198,137**
1257	5002469	GSMTS, Standing, Burney	JPN	489	-	-	-
1258	5002470	GSMTS, Standing, Hinkley	JPN	10,203	83	-	-
1259	5002471	GSMTS, Standing Kettleman	JPN	789	293	-	-
1260	5002474	GSMTS, Standing, Los Medanos	JPN	42	42	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
1261	5002475	GSMTS, Standing, McDonald Island	JPN	(248)	-	-	-
1262	5002476	GSMTS, Standing, Meridian/Orland	JPN	3,196	271	-	-
1263	5002477	GSMTS, Standing, Milpitas/Hollister	JPN	15,156	75	-	-
1264	5002478	GSMTS, Standing, Topock	JPN	7,866	-	-	-
1265	5002479	GSMTS, Standing, Rio Vista	JPN	1,423	-	-	-
1266	5002481	GSMTS, Standing, Tracy	JPN	(11)	-	-	-
1267	5017170	GSO-Standing, McDonald Island	JPN	1,520,898	792,425	-	-
1268	5017171	GSO-Standing, Los Medanos	JPN	794,261	465,730	-	-
1269	5017172	GSO-Standing, Hinkley	JPN	946,349	540,453	-	-
1270	5017173	GSO-Standing, Topock	JPN	995,183	609,855	-	-
1271	5023414	GT CM GAS PROCESSING-HN	JPN	183	-	-	-
1272	5023526	GT OPERATIONS OTHER-BN	JPN	17,052	108,415	-	-
1273	5023527	GT OPERATIONS OTHER-HN	JPN	23,126	5,412	-	-
1274	5023528	GT OPERATIONS OTHER-KT	JPN	33,602	6,383	-	-
1275	5023529	GT OPERATIONS OTHER-LM	JPN	198,573	111,315	-	-
1276	5023530	GT OPERATIONS OTHER-MD	JPN	743,762	286,933	-	-
1277	5023531	GT OPERATIONS OTHER-ME	JPN	54,916	882	-	-
1278	5023532	GT OPERATIONS OTHER-MH	JPN	22,768	-	-	-
1279	5023533	GT OPERATIONS OTHER-RV	JPN	227,638	85,203	-	-
1280	5023534	GT OPERATIONS OTHER-TP	JPN	212,076	41,501	-	-
1281	5023535	GT OPERATIONS OTHER-TY	JPN	30,976	10,466	-	-
1282	5023536	GT OPERATIONS OTHER-WL	JPN	377,224	216,770	-	-
1283	5023579	GT PM GAS PROCESSING-KT	JPN	78	-	-	-
1284	5023623	GT PM STOR COMPRESS STATIONS OTHER-KT	JPN	1,407	-	-	-
1285	5023625	GT PM STOR COMPRESS STATIONS OTHER-MD	JPN	74	-	-	-
1286	5023629	GT PM STOR COMPRESS STATIONS OTHER-TP	JPN	93	-	-	-
1287	5023630	GT PM STOR COMPRESS STATIONS OTHER-TY	JPN	1,713	-	-	-
1288	5023631	GT PM STOR COMPRESS STATIONS OTHER-WL	JPN	145	-	-	-
1289	5023830	GT OPER TRANSM PIPELINES - BN	JPN	146	-	-	-
1290	5023835	GT OPER TRANSM PIPELINES - ME	JPN	36	-	-	-
1291	5023837	GT OPER TRANSM PIPELINES - RV	JPN	1,295	-	-	-
1292	5023850	GT OPER TRANSM REGULATOR STATION - TY	JPN	4,107	-	-	-
1293	5026784	District station maintenance-GT&SO	JPN	-	-	6,555,442	6,710,151
1294	5028014	FORECAST ONLY - JPN	JPN	-	3,633,455	-	-
1295	5029452	PM PIPESTAT REGMONRELIEF - HR	JPN	150	-	-	-
1296	5029949	GT OPERATIONS OTHER-HR	JPN	9,209	-	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
1297	5256515	Manned Stations Oper Risk Avoidance	JPN	-	37	-	-
1298		**Station Operations**		**6,255,945**	**6,916,000**	**6,555,442**	**6,710,151**
1299	5023461	GT CM STOR COMPRESS STATIONS OTHER-MD	JPO	1,200	-	-	-
1300	5023624	GT PM STOR COMPRESS STATIONS OTHER-LM	JPO	6,470	-	-	-
1301	5031230	PM Storage Wells -MD	JPO	1,424,668	537,958	-	-
1302	5031232	PM Storage Wells - LM	JPO	531,514	33,324	-	-
1303	5031476	FORECAST ONLY - JPO	JPO	-	470,719	-	-
1304	5035726	PM Storage Wells - STOR	JPO	-	-	2,045,438	2,093,711
1305		**Preventative Maintenance Storage Wells**		**1,963,852**	**1,042,000**	**2,045,438**	**2,093,711**
1306	5023461	GT CM STOR COMPRESS STATIONS OTHER-MD	JPP	23,762	-	-	-
1307	5023624	GT PM STOR COMPRESS STATIONS OTHER-LM	JPP	600	-	-	-
1308	5031231	CM Storage Wells -MD	JPP	414,453	9,462	-	-
1309	5031233	CM Storage Wells - LM	JPP	30,272	3,714	-	-
1310	5032729	FORECAST ONLY - JPP	JPP	-	141,770	-	-
1311	5035727	CM Storage Wells - STOR	JPP	26,012	-	523,862	536,226
1312	5038069	Prj mgmt. support Los Medanos	JPP	6,956	-	-	-
1313		**Corrective Maintenance Storage Wells**		**502,054**	**154,946**	**523,862**	**536,226**
1314	5002470	GSMTS, Standing, Hinkley	JP#	311	-	-	-
1315	5023425	GT CM INSTRUMENTATION CONTROL-HN	JP#	(1,616,609)	-	-	-
1316	5023456	GT CM POWER UNITS-WL	JP#	3,267	-	-	-
1317	5023457	GT CM STOR COMPRESS STATIONS OTHER-BN	JP#	1,524,768	-	-	-
1318	5023526	GT OPERATIONS OTHER-BN	JP#	55,502	-	-	-
1319	5023529	GT OPERATIONS OTHER-LM	JP#	29,278	-	-	-
1320	5028269	GT - Standard Cost Variance - JP	JP#	421,338	-	-	-
1321	5240369	Well O&M LM	JP#	3,483	-	-	-
1322		**Station Maintenance, Other**		**421,338**	**-**	**-**	**-**
1323	5023526	GT OPERATIONS OTHER-BN	JTG	7,794	-	-	-
1324	5027503	GT Misc - Remapping	JTG	137,925	-	-	-
1325	5031929	2015 Emergent Projects	JTG	47,256	-	-	-
1326	5252492	MCS V-53 valve and pressure indication	JTG	13,899	-	-	-
1327		**Storage Wells**		**206,873**	**-**	**-**	**-**

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
1328	5019769	Pipeline Marker Maint - CC	JOS	3,791	627	-	-
1329	5019770	Pipeline Marker Maint - DA	JOS	2,384	-	-	-
1330	5019771	Pipeline Marker Maint - DI	JOS	167	-	-	-
1331	5019772	Pipeline Marker Maint - EB	JOS	328	-	-	-
1332	5019773	Pipeline Marker Maint - FR	JOS	-	3,703	-	-
1333	5019774	Pipeline Marker Maint - HB	JOS	-	3,621	-	-
1334	5019775	Pipeline Marker Maint - KE	JOS	-	243	-	-
1335	5019778	Pipeline Marker Maint - NV	JOS	696	762	-	-
1336	5019780	Pipeline Marker Maint - SA	JOS	8,966	4,673	-	-
1337	5019782	Pipeline Marker Maint - SI	JOS	-	459	-	-
1338	5019783	Pipeline Marker Maint - SJ	JOS	636	-	-	-
1339	5019784	Pipeline Marker Maint - SO	JOS	3,281	-	-	-
1340	5019786	Pipeline Marker Maint - YO	JOS	1,357	7,308	-	-
1341	5023864	Pipeline Marker Maint -BN	JOS	1,829	2,222	-	-
1342	5023865	Pipeline Marker Maint -HN	JOS	20,730	6,633	-	-
1343	5023866	Pipeline Marker Maint -KT	JOS	598	(96)	-	-
1344	5023867	Pipeline Marker Maint -AT	JOS	2,458	-	-	-
1345	5023869	Pipeline Marker Maint -ME	JOS	1,410	-	-	-
1346	5023870	Pipeline Marker Maint -MH	JOS	-	1,223	-	-
1347	5023871	Pipeline Marker Maint -RV	JOS	3,755	-	-	-
1348	5023872	Pipeline Marker Maint -TP	JOS	6,200	-	-	-
1349	5023873	Pipeline Marker Maint -TY	JOS	4,385	1,311	-	-
1350	5023874	Pipeline Marker Maint -WL	JOS	476	2,745	-	-
1351	5026863	Pipeline Marker Maintenance-BALOP	JOS	-	-	20,568	21,054
1352	5026864	Pipeline Marker Maintenance-GATHR	JOS	-	-	3,148	3,222
1353	5026865	Pipeline Marker Maintenance-L401	JOS	-	-	59,842	61,254
1354	5026866	Pipeline Marker Maintenance-LTRAN	JOS	-	-	633,750	648,707
1355	5026867	Pipeline Marker Maintenance-NPATH L2	JOS	-	-	16,678	17,072
1356	5026868	Pipeline Marker Maintenance-NPATH	JOS	-	-	41,777	42,763
1357	5026869	Pipeline Marker Maintenance-NSPATH	JOS	-	-	30,565	31,287
1358	5026870	Pipeline Marker Maintenance-SPATH	JOS	-	-	111,367	113,996
1359	5026871	Pipeline Marker Maintenance-STOR	JOS	-	-	6,119	6,263
1360	5027999	FORECAST ONLY - JOS	JOS	-	31,264	-	-
1361	5029449	Pipeline Marker Maint -HR	JOS	1,340	-	-	-
1362		**Pipeline Marker Maintenance**		**64,787**	**66,699**	**923,815**	**945,617**

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
1363	5018983	Vegetation Management - MI	JOT	12,181	-	-	-
1364	5018984	Vegetation Management - NB	JOT	954	-	-	-
1365	5018990	Vegetation Management - SJ	JOT	(83)	-	-	-
1366	5018991	Vegetation Management - SO	JOT	4,429	-	-	-
1367	5023536	GT OPERATIONS OTHER-WL	JOT	1,599	-	-	-
1368	5023876	Vegetation Management -HN	JOT	1,843	-	-	-
1369	5023877	Vegetation Management -KT	JOT	68,522	2,045	-	-
1370	5023878	Vegetation Management -AT	JOT	1,854	-	-	-
1371	5023879	Vegetation Management -MD	JOT	452	-	-	-
1372	5023881	Vegetation Management -MH	JOT	452	-	-	-
1373	5023882	Vegetation Management -RV	JOT	11,422	-	-	-
1374	5023883	Vegetation Management -TP	JOT	-	200	-	-
1375	5023885	Vegetation Management -WL	JOT	905	-	-	-
1376	5026927	Vegetation Management-BALOP	JOT	-	-	6,125	6,270
1377	5026928	Vegetation Management-GATHR	JOT	-	-	937	960
1378	5026929	Vegetation Management-L401	JOT	-	-	17,820	18,241
1379	5026930	Vegetation Management-LTRAN	JOT	-	-	188,723	193,177
1380	5026931	Vegetation Management-NPATH L2	JOT	-	-	4,967	5,084
1381	5026932	Vegetation Management-NPATH	JOT	-	-	12,441	12,734
1382	5026933	Vegetation Management-NSPATH	JOT	-	-	9,102	9,317
1383	5026934	Vegetation Management-SPATH	JOT	-	-	33,164	33,947
1384	5026935	Vegetation Management-STOR	JOT	-	-	1,822	1,865
1385	5028000	FORECAST ONLY - JOT	JOT	-	56,755	-	-
1386	5029456	Vegetation Management -HR	JOT	1,063	-	-	-
1387		**Routine Weed Abatement**		**105,593**	**59,000**	**275,101**	**281,593**
1388	5017901	GT Emerg & Unforeseen Comp OH & Inspects	JTF	51,265	-	-	-
1389	5240347	Station Compress Overhaul_Insp-Hinkley	JTF	-	556	-	-
1390	5028025	FORECAST ONLY - JTF	JTF	-	19,444	-	-
1391		**Station Compress Overhaul Inspection**		**51,265**	**20,000**	**-**	**-**
1392	5018994	Vegetation Mgmt - Routine	JTK	2,635,192	197,335	-	-
1393	5028028	FORECAST ONLY - JTK	JTK	-	2,337,665	-	-
1394	5035728	Vegetation Management - GT&SO	JTK	-	-	8,848,618	9,093,317
1395		**Vegetation Management Project**		**2,635,192**	**2,535,000**	**8,848,618**	**9,093,317**

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
1396	5019788	Encroachments	JTO	74,591	-	-	-
1397	5023989	Pipeline ROW Encroachments	JTO	36,219	4,304	-	-
1398	5026178	Encroachments	JTO	-	-	903,218	925,559
1399	5028839	FORECAST ONLY - JTO	JTO	-	241,553	-	-
1400		**Encroachments**		**110,811**	**245,857**	**903,218**	**925,559**
1401	5900121	StanPac Expense	34A	78,821	-	-	-
1402	5904224	Locate and Mark - StanPac	34A	-	-	593	607
1403	5904225	GPOM Regs and Valves PM - CM - STNPC	34A	-	-	65,781	67,334
1404	5904281	StanPac - Leak Management	34A	-	-	42,033	43,025
1405	5904282	StanPac - Patrols	34A	-	-	27,731	28,385
1406	5900121	StanPac Expense	34#	2,149	-	-	-
1407		**Stanpac Expense**		**80,969**	**-**	**136,139**	**139,352**
1408	5020338	PM PIPELINE LEAK SURVEY-GROUND-RV	JOE	80	-	-	-
1409	5023458	GT CM STOR COMPRESS STATIONS OTHER-HN	JPJ	78	-	-	-
1410	5023461	GT CM STOR COMPRESS STATIONS OTHER-MD	JPJ	1,162	-	-	-
1411	5023465	GT CM STOR COMPRESS STATIONS OTHER-TP	JPJ	272	-	-	-
1412	5023466	GT CM STOR COMPRESS STATIONS OTHER-TY	JPJ	235	-	-	-
1413	5023588	GT PM INSTRUMENTATION CONTROL-BN	JPE	1,313	-	-	-
1414	5023589	GT PM INSTRUMENTATION CONTROL-HN	JPE	598	-	-	-
1415	5023590	GT PM INSTRUMENTATION CONTROL-KT	JPE	2,000	-	-	-
1416	5023591	GT PM INSTRUMENTATION CONTROL-LM	JPE	154	-	-	-
1417	5023596	GT PM INSTRUMENTATION CONTROL-TP	JPE	969	-	-	-
1418	5023598	GT PM INSTRUMENTATION CONTROL-WL	JPE	1,824	-	-	-
1419	5023621	GT PM STOR COMPRESS STATIONS OTHER-BN	JPF	905	-	-	-
1420	5023622	GT PM STOR COMPRESS STATIONS OTHER-HN	JPF	298	-	-	-
1421	5023623	GT PM STOR COMPRESS STATIONS OTHER-KT	JPF	1,044	-	-	-
1422	5023624	GT PM STOR COMPRESS STATIONS OTHER-LM	JPF	3,865	-	-	-
1423	5023625	GT PM STOR COMPRESS STATIONS OTHER-MD	JPF	1,762	-	-	-
1424	5023629	GT PM STOR COMPRESS STATIONS OTHER-TP	JPF	1,414	-	-	-
1425	5023630	GT PM STOR COMPRESS STATIONS OTHER-TY	JPF	2,707	-	-	-
1426	5023631	GT PM STOR COMPRESS STATIONS OTHER-WL	JPF	12,040	-	-	-
1427	5023835	GT OPER TRANSM PIPELINES - ME	JOK	109	-	-	-
1428	5023837	GT OPER TRANSM PIPELINES - RV	JOK	874	-	-	-
1429	5023840	GT OPER TRANSM PIPELINES - WL	JOK	36	-	-	-
1430	5023842	GT OPER TRANSM REGULATOR STATION - HN	JOL	484	-	-	-
1431	5023843	GT OPER TRANSM REGULATOR STATION - KT	JOL	1,860	-	-	-
1432	5023843	GT OPER TRANSM REGULATOR STATION - KT	JOL	578	-	-	-
1433	5023844	GT OPER TRANSM REGULATOR STATION - AT	JOL	477	-	-	-
1434	5023846	GT OPER TRANSM REGULATOR STATION - ME	JOL	590	-	-	-
1435	5023847	GT OPER TRANSM REGULATOR STATION - MH	JOL	75	-	-	-

Workpaper Table 9-2
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2016 to 2019
in New Cost Model

Line No.	Planning Order	Planning Order Description	MAT	2016 Recorded	2017 Forecast	2018 Forecast	2019 Forecast
1436	5023848	GT OPER TRANSM REGULATOR STATION - RV	JOL	1,848	-	-	-
1437	5023850	GT OPER TRANSM REGULATOR STATION - TY	JOL	8,822	-	-	-
1438	5023851	GT OPER TRANSM REGULATOR STATION - WL	JOL	149	-	-	-
1439	5029439	GT OPER TRANSM PIPELINES - HR	JOK	19	-	-	-
1440	5029441	GT OPER TRANSM REGULATOR STATION - HR	JOL	262	-	-	-
1441	5023835	GT OPER TRANSM PIPELINES - ME	JOK	52	-	-	-
1442	5023837	GT OPER TRANSM PIPELINES - RV	JOK	442	-	-	-
1443		**Adjustments**		**49,398**	**-**	**-**	**-**
1444		**Total Expense**		**54,515,157**	**76,488,274**	**64,204,355**	**65,961,067**
	Note:	2016 recorded costs exclude CEMA orders in MAT Codes DFA, JOE, JOP, and JOV.					
		Please see Workpaper Table 9-5 on pages WP 9-70 to WP 9-71 for the 2016 recorded adjusted amounts for the Leak Management Program shown in lines 66-235.					
		Please see Workpaper Table 9-6 on pages WP 9-74 for the 2016 recorded adjusted amounts for the Pipeline Patrol Program shown in lines 236-279.					
		Please see Workpaper Table 9-7 on pages WP 9-77 to WP 9-79 for the 2016 recorded adjusted totals for the Pipeline Maintenance Program shown in lines 283-954.					
		Please see Workpaper Table 9-8 on pages WP 9-81 to WP 9-85 for the 2016 recorded adjusted totals for the Station Maintenance Program shown in lines 955-1313.					
		Certain 2016 recorded amounts related to MAT Codes JOE, JOK, JOL, JPE, JPF, JPJ, and JTH were recorded in MAT Code AKA and JTH. PG&E is accounting for the amount of $49,398 as an adjustment to the total expenses in Chapter 9 workpapers on lines 1408-1443.					

ERRATA 145
ERRATA-489

ERRATA 09/10/18
ERRATA 6/5/18

Workpaper Table 9-3
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2012 to 2015
Old Cost Model to New Cost Model Conversion

Line No.	Planning Order	Planning Order Description	MAT	2012 Recorded (OCM)	2013 Recorded (OCM)	2014 Recorded (OCM)	2015 Recorded (OCM)	Conversion Factor	2012 Recorded (NCM)	2013 Recorded (NCM)	2014 Recorded (NCM)	2015 Recorded (NCM)
1	5015300	Mark & Locate - Burney	DFA	8,554	20,358	4,637	13,856	54.1%	4,632	11,023	2,511	7,503
2	5015301	Mark & Locate - Hinkley	DFA	97,784	87,436	95,786	61,148	54.1%	52,947	47,344	51,865	33,110
3	5015302	Mark & Locate - Kettleman	DFA	341,817	433,148	310,686	424,110	54.1%	185,084	234,537	168,228	229,643
4	5015303	Mark & Locate - Los Medanos	DFA	74,719	120,426	140,600	57,335	54.1%	40,458	65,207	76,131	31,045
5	5015304	Mark & Locate - McDonald Island	DFA	35,557	24,224	10,941	20,052	54.1%	19,253	13,116	5,924	10,858
6	5015305	Mark & Locate - Meridian/Orland	DFA	80,562	150,519	158,711	124,874	54.1%	43,622	81,502	85,937	67,616
7	5015306	Mark & Locate - Milpitas	DFA	161,715	172,838	82,736	40,202	54.1%	87,564	93,587	44,799	21,768
8	5015307	Mark & Locate - Topock	DFA	10,933	16,593	15,709	24,607	54.1%	5,920	8,985	8,506	13,324
9	5015308	Mark & Locate - Rio Vista	DFA	115,024	148,257	81,298	44,674	54.1%	62,282	80,277	44,020	24,190
10	5015331	Local Transm - Mark&Locate	DFA	-	-	-	499	54.1%	-	-	-	270
11	5015349	Mark & Locate - Tracy	DFA	258,322	394,888	390,807	87,195	54.1%	139,874	213,820	211,611	47,214
12	5015350	Mark & Locate - Willows	DFA	67,672	151,491	101,960	84,260	54.1%	36,643	82,028	55,208	45,625
13	5016661	GT MARK & LOCATE - PN	DFA	6,440	11,331	22,750	15,126	54.1%	3,487	6,136	12,318	8,190
14	5016675	GT MARK & LOCATE - SF	DFA	19,662	13,308	25,144	63,969	54.1%	10,647	7,206	13,615	34,637
15	5016689	GT MARK & LOCATE - DI	DFA	58,079	92,324	93,625	187,424	54.1%	31,448	49,991	50,695	101,485
16	5016703	GT MARK & LOCATE - EB	DFA	45,157	52,408	109,381	131,994	54.1%	24,451	28,378	59,227	71,471
17	5016717	GT MARK & LOCATE - MI	DFA	-	-	13,618	31,342	54.1%	-	-	7,374	16,971
18	5016732	GT MARK & LOCATE - CC	DFA	18,934	173	2,369	-	54.1%	10,252	93	1,283	-
19	5016746	GT MARK & LOCATE - DA	DFA	85,734	119,735	62,321	10,794	54.1%	46,423	64,833	33,745	5,845
20	5016760	GT MARK & LOCATE - SJ	DFA	4,317	2,227	14,831	7,606	54.1%	2,337	1,206	8,030	4,119
21	5016774	GT MARK & LOCATE - FR	DFA	153	-	44,404	48,547	54.1%	83	-	24,044	26,287
22	5016788	GT MARK & LOCATE - KE	DFA	45,787	47,735	47,857	33,687	54.1%	24,792	25,847	25,913	18,240
23	5016802	GT MARK & LOCATE - ST	DFA	12,984	10,132	8,205	68,807	54.1%	7,030	5,486	4,443	37,257
24	5016816	GT MARK & LOCATE - YO	DFA	131,623	143,995	137,290	142,072	54.1%	71,270	77,969	74,338	76,928
25	5016830	GT MARK & LOCATE - NV	DFA	60,904	48,175	38,974	54,960	54.1%	32,978	26,085	21,104	29,759
26	5016845	GT MARK & LOCATE - SA	DFA	117,624	116,486	154,315	145,425	54.1%	63,690	63,074	83,557	78,743
27	5016860	GT MARK & LOCATE - SI	DFA	1,419	17,546	28,433	43,494	54.1%	769	9,500	15,396	23,551
28	5016890	GT MARK & LOCATE - HB	DFA	1,757	-	4,053	1,977	54.1%	951	-	2,195	1,070
29	5016962	GT MARK & LOCATE - SO	DFA	795	10,995	10,247	12,991	54.1%	430	5,954	5,549	7,034
30	5024328	MARK & LOCATE - CONTRACT	DFA	178,006	409,625	95,864	-	54.1%	96,385	221,800	51,908	-
31	5030869	GT MARK & LOCATE - HB	DFA	-	-	-	31,486	54.1%	-	-	-	17,049
32		**Locate and Mark**		**2,042,037**	**2,816,373**	**2,307,551**	**2,014,513**		**1,105,705**	**1,524,986**	**1,249,474**	**1,090,802**
33	5015352	STANDBY - BURNEY	DFB	-	1,871	-	247	74.2%	-	1,389	-	184
34	5015353	STANDBY - HINKLEY	DFB	12,125	9,091	20,410	9,474	74.2%	9,002	6,749	15,152	7,033
35	5015354	STANDBY - KETTLEMAN	DFB	53,635	127,411	64,251	51,348	74.2%	39,818	94,588	47,699	38,120
36	5015355	STANDBY - LOS MEDANOS	DFB	51,575	22,322	39,307	67,639	74.2%	38,289	16,572	29,181	50,214
37	5015356	STANDBY - MCDONALD ISLAND	DFB	4,743	2,482	1,134	3,361	74.2%	3,521	1,843	842	2,495
38	5015357	StandBy - Meridian/Orland	DFB	36,452	36,384	28,857	95,823	74.2%	27,062	27,011	21,423	71,138
39	5015358	StandBy - Milpitas/Hollister	DFB	46,322	56,820	24,331	6,266	74.2%	34,389	42,182	18,063	4,652
40	5015359	STANDBY - TOPOCK	DFB	-	-	-	3,901	74.2%	-	-	-	2,896
41	5015360	STANDBY - RIO VISTA	DFB	3,787	2,813	6,204	371	74.2%	2,811	2,088	4,606	276
42	5015361	STANDBY - TRACY	DFB	70,333	47,297	67,941	30,506	74.2%	52,214	35,113	50,438	22,647

Workpaper Table 9-3
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2012 to 2015
Old Cost Model to New Cost Model Conversion

Line No.	Planning Order	Planning Order Description	MAT	2012 Recorded (OCM)	2013 Recorded (OCM)	2014 Recorded (OCM)	2015 Recorded (OCM)	Conversion Factor	2012 Recorded (NCM)	2013 Recorded (NCM)	2014 Recorded (NCM)	2015 Recorded (NCM)
43	5015362	STANDBY - WILLOWS	DFB	12,624	10,258	19,494	22,692	74.2%	9,372	7,615	14,472	16,846
44	5016662	GT MARK & LOCATE STANDBY - PN	DFB	513,645	777,091	495,292	265,410	74.2%	381,322	576,900	367,697	197,036
45	5016676	GT MARK & LOCATE STANDBY - SF	DFB	98,248	75,093	129,655	74,158	74.2%	72,938	55,748	96,254	55,054
46	5016690	GT MARK & LOCATE STANDBY - DI	DFB	154,607	173,306	140,115	336,818	74.2%	114,777	128,660	104,019	250,049
47	5016704	GT MARK & LOCATE STANDBY - EB	DFB	59,479	283,944	242,099	142,107	74.2%	44,157	210,795	179,730	105,498
48	5016718	GT MARK & LOCATE STANDBY - MI	DFB	172,831	171,736	223,758	307,858	74.2%	128,307	127,494	166,115	228,549
49	5016733	GT MARK & LOCATE STANDBY - CC	DFB	524,622	797,190	384,837	228,883	74.2%	389,471	591,821	285,697	169,919
50	5016747	GT MARK & LOCATE STANDBY - DA	DFB	211,210	102,519	157,394	154,835	74.2%	156,799	76,108	116,847	114,947
51	5016761	GT MARK & LOCATE STANDBY - SJ	DFB	351,063	347,131	240,209	642,833	74.2%	260,624	257,705	178,328	477,229
52	5016775	GT MARK & LOCATE STANDBY - FR	DFB	33,312	408,663	349,188	293,326	74.2%	24,730	303,385	259,231	217,761
53	5016789	GT MARK & LOCATE STANDBY - KE	DFB	68,762	293,116	151,018	160,472	74.2%	51,048	217,604	112,114	119,132
54	5016803	GT MARK & LOCATE STANDBY - ST	DFB	189,109	291,829	131,574	233,606	74.2%	140,392	216,650	97,679	173,425
55	5016817	GT MARK & LOCATE STANDBY - YO	DFB	198,986	148,635	313,744	784,415	74.2%	147,724	110,344	232,919	582,338
56	5016831	GT MARK & LOCATE STANDBY - NV	DFB	58,765	59,650	35,549	84,970	74.2%	43,626	44,283	26,391	63,080
57	5016846	GT MARK & LOCATE STANDBY - SA	DFB	1,328,687	1,872,992	1,771,829	1,238,606	74.2%	986,396	1,390,480	1,315,378	919,522
58	5016861	GT MARK & LOCATE STANDBY - SI	DFB	288,304	708,638	89,076	114,501	74.2%	214,032	526,081	66,128	85,004
59	5016876	GT MARK & LOCATE STANDBY - NB	DFB	348,103	639,928	286,512	228,625	74.2%	258,426	475,072	212,702	169,727
60	5016891	GT MARK & LOCATE STANDBY - HB	DFB	19,444	38,633	54,822	46,990	74.2%	14,435	28,681	40,699	34,885
61	5016963	GT MARK & LOCATE STANDBY - SO	DFB	198,094	378,533	452,759	591,803	74.2%	147,062	281,017	336,121	439,345
62	5023335	2012 RETRO-WAGE ESCLATION-MWC DF-GT	DFB	69,459	-	-	-	74.2%	51,565	-	-	-
63		**Locate and Mark, Stand-By**		**5,178,328**	**7,885,377**	**5,921,358**	**6,221,845**		**3,844,308**	**5,853,978**	**4,395,922**	**4,618,999**
64	5028239	GT - Standard Cost Variance - DF	DF#	-	-	(63,313)	452,462	-9.2%	-	-	5,825	(41,627)
65		**Locate and Mark, Other**		**-**	**-**	**(63,313)**	**452,462**		**-**	**-**	**5,825**	**(41,627)**
66	5016651	GT LEAK SURVEY - GROUND - PN	JOE	82,504	57,787	94,321	86,624	64.7%	53,348	37,366	60,989	56,012
67	5016665	GT LEAK SURVEY - GROUND - SF	JOE	20,921	12,307	34,859	28,730	64.7%	13,528	7,958	22,540	18,577
68	5016679	GT LEAK SURVEY - GROUND - DI	JOE	152,709	51,408	63,058	129,014	64.7%	98,744	33,241	40,774	83,422
69	5016693	GT LEAK SURVEY - GROUND - EB	JOE	54,077	41,485	38,643	61,011	64.7%	34,967	26,824	24,987	39,450
70	5016707	GT LEAK SURVEY - GROUND - MI	JOE	43,917	35,319	76,588	87,800	64.7%	28,397	22,837	49,523	56,773
71	5016721	GT LEAK SURVEY - GROUND - CC	JOE	101,216	183,127	74,642	124,584	64.7%	65,447	118,412	48,264	80,557
72	5016736	GT LEAK SURVEY - GROUND - DA	JOE	39,626	32,714	52,711	63,066	64.7%	25,623	21,153	34,083	40,779
73	5016750	GT LEAK SURVEY - GROUND - SJ	JOE	75,889	37,406	44,516	67,087	64.7%	49,071	24,187	28,784	43,379
74	5016764	GT LEAK SURVEY - GROUND - FR	JOE	2,058	50,869	118,066	100,461	64.7%	1,331	32,893	76,343	64,959
75	5016778	GT LEAK SURVEY - GROUND - KE	JOE	50,904	62,288	97,516	31,709	64.7%	32,915	40,276	63,055	20,504
76	5016792	GT LEAK SURVEY - GROUND - ST	JOE	105,621	92,542	122,082	81,003	64.7%	68,296	59,839	78,939	52,377
77	5016806	GT LEAK SURVEY - GROUND - YO	JOE	39,418	106,360	141,062	139,933	64.7%	25,488	68,774	91,212	90,482
78	5016820	GT LEAK SURVEY - GROUND - NV	JOE	52,442	48,575	81,315	79,144	64.7%	33,910	31,409	52,579	51,175
79	5016834	GT LEAK SURVEY - GROUND - SA	JOE	29,571	11,913	288,443	277,172	64.7%	19,121	7,703	186,510	179,223
80	5016849	GT LEAK SURVEY - GROUND - SI	JOE	145,289	156,247	135,155	111,213	64.7%	93,945	101,031	87,393	71,912
81	5016864	GT LEAK SURVEY - GROUND - NB	JOE	122,327	37,336	97,389	123,393	64.7%	79,098	24,142	62,973	79,787
82	5016879	GT LEAK SURVEY - GROUND - HB	JOE	64,925	40,842	54,830	56,933	64.7%	41,981	26,409	35,454	36,814
83	5016952	GT LEAK SURVEY - GROUND - SO	JOE	134,909	112,844	79,484	262,389	64.7%	87,234	72,966	51,396	169,663
84	5016956	GT Oper Transm Pipelines - SO	JOE	-	-	132	-	64.7%	-	-	85	-

Workpaper Table 9-3
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2012 to 2015
Old Cost Model to New Cost Model Conversion

Line No.	Planning Order	Planning Order Description	MAT	2012 Recorded (OCM)	2013 Recorded (OCM)	2014 Recorded (OCM)	2015 Recorded (OCM)	Conversion Factor	2012 Recorded (NCM)	2013 Recorded (NCM)	2014 Recorded (NCM)	2015 Recorded (NCM)
85	5020331	PM PIPELINE LEAK SURVEY-GROUND-BN	JOE	33,937	19,229	2,744	6,481	64.7%	21,944	12,434	1,774	4,191
86	5020332	PM PIPELINE LEAK SURVEY-GROUND-HN	JOE	118,135	155,469	78,935	84,699	64.7%	76,388	100,528	51,040	54,767
87	5020333	PM PIPELINE LEAK SURVEY-GROUND-KT	JOE	219,828	215,079	75,906	21,953	64.7%	142,143	139,073	49,081	14,195
88	5020334	PM PIPELINE LEAK SURVEY-GROUND-LM	JOE	55,196	8,895	8,848	10,801	64.7%	35,691	5,751	5,721	6,984
89	5020335	PM PIPELINE LEAK SURVEY-GROUND-MD	JOE	47,566	34,615	34,650	28,871	64.7%	30,757	22,382	22,405	18,668
90	5020336	PM PIPELINE LEAK SURVEY-GROUND-ME	JOE	106,426	99,208	99,214	18,446	64.7%	68,816	64,149	64,153	11,927
91	5020337	PM PIPELINE LEAK SURVEY-GROUND-MH	JOE	193,878	128,649	83,585	32,370	64.7%	125,363	83,186	54,047	20,931
92	5020338	PM PIPELINE LEAK SURVEY-GROUND-RV	JOE	105,244	177,785	49,315	10,336	64.7%	68,052	114,958	31,888	6,684
93	5020339	PM PIPELINE LEAK SURVEY-GROUND-TP	JOE	51,324	34,065	53,191	22,676	64.7%	33,187	22,027	34,394	14,663
94	5020340	PM PIPELINE LEAK SURVEY-GROUND-TY	JOE	203,778	182,278	83,305	37,675	64.7%	131,765	117,863	53,866	24,361
95	5020341	PM PIPELINE LEAK SURVEY-GROUND-WL	JOE	110,755	87,409	36,392	3,424	64.7%	71,616	56,520	23,531	2,214
96	5023507	GT LEAK SURVEY - AERIAL - LM	JOE	-	-	-	520	64.7%	-	-	-	336
97	5023510	GT LEAK SURVEY - AERIAL - MH	JOE	-	4,917	51,365	306	64.7%	-	3,179	33,213	198
98	5023515	GT LEAK SURVEY - AERIAL - RV	JOE	-	-	26,958	1,998	64.7%	-	-	17,431	1,292
99	5023523	GT LEAK SURVEY - AERIAL - TY	JOE	-	-	54,273	-	64.7%	-	-	35,093	-
100	5027986	FORECAST ONLY - JOE	JOE	-	-	-	470,511	64.7%	-	-	-	304,238
101	5030734	GT LEAK SURVEY - GROUND - HR	JOE	-	-	-	11,255	64.7%	-	-	-	7,278
102	5030750	GT Lk Survey Sched & Data Mgmt	JOE	-	-	-	167,930	64.7%	-	-	-	108,586
103	5031073	GT PSEP SURVEY - GROUND	JOE	-	-	-	7,687	64.7%	-	-	-	4,970
104		**Ground Leak Survey**		**2,564,390**	**2,318,968**	**2,433,491**	**2,849,206**		**1,658,164**	**1,499,471**	**1,573,523**	**1,842,329**
105	5018995	Leak Rechecks - CC	JOR	-	-	5,342	3,439	60.8%	-	-	3,249	2,091
106	5018996	Leak Rechecks - DA	JOR	-	-	-	895	60.8%	-	-	-	544
107	5018997	Leak Rechecks - DI	JOR	-	-	-	12,773	60.8%	-	-	-	7,767
108	5018998	Leak Rechecks - EB	JOR	-	-	3,359	5,884	60.8%	-	-	2,043	3,578
109	5018999	Leak Rechecks - FR	JOR	-	-	3,488	15,491	60.8%	-	-	2,121	9,420
110	5019000	Leak Rechecks - HB	JOR	-	-	3,199	12,621	60.8%	-	-	1,945	7,675
111	5019001	Leak Rechecks - KE	JOR	27	1,110	-	2,868	60.8%	16	675	-	1,744
112	5019002	Leak Rechecks - MI	JOR	-	-	55	948	60.8%	-	-	33	577
113	5019003	Leak Rechecks - NB	JOR	-	1,615	339	22,320	60.8%	-	982	206	13,573
114	5019004	Leak Rechecks - NV	JOR	-	-	2,105	1,763	60.8%	-	-	1,280	1,072
115	5019005	Leak Rechecks - PN	JOR	-	-	70,696	41,904	60.8%	-	-	42,990	25,482
116	5019006	Leak Rechecks - SA	JOR	32,953	18,656	41,170	50,388	60.8%	20,039	11,344	25,035	30,641
117	5019007	Leak Rechecks - SF	JOR	-	-	-	169	60.8%	-	-	-	103
118	5019008	Leak Rechecks - SI	JOR	-	-	3,020	10,426	60.8%	-	-	1,837	6,340
119	5019009	Leak Rechecks - SJ	JOR	-	-	372	5,155	60.8%	-	-	226	3,135
120	5019010	Leak Rechecks - SO	JOR	14,943	-	301	3,055	60.8%	9,086	-	183	1,858
121	5019011	Leak Rechecks - ST	JOR	-	-	2,282	2,282	60.8%	-	-	1,387	1,388
122	5019012	Leak Rechecks - YO	JOR	-	-	1,676	6,345	60.8%	-	-	1,019	3,858
123	5023853	LEAK RECHECKS - BN	JOR	-	-	-	459	60.8%	-	-	-	279
124	5023854	LEAK RECHECKS - HN	JOR	-	3,074	4,966	2,298	60.8%	-	1,869	3,020	1,397
125	5023855	LEAK RECHECKS - KT	JOR	-	520	1,485	5,399	60.8%	-	316	903	3,283
126	5023856	LEAK RECHECKS - LM	JOR	-	1,631	219	14,896	60.8%	-	992	133	9,058
127	5023858	LEAK RECHECKS - ME	JOR	-	-	583	593	60.8%	-	-	354	361

Workpaper Table 9-3
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2012 to 2015
Old Cost Model to New Cost Model Conversion

Line No.	Planning Order	Planning Order Description	MAT	2012 Recorded (OCM)	2013 Recorded (OCM)	2014 Recorded (OCM)	2015 Recorded (OCM)	Conversion Factor	2012 Recorded (NCM)	2013 Recorded (NCM)	2014 Recorded (NCM)	2015 Recorded (NCM)
128	5023859	LEAK RECHECKS - MH	JOR	-	2,422	3,947	632	60.8%	-	1,473	2,400	384
129	5023860	LEAK RECHECKS - RV	JOR	-	-	2,437	275	60.8%	-	-	1,482	167
130	5023862	LEAK RECHECKS - TY	JOR	-	-	758	774	60.8%	-	-	461	471
131	5023863	LEAK RECHECKS - WL	JOR	-	-	159	(4,278)	60.8%	-	-	97	(2,602)
132	5030735	Leak Rechecks - HR	JOR	-	-	-	2,821	60.8%	-	-	-	1,715
133		**Leak Rechecks**		**47,922**	**29,028**	**151,959**	**222,598**		**29,141**	**17,651**	**92,405**	**135,360**
134	5023497	GT LEAK SURVEY - AERIAL - BN	JOW	36,930	48,561	46,452	2,278	96.4%	35,618	46,836	44,803	2,197
135	5023498	GT LEAK SURVEY - AERIAL - CC	JOW	5,563	144	6,681	30,013	96.4%	5,365	139	6,444	28,947
136	5023499	GT LEAK SURVEY - AERIAL - DA	JOW	-	-	-	3,392	96.4%	-	-	-	3,271
137	5023500	GT LEAK SURVEY - AERIAL - DI	JOW	6,904	6,219	2,295	19,263	96.4%	6,659	5,998	2,214	18,579
138	5023501	GT LEAK SURVEY - AERIAL - EB	JOW	1,906	1,376	1,037	10,633	96.4%	1,839	1,327	1,000	10,255
139	5023502	GT LEAK SURVEY - AERIAL - FR	JOW	-	-	-	17,936	96.4%	-	-	-	17,299
140	5023504	GT LEAK SURVEY - AERIAL - HN	JOW	-	2,077	51,701	14,718	96.4%	-	2,003	49,864	14,195
141	5023505	GT LEAK SURVEY - AERIAL - KE	JOW	6,771	7,320	945	14,151	96.4%	6,531	7,060	912	13,649
142	5023506	GT LEAK SURVEY - AERIAL - KT	JOW	29,172	43,681	48,613	6,541	96.4%	28,136	42,130	46,886	6,309
143	5023507	GT LEAK SURVEY - AERIAL - LM	JOW	4,345	5,910	27,659	1,655	96.4%	4,191	5,700	26,677	1,596
144	5023508	GT LEAK SURVEY - AERIAL - MD	JOW	388	476	144	108	96.4%	375	459	139	105
145	5023509	GT LEAK SURVEY - AERIAL - ME	JOW	57,589	72,903	26,813	639	96.4%	55,544	70,314	25,860	617
146	5023511	GT LEAK SURVEY - AERIAL - MI	JOW	-	-	14	9,738	96.4%	-	-	14	9,392
147	5023512	GT LEAK SURVEY - AERIAL - NB	JOW	19,050	25,200	5,872	12,843	96.4%	18,373	24,305	5,663	12,387
148	5023513	GT LEAK SURVEY - AERIAL - NV	JOW	32,767	41,983	8,568	14,311	96.4%	31,603	40,492	8,264	13,802
149	5023514	GT LEAK SURVEY - AERIAL - PN	JOW	-	-	1,970	17,004	96.4%	-	-	1,900	16,400
150	5023515	GT LEAK SURVEY - AERIAL - RV	JOW	835	801	32,879	1,073	96.4%	805	773	31,711	1,035
151	5023516	GT LEAK SURVEY - AERIAL - SA	JOW	11,714	15,512	5,304	39,015	96.4%	11,298	14,961	5,116	37,629
152	5023517	GT LEAK SURVEY - AERIAL - SF	JOW	-	-	-	5,710	96.4%	-	-	-	5,507
153	5023518	GT LEAK SURVEY - AERIAL - SI	JOW	25,907	35,423	7,515	9,529	96.4%	24,987	34,165	7,248	9,190
154	5023519	GT LEAK SURVEY - AERIAL - SJ	JOW	-	-	-	16,304	96.4%	-	-	-	15,725
155	5023520	GT LEAK SURVEY - AERIAL - SO	JOW	75,798	102,369	19,269	12,078	96.4%	73,106	98,733	18,585	11,649
156	5023521	GT LEAK SURVEY - AERIAL - ST	JOW	-	-	-	30,430	96.4%	-	-	-	29,349
157	5023522	GT LEAK SURVEY - AERIAL - TP	JOW	-	-	-	18,155	96.4%	-	-	-	17,510
158	5023523	GT LEAK SURVEY - AERIAL - TY	JOW	16,750	19,398	3,204	159	96.4%	16,156	18,709	3,091	154
159	5023524	GT LEAK SURVEY - AERIAL - WL	JOW	15,740	21,244	9,648	198	96.4%	15,181	20,489	9,305	191
160	5023525	GT LEAK SURVEY - AERIAL - YO	JOW	-	-	-	62,241	96.4%	-	-	-	60,031
161	5031074	GT PSEP SURVEY - AERIAL	JOW	-	-	-	957,692	96.4%	-	-	-	923,679
162	5031969	GT LEAK SURVEY - AERIAL - HO	JOW	36,651	49,418	8,559	146	96.4%	35,349	47,662	8,255	141
163	5031970	GT LEAK SURVEY - AERIAL - MP	JOW	10,823	14,442	2,624	46	96.4%	10,439	13,929	2,530	44
164	5032230	GT LEAK SURVEY - AERIAL Contract	JOW	-	-	-	588,881	96.4%	-	-	-	567,967
165	5035323	TIMP Transfer to HPE from JOW	JOW	-	-	-	(5,578)	96.4%	-	-	-	(5,380)
166		**Aerial Leak Survey**		**395,603**	**514,457**	**317,766**	**1,911,302**		**381,553**	**496,186**	**306,480**	**1,843,421**
167	5016659	GT CORR MAINT - G MAIN LEAK - PN	JOP	140,233	150,124	222,292	72,114	61.8%	86,723	92,840	137,470	44,597
168	5016673	GT CORR MAINT - G MAIN LEAK - SF	JOP	-	683	30,762	9,441	61.8%	-	422	19,024	5,839
169	5016687	GT CORR MAINT - G MAIN LEAK - DI	JOP	49,085	5,797	20,529	47,210	61.8%	30,355	3,585	12,696	29,196
170	5016701	GT CORR MAINT - G MAIN LEAK - EB	JOP	7,850	55,449	11,307	56,241	61.8%	4,855	34,291	6,992	34,780
171	5016715	GT CORR MAINT - G MAIN LEAK - MI	JOP	1,338	683	4,873	87,356	61.8%	827	422	3,014	54,023

Workpaper Table 9-3
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2012 to 2015
Old Cost Model to New Cost Model Conversion

Line No.	Planning Order	Planning Order Description	MAT	2012 Recorded (OCM)	2013 Recorded (OCM)	2014 Recorded (OCM)	2015 Recorded (OCM)	Conversion Factor	2012 Recorded (NCM)	2013 Recorded (NCM)	2014 Recorded (NCM)	2015 Recorded (NCM)
172	5016730	GT CORR MAINT - G MAIN LEAK - CC	JOP	38,250	39,807	18,748	80,082	61.8%	23,655	24,618	11,594	49,524
173	5016744	GT CORR MAINT - G MAIN LEAK - DA	JOP	39,904	9,819	2,667	529	61.8%	24,678	6,072	1,650	327
174	5016758	GT CORR MAINT - G MAIN LEAK - SJ	JOP	71,183	27,995	183,081	112,403	61.8%	44,021	17,313	113,221	69,512
175	5016772	GT CORR MAINT - G MAIN LEAK - FR	JOP	38,785	100,228	26,353	49,655	61.8%	23,986	61,983	16,297	30,708
176	5016786	GT CORR MAINT - G MAIN LEAK - KE	JOP	59,233	74,640	13,685	21,436	61.8%	36,631	46,159	8,463	13,257
177	5016800	GT CORR MAINT - G MAIN LEAK - ST	JOP	3,738	18,944	19,153	22,016	61.8%	2,312	11,716	11,845	13,615
178	5016814	GT CORR MAINT - G MAIN LEAK - YO	JOP	31,128	82,988	22,857	73,816	61.8%	19,250	51,321	14,135	45,649
179	5016824	GT Oper Transm Pipelines - NV	JOP	-	-	612	-	61.8%	-	-	379	-
180	5016828	GT CORR MAINT - G MAIN LEAK - NV	JOP	16,234	47,532	5,446	8,838	61.8%	10,039	29,395	3,368	5,466
181	5016843	GT CORR MAINT - G MAIN LEAK - SA	JOP	209,523	359,157	187,229	250,820	61.8%	129,573	222,110	115,786	155,112
182	5016858	GT CORR MAINT - G MAIN LEAK - SI	JOP	100,001	30,206	67,604	226,667	61.8%	61,843	18,680	41,808	140,175
183	5016873	GT CORR MAINT - G MAIN LEAK - NB	JOP	110,690	26,532	42,018	113,007	61.8%	68,453	16,408	25,985	69,886
184	5016888	GT CORR MAINT - G MAIN LEAK - HB	JOP	91,362	51,072	7,073	28,478	61.8%	56,500	31,584	4,374	17,612
185	5016959	GT CORR MAINT - G MAIN VALVE-MANUAL - SO	JOP	4,660	6,486	1,321	368	61.8%	2,882	4,011	817	228
186	5016960	GT CORR MAINT - G MAIN LEAK - SO	JOP	109,161	90,956	7,133	44,635	61.8%	67,507	56,249	4,411	27,603
187	5023816	GT CORR MAINT - G MAIN LEAK - BN	JOP	-	1,777	5,413	1,650	61.8%	-	1,099	3,348	1,020
188	5023817	GT CORR MAINT - G MAIN LEAK - HN	JOP	-	44,387	39,642	15,642	61.8%	-	27,450	24,515	9,673
189	5023818	GT CORR MAINT - G MAIN LEAK - KT	JOP	-	2,084	22,141	11,109	61.8%	-	1,289	13,692	6,870
190	5023819	GT CORR MAINT - G MAIN LEAK - LM	JOP	-	-	70	8,451	61.8%	-	-	43	5,227
191	5023820	GT CORR MAINT - G MAIN LEAK - MD	JOP	-	4,350	245	20,802	61.8%	-	2,690	152	12,864
192	5023821	GT CORR MAINT - G MAIN LEAK - ME	JOP	1,426	29,683	3,425	784	61.8%	882	18,356	2,118	485
193	5023822	GT CORR MAINT - G MAIN LEAK - MH	JOP	-	21,709	15,331	10,206	61.8%	-	13,425	9,481	6,312
194	5023823	GT CORR MAINT - G MAIN LEAK - RV	JOP	-	12,488	1,791	21,435	61.8%	-	7,723	1,107	13,256
195	5023824	GT CORR MAINT - G MAIN LEAK - TP	JOP	-	-	1,017	5,749	61.8%	-	-	629	3,555
196	5023825	GT CORR MAINT - G MAIN LEAK - TY	JOP	-	40,457	1,682	4,758	61.8%	-	25,019	1,040	2,942
197	5023826	GT CORR MAINT - G MAIN LEAK - WL	JOP	-	34,282	16,687	26,779	61.8%	-	21,201	10,320	16,561
198	5028124	GRADE 1 LKS-GT CORR MAINT-G MAIN LEAK-SF	JOP	-	-	-	2,902	61.8%	-	-	-	1,795
199	5028125	GRADE 1 LKS-GT CORR MAINT-G MAIN LEAK-DI	JOP	-	-	-	20,759	61.8%	-	-	-	12,838
200	5028131	GRADE 1 LKS-GT CORR MAINT-G MAIN LEAK-FR	JOP	-	-	-	6,273	61.8%	-	-	-	3,879
201	5028134	GRADE 1 LKS-GT CORR MAINT-G MAIN LEAK-YO	JOP	-	-	-	16,252	61.8%	-	-	-	10,051
202	5028137	GRADE 1 LKS-GT CORR MAINT-G MAIN LEAK-SI	JOP	-	-	-	4,354	61.8%	-	-	-	2,693
203	5028139	GRADE 1 LKS-GT CORR MAINT-G MAIN LEAK-HB	JOP	-	-	-	47,965	61.8%	-	-	-	29,663
204		**CM Gas Main Leak**		**1,123,783**	**1,370,314**	**1,002,186**	**1,530,982**		**694,971**	**847,431**	**619,773**	**946,791**
205	5016652	Ground Investigations	JOF	93,487	302,853	213,862	444,326	53.4%	49,900	161,653	114,153	237,167
206	5016666	Ground Investigations - SF	JOF	7,416	8,937	1,245	-	53.4%	3,958	4,770	664	-
207	5016680	Ground Investigations - DI	JOF	38,796	80,723	43,526	105,016	53.4%	20,708	43,087	23,233	56,054
208	5016694	Ground Investigations - EB	JOF	37,895	146,220	157,556	46,783	53.4%	20,227	78,048	84,098	24,971
209	5016708	Ground Investigations - MI	JOF	9,762	85,674	-	-	53.4%	5,211	45,730	-	-
210	5016722	Ground Investigations - CC	JOF	3,028	105,007	88,957	63,761	53.4%	1,616	56,049	47,482	34,034
211	5016737	Ground Investigations - DA	JOF	27,998	71,668	60,690	30,619	53.4%	14,944	38,254	32,394	16,344
212	5016751	Ground Investigations - SJ	JOF	51,414	62,039	47,872	33,576	53.4%	27,443	33,114	25,553	17,922
213	5016765	Ground Investigations - FR	JOF	138,223	105,299	99,886	66,918	53.4%	73,779	56,205	53,316	35,719
214	5016779	Ground Investigations - KE	JOF	14,564	49,827	32,147	33,943	53.4%	7,774	26,596	17,159	18,117
215	5016793	Ground Investigations - ST	JOF	42,756	52,101	(5,465)	-	53.4%	22,822	27,810	(2,917)	-
216	5016807	Ground Investigations - YO	JOF	21,447	98,457	204,406	183,405	53.4%	11,448	52,553	109,105	97,896

Workpaper Table 9-3
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2012 to 2015
Old Cost Model to New Cost Model Conversion

Line No.	Planning Order	Planning Order Description	MAT	2012 Recorded (OCM)	2013 Recorded (OCM)	2014 Recorded (OCM)	2015 Recorded (OCM)	Conversion Factor	2012 Recorded (NCM)	2013 Recorded (NCM)	2014 Recorded (NCM)	2015 Recorded (NCM)
217	5016821	Ground Investigations - NV	JOF	41,592	75,055	79,639	56,798	53.4%	22,201	40,062	42,509	30,317
218	5016835	Ground Investigations - SA	JOF	72,537	118,695	37,264	-	53.4%	38,718	63,356	19,890	-
219	5016850	Ground Investigations - SI	JOF	12,546	15,724	21,399	42,945	53.4%	6,696	8,393	11,422	22,922
220	5016865	Ground Investigations - NB	JOF	69,861	159,994	76,899	40,624	53.4%	37,290	85,400	41,046	21,684
221	5016880	Ground Investigations - HB	JOF	20,676	134,110	76,504	45,248	53.4%	11,036	71,584	40,835	24,152
222	5016953	Ground Investigations - SO	JOF	26,192	79,987	54,223	46,300	53.4%	13,980	42,694	28,943	24,713
223	5020342	Ground Investigations - Burney	JOF	-	2,526	2,457	3,637	53.4%	-	1,348	1,311	1,941
224	5020343	Ground Investigations - Hinkley	JOF	-	8,529	11,254	12,265	53.4%	-	4,552	6,007	6,546
225	5020344	Ground Investigations - Kettleman	JOF	-	17,923	46,616	42,656	53.4%	-	9,567	24,882	22,769
226	5020345	Ground Investigations - Los Medanos	JOF	-	4,894	6,461	2,982	53.4%	-	2,612	3,449	1,592
227	5020346	Ground Investigations - Mcdonald Island	JOF	-	272	-	215	53.4%	-	145	-	115
228	5020347	Ground Investigations - Meridian	JOF	-	23,063	49,926	25,361	53.4%	-	12,310	26,649	13,537
229	5020348	Ground Investigations - Milpitas	JOF	-	78,554	68,387	9,852	53.4%	-	41,930	36,503	5,259
230	5020349	Ground Investigations - Rio Vista	JOF	-	12,721	24,252	19,861	53.4%	-	6,790	12,945	10,601
231	5020350	Ground Investigations - Topock	JOF	-	173	17,800	12,632	53.4%	-	92	9,501	6,743
232	5020351	Ground Investigations - Tracy	JOF	-	26,832	28,942	62,176	53.4%	-	14,322	15,448	33,188
233	5020352	Ground Investigations - Willows	JOF	-	7,969	35,227	25,393	53.4%	-	4,253	18,803	13,554
234		**Required Ground Pipeline Patrol**		**730,191**	**1,935,825**	**1,581,930**	**1,457,292**		**389,753**	**1,033,282**	**844,384**	**777,856**
235	5023682	GT REQUIRED PIPELINE PATROL-AERIAL-LM	JOV	-	-	841	5,412	92.9%	-	-	781	5,028
236	5023683	GT REQUIRED PIPELINE PATROL-AERIAL-MD	JOV	-	-	-	4,362	92.9%	-	-	-	4,052
237	5023688	GT REQUIRED PIPELINE PATROL-AERIAL-NV	JOV	570	45,150	1,582	-	92.9%	530	41,945	1,470	-
238	5023693	GT REQUIRED PIPELINE PATROL-AERIAL	JOV	-	16,036	-	5,782,850	92.9%	-	14,898	-	5,372,332
239	5023696	GT REQUIRED PIPELINE PATROL-AERIAL-ST	JOV	-	16,439	-	-	92.9%	-	15,272	-	-
240	5032150	GT REQUIRED PIPELINE PATROL-AERIAL-LM-FW	JOV	-	-	-	325,976	92.9%	-	-	-	302,835
241		**Required Aerial Pipeline Patrol**		**570**	**77,625**	**2,423**	**6,118,600**		**530**	**72,115**	**2,251**	**5,684,247**
242	5016656	GT Oper Transm Regulator Station - PN	JO#	-	-	99,033	-	12.5%	-	-	12,405	-
243	5016657	GT CORR MAINT - G REGULATOR GENL - PN	JO#	-	-	(117,662)	-	12.5%	-	-	(14,739)	-
244	5016659	GT CORR MAINT - G MAIN LEAK - PN	JO#	-	-	18,629	-	12.5%	-	-	2,334	-
245	5028238	GT - Standard Cost Variance - JO	JO#	-	-	3,539	760,952	12.5%	-	-	443	95,320
246		**GT Pipeline Maintenance Other**		**-**	**-**	**3,539**	**760,952**		**-**	**-**	**443**	**95,320**
247	5031109	PM SCADA Maintenance - HR	JO1	-	-	-	1,783	48.6%	-	-	-	867
248	5031111	PM SCADA Maintenance - RD	JO1	-	2,434	7,838	11,027	48.6%	-	1,184	3,812	5,362
249	5031115	PM SCADA Maintenance - TY	JO1	-	-	-	572	48.6%	-	-	-	278
250	5031117	PM SCADA Maintenance - TP	JO1	-	-	-	2,429	48.6%	-	-	-	1,181
251	5031119	PM SCADA Maintenance - RV	JO1	-	-	-	5,031	48.6%	-	-	-	2,447
252	5031127	PM SCADA Maintenance - AT	JO1	-	-	-	1,399	48.6%	-	-	-	680
253	5031129	PM SCADA Maintenance - KT	JO1	-	-	-	21,900	48.6%	-	-	-	10,650
254	5031135	PM SCADA Maintenance - SO	JO1	-	2,162	5,577	772	48.6%	-	1,051	2,712	375
255	5031137	PM SCADA Maintenance - HB	JO1	2,264	7,997	5,767	8,163	48.6%	1,101	3,889	2,805	3,969
256	5031139	PM SCADA Maintenance - NB	JO1	-	3,029	7,599	9,206	48.6%	-	1,473	3,695	4,476
257	5031141	PM SCADA Maintenance - SI	JO1	1,646	6,586	3,618	10,072	48.6%	800	3,203	1,759	4,898
258	5031143	PM SCADA Maintenance - SA	JO1	8,586	19,726	26,750	35,653	48.6%	4,175	9,593	13,008	17,337
259	5031145	PM SCADA Maintenance - NV	JO1	3,280	17,433	27,861	20,149	48.6%	1,595	8,477	13,548	9,798

Workpaper Table 9-3
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2012 to 2015
Old Cost Model to New Cost Model Conversion

Line No.	Planning Order	Planning Order Description	MAT	2012 Recorded (OCM)	2013 Recorded (OCM)	2014 Recorded (OCM)	2015 Recorded (OCM)	Conversion Factor	2012 Recorded (NCM)	2013 Recorded (NCM)	2014 Recorded (NCM)	2015 Recorded (NCM)
260	5031147	PM SCADA Maintenance - YO	JO1	-	4,107	6,105	26,968	48.6%	-	1,997	2,969	13,114
261	5031149	PM SCADA Maintenance - ST	JO1	285	3,157	10,831	15,618	48.6%	139	1,535	5,267	7,595
262	5031151	PM SCADA Maintenance - KE	JO1	-	683	2,916	9,648	48.6%	-	332	1,418	4,692
263	5031153	PM SCADA Maintenance - FR	JO1	-	3,074	12,436	8,056	48.6%	-	1,495	6,047	3,918
264	5031155	PM SCADA Maintenance - SJ	JO1	-	2,903	3,906	1,542	48.6%	-	1,412	1,900	750
265	5031159	PM SCADA Maintenance - CC	JO1	-	9,151	13,557	10,089	48.6%	-	4,450	6,593	4,906
266	5031161	PM SCADA Maintenance - MI	JO1	1,717	7,556	12,323	3,955	48.6%	835	3,674	5,992	1,923
267	5031163	PM SCADA Maintenance - EB	JO1	3,971	1,793	-	-	48.6%	1,931	872	-	-
268	5031165	PM SCADA Maintenance - DI	JO1	-	-	5,838	2,908	48.6%	-	-	2,839	1,414
269	5031167	PM SCADA Maintenance - PN	JO1	10,694	11,727	8,041	19,313	48.6%	5,200	5,703	3,910	9,392
270	5031197	PM Meter Maintenance - SO	JO1	1,834	-	-	-	48.6%	892	-	-	-
271		**PM SCADA Maintenance**		**34,276**	**103,520**	**160,962**	**226,252**		**16,668**	**50,340**	**78,274**	**110,023**
272	5031110	CM SCADA Maintenance - HR	JO2	-	-	1,517	-	62.0%	-	-	941	-
273	5031112	CM SCADA Maintenance - RD	JO2	13,744	6,184	2,138	1,833	62.0%	8,526	3,836	1,326	1,137
274	5031118	CM SCADA Maintenance - TP	JO2	-	-	-	2,601	62.0%	-	-	-	1,613
275	5031120	CM SCADA Maintenance - RV	JO2	-	-	186	-	62.0%	-	-	115	-
276	5031122	CM SCADA Maintenance - MH	JO2	-	-	744	289	62.0%	-	-	461	180
277	5031130	CM SCADA Maintenance - KT	JO2	-	-	-	892	62.0%	-	-	-	553
278	5031134	CM SCADA Maintenance - BN	JO2	-	-	2,489	-	62.0%	-	-	1,544	-
279	5031136	CM SCADA Maintenance - SO	JO2	7,400	6,917	16,861	-	62.0%	4,590	4,291	10,459	-
280	5031138	CM SCADA Maintenance - HB	JO2	753	1,964	6,972	2,003	62.0%	467	1,218	4,324	1,243
281	5031140	CM SCADA Maintenance - NB	JO2	3,212	-	4,846	2,762	62.0%	1,992	-	3,006	1,713
282	5031142	CM SCADA Maintenance - SI	JO2	4,065	342	4,144	3,772	62.0%	2,522	212	2,571	2,340
283	5031144	CM SCADA Maintenance - SA	JO2	9,387	20,715	21,856	24,305	62.0%	5,823	12,849	13,557	15,076
284	5031146	CM SCADA Maintenance - NV	JO2	6,893	22,581	36,831	3,115	62.0%	4,276	14,007	22,846	1,932
285	5031148	CM SCADA Maintenance - YO	JO2	-	-	7,130	6,878	62.0%	-	-	4,423	4,267
286	5031150	CM SCADA Maintenance - ST	JO2	2,319	2,633	-	923	62.0%	1,439	1,633	-	573
287	5031152	CM SCADA Maintenance - KE	JO2	-	2,220	-	1,221	62.0%	-	1,377	-	757
288	5031154	CM SCADA Maintenance - FR	JO2	-	683	5,016	7,454	62.0%	-	424	3,111	4,624
289	5031156	CM SCADA Maintenance - SJ	JO2	4,666	10,374	5,248	-	62.0%	2,894	6,435	3,255	-
290	5031158	CM SCADA Maintenance - DA	JO2	2,000	-	301	-	62.0%	1,241	-	187	-
291	5031160	CM SCADA Maintenance - CC	JO2	1,001	1,677	33,469	26,191	62.0%	621	1,040	20,760	16,246
292	5031162	CM SCADA Maintenance - MI	JO2	-	2,562	3,226	7,768	62.0%	-	1,589	2,001	4,818
293	5031164	CM SCADA Maintenance - EB	JO2	-	12,118	-	-	62.0%	-	7,517	-	-
294	5031166	CM SCADA Maintenance - DI	JO2	-	2,919	1,258	579	62.0%	-	1,811	781	359
295	5031168	CM SCADA Maintenance - PN	JO2	856	6,975	26,933	2,327	62.0%	531	4,326	16,706	1,444
296		**CM SCADA Maintenance**		**56,297**	**100,865**	**181,164**	**94,914**		**34,921**	**62,566**	**112,376**	**58,875**
297	5016653	GT PREV MAINT - G REGULATOR GENL - PN	JOG	53,992	29,670	42,479	35,826	52.2%	28,205	15,499	22,190	18,715
298	5016667	GT PREV MAINT - G REGULATOR GENL - SF	JOG	63,491	1,141	-	-	52.2%	33,167	596	-	-
299	5016681	GT PREV MAINT - G REGULATOR GENL - DI	JOG	67,375	26,996	42,014	52,144	52.2%	35,196	14,102	21,948	27,239
300	5016695	GT PREV MAINT - G REGULATOR GENL - EB	JOG	118,875	45,688	35,112	51,828	52.2%	62,099	23,867	18,342	27,074
301	5016709	GT PREV MAINT - G REGULATOR GENL - MI	JOG	106,367	83,125	63,815	66,011	52.2%	55,565	43,423	33,336	34,483
302	5016723	GT PREV MAINT - G REGULATOR GENL - CC	JOG	86,962	70,588	90,201	95,543	52.2%	45,428	36,874	47,120	49,910
303	5016738	GT PREV MAINT - G REGULATOR GENL - DA	JOG	2,099	38,359	8,101	7,811	52.2%	1,097	20,038	4,232	4,080

Workpaper Table 9-3
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2012 to 2015
Old Cost Model to New Cost Model Conversion

Line No.	Planning Order	Planning Order Description	MAT	2012 Recorded (OCM)	2013 Recorded (OCM)	2014 Recorded (OCM)	2015 Recorded (OCM)	Conversion Factor	2012 Recorded (NCM)	2013 Recorded (NCM)	2014 Recorded (NCM)	2015 Recorded (NCM)
304	5016752	GT PREV MAINT - G REGULATOR GENL - SJ	JOG	286,510	108,433	117,226	116,769	52.2%	149,668	56,644	61,237	60,998
305	5016766	GT PREV MAINT - G REGULATOR GENL - FR	JOG	47,661	91,645	105,688	108,399	52.2%	24,897	47,874	55,210	56,626
306	5016780	GT PREV MAINT - G REGULATOR GENL - KE	JOG	28,357	44,378	47,013	57,226	52.2%	14,814	23,183	24,559	29,894
307	5016794	GT PREV MAINT - G REGULATOR GENL - ST	JOG	10,348	33,750	26,630	25,421	52.2%	5,405	17,631	13,911	13,279
308	5016795	GT PREV MAINT - G MAIN VALVE-MANUAL - ST	JOG	-	-	-	579	52.2%	-	-	-	302
309	5016808	GT PREV MAINT - G REGULATOR GENL - YO	JOG	54,332	51,965	57,443	82,357	52.2%	28,382	27,146	30,007	43,022
310	5016822	GT PREV MAINT - G REGULATOR GENL - NV	JOG	86,674	102,025	82,796	74,881	52.2%	45,277	53,296	43,252	39,116
311	5016836	GT PREV MAINT - G REGULATOR GENL - SA	JOG	120,313	152,689	177,916	199,347	52.2%	62,850	79,762	92,941	104,136
312	5016851	GT PREV MAINT - G REGULATOR GENL - SI	JOG	53,812	66,027	74,025	111,500	52.2%	28,110	34,492	38,669	58,246
313	5016866	GT PREV MAINT - G REGULATOR GENL - NB	JOG	145,167	83,193	85,238	85,975	52.2%	75,833	43,459	44,527	44,912
314	5016881	GT PREV MAINT - G REGULATOR GENL - HB	JOG	88,053	67,588	58,214	79,351	52.2%	45,998	35,307	30,410	41,452
315	5016954	GT PREV MAINT - G REGULATOR GENL - SO	JOG	72,502	106,769	104,271	104,744	52.2%	37,874	55,775	54,470	54,717
316	5020364	PM PIPESTAT REGMONRELIEF - BN	JOG	-	-	12,929	8,521	52.2%	-	-	6,754	4,451
317	5020365	PM PIPESTAT REGMONRELIEF - HN	JOG	-	2,218	36,242	41,744	52.2%	-	1,159	18,932	21,807
318	5020366	PM PIPESTAT REGMONRELIEF - KT	JOG	-	2,169	123,199	222,443	52.2%	-	1,133	64,357	116,201
319	5020367	PM PIPESTAT REGMONRELIEF - AT	JOG	-	28,553	95,795	82,717	52.2%	-	14,916	50,042	43,210
320	5020368	PM PIPESTAT REGMONRELIEF - MD	JOG	-	628	3,111	6,994	52.2%	-	328	1,625	3,654
321	5020369	PM PIPESTAT REGMONRELIEF - ME	JOG	-	3,295	31,025	28,313	52.2%	-	1,721	16,207	14,790
322	5020370	PM PIPESTAT REGMONRELIEF - MH	JOG	-	10,744	80,204	81,523	52.2%	-	5,612	41,898	42,586
323	5020371	PM PIPESTAT REGMONRELIEF - RV	JOG	-	3,890	25,136	48,531	52.2%	-	2,032	13,131	25,352
324	5020372	PM PIPESTAT REGMONRELIEF - TP	JOG	-	-	9,348	7,755	52.2%	-	-	4,883	4,051
325	5020373	PM PIPESTAT REGMONRELIEF - TY	JOG	-	8,632	87,047	59,164	52.2%	-	4,509	45,472	30,906
326	5020374	PM PIPESTAT REGMONRELIEF - WL	JOG	-	-	60,128	26,640	52.2%	-	-	31,410	13,916
327	5023330	2012 RETRO-WAGE ESCLATION-MWC BX-GD	JOG	164,769	-	-	-	52.2%	86,073	-	-	-
328	5023352	2012 RETRO-WAGE ESCLATION-MWC BX-GT	JOG	494,308	-	-	-	52.2%	258,219	-	-	-
329	5025690	GAS T&R MINOR MATL JE ADJ	JOG	-	23,789	-	-	52.2%	-	12,427	-	-
330	5029444	GT PREV MAINT - G REGULATOR GENL - RD	JOG	10,529	10,009	8,483	51,675	52.2%	5,500	5,229	4,431	26,994
331	5029452	PM PIPESTAT REGMONRELIEF - HR	JOG	-	-	-	33,383	52.2%	-	-	-	17,439
332	5031200	PM Meter Maintenance - NB	JOG	-	-	-	7,584	52.2%	-	-	-	3,962
333	5031204	PM Meter Maintenance - SA	JOG	-	427	1,177	-	52.2%	-	223	615	-
334	5031208	PM Meter Maintenance - YO	JOG	-	-	-	705	52.2%	-	-	-	369
335		**PM G Regulator Station General**		**2,162,497**	**1,298,385**	**1,792,004**	**2,063,400**		**1,129,656**	**678,257**	**936,116**	**1,077,890**
336	5016654	GT PREV MAINT - G MAIN VALVE-MANUAL - PN	JOH	27,516	31,699	22,696	22,745	51.5%	14,162	16,315	11,681	11,707
337	5016668	GT PREV MAINT - G MAIN VALVE-MANUAL - SF	JOH	8,982	4,126	1,673	10,652	51.5%	4,623	2,124	861	5,483
338	5016682	GT PREV MAINT - G MAIN VALVE-MANUAL - DI	JOH	12,054	16,362	23,862	37,208	51.5%	6,204	8,421	12,281	19,150
339	5016696	GT PREV MAINT - G MAIN VALVE-MANUAL - EB	JOH	38,336	64,338	41,255	32,267	51.5%	19,731	33,114	21,233	16,607
340	5016710	GT PREV MAINT - G MAIN VALVE-MANUAL - MI	JOH	13,696	22,615	22,509	20,517	51.5%	7,049	11,640	11,585	10,560
341	5016724	GT PREV MAINT - G MAIN VALVE-MANUAL - CC	JOH	30,869	58,817	40,409	54,789	51.5%	15,888	30,272	20,798	28,199
342	5016739	GT PREV MAINT - G MAIN VALVE-MANUAL - DA	JOH	13,980	27,594	19,488	23,135	51.5%	7,195	14,202	10,030	11,907
343	5016753	GT PREV MAINT - G MAIN VALVE-MANUAL - SJ	JOH	60,784	46,436	36,740	46,447	51.5%	31,284	23,900	18,909	23,905
344	5016767	GT PREV MAINT - G MAIN VALVE-MANUAL - FR	JOH	46,607	33,159	29,452	22,099	51.5%	23,988	17,067	15,159	11,374
345	5016781	GT PREV MAINT - G MAIN VALVE-MANUAL - KE	JOH	7,052	20,866	20,356	29,082	51.5%	3,629	10,739	10,477	14,968
346	5016795	GT PREV MAINT - G MAIN VALVE-MANUAL - ST	JOH	13,262	29,986	47,862	37,582	51.5%	6,826	15,433	24,634	19,343
347	5016809	GT PREV MAINT - G MAIN VALVE-MANUAL - YO	JOH	99,423	99,858	82,818	102,777	51.5%	51,171	51,395	42,625	52,897
348	5016823	GT PREV MAINT - G MAIN VALVE-MANUAL - NV	JOH	25,331	32,141	46,869	67,305	51.5%	13,037	16,543	24,123	34,641

Workpaper Table 9-3
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2012 to 2015
Old Cost Model to New Cost Model Conversion

Line No.	Planning Order	Planning Order Description	MAT	2012 Recorded (OCM)	2013 Recorded (OCM)	2014 Recorded (OCM)	2015 Recorded (OCM)	Conversion Factor	2012 Recorded (NCM)	2013 Recorded (NCM)	2014 Recorded (NCM)	2015 Recorded (NCM)
349	5016837	GT PREV MAINT - G MAIN VALVE-MANUAL - SA	JOH	71,940	108,114	134,470	121,078	51.5%	37,026	55,644	69,209	62,316
350	5016852	GT PREV MAINT - G MAIN VALVE-MANUAL - SI	JOH	12,959	22,062	26,140	43,902	51.5%	6,670	11,355	13,454	22,596
351	5016867	GT PREV MAINT - G MAIN VALVE-MANUAL - NB	JOH	102,418	59,090	53,575	95,381	51.5%	52,713	30,413	27,574	49,091
352	5016882	GT PREV MAINT - G MAIN VALVE-MANUAL - HB	JOH	15,382	18,362	19,578	19,825	51.5%	7,917	9,451	10,076	10,203
353	5016955	GT PREV MAINT - G MAIN VALVE-MANUAL - SO	JOH	50,872	45,067	42,855	46,327	51.5%	26,183	23,195	22,057	23,844
354	5020353	PM PIPELINE VALVE-MANUAL - BN	JOH	-	-	13,033	16,000	51.5%	-	-	6,708	8,235
355	5020354	PM PIPELINE VALVE-MANUAL - HN	JOH	-	3,875	33,597	40,403	51.5%	-	1,994	17,292	20,795
356	5020355	PM PIPELINE VALVE-MANUAL - KT	JOH	-	7,556	63,203	55,537	51.5%	-	3,889	32,529	28,584
357	5020356	PM PIPELINE VALVE-MANUAL - AT	JOH	-	3,939	25,037	27,035	51.5%	-	2,027	12,886	13,915
358	5020357	PM PIPELINE VALVE-MANUAL - MD	JOH	-	3,611	(888)	1,180	51.5%	-	1,858	(457)	607
359	5020358	PM PIPELINE VALVE-MANUAL - ME	JOH	-	7,296	61,696	86,831	51.5%	-	3,755	31,754	44,690
360	5020359	PM PIPELINE VALVE-MANUAL - MH	JOH	-	33,606	74,624	57,780	51.5%	-	17,297	38,408	29,738
361	5020360	PM PIPELINE VALVE-MANUAL - RV	JOH	-	12,383	57,701	42,353	51.5%	-	6,373	29,698	21,798
362	5020361	PM PIPELINE VALVE-MANUAL - TP	JOH	-	-	13,078	28,032	51.5%	-	-	6,731	14,428
363	5020362	PM PIPELINE VALVE-MANUAL - TY	JOH	-	11,537	60,979	83,601	51.5%	-	5,938	31,385	43,028
364	5020363	PM PIPELINE VALVE-MANUAL - WL	JOH	-	31,438	37,776	24,076	51.5%	-	16,181	19,443	12,391
365	5029443	GT PREV MAINT - G MAIN VALVE-MANUAL - RD	JOH	-	-	-	20,040	51.5%	-	-	-	10,314
366	5029451	PM PIPELINE VALVE-MANUAL - HR	JOH	-	-	-	47,611	51.5%	-	-	-	24,504
367		**PM Gas Pipeline Valve Manual**		**651,462**	**855,936**	**1,152,444**	**1,363,599**		**335,296**	**440,534**	**593,141**	**701,819**
368	5016823	GT PREV MAINT - G MAIN VALVE-MANUAL - NV	JOI	-	1,460	-	-	53.4%	-	779	-	-
369	5023632	GT PREV MAINT-G MAIN VALVE-AUTOMATED-BN	JOI	-	-	5,494	11,382	53.4%	-	-	2,931	6,072
370	5023633	GT PREV MAINT-G MAIN VALVE-AUTOMATED-CC	JOI	-	1,366	6,253	15,700	53.4%	-	729	3,336	8,376
371	5023634	GT PREV MAINT-G MAIN VALVE-AUTOMATED-DA	JOI	-	346	233	386	53.4%	-	185	125	206
372	5023635	GT PREV MAINT-G MAIN VALVE-AUTOMATED-DI	JOI	-	3,416	2,893	13,628	53.4%	-	1,822	1,543	7,271
373	5023636	GT PREV MAINT-G MAIN VALVE-AUTOMATED-EB	JOI	2,795	-	8,170	21,033	53.4%	1,491	-	4,359	11,222
374	5023637	GT PREV MAINT-G MAIN VALVE-AUTOMATED-FR	JOI	-	-	5,092	3,404	53.4%	-	-	2,717	1,816
375	5023638	GT PREV MAINT-G MAIN VALVE-AUTOMATED-HB	JOI	855	1,366	311	-	53.4%	456	729	166	-
376	5023639	GT PREV MAINT-G MAIN VALVE-AUTOMATED-HN	JOI	-	3,420	4,536	16,979	53.4%	-	1,825	2,420	9,059
377	5023640	GT PREV MAINT-G MAIN VALVE-AUTOMATED-KE	JOI	-	-	-	386	53.4%	-	-	-	206
378	5023641	GT PREV MAINT-G MAIN VALVE-AUTOMATED-KT	JOI	-	952	26,000	29,097	53.4%	-	508	13,872	15,524
379	5023642	GT PREV MAINT-G MAIN VALVE-AUTOMATED-AT	JOI	-	388	2,873	31,845	53.4%	-	207	1,533	16,990
380	5023643	GT PREV MAINT-G MAIN VALVE-AUTOMATED-MD	JOI	-	-	-	11,730	53.4%	-	-	-	6,258
381	5023644	GT PREV MAINT-G MAIN VALVE-AUTOMATED-ME	JOI	-	-	432	2,924	53.4%	-	-	230	1,560
382	5023645	GT PREV MAINT-G MAIN VALVE-AUTOMATED-MH	JOI	-	7,453	39,696	102,075	53.4%	-	3,977	21,179	54,460
383	5023646	GT PREV MAINT-G MAIN VALVE-AUTOMATED-MI	JOI	1,646	8,113	19,033	25,968	53.4%	878	4,328	10,155	13,855
384	5023647	GT PREV MAINT-G MAIN VALVE-AUTOMATED-NB	JOI	-	25,864	20,428	1,896	53.4%	-	13,799	10,899	1,012
385	5023648	GT PREV MAINT-G MAIN VALVE-AUTOMATED-NV	JOI	8,628	13,859	2,138	4,245	53.4%	4,603	7,394	1,141	2,265
386	5023649	GT PREV MAINT-G MAIN VALVE-AUTOMATED-PN	JOI	4,833	1,312	3,731	482	53.4%	2,579	700	1,991	257
387	5023650	GT PREV MAINT-G MAIN VALVE-AUTOMATED-RV	JOI	-	2,367	990	15,001	53.4%	-	1,263	528	8,003
388	5023651	GT PREV MAINT-G MAIN VALVE-AUTOMATED-SA	JOI	28,040	11,016	5,991	38,989	53.4%	14,960	5,877	3,197	20,802
389	5023652	GT PREV MAINT-G MAIN VALVE-AUTOMATED-SF	JOI	151	-	-	-	53.4%	80	-	-	-
390	5023653	GT PREV MAINT-G MAIN VALVE-AUTOMATED-SI	JOI	8,209	13,015	16,204	2,894	53.4%	4,380	6,944	8,645	1,544
391	5023654	GT PREV MAINT-G MAIN VALVE-AUTOMATED-SJ	JOI	-	2,476	-	-	53.4%	-	1,321	-	-
392	5023655	GT PREV MAINT-G MAIN VALVE-AUTOMATED-SO	JOI	7,605	1,196	-	-	53.4%	4,057	638	-	-
393	5023656	GT PREV MAINT-G MAIN VALVE-AUTOMATED-ST	JOI	9,254	7,344	5,380	6,688	53.4%	4,937	3,918	2,870	3,568

Workpaper Table 9-3
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2012 to 2015
Old Cost Model to New Cost Model Conversion

Line No.	Planning Order	Planning Order Description	MAT	2012 Recorded (OCM)	2013 Recorded (OCM)	2014 Recorded (OCM)	2015 Recorded (OCM)	Conversion Factor	2012 Recorded (NCM)	2013 Recorded (NCM)	2014 Recorded (NCM)	2015 Recorded (NCM)
394	5023657	GT PREV MAINT-G MAIN VALVE-AUTOMATED-TP	JOI	-	4,835	6,005	16,231	53.4%	-	2,580	3,204	8,660
395	5023658	GT PREV MAINT-G MAIN VALVE-AUTOMATED-TY	JOI	-	158	16,440	58,807	53.4%	-	84	8,771	31,376
396	5023659	GT PREV MAINT-G MAIN VALVE-AUTOMATED-WL	JOI	-	4,176	5,580	25,040	53.4%	-	2,228	2,977	13,360
397	5023660	GT PREV MAINT-G MAIN VALVE-AUTOMATED-YO	JOI	1,925	5,551	4,498	386	53.4%	1,027	2,961	2,400	206
398	5029445	GT PREV MAINT-G MAIN VALVE-AUTOMATED-HR	JOI	-	-	-	13,110	53.4%	-	-	-	6,995
399	5029446	GT PREV MAINT-G MAIN VALVE-AUTOMATED-RD	JOI	-	1,864	-	4,666	53.4%	-	995	-	2,489
400		**PM Gas Pipeline Valve Automated**		**73,940**	**123,315**	**208,401**	**474,972**		**39,449**	**65,792**	**111,188**	**253,412**
401	5016725	GT Prev Maint - Gas Holders - CC	JOJ	26,806	45,274	34,428	26,148	55.9%	14,971	25,286	19,228	14,604
402	5016838	GT Prev Maint - Gas Holders - SA	JOJ	93,654	101,537	164,898	170,947	55.9%	52,307	56,710	92,098	95,476
403	5016853	GT Prev Maint - Gas Holders - SI	JOJ	48,887	96,331	111,917	146,663	55.9%	27,304	53,802	62,507	81,913
404	5031202	PM Meter Maintenance - SI	JOJ	37,523	-	-	-	55.9%	20,957	-	-	-
405		**Gas Holders Maintenance**		**206,870**	**243,141**	**311,243**	**343,759**		**115,540**	**135,797**	**173,833**	**191,994**
406	5016655	GT Oper Transm Pipelines - PN	JOK	8,557	24,436	14,009	30,241	53.0%	4,535	12,951	7,424	16,027
407	5016669	GT Oper Transm Pipelines - SF	JOK	4,692	8,587	7,216	7,628	53.0%	2,487	4,551	3,824	4,043
408	5016683	GT Oper Transm Pipelines - DI	JOK	114,011	121,220	163,495	177,602	53.0%	60,424	64,244	86,649	94,126
409	5016697	GT Oper Transm Pipelines - EB	JOK	17,623	41,470	36,037	34,083	53.0%	9,340	21,978	19,099	18,064
410	5016711	GT Oper Transm Pipelines - MI	JOK	-	6,680	372	6,122	53.0%	-	3,541	197	3,245
411	5016726	GT Oper Transm Pipelines - CC	JOK	49,470	160,363	98,926	61,701	53.0%	26,218	84,990	52,429	32,700
412	5016740	GT Oper Transm Pipelines - DA	JOK	28,505	32,046	31,203	17,583	53.0%	15,107	16,984	16,537	9,319
413	5016754	GT Oper Transm Pipelines - SJ	JOK	46,882	67,496	39,319	(12,573)	53.0%	24,846	35,772	20,838	(6,663)
414	5016768	GT Oper Transm Pipelines - FR	JOK	70,400	46,441	24,692	36,603	53.0%	37,310	24,613	13,086	19,399
415	5016782	GT Oper Transm Pipelines - KE	JOK	3,534	21,786	1,165	-	53.0%	1,873	11,546	617	-
416	5016796	GT Oper Transm Pipelines - ST	JOK	33,096	29,837	5,528	2,500	53.0%	17,540	15,813	2,930	1,325
417	5016810	GT Oper Transm Pipelines - YO	JOK	11,432	19,342	744	-	53.0%	6,059	10,251	394	-
418	5016824	GT Oper Transm Pipelines - NV	JOK	97,890	160,094	160,474	140,534	53.0%	51,880	84,847	85,048	74,481
419	5016839	GT Oper Transm Pipelines - SA	JOK	95,889	103,084	111,951	107,622	53.0%	50,820	54,632	59,332	57,038
420	5016851	GT PREV MAINT - G REGULATOR GENL - SI	JOK	-	-	-	4,341	53.0%	-	-	-	2,301
421	5016854	GT Oper Transm Pipelines - SI	JOK	51,213	80,752	29,619	24,118	53.0%	27,142	42,797	15,697	12,782
422	5016869	GT Oper Transm Pipelines - NB	JOK	26,521	42,124	64,388	55,420	53.0%	14,056	22,325	34,125	29,372
423	5016884	GT Oper Transm Pipelines - HB	JOK	3,671	66,646	87,415	50,188	53.0%	1,946	35,321	46,328	26,599
424	5016956	GT Oper Transm Pipelines - SO	JOK	27,523	35,860	20,389	12,069	53.0%	14,587	19,005	10,806	6,396
425	5023830	GT OPER TRANSM PIPELINES - BN	JOK	-	28,180	62,041	46,216	53.0%	-	14,935	32,881	24,493
426	5023831	GT OPER TRANSM PIPELINES - HN	JOK	-	57,285	185,619	18,346	53.0%	-	30,360	98,374	9,723
427	5023832	GT OPER TRANSM PIPELINES - KT	JOK	-	53,335	130,077	57,556	53.0%	-	28,266	68,938	30,504
428	5023833	GT OPER TRANSM PIPELINES - AT	JOK	-	5,030	3,683	11,982	53.0%	-	2,666	1,952	6,350
429	5023834	GT OPER TRANSM PIPELINES - MD	JOK	-	-	9,529	-	53.0%	-	-	5,050	-
430	5023835	GT OPER TRANSM PIPELINES - ME	JOK	-	394,012	398,371	458,714	53.0%	-	208,819	211,129	243,110
431	5023836	GT OPER TRANSM PIPELINES - MH	JOK	-	68,594	107,289	58,084	53.0%	-	36,354	56,861	30,783
432	5023837	GT OPER TRANSM PIPELINES - RV	JOK	-	269,986	524,121	362,867	53.0%	-	143,087	277,775	192,313
433	5023838	GT OPER TRANSM PIPELINES - TP	JOK	-	9,806	17,404	52,617	53.0%	-	5,197	9,224	27,886
434	5023839	GT OPER TRANSM PIPELINES - TY	JOK	-	52,140	111,418	95,259	53.0%	-	27,633	59,049	50,486
435	5023840	GT OPER TRANSM PIPELINES - WL	JOK	-	234,243	356,135	278,234	53.0%	-	124,144	188,745	147,459
436	5029439	GT OPER TRANSM PIPELINES - HR	JOK	-	-	-	55,992	53.0%	-	-	-	29,675
437		**Operate Transmission Pipelines**		**690,910**	**2,240,874**	**2,802,627**	**2,251,651**		**366,170**	**1,187,622**	**1,485,340**	**1,193,333**

Workpaper Table 9-3
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2012 to 2015
Old Cost Model to New Cost Model Conversion

Line No.	Planning Order	Planning Order Description	MAT	2012 Recorded (OCM)	2013 Recorded (OCM)	2014 Recorded (OCM)	2015 Recorded (OCM)	Conversion Factor	2012 Recorded (NCM)	2013 Recorded (NCM)	2014 Recorded (NCM)	2015 Recorded (NCM)
438	5016656	GT Oper Transm Regulator Station - PN	JOL	2,107	-	622	-	56.3%	1,187	-	351	-
439	5016670	GT Oper Transm Regulator Station - SF	JOL	520	27	-	-	56.3%	293	15	-	-
440	5016684	GT Oper Transm Regulator Station - DI	JOL	-	-	1,492	-	56.3%	-	-	840	-
441	5016698	GT Oper Transm Regulator Station - EB	JOL	-	2,435	-	-	56.3%	-	1,372	-	-
442	5016727	GT Oper Transm Regulator Station - CC	JOL	-	5,194	7,276	14,354	56.3%	-	2,925	4,098	8,084
443	5016741	GT Oper Transm Regulator Station - DA	JOL	828	-	-	-	56.3%	466	-	-	-
444	5016755	GT Oper Transm Regulator Station - SJ	JOL	3,927	20,637	21,615	1,013	56.3%	2,212	11,623	12,174	571
445	5016769	GT Oper Transm Regulator Station - FR	JOL	10,518	649	-	2,216	56.3%	5,924	365	-	1,248
446	5016783	GT Oper Transm Regulator Station - KE	JOL	356	27	-	1,058	56.3%	201	15	-	596
447	5016797	GT Oper Transm Regulator Station - ST	JOL	23,428	38,327	30,837	15,551	56.3%	13,195	21,586	17,368	8,758
448	5016811	GT Oper Transm Regulator Station - YO	JOL	1,833	32,727	11,894	27,838	56.3%	1,032	18,432	6,699	15,679
449	5016825	GT Oper Transm Regulator Station - NV	JOL	11,311	42,867	33,289	23,873	56.3%	6,370	24,143	18,749	13,446
450	5016840	GT Oper Transm Regulator Station - SA	JOL	99,677	79,320	102,908	90,886	56.3%	56,139	44,674	57,959	51,188
451	5016855	GT Oper Transm Regulator Station - SI	JOL	221	2,111	9,091	2,001	56.3%	125	1,189	5,120	1,127
452	5016870	GT Oper Transm Regulator Station - NB	JOL	12,613	33,253	27,863	36,911	56.3%	7,104	18,728	15,693	20,789
453	5016885	GT Oper Transm Regulator Station - HB	JOL	4,496	18,285	13,225	12,209	56.3%	2,532	10,298	7,449	6,876
454	5016957	GT Oper Transm Regulator Station - SO	JOL	2,671	28,867	7,562	7,249	56.3%	1,505	16,258	4,259	4,083
455	5023841	GT OPER TRANSM REGULATOR STATION - BN	JOL	-	443,788	542,340	420,735	56.3%	-	249,947	305,453	236,963
456	5023842	GT OPER TRANSM REGULATOR STATION - HN	JOL	-	314,971	471,240	450,751	56.3%	-	177,396	265,408	253,869
457	5023843	GT OPER TRANSM REGULATOR STATION - KT	JOL	-	470,604	608,795	454,692	56.3%	-	265,050	342,881	256,089
458	5023844	GT OPER TRANSM REGULATOR STATION - AT	JOL	-	197,636	235,411	317,286	56.3%	-	111,311	132,586	178,700
459	5023845	GT OPER TRANSM REGULATOR STATION - MD	JOL	-	693	-	-	56.3%	-	390	-	-
460	5023846	GT OPER TRANSM REGULATOR STATION - ME	JOL	-	700,022	1,079,218	1,034,624	56.3%	-	394,261	607,830	582,714
461	5023847	GT OPER TRANSM REGULATOR STATION - MH	JOL	-	662,135	869,993	769,324	56.3%	-	372,923	489,991	433,294
462	5023848	GT OPER TRANSM REGULATOR STATION - RV	JOL	-	602,204	707,718	717,777	56.3%	-	339,169	398,596	404,261
463	5023849	GT OPER TRANSM REGULATOR STATION - TP	JOL	-	154,304	227,898	169,108	56.3%	-	86,906	128,355	95,244
464	5023850	GT OPER TRANSM REGULATOR STATION - TY	JOL	-	385,394	689,519	552,023	56.3%	-	217,059	388,346	310,907
465	5023851	GT OPER TRANSM REGULATOR STATION - WL	JOL	-	326,226	644,510	567,917	56.3%	-	183,735	362,996	319,858
466	5029441	GT OPER TRANSM REGULATOR STATION - HR	JOL	-	-	-	113,253	56.3%	-	-	-	63,786
467	5031204	PM Meter Maintenance - SA	JOL	13,560	21,354	10,841	7,739	56.3%	7,637	12,027	6,106	4,358
468		**Operate Transmission Regulator Station**		**188,065**	**4,584,056**	**6,355,157**	**5,810,387**		**105,921**	**2,581,801**	**3,579,309**	**3,272,487**
469	5016657	GT CORR MAINT - G REGULATOR GENL - PN	JOM	55,062	15,919	21,044	11,190	61.8%	34,027	9,837	13,005	6,915
470	5016671	GT CORR MAINT - G REGULATOR GENL - SF	JOM	7,638	-	-	-	61.8%	4,720	-	-	-
471	5016681	GT PREV MAINT - G REGULATOR GENL - DI	JOM	-	-	372	-	61.8%	-	-	230	-
472	5016685	GT CORR MAINT - G REGULATOR GENL - DI	JOM	46,377	56,637	22,101	21,392	61.8%	28,660	35,001	13,658	13,220
473	5016699	GT CORR MAINT - G REGULATOR GENL - EB	JOM	5,430	19,999	10,339	7,421	61.8%	3,355	12,359	6,389	4,586
474	5016713	GT CORR MAINT - G REGULATOR GENL - MI	JOM	21,639	8,657	17,556	69,838	61.8%	13,373	5,350	10,850	43,159
475	5016728	GT CORR MAINT - G REGULATOR GENL - CC	JOM	10,760	47,621	63,720	23,673	61.8%	6,649	29,429	39,378	14,630
476	5016729	GT CORR MAINT - G MAIN VALVE-MANUAL - CC	JOM	-	-	177	11,993	61.8%	-	-	109	7,411
477	5016742	GT CORR MAINT - G REGULATOR GENL - DA	JOM	17,292	13,481	6,488	7,293	61.8%	10,686	8,331	4,010	4,507
478	5016756	GT CORR MAINT - G REGULATOR GENL - SJ	JOM	5,807	27,483	147,755	71,116	61.8%	3,589	16,984	91,310	43,948
479	5016770	GT CORR MAINT - G REGULATOR GENL - FR	JOM	27,636	20,867	40,732	12,113	61.8%	17,079	12,896	25,172	7,486
480	5016771	GT CORR MAINT - G MAIN VALVE-MANUAL - FR	JOM	-	2,903	-	-	61.8%	-	1,794	-	-
481	5016784	GT CORR MAINT - G REGULATOR GENL - KE	JOM	20,976	35,235	16,641	18,931	61.8%	12,963	21,775	10,284	11,699

Workpaper Table 9-3
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2012 to 2015
Old Cost Model to New Cost Model Conversion

Line No.	Planning Order	Planning Order Description	MAT	2012 Recorded (OCM)	2013 Recorded (OCM)	2014 Recorded (OCM)	2015 Recorded (OCM)	Conversion Factor	2012 Recorded (NCM)	2013 Recorded (NCM)	2014 Recorded (NCM)	2015 Recorded (NCM)
482	5016798	GT CORR MAINT - G REGULATOR GENL - ST	JOM	17,948	28,113	2,296	8,394	61.8%	11,092	17,373	1,419	5,188
483	5016812	GT CORR MAINT - G REGULATOR GENL - YO	JOM	22,011	29,453	26,118	35,764	61.8%	13,603	18,201	16,140	22,102
484	5016826	GT CORR MAINT - G REGULATOR GENL - NV	JOM	57,175	41,283	15,964	12,140	61.8%	35,333	25,512	9,865	7,502
485	5016841	GT CORR MAINT - G REGULATOR GENL - SA	JOM	100,484	120,094	106,939	112,919	61.8%	62,097	74,216	66,087	69,782
486	5016842	GT CORR MAINT - G MAIN VALVE-MANUAL - SA	JOM	-	-	16,296	5,317	61.8%	-	-	10,071	3,286
487	5016856	GT CORR MAINT - G REGULATOR GENL - SI	JOM	10,606	53,971	28,153	14,770	61.8%	6,554	33,353	17,398	9,128
488	5016871	GT CORR MAINT - G REGULATOR GENL - NB	JOM	34,776	94,837	73,093	38,667	61.8%	21,491	58,608	45,171	23,896
489	5016886	GT CORR MAINT - G REGULATOR GENL - HB	JOM	13,270	28,927	25,301	41,307	61.8%	8,201	17,877	15,636	25,527
490	5016958	GT CORR MAINT - G REGULATOR GENL - SO	JOM	26,910	9,378	17,943	6,702	61.8%	16,630	5,795	11,088	4,142
491	5016959	GT CORR MAINT - G MAIN VALVE-MANUAL - SO	JOM	-	683	79	-	61.8%	-	422	49	-
492	5020309	CM PIPESTAT REGMONRELIEF - BN	JOM	-	327	2,082	165	61.8%	-	202	1,287	102
493	5020310	CM PIPESTAT REGMONRELIEF - HN	JOM	-	22,756	11,287	3,695	61.8%	-	14,063	6,975	2,283
494	5020311	CM PIPESTAT REGMONRELIEF - KT	JOM	-	9,797	13,426	4,369	61.8%	-	6,054	8,297	2,700
495	5020312	CM PIPESTAT REGMONRELIEF - AT	JOM	1,141	8,957	15,201	13,641	61.8%	705	5,535	9,394	8,430
496	5020313	CM PIPESTAT REGMONRELIEF - MD	JOM	-	-	167	1,915	61.8%	-	-	103	1,183
497	5020314	CM PIPESTAT REGMONRELIEF - ME	JOM	-	3,318	2,461	18,897	61.8%	-	2,051	1,521	11,678
498	5020315	CM PIPESTAT REGMONRELIEF - MH	JOM	1,177	63,053	14,601	6,536	61.8%	727	38,965	9,023	4,039
499	5020316	CM PIPESTAT REGMONRELIEF - RV	JOM	-	3,423	375	3,134	61.8%	-	2,115	232	1,937
500	5020317	CM PIPESTAT REGMONRELIEF - TP	JOM	-	-	701	20,154	61.8%	-	-	433	12,455
501	5020318	CM PIPESTAT REGMONRELIEF - TY	JOM	-	1,469	4,369	5,550	61.8%	-	908	2,700	3,430
502	5020319	CM PIPESTAT REGMONRELIEF - WL	JOM	-	-	4,081	-	61.8%	-	-	2,522	-
503	5025691	GAS T&R MINOR MATL JE ADJ	JOM	-	134,802	-	-	61.8%	-	83,305	-	-
504	5029430	CM PIPESTAT REGMONRELIEF - HR	JOM	-	-	-	21,335	61.8%	-	-	-	13,185
505	5029436	GT CORR MAINT - G REGULATOR GENL - RD	JOM	-	2,135	-	13,278	61.8%	-	1,319	-	8,205
506		**CM Gas Regulator General**		**504,113**	**905,578**	**727,858**	**643,607**		**311,534**	**559,632**	**449,804**	**397,738**
507	5016658	GT CORR MAINT - G MAIN VALVE-MANUAL - PN	JON	104,840	93,121	121,325	12,108	57.7%	60,468	53,709	69,976	6,983
508	5016672	GT CORR MAINT - G MAIN VALVE-MANUAL - SF	JON	10,848	15,873	44,556	-	57.7%	6,257	9,155	25,698	-
509	5016686	GT CORR MAINT - G MAIN VALVE-MANUAL - DI	JON	62,364	22,562	21,781	705	57.7%	35,969	13,013	12,562	407
510	5016700	GT CORR MAINT - G MAIN VALVE-MANUAL - EB	JON	18,333	6,024	8,364	39,099	57.7%	10,574	3,475	4,824	22,551
511	5016714	GT CORR MAINT - G MAIN VALVE-MANUAL - MI	JON	16,957	-	1,948	11,643	57.7%	9,780	-	1,123	6,715
512	5016723	GT PREV MAINT - G REGULATOR GENL - CC	JON	3,449	-	-	-	57.7%	1,989	-	-	-
513	5016729	GT CORR MAINT - G MAIN VALVE-MANUAL - CC	JON	30,252	26,637	14,605	27,345	57.7%	17,448	15,363	8,424	15,772
514	5016743	GT CORR MAINT - G MAIN VALVE-MANUAL - DA	JON	74,612	25,970	17,155	8,205	57.7%	43,034	14,979	9,894	4,733
515	5016753	GT PREV MAINT - G MAIN VALVE-MANUAL - SJ	JON	-	-	8,483	-	57.7%	-	-	4,893	-
516	5016757	GT CORR MAINT - G MAIN VALVE-MANUAL - SJ	JON	31,301	24,919	19,792	32,509	57.7%	18,053	14,372	11,415	18,750
517	5016771	GT CORR MAINT - G MAIN VALVE-MANUAL - FR	JON	31,422	49,868	34,284	820	57.7%	18,123	28,762	19,774	473
518	5016785	GT CORR MAINT - G MAIN VALVE-MANUAL - KE	JON	11,737	4,892	32,827	20,868	57.7%	6,769	2,821	18,934	12,036
519	5016799	GT CORR MAINT - G MAIN VALVE-MANUAL - ST	JON	55,595	104,023	15,284	122,173	57.7%	32,065	59,997	8,815	70,465
520	5016813	GT CORR MAINT - G MAIN VALVE-MANUAL - YO	JON	38,728	41,700	43,175	38,687	57.7%	22,337	24,051	24,902	22,313
521	5016827	GT CORR MAINT - G MAIN VALVE-MANUAL - NV	JON	51,850	27,136	11,216	1,352	57.7%	29,905	15,651	6,469	780
522	5016842	GT CORR MAINT - G MAIN VALVE-MANUAL - SA	JON	116,892	81,658	80,573	120,934	57.7%	67,419	47,098	46,471	69,750
523	5016857	GT CORR MAINT - G MAIN VALVE-MANUAL - SI	JON	49,067	12,802	10,981	3,259	57.7%	28,300	7,384	6,333	1,880
524	5016872	GT CORR MAINT - G MAIN VALVE-MANUAL - NB	JON	32,465	17,658	22,032	6,418	57.7%	18,724	10,185	12,707	3,702

Workpaper Table 9-3
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2012 to 2015
Old Cost Model to New Cost Model Conversion

Line No.	Planning Order	Planning Order Description	MAT	2012 Recorded (OCM)	2013 Recorded (OCM)	2014 Recorded (OCM)	2015 Recorded (OCM)	Conversion Factor	2012 Recorded (NCM)	2013 Recorded (NCM)	2014 Recorded (NCM)	2015 Recorded (NCM)
525	5016887	GT CORR MAINT - G MAIN VALVE-MANUAL - HB	JON	6,587	24,236	10,334	44,509	57.7%	3,799	13,979	5,960	25,671
526	5016959	GT CORR MAINT - G MAIN VALVE-MANUAL - SO	JON	106,984	33,190	16,801	15,335	57.7%	61,705	19,143	9,690	8,845
527	5020298	CM PIPELINE VALVE - MANUAL - BN	JON	-	-	3,831	3,753	57.7%	-	-	2,210	2,164
528	5020299	CM PIPELINE VALVE - MANUAL - HN	JON	-	2,468	115,185	10,123	57.7%	-	1,423	66,435	5,839
529	5020300	CM PIPELINE VALVE - MANUAL - KT	JON	-	1,126	7,378	13,952	57.7%	-	649	4,255	8,047
530	5020301	CM PIPELINE VALVE - MANUAL - AT	JON	-	16,395	26,258	18,215	57.7%	-	9,456	15,145	10,506
531	5020302	CM PIPELINE VALVE - MANUAL - MD	JON	-	-	280	-	57.7%	-	-	162	-
532	5020303	CM PIPELINE VALVE - MANUAL - ME	JON	-	4,958	12,040	6,168	57.7%	-	2,859	6,944	3,557
533	5020304	CM PIPELINE VALVE - MANUAL - MH	JON	-	21,999	41,216	7,452	57.7%	-	12,688	23,772	4,298
534	5020305	CM PIPELINE VALVE - MANUAL - RV	JON	-	1,353	29,383	3,382	57.7%	-	781	16,947	1,950
535	5020306	CM PIPELINE VALVE - MANUAL - TP	JON	-	2,428	757	10,105	57.7%	-	1,400	437	5,828
536	5020307	CM PIPELINE VALVE - MANUAL - TY	JON	-	3,495	619	8,397	57.7%	-	2,016	357	4,843
537	5020308	CM PIPELINE VALVE - MANUAL - WL	JON	-	1,438	15,315	91,218	57.7%	-	830	8,833	52,611
538	5029429	CM PIPELINE VALVE - MANUAL - HR	JON	-	-	-	5,358	57.7%	-	-	-	3,090
539	5029435	GT CORR MAINT - G MAIN VALVE-MANUAL - RD	JON	-	342	372	768	57.7%	-	197	214	443
540	5248418	ATMOSPHERIC CORR STATION MITIGATION	JON	-	85	372	-	57.7%	-	49	214	-
541		**CM Gas Pipeline Valve Manual**		**854,281**	**668,357**	**788,521**	**684,860**		**492,719**	**385,484**	**454,791**	**395,003**
542	5016757	GT CORR MAINT - G MAIN VALVE-MANUAL - SJ	JOO	-	-	-	21,684	71.1%	-	-	-	15,419
543	5023468	GT CORR MAINT-G MAIN VALVE-AUTOMATED-BN	JOO	-	374	-	2,969	71.1%	-	266	-	2,111
544	5023472	GT CORR MAINT-G MAIN VALVE-AUTOMATED-EB	JOO	-	14,365	55	16,992	71.1%	-	10,215	39	12,083
545	5023473	GT CORR MAINT-G MAIN VALVE-AUTOMATED-FR	JOO	-	-	4,276	-	71.1%	-	-	3,041	-
546	5023475	GT CORR MAINT-G MAIN VALVE-AUTOMATED-HN	JOO	-	1,026	1,285	743	71.1%	-	730	914	528
547	5023476	GT CORR MAINT-G MAIN VALVE-AUTOMATED-KE	JOO	-	-	467	-	71.1%	-	-	332	-
548	5023477	GT CORR MAINT-G MAIN VALVE-AUTOMATED-KT	JOO	-	952	3,760	928	71.1%	-	677	2,674	660
549	5023478	GT CORR MAINT-G MAIN VALVE-AUTOMATED-AT	JOO	-	377	-	1,294	71.1%	-	268	-	920
550	5023480	GT CORR MAINT-G MAIN VALVE-AUTOMATED-ME	JOO	-	-	500	165	71.1%	-	-	355	117
551	5023481	GT CORR MAINT-G MAIN VALVE-AUTOMATED-MH	JOO	-	20,059	6,409	3,588	71.1%	-	14,264	4,558	2,551
552	5023483	GT CORR MAINT-G MAIN VALVE-AUTOMATED-NB	JOO	3,544	1,219	-	-	71.1%	2,520	867	-	-
553	5023485	GT CORR MAINT-G MAIN VALVE-AUTOMATED-PN	JOO	-	-	4,125	-	71.1%	-	-	2,933	-
554	5023486	GT CORR MAINT-G MAIN VALVE-AUTOMATED-RV	JOO	-	2,109	-	-	71.1%	-	1,500	-	-
555	5023487	GT CORR MAINT-G MAIN VALVE-AUTOMATED-SA	JOO	1,097	-	2,931	3,131	71.1%	780	-	2,084	2,226
556	5023488	GT CORR MAINT-G MAIN VALVE-AUTOMATED-SF	JOO	-	1,025	-	-	71.1%	-	729	-	-
557	5023489	GT CORR MAINT-G MAIN VALVE-AUTOMATED-SI	JOO	-	897	-	-	71.1%	-	638	-	-
558	5023490	GT CORR MAINT-G MAIN VALVE-AUTOMATED-SJ	JOO	-	512	-	-	71.1%	-	364	-	-
559	5023491	GT CORR MAINT-G MAIN VALVE-AUTOMATED-SO	JOO	-	9,471	-	-	71.1%	-	6,735	-	-
560	5023492	GT CORR MAINT-G MAIN VALVE-AUTOMATED-ST	JOO	12,832	7,907	-	-	71.1%	9,125	5,622	-	-
561	5023493	GT CORR MAINT-G MAIN VALVE-AUTOMATED-TP	JOO	-	1,385	21,919	5,588	71.1%	-	985	15,586	3,974
562	5023494	GT CORR MAINT-G MAIN VALVE-AUTOMATED-TY	JOO	-	5,028	543	751	71.1%	-	3,576	386	534
563	5023495	GT CORR MAINT-G MAIN VALVE-AUTOMATED-WL	JOO	-	-	-	1,318	71.1%	-	-	-	937
564	5023496	GT CORR MAINT-G MAIN VALVE-AUTOMATED-YO	JOO	-	1,537	-	-	71.1%	-	1,093	-	-
565	5029437	GT CORR MAINT-G MAIN VALVE-AUTOMATED-HR	JOO	-	-	-	3,915	71.1%	-	-	-	2,784
566		**CM Gas Pipeline Valve Automated**		**17,474**	**68,243**	**46,270**	**63,066**		**12,426**	**48,528**	**32,902**	**44,846**
567	5016881	GT PREV MAINT - G REGULATOR GENL - HB	JOX	-	-	-	579	47.0%	-	-	-	272
568	5031169	PM Meter Maintenance - HR	JOX	-	-	-	8,703	47.0%	-	-	-	4,089

Workpaper Table 9-3
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2012 to 2015
Old Cost Model to New Cost Model Conversion

Line No.	Planning Order	Planning Order Description	MAT	2012 Recorded (OCM)	2013 Recorded (OCM)	2014 Recorded (OCM)	2015 Recorded (OCM)	Conversion Factor	2012 Recorded (NCM)	2013 Recorded (NCM)	2014 Recorded (NCM)	2015 Recorded (NCM)
569	5031171	PM Meter Maintenance - RD	JOX	10,035	9,635	13,744	35,832	47.0%	4,715	4,527	6,458	16,837
570	5031173	PM Meter Maintenance - WL	JOX	-	-	-	1,388	47.0%	-	-	-	652
571	5031175	PM Meter Maintenance - TY	JOX	-	-	-	12,755	47.0%	-	-	-	5,994
572	5031177	PM Meter Maintenance - TP	JOX	-	-	-	5,647	47.0%	-	-	-	2,654
573	5031179	PM Meter Maintenance - RV	JOX	-	-	-	38,681	47.0%	-	-	-	18,176
574	5031183	PM Meter Maintenance - ME	JOX	-	-	-	196	47.0%	-	-	-	92
575	5031187	PM Meter Maintenance - AT	JOX	-	-	-	4,067	47.0%	-	-	-	1,911
576	5031189	PM Meter Maintenance - KT	JOX	-	-	-	109,076	47.0%	-	-	-	51,255
577	5031195	PM Meter Maintenance - SO	JOX	13,271	2,842	22,646	26,030	47.0%	6,236	1,335	10,642	12,232
578	5031198	PM Meter Maintenance - HB	JOX	47,070	32,572	6,692	7,110	47.0%	22,118	15,306	3,144	3,341
579	5031200	PM Meter Maintenance - NB	JOX	-	20,582	69,992	9,070	47.0%	-	9,671	32,889	4,262
580	5031202	PM Meter Maintenance - SI	JOX	-	29,575	1,738	898	47.0%	-	13,897	817	422
581	5031204	PM Meter Maintenance - SA	JOX	56,280	69,316	58,493	67,484	47.0%	26,446	32,572	27,486	31,711
582	5031206	PM Meter Maintenance - NV	JOX	35,706	81,958	74,028	92,503	47.0%	16,778	38,512	34,786	43,467
583	5031208	PM Meter Maintenance - YO	JOX	713	4,674	9,021	1,849	47.0%	335	2,196	4,239	869
584	5031210	PM Meter Maintenance - ST	JOX	-	2,679	186	3,897	47.0%	-	1,259	87	1,831
585	5031212	PM Meter Maintenance - KE	JOX	-	6,575	6,990	18,933	47.0%	-	3,090	3,284	8,897
586	5031214	PM Meter Maintenance - FR	JOX	-	4,526	5,484	10,374	47.0%	-	2,127	2,577	4,875
587	5031216	PM Meter Maintenance - SJ	JOX	2,281	2,647	3,718	2,109	47.0%	1,072	1,244	1,747	991
588	5031220	PM Meter Maintenance - CC	JOX	-	-	744	63,855	47.0%	-	-	349	30,006
589	5031222	PM Meter Maintenance - MI	JOX	7,130	5,465	21,844	41,116	47.0%	3,350	2,568	10,265	19,321
590	5031224	PM Meter Maintenance - EB	JOX	25,548	26,473	15,661	-	47.0%	12,005	12,440	7,359	-
591	5031226	PM Meter Maintenance - DI	JOX	2,464	3,715	7,045	18,107	47.0%	1,158	1,746	3,310	8,509
592		**PM Meter Maintenance**		**200,499**	**303,235**	**318,025**	**580,260**		**94,215**	**142,491**	**149,441**	**272,666**
593	5010512	Gas Measurement and Chromatograph	JOY	-	-	8,449	-	65.7%	-	-	5,552	-
594	5016756	GT CORR MAINT - G REGULATOR GENL - SJ	JOY	-	-	121	-	65.7%	-	-	80	-
595	5017902	GT Emerg & Unforeseen Meas. and Chrom.	JOY	145,057	30,556	762	-	65.7%	95,325	20,080	501	-
596	5030811	JOY-CM Meter Maintenance-Test	JOY	-	-	-	193	65.7%	-	-	-	127
597	5031172	CM Meter Maintenance - RD	JOY	-	2,050	-	-	65.7%	-	1,347	-	-
598	5031178	CM Meter Maintenance - TP	JOY	-	-	-	74	65.7%	-	-	-	49
599	5031180	CM Meter Maintenance - RV	JOY	-	-	-	4,289	65.7%	-	-	-	2,818
600	5031182	CM Meter Maintenance - MH	JOY	-	-	1,926	-	65.7%	-	-	1,266	-
601	5031196	CM Meter Maintenance - SO	JOY	-	-	1,246	1,058	65.7%	-	-	819	695
602	5031199	CM Meter Maintenance - HB	JOY	3,688	854	311	-	65.7%	2,423	561	204	-
603	5031201	CM Meter Maintenance - NB	JOY	16,317	42,492	1,867	5,788	65.7%	10,723	27,924	1,227	3,804
604	5031203	CM Meter Maintenance - SI	JOY	213	-	-	572	65.7%	140	-	-	376
605	5031205	CM Meter Maintenance - SA	JOY	5,618	14,514	1,647	7,308	65.7%	3,692	9,538	1,082	4,802
606	5031207	CM Meter Maintenance - NV	JOY	6,272	1,088	-	-	65.7%	4,122	715	-	-
607	5031209	CM Meter Maintenance - YO	JOY	-	-	558	2,822	65.7%	-	-	367	1,854
608	5031211	CM Meter Maintenance - ST	JOY	-	-	2,576	429	65.7%	-	-	1,693	282
609	5031213	CM Meter Maintenance - KE	JOY	-	-	-	15,243	65.7%	-	-	-	10,017
610	5031215	CM Meter Maintenance - FR	JOY	48,155	20,338	-	6,957	65.7%	31,645	13,365	-	4,571
611	5031217	CM Meter Maintenance - SJ	JOY	-	-	1,487	-	65.7%	-	-	977	-
612	5031219	CM Meter Maintenance - DA	JOY	49,466	17,288	175	-	65.7%	32,507	11,361	115	-

Workpaper Table 9-3
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2012 to 2015
Old Cost Model to New Cost Model Conversion

Line No.	Planning Order	Planning Order Description	MAT	2012 Recorded (OCM)	2013 Recorded (OCM)	2014 Recorded (OCM)	2015 Recorded (OCM)	Conversion Factor	2012 Recorded (NCM)	2013 Recorded (NCM)	2014 Recorded (NCM)	2015 Recorded (NCM)
613	5031221	CM Meter Maintenance - CC	JOY	-	1,557	-	27,503	65.7%	-	1,023	-	18,074
614	5031223	CM Meter Maintenance - MI	JOY	-	-	-	9,272	65.7%	-	-	-	6,093
615	5031225	CM Meter Maintenance - EB	JOY	-	5,027	1,952	-	65.7%	-	3,303	1,283	-
616	5031227	CM Meter Maintenance - DI	JOY	148	1,580	1,679	-	65.7%	97	1,038	1,103	-
617	5031229	CM Meter Maintenance - PN	JOY	-	-	2,915	3,633	65.7%	-	-	1,915	2,387
618		**CM Meter Maintenance**		**274,934**	**137,342**	**27,672**	**85,140**		**180,673**	**90,255**	**18,184**	**55,950**
619	5023599	GT PM PIPELINE STATION INSTR-BN	JPA	-	51,042	126,932	120,133	55.4%	-	28,261	70,278	66,514
620	5023600	GT PM PIPELINE STATION INSTR-HN	JPA	-	19,127	45,486	81,666	55.4%	-	10,590	25,184	45,216
621	5023601	GT PM PIPELINE STATION INSTR-KT	JPA	-	15,223	188,555	147,426	55.4%	-	8,429	104,397	81,625
622	5023602	GT PM PIPELINE STATION INSTR-LM	JPA	-	14,131	100,429	99,495	55.4%	-	7,824	55,604	55,087
623	5023603	GT PM PIPELINE STATION INSTR-MD	JPA	-	13,931	276,059	387,382	55.4%	-	7,713	152,845	214,481
624	5023604	GT PM PIPELINE STATION INSTR-ME	JPA	-	2,253	441	6,973	55.4%	-	1,247	244	3,861
625	5023605	GT PM PIPELINE STATION INSTR-MH	JPA	-	16,518	5,534	10,282	55.4%	-	9,145	3,064	5,693
626	5023606	GT PM PIPELINE STATION INSTR-RV	JPA	-	13,625	27,045	9,143	55.4%	-	7,544	14,974	5,062
627	5023607	GT PM PIPELINE STATION INSTR-TP	JPA	-	21,539	57,531	54,191	55.4%	-	11,925	31,853	30,004
628	5023608	GT PM PIPELINE STATION INSTR-TY	JPA	-	6,775	26,875	29,075	55.4%	-	3,751	14,880	16,098
629	5023609	GT PM PIPELINE STATION INSTR-WL	JPA	-	8,748	117,506	109,997	55.4%	-	4,844	65,059	60,902
630		**PM StorCompStat Piping Assets**		-	**182,912**	**972,393**	**1,055,763**		**-**	**101,272**	**538,382**	**584,541**
631	5023435	GT CM PIPELINE STATION -BN	JPB	-	21,957	19,890	31,320	62.9%	-	13,821	12,519	19,714
632	5023436	GT CM PIPELINE STATION -HN	JPB	-	29,237	58,986	85,707	62.9%	-	18,403	37,128	53,947
633	5023437	GT CM PIPELINE STATION -KT	JPB	-	4,834	11,021	8,202	62.9%	-	3,043	6,937	5,162
634	5023438	GT CM PIPELINE STATION -LM	JPB	-	5,497	18,860	3,328	62.9%	-	3,460	11,871	2,095
635	5023439	GT CM PIPELINE STATION -MD	JPB	-	33,315	69,338	101,519	62.9%	-	20,970	43,644	63,900
636	5023440	GT CM PIPELINE STATION -ME	JPB	-	9,991	500	2,622	62.9%	-	6,289	315	1,650
637	5023441	GT CM PIPELINE STATION -MH	JPB	-	3,757	4,926	6,170	62.9%	-	2,365	3,101	3,884
638	5023442	GT CM PIPELINE STATION -RV	JPB	-	3,321	43,609	25,689	62.9%	-	2,090	27,449	16,170
639	5023443	GT CM PIPELINE STATION -TP	JPB	-	8,906	26,148	16,186	62.9%	-	5,606	16,459	10,188
640	5023444	GT CM PIPELINE STATION -TY	JPB	-	17,795	21,216	9,504	62.9%	-	11,201	13,354	5,982
641	5023445	GT CM PIPELINE STATION -WL	JPB	-	6,384	12,931	22,067	62.9%	-	4,018	8,139	13,890
642		**CM StorCompStat Piping Assets**		**-**	**144,992**	**287,423**	**312,314**		**-**	**91,264**	**180,915**	**196,582**
643	5023577	GT PM GAS PROCESSING-BN	JPC	-	19,814	18,828	16,660	64.6%	-	12,804	12,166	10,766
644	5023578	GT PM GAS PROCESSING-HN	JPC	-	70,348	218,039	190,957	64.6%	-	45,459	140,896	123,396
645	5023579	GT PM GAS PROCESSING-KT	JPC	-	81,506	114,808	98,614	64.6%	-	52,669	74,189	63,724
646	5023580	GT PM GAS PROCESSING-LM	JPC	-	140,150	634,008	521,635	64.6%	-	90,565	409,695	337,080
647	5023581	GT PM GAS PROCESSING-MD	JPC	-	392,189	540,928	411,605	64.6%	-	253,432	349,546	265,978
648	5023582	GT PM GAS PROCESSING-ME	JPC	-	935	2,854	1,249	64.6%	-	604	1,844	807
649	5023583	GT PM GAS PROCESSING-MH	JPC	-	32	-	1,154	64.6%	-	20	-	746
650	5023585	GT PM GAS PROCESSING-TP	JPC	-	60,872	249,513	196,165	64.6%	-	39,335	161,235	126,762
651	5023586	GT PM GAS PROCESSING-TY	JPC	-	10,587	1,541	3,754	64.6%	-	6,841	996	2,426
652	5023587	GT PM GAS PROCESSING-WL	JPC	-	55,857	74,101	86,065	64.6%	-	36,095	47,884	55,615
653	5240369	Well O&M LM	JPC	-	-	-	644	64.6%	-	-	-	416
654		**PM StorCompStat GasProcess**		**-**	**832,289**	**1,854,620**	**1,528,503**		**-**	**537,823**	**1,198,451**	**987,715**

Workpaper Table 9-3
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2012 to 2015
Old Cost Model to New Cost Model Conversion

Line No.	Planning Order	Planning Order Description	MAT	2012 Recorded (OCM)	2013 Recorded (OCM)	2014 Recorded (OCM)	2015 Recorded (OCM)	Conversion Factor	2012 Recorded (NCM)	2013 Recorded (NCM)	2014 Recorded (NCM)	2015 Recorded (NCM)
655	5023566	GT PM GAS COMPRESSOR-BN	JPD	-	40,583	129,763	108,291	67.7%	-	27,487	87,888	73,345
656	5023567	GT PM GAS COMPRESSOR-HN	JPD	-	444,919	839,387	917,036	67.7%	-	301,343	568,515	621,107
657	5023568	GT PM GAS COMPRESSOR-KT	JPD	-	85,352	210,018	143,090	67.7%	-	57,809	142,245	96,915
658	5023569	GT PM GAS COMPRESSOR-LM	JPD	-	121,031	228,669	221,222	67.7%	-	81,974	154,877	149,833
659	5023570	GT PM GAS COMPRESSOR-MD	JPD	-	27,768	153,775	85,884	67.7%	-	18,807	104,152	58,169
660	5023574	GT PM GAS COMPRESSOR-TP	JPD	-	25,678	146,600	162,397	67.7%	-	17,391	99,292	109,991
661	5023575	GT PM GAS COMPRESSOR-TY	JPD	-	55,800	69,012	25,361	67.7%	-	37,793	46,742	17,177
662	5023576	GT PM GAS COMPRESSOR-WL	JPD	-	68,249	156,285	282,471	67.7%	-	46,225	105,851	191,317
663		**PM StorCompStat GasCompressor**		**-**	**869,379**	**1,933,509**	**1,945,753**		**-**	**588,829**	**1,309,562**	**1,317,855**
664	5010510	Compressor Rentals , Leases , Agreements	JPE	-	-	5,637	648	58.2%	-	-	3,280	377
665	5023588	GT PM INSTRUMENTATION CONTROL-BN	JPE	-	467,834	790,892	681,854	58.2%	-	272,156	460,090	396,659
666	5023589	GT PM INSTRUMENTATION CONTROL-HN	JPE	-	493,751	436,011	442,217	58.2%	-	287,233	253,643	257,254
667	5023590	GT PM INSTRUMENTATION CONTROL-KT	JPE	-	568,592	934,319	1,144,773	58.2%	-	330,770	543,526	665,955
668	5023591	GT PM INSTRUMENTATION CONTROL-LM	JPE	-	95,398	227,296	211,477	58.2%	-	55,496	132,226	123,023
669	5023592	GT PM INSTRUMENTATION CONTROL-MD	JPE	-	4,729	12,074	7,790	58.2%	-	2,751	7,024	4,532
670	5023594	GT PM INSTRUMENTATION CONTROL-MH	JPE	-	5,996	3,183	1,001	58.2%	-	3,488	1,852	582
671	5023595	GT PM INSTRUMENTATION CONTROL-RV	JPE	-	-	140	1,031	58.2%	-	-	82	600
672	5023596	GT PM INSTRUMENTATION CONTROL-TP	JPE	-	163,068	453,945	532,272	58.2%	-	94,863	264,076	309,642
673	5023597	GT PM INSTRUMENTATION CONTROL-TY	JPE	-	81,443	90,377	105,673	58.2%	-	47,378	52,576	61,474
674	5023598	GT PM INSTRUMENTATION CONTROL-WL	JPE	-	377,928	587,256	577,088	58.2%	-	219,854	341,627	335,712
675		**PM StorCompStat Support**		**-**	**2,258,739**	**3,541,130**	**3,705,825**		**-**	**1,313,989**	**2,060,001**	**2,155,809**
676	5023625	GT PM STOR COMPRESS STATIONS OTHER-MD	JPF	-	263,492	464,788	650,333	71.8%	-	189,182	333,708	466,927
677		**PM StorCompStat Other**		**-**	**263,492**	**464,788**	**650,333**		**-**	**189,182**	**333,708**	**466,927**
678	5023413	GT CM GAS PROCESSING-BN	JPG	-	4,091	9,286	4,695	77.2%	-	3,158	7,169	3,624
679	5023414	GT CM GAS PROCESSING-HN	JPG	-	48,233	155,979	159,535	77.2%	-	37,237	120,420	123,165
680	5023415	GT CM GAS PROCESSING-KT	JPG	-	5,474	21,420	13,432	77.2%	-	4,226	16,537	10,370
681	5023416	GT CM GAS PROCESSING-LM	JPG	-	161,700	87,209	65,210	77.2%	-	124,836	67,328	50,343
682	5023417	GT CM GAS PROCESSING-MD	JPG	-	185,735	497,471	423,998	77.2%	-	143,392	384,060	327,337
683	5023418	GT CM GAS PROCESSING-ME	JPG	-	795	1,612	1,072	77.2%	-	614	1,244	828
684	5023419	GT CM GAS PROCESSING-MH	JPG	-	247	-	143	77.2%	-	191	-	110
685	5023420	GT CM GAS PROCESSING-RV	JPG	-	-	-	577	77.2%	-	-	-	446
686	5023421	GT CM GAS PROCESSING-TP	JPG	-	172,908	230,757	387,216	77.2%	-	133,489	178,150	298,941
687	5023422	GT CM GAS PROCESSING-TY	JPG	-	335	490	987	77.2%	-	258	379	762
688	5023423	GT CM GAS PROCESSING-WL	JPG	-	14,587	56,181	103,155	77.2%	-	11,261	43,373	79,638
689		**CM StorCompStat GasProcess**		**-**	**594,103**	**1,060,405**	**1,160,019**		**-**	**458,662**	**818,659**	**895,563**
690	5023402	GT CM GAS COMPRESSOR-BN	JPH	-	48,568	186,158	125,641	76.7%	-	37,238	142,730	96,331
691	5023403	GT CM GAS COMPRESSOR-HN	JPH	3,683	527,258	599,083	666,639	76.7%	2,824	404,257	459,327	511,122
692	5023404	GT CM GAS COMPRESSOR-KT	JPH	-	11,283	81,367	84,073	76.7%	-	8,651	62,385	64,460
693	5023405	GT CM GAS COMPRESSOR-LM	JPH	-	92,575	249,043	58,188	76.7%	-	70,979	190,945	44,614
694	5023406	GT CM GAS COMPRESSOR-MD	JPH	-	21,235	49,723	57,142	76.7%	-	16,281	38,123	43,811
695	5023410	GT CM GAS COMPRESSOR-TP	JPH	263	176,595	597,465	394,801	76.7%	202	135,398	458,085	302,700

Workpaper Table 9-3
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2012 to 2015
Old Cost Model to New Cost Model Conversion

Line No.	Planning Order	Planning Order Description	MAT	2012 Recorded (OCM)	2013 Recorded (OCM)	2014 Recorded (OCM)	2015 Recorded (OCM)	Conversion Factor	2012 Recorded (NCM)	2013 Recorded (NCM)	2014 Recorded (NCM)	2015 Recorded (NCM)
696	5023411	GT CM GAS COMPRESSOR-TY	JPH	-	60,875	78,481	18,479	76.7%	-	46,674	60,173	14,168
697	5023412	GT CM GAS COMPRESSOR-WL	JPH	-	84,620	226,415	169,917	76.7%	-	64,879	173,596	130,278
698		**CM StorCompStat GasCompress**		**3,947**	**1,023,010**	**2,067,735**	**1,574,879**		**3,026**	**784,358**	**1,585,365**	**1,207,484**
699	5023424	GT CM INSTRUMENTATION CONTROL-BN	JPI	-	99,927	125,559	136,993	63.1%	-	63,035	79,204	86,417
700	5023425	GT CM INSTRUMENTATION CONTROL-HN	JPI	-	173,918	484,529	463,330	63.1%	-	109,709	305,646	292,273
701	5023426	GT CM INSTRUMENTATION CONTROL-KT	JPI	-	34,452	40,721	105,740	63.1%	-	21,733	25,687	66,702
702	5023427	GT CM INSTRUMENTATION CONTROL-LM	JPI	108,515	113,697	161,368	118,971	63.1%	68,452	71,721	101,793	75,048
703	5023428	GT CM INSTRUMENTATION CONTROL-MD	JPI	-	163,047	181,916	193,419	63.1%	-	102,852	114,754	122,010
704	5023430	GT CM INSTRUMENTATION CONTROL-MH	JPI	-	2,729	21,102	5,153	63.1%	-	1,721	13,311	3,250
705	5023431	GT CM INSTRUMENTATION CONTROL-RV	JPI	-	579	-	-	63.1%	-	365	-	-
706	5023432	GT CM INSTRUMENTATION CONTROL-TP	JPI	-	102,075	179,491	517,045	63.1%	-	64,390	113,225	326,157
707	5023433	GT CM INSTRUMENTATION CONTROL-TY	JPI	-	8,504	1,054	5,402	63.1%	-	5,364	665	3,407
708	5023434	GT CM INSTRUMENTATION CONTROL-WL	JPI	-	107,432	289,179	161,802	63.1%	-	67,769	182,417	102,066
709		**CM StorCompStat Support**		**108,515**	**806,360**	**1,484,920**	**1,707,854**		**68,452**	**508,659**	**936,701**	**1,077,331**
710	5023465	GT CM STOR COMPRESS STATIONS OTHER-TP	JPJ	-	-	-	446	62.5%	-	-	-	279
711	5023466	GT CM STOR COMPRESS STATIONS OTHER-TY	JPJ	-	9,479	31,569	30,949	62.5%	-	5,924	19,729	19,342
712		**CM StorCompStat Other**		**-**	**9,479**	**31,569**	**31,395**		**-**	**5,924**	**19,729**	**19,620**
713	5023610	GT PM POWER UNITS-BN	JPK	-	17,024	19,585	27,464	60.4%	-	10,281	11,828	16,586
714	5023611	GT PM POWER UNITS-HN	JPK	-	64,091	80,899	65,234	60.4%	-	38,706	48,856	39,396
715	5023612	GT PM POWER UNITS-KT	JPK	-	4,098	9,621	11,918	60.4%	-	2,475	5,810	7,197
716	5023613	GT PM POWER UNITS-LM	JPK	-	2,721	20,080	13,919	60.4%	-	1,643	12,127	8,406
717	5023614	GT PM POWER UNITS-MD	JPK	-	23,117	56,890	49,711	60.4%	-	13,961	34,357	30,021
718	5023616	GT PM POWER UNITS-MH	JPK	-	1,398	-	-	60.4%	-	844	-	-
719	5023618	GT PM POWER UNITS-TP	JPK	-	40,344	47,370	43,802	60.4%	-	24,364	28,608	26,453
720	5023619	GT PM POWER UNITS-TY	JPK	-	1,612	3,947	16,302	60.4%	-	973	2,384	9,845
721	5023620	GT PM POWER UNITS-WL	JPK	-	10,403	12,749	7,698	60.4%	-	6,283	7,699	4,649
722		**PM Power Units**		**-**	**164,809**	**251,142**	**236,048**		**-**	**99,531**	**151,669**	**142,553**
723	5023446	GT CM POWER UNITS-BN	JPL	-	8,476	5,996	2,268	68.6%	-	5,817	4,115	1,557
724	5023447	GT CM POWER UNITS-HN	JPL	-	39,787	127,213	152,408	68.6%	-	27,307	87,311	104,604
725	5023448	GT CM POWER UNITS-KT	JPL	-	1,368	-	1,632	68.6%	-	939	-	1,120
726	5023449	GT CM POWER UNITS-LM	JPL	-	2,563	7,357	5,279	68.6%	-	1,759	5,049	3,623
727	5023450	GT CM POWER UNITS-MD	JPL	-	14,311	9,802	24,464	68.6%	-	9,822	6,728	16,791
728	5023454	GT CM POWER UNITS-TP	JPL	-	23,998	39,140	63,521	68.6%	-	16,471	26,863	43,597
729	5023455	GT CM POWER UNITS-TY	JPL	-	-	-	8,320	68.6%	-	-	-	5,710
730	5023456	GT CM POWER UNITS-WL	JPL	-	-	-	6,969	68.6%	-	-	-	4,783
731		**CM Power Units**		**-**	**90,503**	**189,508**	**264,863**		**-**	**62,116**	**130,067**	**181,786**
732	5002469	GSMTS, Standing, Burney	JPN	1,468,692	737,645	(104,390)	26,741	53.8%	790,845	397,199	(56,211)	14,399
733	5002470	GSMTS, Standing, Hinkley	JPN	3,988,689	1,984,389	(368,822)	487,503	53.8%	2,147,787	1,068,533	(198,600)	262,505
734	5002471	GSMTS, Standing Kettleman	JPN	3,268,656	1,511,785	71,986	(143,201)	53.8%	1,760,071	814,050	38,762	(77,109)
735	5002472	GSMTS, Standing, Local Trans-North	JPN	-	228	-	-	53.8%	-	123	-	-
736	5002474	GSMTS, Standing, Los Medanos	JPN	1,585,090	283,605	79,199	236,689	53.8%	853,522	152,712	42,646	127,450

Workpaper Table 9-3
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2012 to 2015
Old Cost Model to New Cost Model Conversion

Line No.	Planning Order	Planning Order Description	MAT	2012 Recorded (OCM)	2013 Recorded (OCM)	2014 Recorded (OCM)	2015 Recorded (OCM)	Conversion Factor	2012 Recorded (NCM)	2013 Recorded (NCM)	2014 Recorded (NCM)	2015 Recorded (NCM)
737	5002475	GSMTS, Standing, McDonald Island	JPN	2,686,122	439,895	(356,080)	(180,584)	53.8%	1,446,394	236,870	(191,738)	(97,239)
738	5002476	GSMTS, Standing, Meridian/Orland	JPN	1,876,536	929,822	48,393	70,572	53.8%	1,010,457	500,680	26,058	38,001
739	5002477	GSMTS, Standing, Milpitas/Hollister	JPN	1,918,556	829,084	145,569	420,451	53.8%	1,033,084	446,436	78,385	226,400
740	5002478	GSMTS, Standing, Topock	JPN	2,085,368	1,131,087	(94,408)	188,244	53.8%	1,122,906	609,055	(50,836)	101,363
741	5002479	GSMTS, Standing, Rio Vista	JPN	1,672,296	552,006	185,125	86,522	53.8%	900,480	297,238	99,684	46,589
742	5002481	GSMTS, Standing, Tracy	JPN	1,469,422	954,768	315,823	407,859	53.8%	791,238	514,113	170,061	219,620
743	5002482	GSMTS, Standing, Willows	JPN	2,294,993	929,895	(185,066)	(54,344)	53.8%	1,235,783	500,720	(99,652)	(29,263)
744	5017170	GSO-Standing, McDonald Island	JPN	1,699,950	2,343,660	2,424,211	2,392,570	53.8%	915,371	1,261,989	1,305,363	1,288,325
745	5017171	GSO-Standing, Los Medanos	JPN	1,345,323	1,903,816	1,472,250	1,398,531	53.8%	724,415	1,025,146	792,761	753,066
746	5017172	GSO-Standing, Hinkley	JPN	1,166,834	1,771,546	1,719,455	1,630,889	53.8%	628,304	953,923	925,874	878,184
747	5017173	GSO-Standing, Topock	JPN	1,535,550	2,041,192	1,751,874	1,618,121	53.8%	826,846	1,099,119	943,330	871,308
748	5023527	GT OPERATIONS OTHER-HN	JPN	-	501,401	371,843	229,919	53.8%	-	269,989	200,226	123,804
749	5023528	GT OPERATIONS OTHER-KT	JPN	-	277,250	362,762	221,372	53.8%	-	149,291	195,336	119,202
750	5023529	GT OPERATIONS OTHER-LM	JPN	-	199,561	199,240	195,965	53.8%	-	107,458	107,285	105,521
751	5023530	GT OPERATIONS OTHER-MD	JPN	-	421,582	673,892	724,955	53.8%	-	227,009	362,870	390,366
752	5023531	GT OPERATIONS OTHER-ME	JPN	-	214,320	224,922	162,912	53.8%	-	115,405	121,114	87,723
753	5023532	GT OPERATIONS OTHER-MH	JPN	-	11,602	44,031	60,714	53.8%	-	6,247	23,709	32,693
754	5023533	GT OPERATIONS OTHER-RV	JPN	-	81,214	64,384	78,011	53.8%	-	43,731	34,669	42,007
755	5023534	GT OPERATIONS OTHER-TP	JPN	-	277,279	411,857	427,363	53.8%	-	149,306	221,772	230,122
756	5023535	GT OPERATIONS OTHER-TY	JPN	-	69,252	136,832	37,354	53.8%	-	37,290	73,680	20,114
757	5023536	GT OPERATIONS OTHER-WL	JPN	-	46,417	60,597	9,478	53.8%	-	24,994	32,630	5,103
758	5029949	GT OPERATIONS OTHER-HR	JPN	-	-	-	38,715	53.8%	-	-	-	20,847
759		**Station Operations**		**30,062,076**	**20,444,301**	**9,655,480**	**10,773,321**		**16,187,503**	**11,008,627**	**5,199,179**	**5,801,102**
760	5031230	PM Storage Wells -MD	JPO	-	5,991	42,841	80,600	61.3%	-	3,673	26,265	49,414
761	5031232	PM Storage Wells - LM	JPO	-	29,863	45,690	68,830	61.3%	-	18,308	28,012	42,198
762		**PM Storage Wells**		**-**	**35,854**	**88,531**	**149,430**		**-**	**21,982**	**54,277**	**91,612**
763	5031231	CM Storage Wells -MD	JPP	-	10,634	6,930	56,797	90.1%	-	9,582	6,244	51,177
764		**CM Storage Wells**		**-**	**10,634**	**6,930**	**56,797**		**-**	**9,582**	**6,244**	**51,177**
765	5028269	GT - Standard Cost Variance - JP	JP#	-	-	322,038	285,608	-6.2%	-	-	(19,966)	(17,708)
766		**PM Storage Wells**		**-**	**-**	**322,038**	**285,608**		**-**	**-**	**(19,966)**	**(17,708)**
767	5006051	GT , Systemwide , Gas Storage	JTG	-	291	519	-	93.4%	-	272	485	-
768	5017906	GT Emerg & Unforeseen Oth Exp Spec Proj	JTG	60,480	5,393	-	-	93.4%	56,514	5,039	-	-
769	5024010	GT Pipeline Other	JTG	24,591	18,274	176	-	93.4%	22,978	17,075	164	-
770	5024374	GT Station Painting Program	JTG	2,020	160,386	2,019	-	93.4%	1,887	149,868	1,887	-
771	5024597	GT RELIABILITY & MAINT. QA/QC SUPPORT	JTG	-	269	672	-	93.4%	-	251	628	-
772	5026030	Critical Documents C&P STOR	JTG	-	11,516	5,648	-	93.4%	-	10,761	5,277	-
773	5026033	MAOP verification project M&C STOR	JTG	120,413	429,978	110,374	-	93.4%	112,517	401,781	103,136	-
774	5027503	GT Misc - Remapping	JTG	475,620	544,545	(18,696)	170,006	93.4%	444,430	508,836	(17,470)	158,858
775	5031929	2015 Emergent Projects	JTG	-	-	-	24,872	93.4%	-	-	-	23,241
776		**Storage Wells**		**683,124**	**1,170,651**	**100,712**	**194,878**		**638,327**	**1,093,883**	**94,107**	**182,098**

Workpaper Table 9-3
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2012 to 2015
Old Cost Model to New Cost Model Conversion

Line No.	Planning Order	Planning Order Description	MAT	2012 Recorded (OCM)	2013 Recorded (OCM)	2014 Recorded (OCM)	2015 Recorded (OCM)	Conversion Factor	2012 Recorded (NCM)	2013 Recorded (NCM)	2014 Recorded (NCM)	2015 Recorded (NCM)
777	5019769	Pipeline Marker Maint - CC	JOS	35,972	2,007	-	-	59.8%	21,515	1,201	-	-
778	5019770	Pipeline Marker Maint - DA	JOS	3,446	1,024	10,535	4,942	59.8%	2,061	613	6,301	2,956
779	5019771	Pipeline Marker Maint - DI	JOS	4,476	683	-	-	59.8%	2,677	409	-	-
780	5019772	Pipeline Marker Maint - EB	JOS	6,530	-	4,201	2,306	59.8%	3,906	-	2,513	1,379
781	5019773	Pipeline Marker Maint - FR	JOS	71,901	-	17,560	1,654	59.8%	43,005	-	10,503	989
782	5019774	Pipeline Marker Maint - HB	JOS	4,518	-	6,675	7,191	59.8%	2,702	-	3,993	4,301
783	5019775	Pipeline Marker Maint - KE	JOS	9,290	19,214	2,256	1,485	59.8%	5,557	11,492	1,349	888
784	5019776	Pipeline Marker Maint - MI	JOS	1,899	-	1,855	518	59.8%	1,136	-	1,109	310
785	5019777	Pipeline Marker Maint - NB	JOS	16,508	16,791	3,597	-	59.8%	9,874	10,043	2,151	-
786	5019778	Pipeline Marker Maint - NV	JOS	21,204	43,504	4,706	2,676	59.8%	12,683	26,020	2,814	1,601
787	5019779	Pipeline Marker Maint - PN	JOS	10,062	1,366	1,556	4,612	59.8%	6,018	817	931	2,759
788	5019780	Pipeline Marker Maint - SA	JOS	150,724	43,495	13,606	1,977	59.8%	90,150	26,015	8,138	1,183
789	5019782	Pipeline Marker Maint - SI	JOS	8,970	8,208	3,276	824	59.8%	5,365	4,909	1,959	493
790	5019783	Pipeline Marker Maint - SJ	JOS	-	342	372	-	59.8%	-	204	222	-
791	5019784	Pipeline Marker Maint - SO	JOS	18,409	81,627	79,594	30,174	59.8%	11,011	48,822	47,606	18,047
792	5019785	Pipeline Marker Maint - ST	JOS	4,752	7,293	3,770	-	59.8%	2,842	4,362	2,255	-
793	5019786	Pipeline Marker Maint - YO	JOS	2,566	5,611	3,431	3,170	59.8%	1,535	3,356	2,052	1,896
794	5023864	Pipeline Marker Maint -BN	JOS	-	15,217	19,696	7,093	59.8%	-	9,101	11,780	4,242
795	5023865	Pipeline Marker Maint -HN	JOS	-	-	12,854	10,427	59.8%	-	-	7,688	6,236
796	5023866	Pipeline Marker Maint -KT	JOS	-	2,771	5,808	4,573	59.8%	-	1,657	3,474	2,735
797	5023867	Pipeline Marker Maint -AT	JOS	-	2,408	2,601	15,914	59.8%	-	1,440	1,556	9,519
798	5023868	Pipeline Marker Maint -MD	JOS	-	2,641	2,698	4,328	59.8%	-	1,580	1,613	2,589
799	5023869	Pipeline Marker Maint -ME	JOS	281,337	23,567	-	124	59.8%	168,272	14,096	-	74
800	5023870	Pipeline Marker Maint -MH	JOS	-	2,020	5,311	1,653	59.8%	-	1,208	3,177	988
801	5023871	Pipeline Marker Maint -RV	JOS	-	11,326	9,592	3,299	59.8%	-	6,774	5,737	1,973
802	5023872	Pipeline Marker Maint -TP	JOS	-	2,741	26,207	6,242	59.8%	-	1,639	15,675	3,733
803	5023873	Pipeline Marker Maint -TY	JOS	27,833	18,418	561	44,873	59.8%	16,648	11,016	335	26,839
804	5023874	Pipeline Marker Maint -WL	JOS	-	4,914	6,751	3,227	59.8%	-	2,939	4,038	1,930
805	5029449	Pipeline Marker Maint -HR	JOS	-	-	-	23,328	59.8%	-	-	-	13,953
806		**Pipeline Marker Maintenance**		**680,398**	**317,186**	**249,065**	**186,609**		**406,956**	**189,714**	**148,969**	**111,613**
807	5018976	Vegetation Management - CC	JOT	1,711	3,239	2,026	6,318	88.0%	1,505	2,849	1,782	5,557
808	5018977	Vegetation Management - DA	JOT	117	470	1,412	241	88.0%	103	413	1,242	212
809	5018978	Vegetation Management - DI	JOT	3,975	7,466	4,632	15,394	88.0%	3,496	6,567	4,075	13,540
810	5018979	Vegetation Management - EB	JOT	6,929	4,233	678	5,549	88.0%	6,094	3,723	596	4,881
811	5018980	Vegetation Management - FR	JOT	850	1,564	2,031	3,600	88.0%	748	1,376	1,787	3,167
812	5018981	Vegetation Management - HB	JOT	1,253	2,021	1,543	4,445	88.0%	1,102	1,777	1,357	3,910
813	5018982	Vegetation Management - KE	JOT	1,134	1,604	1,296	1,252	88.0%	997	1,411	1,140	1,101
814	5018983	Vegetation Management - MI	JOT	1,297	1,592	1,359	1,775	88.0%	1,141	1,401	1,195	1,561
815	5018984	Vegetation Management - NB	JOT	1,576	12,630	2,893	8,218	88.0%	1,386	11,109	2,544	7,228
816	5018985	Vegetation Management - NV	JOT	2,417	3,367	1,999	4,830	88.0%	2,126	2,961	1,758	4,248
817	5018986	Vegetation Management - PN	JOT	2,735	984	4,855	11,893	88.0%	2,405	866	4,271	10,460
818	5018987	Vegetation Management - SA	JOT	48,298	23,340	40,700	36,637	88.0%	42,481	20,529	35,799	32,225
819	5018988	Vegetation Management - SF	JOT	213	1,019	1,315	248	88.0%	188	896	1,156	218
820	5018989	Vegetation Management - SI	JOT	17,883	15,250	6,896	9,111	88.0%	15,730	13,413	6,066	8,014

Workpaper Table 9-3
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2012 to 2015
Old Cost Model to New Cost Model Conversion

Line No.	Planning Order	Planning Order Description	MAT	2012 Recorded (OCM)	2013 Recorded (OCM)	2014 Recorded (OCM)	2015 Recorded (OCM)	Conversion Factor	2012 Recorded (NCM)	2013 Recorded (NCM)	2014 Recorded (NCM)	2015 Recorded (NCM)
821	5018990	Vegetation Management - SJ	JOT	10,826	2,250	3,059	1,624	88.0%	9,522	1,979	2,691	1,428
822	5018991	Vegetation Management - SO	JOT	1,252	3,558	6,457	3,426	88.0%	1,101	3,130	5,679	3,013
823	5018992	Vegetation Management - ST	JOT	995	1,815	3,010	808	88.0%	876	1,597	2,647	711
824	5018993	Vegetation Management - YO	JOT	1,173	2,411	1,171	4,076	88.0%	1,032	2,120	1,030	3,585
825	5023875	Vegetation Management -BN	JOT	-	2,319	7,663	20,039	88.0%	-	2,039	6,740	17,626
826	5023876	Vegetation Management -HN	JOT	-	7,118	20,553	47,342	88.0%	-	6,261	18,077	41,641
827	5023877	Vegetation Management -KT	JOT	-	10,683	44,999	57,032	88.0%	-	9,396	39,580	50,163
828	5023878	Vegetation Management -AT	JOT	-	8,506	24,567	22,611	88.0%	-	7,482	21,608	19,888
829	5023879	Vegetation Management -MD	JOT	-	15,046	23,236	47,798	88.0%	-	13,234	20,438	42,042
830	5023880	Vegetation Management -ME	JOT	-	3,363	7,607	10,378	88.0%	-	2,958	6,691	9,128
831	5023881	Vegetation Management -MH	JOT	-	4,635	21,270	40,599	88.0%	-	4,077	18,709	35,709
832	5023882	Vegetation Management -RV	JOT	-	5,640	7,564	13,619	88.0%	-	4,961	6,653	11,979
833	5023883	Vegetation Management -TP	JOT	-	6,025	3,367	13,201	88.0%	-	5,299	2,961	11,611
834	5023884	Vegetation Management -TY	JOT	-	7,322	25,166	48,201	88.0%	-	6,440	22,136	42,396
835	5023885	Vegetation Management -WL	JOT	-	10,694	14,780	33,342	88.0%	-	9,406	13,000	29,326
836	5029456	Vegetation Management -HR	JOT	-	-	-	7,984	88.0%	-	-	-	7,022
837		**Routine Weed Abatement**		**104,633**	**170,164**	**288,103**	**481,589**		**92,032**	**149,671**	**253,407**	**423,591**
838	5017901	GT Emerg & Unforeseen Comp OH & Inspects	JTF	1,142,772	164,731	5,803	-	52.1%	595,804	85,885	3,026	-
839	5025336	Pipeline Other-Line 401 Pipeline	JTF	362,014	332,104	998	-	52.1%	188,742	173,148	520	-
840	5230956	40754916-Mcdi K1/k2 Annual Maintenance 2	JTF	(3,347)	3,925	811	-	52.1%	(1,745)	2,046	423	-
841	5233392	40754917-Mcdi K1/k2 Annual Maintenance 2	JTF	687,522	148,531	1,899	-	52.1%	358,452	77,439	990	-
842	5236518	41651990 MCDI MCS K1 ANNUAL MAINT PROJ	JTF	3,623	-	48	-	52.1%	1,889	-	25	-
843	5240347	Station Compress Overhaul_Insp-Hinkley	JTF	214	-	-	-	52.1%	112	-	-	-
844	5241060	Pleasant Crk K-8 Annual Maint 2014	JTF	(1,181)	-	-	-	52.1%	(616)	-	-	-
845		**Station Compress Overhaul Inspection**		**2,191,617**	**649,291**	**9,559**	**-**		**1,142,638**	**338,519**	**4,984**	**-**
846	5018994	Vegetation Mgmt - Routine	JTK	1,757,385	110,898	228,419	503,774	90.7%	1,594,779	100,637	207,284	457,162
847	5026503	Vegetation Management	JTK	-	769	-	-	90.7%	-	697	-	-
848		**Vegetation Management Project**		**1,757,385**	**111,667**	**228,419**	**503,774**		**1,594,779**	**101,335**	**207,284**	**457,162**
849	5019773	Pipeline Marker Maint - FR	JTO	-	-	21,857	3,432	89.3%	-	-	19,527	3,067
850	5019778	Pipeline Marker Maint - NV	JTO	-	-	42,110	228	89.3%	-	-	37,622	204
851	5019785	Pipeline Marker Maint - ST	JTO	-	-	105,808	1,607	89.3%	-	-	94,531	1,436
852	5019786	Pipeline Marker Maint - YO	JTO	-	-	296,893	18,664	89.3%	-	-	265,249	16,674
853	5019788	Encroachments	JTO	-	845	300	17,732	89.3%	-	755	268	15,842
854	5023868	Pipeline Marker Maint -MD	JTO	-	-	44,818	1,379	89.3%	-	-	40,041	1,232
855	5023873	Pipeline Marker Maint -TY	JTO	-	-	880,828	(1,361)	89.3%	-	-	786,948	(1,216)
856	5023989	Pipeline ROW Encroachments	JTO	9,092	30,373	13,827	5,291	89.3%	8,123	27,136	12,353	4,727
857	5025056	GT Emerg & Unforeseen ROW Encroachments	JTO	19,445	-	-	-	89.3%	17,373	-	-	-
858	5238236	41360705-L-105n Mp 6.91-22.85 Pressure I	JTO	-	-	28,106	-	89.3%	-	-	25,111	-
859		**Enchroachments**		**28,538**	**31,218**	**1,434,547**	**46,973**		**25,496**	**27,891**	**1,281,651**	**41,966**

Workpaper Table 9-3
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Detail of Expenses 2012 to 2015
Old Cost Model to New Cost Model Conversion

Line No.	Planning Order	Planning Order Description	MAT	2012 Recorded (OCM)	2013 Recorded (OCM)	2014 Recorded (OCM)	2015 Recorded (OCM)	Conversion Factor	2012 Recorded (NCM)	2013 Recorded (NCM)	2014 Recorded (NCM)	2015 Recorded (NCM)
860	5900121	StanPac Expense	34A	170,990	211,890	184,088	203,918	80.8%	138,160	171,207	148,743	164,766
861	5902482	Station Valves & Actuator M&C-STNPC	34A	-	-	1,034	-	80.8%	-	-	835	-
862	5900121	StanPac Expense	34#	-	2,410	4,874	-	80.8%	-	1,948	3,938	-
863	5902801	FORECAST ONLY - 34#	34#	-	-	1,365	-	80.8%	-	-	1,103	-
864		**Stanpac Expense**		**170,990**	**214,300**	**191,360**	**203,918**		**138,160**	**173,155**	**154,619**	**164,766**
865	5023590	GT PM INSTRUMENTATION CONTROL-KT	JPE	-	-	-	14,898	58.2%	-	-	-	8,671
866	5023595	GT PM INSTRUMENTATION CONTROL-RV	JPE	-	-	-	1,938	58.2%	-	-	-	1,128
867	5023596	GT PM INSTRUMENTATION CONTROL-TP	JPE	-	-	-	4,273	58.2%	-	-	-	2,487
868	5023597	GT PM INSTRUMENTATION CONTROL-TY	JPE	-	-	-	3,545	58.2%	-	-	-	2,063
869	5023837	GT OPER TRANSM PIPELINES - RV	JOK	-	-	-	41	53.0%	-	-	-	22
870	5023843	GT OPER TRANSM REGULATOR STATION - KT	JOL	-	-	-	5,944	56.3%	-	-	-	3,347
871	5023848	GT OPER TRANSM REGULATOR STATION - RV	JOL	-	-	-	825	56.3%	-	-	-	464
872	5023850	GT OPER TRANSM REGULATOR STATION - TY	JOL	-	-	-	3,718	56.3%	-	-	-	2,093
873	5240369	Well O&M LM	JPC	-	-	-	143	64.6%	-	-	-	92
874		**Adjustment to incorporate 2015 recorded from Chapter 13**		**-**	**-**	**-**	**35,326**		**-**	**-**	**-**	**20,367**
875		**Total Expense**		**53,789,668**	**58,976,147**	**55,245,125**	**65,317,387**		**31,636,681**	**35,630,167**	**33,913,145**	**41,581,049**
	Note:	2014-2015 recorded costs exclude CEMA orders in MAT Codes DFA, JOE, JOP, and JOV.										
		Certain 2015 recorded amounts related to MAT Codes JOK, JOL, JPC, and JPE were recorded in MAT Code AKA. PG&E is accounting for the amount of $20,367 as an adjustment to the total expenses in Chapter 9 workpapers on lines 865-874.										

Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9,
Operations and Maintenance

LOCATE AND MARK PROGRAM SUMMARY

Filing Project/Program Name/Number
FILING TITLE: Locate and Mark
MAINTENANCE ACTIVITY TYPE: DFA, DFB, 34A
PLANNING ORDER NUMBERS: Various; See lines 1-61, 1402 in Workpaper Table 9-2

Expenses (Thousands of Dollars)[1]:

	2018	2019
Total Expenses	**$12,556**	**$13,235**

DESCRIPTION:

Locate and Mark is required to prevent excavations by third party contractors, PG&E construction crews, or others from causing damage to PG&E'S transmission pipeline assets. This includes responding to notifications in a timely manner and physically locating PG&E transmission pipelines near the proposed excavations. Transmission work crews have personnel assigned to monitor the regional one-call notifications from the "811 – Call Before You Dig" system. Standby is used for time spent by PG&E personnel on the excavation sites when PG&E transmission pipelines are being exposed.

JUSTIFICATION:

49 CFR Part 192.614 requires that each operator of a buried pipeline carry out a program to prevent damage to that pipeline from excavation activities. California Government Code (CGC) Section 4216 requires PG&E to belong to and share the costs of operating the regional "One-call" notification system.

COST ASSUMPTIONS:

Forecast costs are based on historical dollars from 2016 for responding to Locate and Mark call-outs and Standby commitments. This includes the number of Locate and Mark tickets worked and Standby tickets received and the unit costs associated with responses. The Standby commitment on any particular excavation site may require field personnel to

[1] Includes StanPac – Locate and Mark costs under MAT 34A.

remain at the site for hours, days, or weeks to protect pipeline assets from excavation damage.

The 2018 through 2019 forecast also includes incremental costs caused by growth in one-call notifications and the rise in associated Standby time on excavation projects as the economy improves. Greater awareness of the safety aspect of “811 – Call Before You Dig” has led to expanded program participation and accordingly, more requirements for PG&E call-outs to support the program. In addition to ongoing operations, forecast costs include hiring, training, qualifying and requalifying employees for a well prepared workforce to operate and maintain PG&E’s natural gas transmission assets.

Note: 2017 forecast totals differ from costs shown in standard workpapers due to timing differences in extraction of data.

Workpaper Table 9-4
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Locate and Mark, MAT: DFA, DFB, 34A

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
DFA	Locate and Mark	Unit (tickets)	11,337	12,244	12,856	13,242	The expected increase in units from 2016 to 2017 is associated with a growth rate of Locate and Mark tickets as well as Standby requests due to increasing awareness of the "811 – Call Before You Dig" program. After 2017, the number of Locate and Mark tickets as well as Standby requests is expected to increase at a slower rate, due to awareness of the "811 – Call Before You Dig" program reaching an increasing portion of the population. The forecasted unit cost is based on 2016 historical unit cost escalated through 2019.
		Expected Increase in Units from Previous Year		8%	5%	3%	
		Unit Cost	$93.26	$95.44	$97.43	$99.73	
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (DFA) (in thousands of dollars)	**$1,057**	**$1,169**	**$1,253**	**$1,321**	

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
DFB	Standby	Unit (tickets)	9,530	10,292	10,807	11,128	The expected increase in units from 2016 to 2017 is associated with a growth rate of Locate and Mark tickets as well as Standby requests due to increasing awareness of the "811 – Call Before You Dig" program. After 2017, the number of Locate and Mark tickets as well as Standby requests is expected to increase at a slower rate, due to awareness of the "811 – Call Before You Dig" program reaching an increasing portion of the population. The forecasted unit cost is based on 2016 historical unit cost escalated through 2019.
		Expected Increase in Units from Previous Year		8%	5%	3%	
		Unit Cost	$1,001.13	$1,024.56	$1,045.87	$1,070.55	
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (DFB) (in thousands of dollars)	**$9,541**	**$10,545**	**$11,303**	**$11,913**	

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
34A	StanPac - Locate and Mark	Cost	$662.72	$678.23	$692.33	$708.67	StanPac is a shared-ownership transmission pipeline. PG&E owns six sevenths of StanPac.
		Escalation Rate		2.34%	2.08%	2.36%	
		PG&E Portion (6/7)		0.86	0.86	0.86	
		Subtotal (34A) (in thousands of dollars)	**$0.663**	**$0.581**	**$0.593**	**$0.607**	

MAT	MAT Description	2016 Historical	2017 Forecast (in thousands of dollars)	2018 Forecast (in thousands of dollars)	2019 Forecast (in thousands of dollars)	Notes
DFA	Locate and Mark	$1,057	$1,169	$1,253	$1,321	
DFB	Standby	$9,541	$10,545	$11,303	$11,913	
34A	StanPac - Locate and Mark	$0.663	$0.581	$0.593	$0.607	
	Total Cost for Locate and Mark (DFA, DBF, 34A) (in thousands of dollars)	**$10,599**	**$11,715**	**$12,556**	**$13,234**	

Note: 2017 forecast totals differ from costs shown in standard workpapers due to timing differences in extraction of data.

Pacific Gas and Electric Company
2017 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9,
Operations and Maintenance

LEAK MANAGEMENT PROGRAM SUMMARY

Filing Project/Program Name/Number
FILING TITLE: Leak Management
MAINTENANCE ACTIVITY TYPE: JOE, JOW, JOP, JOR, 34A
PLANNING ORDER NUMBERS: Various; See lines 66-235, 1404 on Workpaper Table 9-2

EXPENSES (thousands of dollars)[1]:

	2018	2019
TOTAL EXPENSES:	**$6,176**	**$6,115**

DESCRIPTION:

Pipeline leak management activities include leak surveys and grading, leak repairs, and rechecks. Leak management program encompasses the following three subprograms:

- Leak Survey (Ground/Aerial Survey (JOE/JOW)) – work includes survey of the entire gas transmission pipeline in PG&E's service territory, which is commonly completed on the ground (via foot or vehicle survey) by operator-qualified personnel using a portable methane gas leak detector. Additionally, aerial leak surveys are performed by helicopter using Light Detection and Ranging Infra-Red (LiDAR) technology in remote locations and areas difficult to access on the ground.
- Leak Rechecks (JOR) – work includes rechecking prescribed leaks (Grade 2 and 3[2]) prior to scheduled repair at intervals of six months from the date found.
- Leak Repair (JOP) – work includes all engineering, materials, and construction expenses for major and minor repairs of pipeline and equipment leaks.

JUSTIFICATION:

Leak management activities support compliance with 49 CFR Parts 192.703, 192.706

[1] Includes StanPac – Leak Management costs under 34A.
[2] Grade 1 Leaks: hazardous leaks requiring immediate repair; Grade 2 Leaks: non-hazardous leaks requiring future scheduled repair; Grade 3 Leaks: non-hazardous leaks expected to remain non-hazardous

and 192.717. The adoption of Revised General Order (GO) 112-F has imposed new operational and reporting metrics, accelerated leak survey schedules, and, in certain circumstances, adopts California standards that are more stringent than Federal requirements. In 2016, PG&E commenced semi-annual leak survey in preparation for the GO 112-F requirements set for 2017.

COST ASSUMPTIONS:

PG&E's forecast is based on historical cost and units worked for survey, repair and recheck tasks.

Leak Survey Cost (JOE/JOW):

The entire Transmission pipeline in PG&E's service territory is surveyed semi-annually.

- Total miles surveyed annually: approx. 13,500 miles
- Total miles surveyed under MAT JOE/JOW: approx. 12,500 miles
- Total miles surveyed under MAT HPE[3]: approx. 1,000 miles

Total mileage of JOE/JOW leak survey is approximately 12,500 miles (units) via ground or aerial survey. This includes the total miles of transmission pipeline surveyed twice yearly, excluding Class 3 /4 non-HCA (MAT HPE) or approximately 970 miles. Survey mileage via ground versus aerial will remain consistent from 2017 to 2019 (approximately 3,500 miles ground survey and approximately 9,000 miles of aerial survey). The 2016 leak survey depicts increased mileage of ground survey versus aerial survey due to one-time audit of pipeline markers (approximately 5,500 ground survey and approximately 7,000 aerial survey). Forecasted unit cost is based on actual 2016 unit cost escalated through 2019.

Approximately 200 Gas Pipeline Operations and Maintenance (GPO&M) transmission stations are leak surveyed semiannually and included in the unit forecast. Forecast includes only routine leak survey activities. The scope of work does not include the leak surveying of any assets which are surveyed more frequently for any other reason.[4]

Leak Rechecks (JOR):

Leak rechecks are performed on Grade 2 and 3 leaks that are scheduled for repair later than six months after the leak find date. PG&E forecasts fewer rechecks as compared to 2016 due to the adoption of Revised General Order (GO) 112-F, which

[3] The cost of leak survey for HPE units is reflected in Chapter 5.

[4] Examples of more frequent leak surveying include TIMP Leak Surveys and Corrosion Casings. The costs for these surveys are included in Chapter 5 – Asset Family - Transmission, and Chapter 8 – Corrosion Control, respectively.

requires the repair of previously identified below ground grade 3 leaks. All non-Grade 1 above/below ground leak rechecks will be performed in conjunction with the semi-annual leak survey when possible. PG&E's unit cost forecast is based on 2016 unit cost escalated through 2019.

Leak Repair (JOP):
Leak repair includes the cost for base unit leak repair, plus additional costs in 2017 and 2018 for previously identified below ground grade 3 unit leak repairs. PG&E's forecasted units are based on 2016 actual units and are expected to remain consistent throughout 2019. Unit cost forecasts are based on 2016 actual unit cost escalated through 2019. The adoption of Revised General Order (GO) 112-F requires the repair of all below ground grade 3 leaks, which results in an additional cost in 2017 and 2018 for previously identified below ground grade 3 leak repairs. Total units outlined in the Below Ground Grade 3 Previously Identified section of JOP are the current leaks scheduled for repair.

StanPac costs are deducted from MATs JOE, JOW, JOP and JOR are detailed separately.

Note: 2016 recorded and 2017 forecast totals differ from costs shown in standard workpapers due to timing differences in extraction of data. 2018 and 2019 forecasts differ from the amounts reflected in PG&E's Results of Operations model.

Workpaper Table 9-5
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Leak Management, MAT JOE, JOP, JOR, JOW, 34A

MAT	MAT Description		2016	2017	2018	2019	Notes
JOE	Leak Survey (Ground)	Units (miles)	5,658	3,546	3,522	3,522	Ground Leak Survey is performed for pipeline mileage readily accessible by ground crews. The unit cost is based on 2016 unit cost escalated through 2019. The 2016 mileage was not utilized because additional ground leak survey was performed in 2016 due to covering pipeline markers during ground patrols which resulted in higher ground mileage vs aerial survey. Based on 2016 miles (GIS), MAT Codes JOE and JOW exclude miles for StanPac, which are included in MAT 34A.
		Unit Cost	$337	$345	$352	$360	
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JOE) - in thousands of dollars	**$1,905**	**$1,222**	**$1,239**	**$1,268**	

MAT	MAT Description		2016	2017	2018	2019	Notes
JOW	Leak Survey (Aerial)	Units (miles)	6,868	8,994	8,934	8,934	Based on 2016 Actuals, MAT Code JOW exclude GIS miles for StanPac, which are included in MAT 34A. It also excludes MAT HPE miles. The unit cost is based on 2016 unit cost escalated through 2019.
		Unit Cost	$186	$190	$194	$198	
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JOW) - in thousands of dollars	**$1,275**	**$1,708**	**$1,732**	**$1,773**	

MAT	MAT Description		2016	2017	2018	2019	Notes
JOR	Leak Rechecks	Units (rechecks)	1,142	1,142	518	518	Based on 2016 actuals. Recheck units decrease from 2016 due to the overlap of the bi-annual survey and transition due to adherence to GO-112F. The unit cost is based on 2016 unit cost escalated through 2019 (excluding units for StanPac).
		Unit Cost	$228	$233	$238	$244	
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JOR) - in thousands of dollars	**$260**	**$266**	**$123**	**$126**	

MAT	MAT Description		2016	2017	2018	2019	Notes
JOP	Leak Repair	**1. Leak Repair - Base Units**					Includes cost for base units and additional costs for previously identified below ground grade 3 leaks. Forecasted units are based on 2016 actuals. The additional previously identified below ground grade 3 units are based on current open below ground grade 3 leaks prior to April 2017 survey. The unit cost is based on 2016 actuals escalated through 2019 (excluding units for StanPac).
		Units	525	525	520	520	
		Unit Cost	$5,224	$5,346	$5,457	$5,586	
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (In thousands of dollars)	**$2,743**	**$2,807**	**$2,838**	**$2,905**	
		2. Below Ground Gr. 3 Previously Identified Units					
		Units	-	111	37	-	
		Unit Cost	$5,224	$5,346	$5,457	$5,586	
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (In thousands of dollars)	**$0**	**$593**	**$202**	**$0**	
		Subtotal (JOP) - in thousands of dollars	**$2,743**	**$3,400**	**$3,040**	**$2,905**	

Note: 2016 recorded and 2017 forecast totals differ from costs shown in standard workpapers due to timing differences in extraction of data. 2018 and 2019 forecasts differ from the amounts reflected in PG&E's Results of Operations model.

Workpaper Table 9-5
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Leak Management, MAT JOE, JOP, JOR, JOW, 34A

	2016	2017	2018	2019	Notes
Total (JOE, JOR, JOW, JOP) - in thousands of dollars	**$6,183**	**$6,597**	**$6,134**	**$6,072**	Note: 2016 and 2017 recorded forecast totals differ from costs shown in standard workpapers due to timing differences in extraction of data. 2018 and 2019 forecasts differ from the amounts reflected in PG&E's Results of Operations model.

MAT	MAT Description	Cost Source Subcomponent				2018 Forecast	2019 Forecast	Notes
34A	StanPac - Leak Management	JOE - StanPac	Units (miles)			24	24	
			Unit Cost			$352	$360	
			Escalation				2.36%	StanPac is a shared-ownership transmission pipeline. PG&E owns six sevenths
			Subtotal (34A - JOE component) - in thousands of dollars			**$8**	**$9**	of StanPac.
		MAT Subcomponent				**2018 Forecast**	**2019 Forecast**	**Notes**
		JOP - StanPac	Units (repairs)			5	5	
			Unit Cost			$ 5,457	$ 5,586	
			Escalation				2.36%	StanPac is a shared-ownership transmission pipeline. PG&E owns six sevenths
			Subtotal (34A - JOP component) - in thousands of dollars			**$27**	**$28**	of StanPac.
		MAT Subcomponent				**2018 Forecast**	**2019 Forecast**	**Notes**
		JOR - StanPac	Units (rechecks)			7	7	
			Unit Cost			$238	$244	
			Escalation				2.36%	StanPac is a shared-ownership transmission pipeline. PG&E owns six sevenths
			Subtotal (34A - JOR component) - in thousands of dollars			**$2**	**$2**	of StanPac.
		MAT Subcomponent				**2018 Forecast**	**2019 Forecast**	**Notes**
		JOW - StanPac	Units (miles)			60	60	
			Unit Cost			$194	$199	
			Escalation				2.36%	StanPac is a shared-ownership transmission pipeline. PG&E owns six sevenths
			Subtotal (34A - JOW component) - in thousands of dollars			**$12**	**$12**	of StanPac.
						2018 Forecast	**2019 Forecast**	**Notes**
		Subtotal (34A) - in thousands of dollars				**$49**	**$50**	
		PG&E Portion				**86%**	**86%**	StanPac is a shared-ownership transmission pipeline. PG&E owns six sevenths
		TOTAL COST (34A) - in thousands of dollars				**$42**	**$43**	of StanPac.

Note: 2016 recorded and 2017 forecast totals differ from costs shown in standard workpapers due to timing differences in extraction of data. 2018 and 2019 forecasts differ from the amounts reflected in PG&E's Results of Operations model.

Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9,
Operations and Maintenance

PIPELINE PATROL PROGRAM SUMMARY

Filing Project/Program Name/Number
FILING TITLE: Pipeline Patrol
MAINTENANCE ACTIVITY TYPE: JOF, JOV, 34A
PLANNING ORDER NO: Various; See lines 236 to 279, 1405 on Workpaper Table 9-2

Expenses (thousands of dollars)[1]:

	2018	2019
Total Expenses	**$6,377**	**$6,528**

DESCRIPTION:

Pipeline patrol is an integrity management activity required to observe surface conditions on and adjacent to the pipeline's right-of-way for indications of leaks, construction activity, and other factors affecting safety and operation. A secondary purpose of patrolling is to report observations of new construction that may impact a pipeline's Class Location or classification as a High Consequence Area (HCA). PG&E patrols its pipelines both aerially (via fixed-wing aircraft or helicopter) and on the ground (via walking or driving).

JUSTIFICATION

PG&E's pipeline patrol program fulfills federal code requirements (49 CFR §192.705 and §192.613) and contributes to damage prevention and safety of PG&E facilities. These federal requirements are also reflected in PG&E Utility Procedure TD-4412P-07, Revision 6 – "Patrolling Gas Pipelines".

COST ASSUMPTIONS:

Ground Patrol (JOF) – The 2018 and 2019 hours are based on historical 2016 records for five FTEs plus additional support. Beginning in 2018, the ground patrol crew will include 6 FTEs with some additional support. The 2018 and 2019 unit cost is based on 2016 historical rate escalated through 2019.

[1] Includes StanPac – Pipeline Patrol costs under 34A.

Aerial Patrol (JOV) - The number of miles forecast in 2018 and 2019 is based on patrolling entire system miles twelve times per year plus twelve HCA patrols per year. The 2018 and 2019 mileage does not include StanPac miles of approximately 2,190 (mileage recorded in 2016). The unit cost decreased in 2017 as compared to 2016 due to contractor conversions into FTEs which resulted in lower unit cost. 2017 miles are forecasted lower as compared to 2016 miles due to planned maintenance and airplane upgrades (LiDAR installations).

Note: 2016 recorded and 2017 forecast totals differ from costs shown in standard workpapers due to timing differences in extraction of data. 2018 and 2019 forecasts differ from the amounts reflected in PG&E's Results of Operations model.

Workpaper Table 9-6
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Pipeline Patrol, MAT JOF, JOV, 34A

MAT	MAT Description		2016 Historical	2017 forecast	2018 forecast	2019 forecast	Notes
JOF	Ground Patrol	Unit (hours)	13,343	13,343	14,935	14,935	The 2018 and 2019 hours are based on historical 2016 records for five FTEs plus additional support. Beginning in 2018, the ground patrol crew will include 6 FTEs with some additional support. The 2018 and 2019 unit cost is based on 2016 historical rate escalated through 2019.
		Unit Cost	$82.11	$84.03	$85.78	$87.80	
		Escalation		2.34%	2.08%	2.36%	
		Subtotal - in thousands of dollars	**$1,096**	**$1,121**	**$1,281**	**$1,311**	

MAT	MAT Description		2016 Historical	2017 forecast	2018 forecast	2019 forecast	Notes
JOV	Aerial Patrol	Unit (Miles)	119,991	103,138	126,918	126,918	The number of miles forecast in 2018 and 2019 is based on patrolling entire system miles 12 times per year plus 12 HCA patrols per year. The 2018 and 2019 mileage does not include StanPac miles of approximately 2,190 (mileage recorded in 2016). The unit cost decreased in 2017 as compared to 2016 due to contractor conversions into FTEs which resulted in lower unit cost. 2017 miles are forecasted lower as compared to 2016 miles due to planned maintenance and airplane upgrades (LiDAR installations).
		Unit Cost	$46.91	$39.12	$39.93	$40.88	
		Escalation			2.08%	2.36%	
		Subtotal - in thousands of dollars	**$5,629**	**$4,035**	**$5,068**	**$5,188**	

	2016 Historical	2017 forecast	2018 forecast	2019 forecast	Notes
Total for JOF and JOV - in thousands of dollars	**$6,724**	**$5,156**	**$6,349**	**$6,499**	

Desciption				2017 forecast	2018 forecast	2019 forecast	Notes
34A StanPac - Ground		Costs for Ground Patrol		No recorded 34A StanPac costs in 2017	$ 8,085		Total Costs (2012-2016 5yr Average + Veg Obscured Segments). StanPac is a shared-ownership transmission pipeline. PG&E owns six sevenths of StanPac.
		PG&E StanPac share			86%		
		PG&E costs			$ 6,930		
		Escalation				2.36%	
		Subtotal - in thousands of dollars			**$7**	**$7**	
34A StanPac - Aerial		Costs for Aerial Patrol			$ 24,268		Cost include Helicopter, Fixed Wing, Labor, and Overhead. StanPac is a shared-ownership transmission pipeline. PG&E owns six sevenths of StanPac.
		PG&E StanPac share			86%		
		PG&E costs			$ 20,801		
		Escalation				2.36%	
		Subtotal - in thousands of dollars			**$21**	**$21**	
		Total - in thousands of dollars			**$28**	**$28**	

Note: 2016 recorded and 2017 forecast totals differ from costs shown in standard workpapers due to timing differences in extraction of data.
2018 and 2019 forecasts differ from the amounts reflected in PG&E's Results of Operations model.

Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9,
Operations and Maintenance

PIPELINE MAINTENANCE PROGRAM SUMMARY

Filing Project/Program Name/Number
FILING TITLE: Pipeline Maintenance
MAINTENANCE ACTIVITY TYPE: JO1, JO2, JOG, JOH, JOI, JOJ, JOK, JOL, JOM, JON, JOO, JOX, JOY, 34A
PLANNING ORDER NUMBERS: Various; See lines 283-954, 1403 on Workpaper Table 9-2

EXPENSES (thousands of dollars)[1]:

	2018	2019
TOTAL EXPENSES	**9,478**	**9,731**

DESCRIPTION:

Pipeline Maintenance is required to ensure safe and reliable operation of the Gas Transmission pipeline system and regulator stations. The Pipeline Maintenance program has eight subprograms:

- Preventative and Corrective Maintenance for Regulator Stations,
- Preventative and Corrective Maintenance for Manual Valves,
- Preventative and Corrective Maintenance for Automated Valves and Actuators,
- Preventative and Corrective Maintenance for Gas Holders,
- Preventative and Corrective Maintenance for Meters and Chromatographs,
- Preventative and Corrective Maintenance for Supervisory Control and Data Acquisition (SCADA),
- Operate Transmission Pipelines, and
- Operate Transmission Regulator Stations.

JUSTIFICATION:

Pipeline Maintenance and Repair is required by 49 CFR Parts 192.605, 192.739 and 192.745. Operate Transmission Pipeline is required by 49 CFR Parts 192.701 and 192.703.

[1] Includes StanPac – Pipeline Maintenance costs under 34A.

COST ASSUMPTIONS:

The forecast for Pipeline Maintenance is based on 2016 historical costs escalated through 2019. The forecast includes performing compliance, maintenance and repair/replacement tasks, and also includes incremental increases for preventative maintenance on automated valves and on SCADA, based on an expectation of increased equipment installations.

Note: 2016 recorded and 2017 forecast totals differ from costs shown in standard workpapers due to timing differences in extraction of data.

Workpaper Table 9-7
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Transmission Pipe
Pipeline Maintenance Forecast Calculation, MAT JO1, JO2, JOG, JOH, JOI, JOJ, JOK, JOL, JOM, JON, JOO, JOX, JOY, 34A

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JO1	Preventative Maintenance for SCADA	Units Previously Installed to be Maintained in Current Year		446	463	475	Additional SCADA units include: Remote Terminal Units (RTUs), Programmable Logic Controlers (PLCs), Analyzers, etc.
		Hours per Unit		1	1		
		Hourly Rate		$52.79	$52.79	$54.04	
		Escalation		2.34%	2.08%	2.36%	
		Subtotal for Additonal Units to be Maintained		**$23,478**	**$24,442**	**$25,667**	
		Previous Year's Total Cost Escalated to Current Year		$577,198	$613,170	$653,057	Historical amounts are as of July 2017.
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JO1) - in thousands of dollars	**$564**	**$601**	**$638**	**$679**	

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JO2	Corrective Maintenance for SCADA	Historical Cost	$337	$345	$352	$361	Historical amounts are as of July 2017.
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JO2) - in thousands of dollars	**$337**	**$345**	**$352**	**$361**	

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JOG	Preventative Maintenance for Regulator Stations	Historical Cost	$1,317	$1,348	$1,376	$1,408	Historical amounts are as of July 2017.
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JOG) - in thousands of dollars	**$1,317**	**$1,348**	**$1,376**	**$1,408**	

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JOH	Preventative Maintenance for Manual Valves	Historical Cost	$974	$997	$1,018	$1,042	Historical amounts are as of July 2017.
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JOH) - in thousands of dollars	**$974**	**$997**	**$1,018**	**$1,042**	

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JOI	Preventative Maintenance for Automated Valves/Actuators	Units Previously Installed to be Maintained in Current Year		34	35	46	Historical amounts are as of July 2017.
		Hours per Unit		1.41	1.41	1.41	
		Hourly Rate		$52.79	$53.89	$55.16	
		Escalation		2.34%	2.08%	2.36%	
		Subtotal for Additonal Units to be Maintained		**$2,531**	**$2,659**	**$3,578**	
		Previous Year's Total Cost Escalated to Current Year		$163,744	$169,734	$176,461	
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JOI) - in thousands of dollars	**$160**	**$166**	**$173**	**$180**	

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JOJ	Preventative and Corrective Maintenance for Gas Holders	Historical Cost	$177	$181	$185	$189	Historical amounts are as of July 2017.
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JOJ) - in thousands of dollars	**$177**	**$181**	**$185**	**$189**	

Note: 2016 recorded and 2017 forecast totals differ from costs shown in standard workpapers due to timing differences in extraction of data.

Workpaper Table 9-7
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Transmission Pipe
Pipeline Maintenance Forecast Calculation, MAT JO1, JO2, JOG, JOH, JOI, JOJ, JOK, JOL, JOM, JON, JOO, JOX, JOY, 34A

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JOM	Corrective Maintenance for Regulator Stations	Historical Cost	$407	$417	$426	$436	Historical amounts are as of July 2017.
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JOM) - in thousands of dollars	**$407**	**$417**	**$426**	**$436**	

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JON	Corrective Maintenance for Manual Valves	Historical Cost	$685	$701	$715	$732	Historical amounts are as of July 2017.
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JON) - in thousands of dollars	**$685**	**$701**	**$715**	**$732**	

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JOO	Corrective Maintenance for Automated Valves/Actuators	Historical Cost	$23	$24	$24	$25	Historical amounts are as of July 2017.
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JOO) - in thousands of dollars	**$23**	**$24**	**$24**	**$25**	

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JOX	Preventative Maintenance for Meters and Chromatographs	Historical Cost	$551	$564	$576	$590	Historical amounts are as of July 2017.
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JOX) - in thousands of dollars	**$551**	**$564**	**$576**	**$590**	

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JOY	Corrective Maintenance for Meters and Chromatographs	Historical Cost	$112	$114	$117	$119	Historical amounts are as of July 2017.
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JOY) - in thousands of dollars	**$112**	**$114**	**$117**	**$119**	

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JOK	Operate Transmission Pipelines	Historical Cost	$1,001	$1,025	$1,046	$1,071	Historical amounts are as of July 2017.
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JOK) - in thousands of dollars	**$1,001**	**$1,025**	**$1,046**	**$1,071**	

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JOL	Operate Transmission Regulator Stations	Historical Cost	$2,649	$2,711	$2,768	$2,833	Historical amounts are as of July 2017.
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JOL) - in thousands of dollars	**$2,649**	**$2,711**	**$2,768**	**$2,833**	

Note: 2016 recorded and 2017 forecast totals differ from costs shown in standard workpapers due to timing differences in extraction of data.

Workpaper Table 9-7
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Transmission Pipe
Pipeline Maintenance Forecast Calculation, MAT JO1, JO2, JOG, JOH, JOI, JOJ, JOK, JOL, JOM, JON, JOO, JOX, JOY, 34A

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
34A	StanPac - Pipeline Maintenance	Total Pipeline Miles	6731				StanPac is a shared-ownership transmission pipeline. PG&E owns six sevenths of StanPac.
		StanPac Miles	55				
		StanPac Portion of Total Miles	0.82%				
		2016 Pipeline Maintenance Cost	$8,958,790				
		StanPac Portion of Cost	$73,204	$74,917	$76,475	$78,280	
		Escalation		2.34%	2.08%	2.36%	
		PG&E Portion (6/7)	0.86	0.86	0.86	0.86	
		Subtotal (34A) - in thousands of dollars	**$63**	**$64**	**$66**	**$67**	

Program	Sub-Program	MAT Code(s)	2016 Historical (in thousands of dollars)	2017 Forecast (in thousands of dollars)	2018 Forecast (in thousands of dollars)	2019 Forecast (in thousands of dollars)
Pipeline Maintenance	PM/CM Reg Stations	JOG/JOM	$1,724	$1,764	$1,801	$1,844
	PM/CM Manual Valves	JOH/JON	$1,659	$1,698	$1,733	$1,774
	PM/CM Automated Valves/Actuators	JOI/JOO	$183	$190	$197	$205
	PM/CM Gas Holders Maintenance	JOJ	$177	$181	$185	$189
	PM/CM Meter Maintenance	JOX/JOY	$663	$678	$693	$709
	PM/CM SCADA Maintenance	JO1/JO2	$901	$946	$990	$1,039
	Operation Transmission Pipelines	JOK	$1,001	$1,025	$1,046	$1,071
	Operate Transmission Reg. Stations	JOL	$2,649	$2,711	$2,768	$2,833
	TOTAL - in thousands of dollars		**$8,958**	**$9,194**	**$9,413**	**$9,664**

Note: 2016 recorded and 2017 forecast totals differ from costs shown in standard workpapers due to timing differences in extraction of data.

Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9,
Gas Transmission Pipeline Operations and Maintenance

STATION MAINTENANCE PROGRAM SUMMARY

Filing Project/Program Name/Number
FILING TITLE: Station Maintenance
MAINTENANCE ACTIVITY TYPE: JPA, JPB, JPC, JPD, JPE, JPF, JPG, JPH, JPI, JPJ, JPK, JPL, JPN, JPO, JPP
PLANNING ORDER NUMBERS: Various; See lines 955-1313 on Workpaper Table 9-2

EXPENSES (thousands of dollars):

	2018	2019
TOTAL EXPENSES	**18,666**	**19,106**

DESCRIPTION:

PG&E's Station Maintenance program provides preventative and corrective maintenance for 41 compressor stations / storage field compressors. The Station Maintenance program encompasses the following seven subprograms:

- Preventative and Corrective Maintenance for Station Piping,
- Preventative and Corrective Maintenance for Gas Processing Equipment,
- Preventative and Corrective Maintenance Inside the Compressor Building,
- Preventative and Corrective Maintenance for Storage/Compressor Station Support,
- Preventative and Corrective Maintenance for Power Units,
- Preventative and Corrective Maintenance for Storage well, and
- Station Operations.

JUSTIFICATION:

Preventive and corrective maintenance work on the Gas Transmission pipeline compressor stations, storage compressor stations, and terminals is performed to meet requirements of 49 CFR Parts 192.605 and 192.703.

COST ASSUMPTIONS:

Forecast costs for Station Maintenance are based on 2016 historical costs escalated through 2019.

Note: 2016 recorded and 2017 forecast totals differ from costs shown in standard workpapers due to timing differences in extraction of data.

Workpaper Table 9-8
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Transmission Pipe
Station Maintenance Forecast Calculation - MATs JPA, JPB, JPC, JPD, JPE, JPF, JPG, JPH, JPI, JPJ, JPK, JPL, JPN, JPO, JPP

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JPA	Preventative Maintenance for Station Piping	Historical Cost - in thousands of dollars	$697	$714	$729	$746	Historical amounts are as of July 2017.
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JPA) - in thousands of dollars	**$697**	**$714**	**$729**	**$746**	

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JPB	Corrective Maintenance for Station Piping	Historical Cost - in thousands of dollars	$158	$162	$166	$169	Historical amounts are as of July 2017.
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JPB) - in thousands of dollars	**$158**	**$162**	**$166**	**$169**	

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JPC	Preventative Maintenance for Gas Processing Equipment	Historical Cost - in thousands of dollars	$830	$849	$867	$887	Historical amounts are as of July 2017.
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JPC) - in thousands of dollars	**$830**	**$849**	**$867**	**$887**	

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JPD	Preventative Maintenance Inside Compressor Building	Historical Cost - in thousands of dollars	$1,125	$1,151	$1,175	$1,203	Historical amounts are as of July 2017.
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JPD) - in thousands of dollars	**$1,125**	**$1,151**	**$1,175**	**$1,203**	

Note: 2016 recorded and 2017 forecast totals differ from costs shown in standard workpapers due to timing differences in extraction of data.

Workpaper Table 9-8
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Transmission Pipe
Station Maintenance Forecast Calculation - MATs JPA, JPB, JPC, JPD, JPE, JPF, JPG, JPH, JPI, JPJ, JPK, JPL, JPN, JPO, JPP

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JPE	Preventative Maintenance for Storage/Compressor Station Support	Historical Cost - in thousands of dollars	$1,755	$1,795	$1,832	$1,876	From 2018 onwards, MAT JPF will be combined with MAT JPE. Historical amounts are as of July 2017.
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JPE only) - in thousands of dollars	**$1,755**	**$1,795**	$1,832	$1,876	
		Added Costs from JPF for 2018 and 2019 - in thousands of dollars			$542	$555	
		Subtotal (JPE and JPF for 2018 and 2019) - in thousands of dollars			**$2,375**	**$2,432**	

MAT	MAT Description		2016 Historical	2017 Forecast			Notes
JPF	Preventative Maintenance for StorCompStat Other	Historical Cost - in thousands of dollars	$526	$539			From 2018 onwards, MAT JPF will be combined with MAT JPE. Historical amounts are as of July 2017.
		Escalation		2.34%			
		Subtotal (JPF) - in thousands of dollars	**$526**	**$539**			

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JPG	Corrective Maintenance for Gas Processing Equipment	Historical Cost - in thousands of dollars	$943	$965	$985	$1,008	Historical amounts are as of July 2017.
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JPG) - in thousands of dollars	**$943**	**$965**	**$985**	**$1,008**	

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JPH	Corrective Maintenance Inside Compressor Building	Historical Cost - in thousands of dollars	$1,250	$1,279	$1,306	$1,337	Historical amounts are as of July 2017.
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JPH) - in thousands of dollars	**$1,250**	**$1,279**	**$1,306**	**$1,337**	

Note: 2016 recorded and 2017 forecast totals differ from costs shown in standard workpapers due to timing differences in extraction of data.

Workpaper Table 9-8
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Transmission Pipe
Station Maintenance Forecast Calculation - MATs JPA, JPB, JPC, JPD, JPE, JPF, JPG, JPH, JPI, JPJ, JPK, JPL, JPN, JPO, JPP

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JPI	Corrective Maintenance for Storage/Compressor Station Support	Historical Cost - in thousands of dollars	$1,470	$1,504	$1,536	$1,572	From 2018 onwards, MAT JPJ will be combined with MAT JPI. Historical amounts are as of July 2017.
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JPI only) - in thousands of dollars	**$1,470**	**$1,504**	$1,536	$1,572	
		Added Costs from JPJ for 2018 and 2019 - in thousands of dollars			$35	$35	
		Subtotal (JPI and JPJ for 2018 and 2019) - in thousands of dollars			**$1,570**	**$1,607**	

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JPJ	Corrective Maintenance for StorCompStat Other	Historical Cost - in thousands of dollars	$33	$34			From 2018 onwards, MAT JPJ will be combined with MAT JPI. Historical amounts are as of July 2017.
		Escalation		2.34%			
		Subtotal (JPJ) - in thousands of dollars	**$33**	**$34**			

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JPK	Preventative Maintenance for Power Units	Historical Cost - in thousands of dollars	$168	$172	$175	$179	Historical amounts are as of July 2017.
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JPK) - in thousands of dollars	**$168**	**$172**	**$175**	**$179**	

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JPL	Corrective Maintenance for Power Units	Historical Cost - in thousands of dollars	$185	$190	$194	$198	Historical amounts are as of July 2017.
		Escalation		2.34%	2.08%	2.36%	
		Subtotal (JPL) - in thousands of dollars	**$185**	**$190**	**$194**	**$198**	

Note: 2016 recorded and 2017 forecast totals differ from costs shown in standard workpapers due to timing differences in extraction of data.

Workpaper Table 9-8
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Transmission Pipe
Station Maintenance Forecast Calculation - MATs JPA, JPB, JPC, JPD, JPE, JPF, JPG, JPH, JPI, JPJ, JPK, JPL, JPN, JPO, JPP

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JPN	Station Operations	Historical Cost - in thousands of dollars	$6,275	$6,422	$6,555	$6,710	
		Escalation		2.34%	2.08%	2.36%	Historical amounts are as of July 2017.
		Subtotal (JPN) - in thousands of dollars	**$6,275**	**$6,422**	**$6,555**	**$6,710**	

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JPO	Preventative Maintenance for Storage Wells	Historical Cost - in thousands of dollars	$1,958	$2,004	$2,045	$2,094	
		Escalation		2.34%	2.08%	2.36%	Historical amounts are as of July 2017.
		Subtotal (JPO) - in thousands of dollars	**$1,958**	**$2,004**	**$2,045**	**$2,094**	

MAT	MAT Description		2016 Historical	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JPP	Corrective Maintenance for Storage Wells	Historical Cost - in thousands of dollars	$501	$513	$524	$536	
		Escalation		2.34%	2.08%	2.36%	Historical amounts are as of July 2017.
		Subtotal (JPP) - in thousands of dollars	**$501**	**$513**	**$524**	**$536**	

Note: 2016 recorded and 2017 forecast totals differ from costs shown in standard workpapers due to timing differences in extraction of data.

Workpaper Table 9-8
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Transmission Pipe
Station Maintenance Forecast Calculation - MATs JPA, JPB, JPC, JPD, JPE, JPF, JPG, JPH, JPI, JPJ, JPK, JPL, JPN, JPO, JPP

Program	Subprogram	MAT	2016 Historical (in thousands of dollars)	2017 Forecast (in thousands of dollars)	2018 Forecast (in thousands of dollars)	2019 Forecast (in thousands of dollars)	Notes
Station Maintenance	PM/CM Station Piping	JPA/JPB	$856	$876	$894	$915	This table is presented in Chapter 9 Testimony.
	PM/CM Gas Processing Equipment	JPC/JPG	$1,772	$1,814	$1,852	$1,895	
	PM/CM Inside Compressor Building	JPD/JPH	$2,375	$2,430	$2,481	$2,539	
	PM/CM Storage/Compressor Station Support	JPE/JPI	$3,225	$3,299	$3,946	$4,038	
	PM/CM Power Units	JPK/JPL	$353	$361	$369	$377	
	PM/CM Storage Wells	JPO/JPP	$2,459	$2,517	$2,569	$2,630	
	Station Operations	JPN	$6,275	$6,422	$6,555	$6,710	
	Total for Station Maintenance - in thousands of dollars		**$17,315**	**$17,719**	**$18,666**	**$19,106**	
	Preventative Maintenance for StorCompStat Other	JPF	$526	$539			From 2018 onwards, MAT JPF will be combined with MAT JPE.
	Corrective Maintenance for StorCompStat Other	JPJ	$33	$34			From 2018 onwards, MAT JPJ will be combined with MAT JPI.
	Total for Station Maintenance - in thousands of dollars includes retired MATs JPF and JPJ		**$17,874**	**$18,292**			

Note: 2016 recorded and 2017 forecast totals differ from costs shown in standard workpapers due to timing differences in extraction of data.

Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9,
Gas Transmission Pipeline Operations and Maintenance

RIGHT-OF-WAY MAINTENANCE PROGRAM SUMMARY

Filing Project/Program Name/Number
FILING TITLE: Right-of-Way (ROW) Maintenance
MAINTENANCE ACTIVITY TYPE: JOS, JOT, JTO, JTK
PLANNING ORDER NUMBERS: Various; See lines 1328-1387, 1392-1400 on Workpaper Table 9-2

EXPENSES (thousands of dollars):

	2018	2019
TOTAL EXPENSES:	**10,951**	**11,246**

DESCRIPTION:

The objective of the PG&E Right-of-Way (ROW) Maintenance program is to support the safe and reliable operation of the entire gas transmission pipeline in PG&E's service territory. The ROW Maintenance program encompasses the following four subprograms:

- Pipeline Marker Maintenance – This subprogram involves installing, replacing, and maintaining pipeline markers on transmission lines.
- Routine Weed Abatement – This subprogram covers weed abatement surrounding PG&E facilities, such as compressor stations, storage fields, regulator stations, and meter stations.
- Vegetation Management – This subprogram is responsible for keeping exposed pipelines clear of vegetation such as trees, brush, and tall grass.
- Encroachment Structures and ROW Clean Up – This subprogram provides safe access to the pipeline in the event of an emergency, improves the visibility of pipeline markers, reduces damage from excavation, and increases public awareness of the pipeline's location.

JUSTIFICATION:

Pipeline Marker Maintenance is required by 49 CFR 14 Part 192.707.
Routine Weed Abatement is required by 49 CFR Parts 192.613, 192.705, and 192.706.
Vegetation Management is required by 49 CFR Parts 192.613, 192.705, and 192.706.

Encroachment Structures and ROW Clean-Up is required by GO-112F.

COST ASSUMPTIONS:

PG&E's forecast for ROW Maintenance includes costs associated with Pipeline Marker Maintenance, Routine Weed Abatement, Vegetation Management, and Encroachment Structures and ROW Clean-Up.

PG&E's 2019 forecast for Right-of-Way Maintenance is based on the steady state right-of-way maintenance projections for 2018 and beyond. This work will commence upon the completion of the gas transmission right-of-way clearing.

- Pipeline Marker Maintenance - PG&E's 2019 forecast is based on the total number of pipeline markers in the GIS system as of 2016 as well as the 2017 contract estimate for pipeline marker installation and materials.
- Routine Weed Abatement - Forecasted costs are based on an average of costs from 2014 to 2016 escalated through 2019.
- Vegetation Management – Forecasted costs are predominantly based on the known mileage of pipe requiring weed abatement, the number of trees within our surveyed right-of-way requiring monitoring and removal, support costs for land and environmental technical experts, as well as public outreach and integrity management-related costs.
- Encroachment Structures and ROW Clean-Up – Forecasted costs are predominantly associated with right-of-way cleanup (graffiti, abatement, road maintenance, and trash removal) as well as public affairs-related support costs.

Note: 2016 recorded and 2017 forecast totals differ from costs shown in standard workpapers due to timing differences in extraction of data.

Workpaper Table 9-9
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Right of Way Maintenance, MAT: JOS, JOT, JTK, JTO

MAT	MAT Description		2016 Pipeline Marker Count (GIS)	2017 Forecast	2018 Forecast	2019 Forecast	Notes
JOS	Pipeline Marker Maintenance	Unit (Pipeline Markers)	64,302	2,300	2,300	2,300	PG&E's 2019 forecast is based on the total number of pipeline markers in the GIS system as of 2016 as well as the 2017 contract estimate for pipeline marker installation and materials.
		Unit Cost		$393.47	$401.67	$411.14	
		Escalation			2.08%	2.36%	2017 - 2019 are based on number of markers forecasted for repair (approximately 3-4% of total per year, which is equivalent to approximately 2,300-2,500 markers/year).
		Total (JOS) - in thousands of dollars		**$905**	**$ 924**	**$ 946**	

MAT	MAT Description		Costs	Notes
JOT	Routine Weed Abatement	2014 Historical Cost	$256,000	
		2015 Historical Cost	$428,000	
		2016 Historical Cost	$106,000	
		2016 3-year Average (2014-2016) Historical Costs	$263,333	Forecasted costs for 2017, 2018, and 2019, shown below, are based on this three-year historical average.

	2016 3-year Average (2014-2016) Historical Costs	2017 Forecast	2018 Forecast	2019 Forecast
Escalation		2.34%	2.08%	2.36%
Total (JOT) - in thousands of dollars	**$263**	**$269**	**$275**	**$282**

Note: 2016 recorded and 2017 forecast totals differ from costs shown in standard workpapers due to timing differences in extraction of data.

Workpaper Table 9-9
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Right of Way Maintenance, MAT: JOS, JOT, JTK, JTO

MAT Code	Activities	Activity Description		2018 Forecast	2019 Forecast	Notes
JTK (Vegetation Management)	Vegetation & Structure Patrols	PG&E is evaluating methods of lowering costs for Vegetation & Structure Patrols by combining efforts with Aerial and Ground Patrols.	Unit Cost	$267	$274	Miles is based on approximately 1/3 of the total system per year.
			Unit (Miles)	2250	2250	
			Subtotal - in thousands of dollars	**$600**	**$616**	
	Land - Project Management	Three land consultant FTEs, certified in arborism and project management, will be responsible for managing the tree removals and vegetation treatments in their geographic area.	Unit (Hours)	1,700	1,700	The average Unit Cost is based on 2016 actuals from SAP escalated through 2019.
			Unit (FTEs)	3	3	
			Unit Cost	$87	$90	
			Subtotal - in thousands of dollars	**$444**	**$457**	
	Land - Supervision - Program Manager	The leader for the land team will supervise the patrollers and project managers and be responsible for qualifying contract resources, budget, performance management, and interaction with the Gas Program Manager.	Unit (Hours)	1,700	1,700	The average Unit Cost is based on 2016 actuals from SAP escalated through 2019.
			Unit Cost	$87	$90	
			Subtotal - in thousands of dollars	**$148**	**$152**	
	Land Rights Support	Land agents are experts in the interpretation and application of the easement documents giving PG&E the right to maintain the easement for the safe and reliable operation of the pipeline.	Unit (Hours)	1,700	1,700	The average Unit Cost is based on 2016 actuals from SAP escalated through 2019.
			Unit (FTEs)	2.25	2.25	
			Unit Cost	$87	$90	
			Subtotal - in thousands of dollars	**$333**	**$342**	
	Tree Removal	The maintenance program will remove trees as they are categorized by our integrity management team as unmanageable which include trees that are dead or dying. The trees requiring removal often require specialized equipment (cranes, extension buckets) and crews due to their proximity to houses or roads.	Total number of manageable trees	92,573	92,573	2.5% is based on electric vegetation managements database of facility protect trees. This is an overall average, however, recently the average has been as high as 10% due to the drought and pine beetle infestation. The 2.5% approximate rate is utilized because the pipeline locations are not predominately in the southern sierra where the higher rate of dead and dying pine trees are occurring.
			Total number of trees at exposed pipe locations	2,444	2,444	
			Anticipated percentage of manageable trees and trees at exposed pipe locations requiring removal	2.5%	2.5%	
			Unit (Manageable trees removed)	2,314	2,314	
			Unit (Trees at exposed pipe locations removed)	61	61	
			Unit Cost	$748	$770	
			Subtotal - in thousands of dollars	**$1,777**	**$1,830**	

Note: 2016 recorded and 2017 forecast totals differ from costs shown in standard workpapers due to timing differences in extraction of data.

Workpaper Table 9-9
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Right of Way Maintenance, MAT: JOS, JOT, JTK, JTO

MAT Code	Activities	Activity Description		2018 Forecast	2019 Forecast	Notes
JTK (Vegetation Management)	Customer Incentive	PG&E provides gift cards to customers who replace dead or dying trees.	Unit (Customer tree replacements)	2,300	2,375	$100 is the gift card amount given to customers for tree replacement.
			Unit Cost	$100	$100	
			Subtotal - in thousands of dollars	**$230**	**$238**	
	Vegetation Mowing and Herbicide Applications	This work is the non-tree vegetation maintenance that requires mowing, weed eating, and herbicide spraying of sprouting stumps, tree seedlings, bushes, brambles, and tall grasses. The mowers can be tractor pulled brush mowers or masticators. The herbicide spraying is low pressure backpack sprayers utilized by licensed applicators with a hand wand.	Unit (Miles)	1,009	1,009	Approximately 1,009 miles of pipeline requires (non-tree) mowing, weed eating, and herbicide application. This approximate mileage has been calculated based on PG&E's yearly vegetation survey of the right-of-way.
			Unit Cost	$1,596	$1,643	
			Subtotal - in thousands of dollars	**$1,610**	**$1,658**	
	Vegetation Treatment of Fee Strips	The treatments are typically mowing with some herbicide applications and are often of a greater area than on easements.	**Subtotal - in thousands of dollars**	**$33**	**$34**	2016 actual cost for vegetation treatment on PG&E owned fee strips.
	Vegetation Contingency	Approximately 20% Contingency based on Vegetation Management Subject Matter Expert within PG&E Land Operations	**Subtotal - in thousands of dollars**	**$1,039**	**$1,067**	Contingency is for unforeseen events including communities that oppose tree removals thus needing additional support, environmental policy changes that increase costs and permit costs. Also due to population growth and residences are built near pipelines that generally contributes to increased frequency of encroachments thus increase monitoring costs.
	Environmental Project Review	PG&E has two FTEs (land planner and biologist) responsible for reviewing the vegetation/tree removal projects and advising on avoidance and minimization practices to reduce any environmental impact.	Unit (Hours)	1,650	1,650	The average Unit Cost is based on 2016 actuals from SAP escalated through 2019.
			Unit (Employees)	2	2	
			Unit Cost	$87	$90	
			Subtotal - in thousands of dollars	**$288**	**$297**	
	Environmental – Field Bird Surveys	PG&E has established a contract biologist, as a part of the environmental team, to conduct bird surveys at job sites with trees.	Contract Cost Per Season	$97,040	$100,000	This cost covers field bird surveys for the approximately 2,400 trees listed above in the Tree Removal section.
			Subtotal - in thousands of dollars	**$97**	**$100**	
	Environmental Permits/Mitigation	PG&E has estimated costs for permits and mitigation requirements for the vegetation treatments.	Unit (Permits)	25	25	This cost covers Coastal Commission Permits, Permits for Streambed Alterations, etc.
			Unit Cost	$9,720	$10,000	
			Subtotal - in thousands of dollars	**$243**	**$250**	

Note: 2016 recorded and 2017 forecast totals differ from costs shown in standard workpapers due to timing differences in extraction of data.

Workpaper Table 9-9
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Right of Way Maintenance, MAT: JOS, JOT, JTK, JTO

MAT Code	Activities	Activity Description		2018 Forecast	2019 Forecast	Notes
JTK (Vegetation Management)	Environmental Management Contingency	Approximately 15% Contingency based on Vegetation Management Subject Matter Expert within PG&E Land Operations	**Subtotal - in thousands of dollars**	**$97**	**$97**	Contingency is for unforeseen events including communities that oppose tree removals thus needing additional support, environmental policy changes that increase costs and permit costs. Also due to population growth and residences are built near pipelines that generally contributes to increased frequency of encroachments thus increase monitoring costs.
	Integrity Management (IM) Support	PG&E has delegated internal and external resources to evaluate tree information submitted from patrols regarding the risk that the tree may have to a pipe. These resources mange models evaluating tree risk and perform site visits as necessary.	Unit (Hours)	2,240	2,240	The average Unit Cost is based on 2016 actuals from SAP escalated through 2019.
			Unit Cost (Contractor/Internal employee)	$120.56	$123.75	
			Subtotal - Internal Resources and Contractor - in thousands of dollars	**$270**	**$277**	
	Public Affairs (Community, Government Outreach and Communications)	This Public Affairs program will interface with local jurisdictions and customers with proactive messaging to bring awareness to pipeline safety.	Total Public Affairs Cost - in thousands of dollars	$1,842	$1,886	The JTK Public Affairs program makes up 80% of the total public affairs effort forecast. The JTO Public affairs program makes up the other 20%.
			JTK Proportion (80%)	80%	80%	
			Subtotal for Public Affairs - in thousands of dollars	**$1,474**	**$1,509**	
	Gas Transmission Program Management	The Gas Program Manager is responsible for the Vegetation and Structure Encroachment Program.	Unit (Hours)	1,898	1,898	The average Unit Cost is based on 2016 actuals from SAP escalated through 2019.
			Unit Cost	$87	$90	
			Unit (Employees)	1	1	
			Subtotal - in thousands of dollars	**$166**	**$170**	
	Total Cost for Vegetation Management (JTK) - in thousands of dollars			**$8,849**	**$9,093**	

Note: 2016 recorded and 2017 forecast totals differ from costs shown in standard workpapers due to timing differences in extraction of data.

Workpaper Table 9-9
Pacific Gas and Electric Company
2019 Gas Transmission and Storage Rate Case
Workpapers Supporting Chapter 9, Operations and Maintenance
Right of Way Maintenance, MAT: JOS, JOT, JTK, JTO

MAT	Activities	Activity Description		2018 Forecast	2019 Forecast	Notes
JTO (Encroachment Structures and ROW Clean-Up)	Land Rights Support	The Land Rights Support team is made up of geographically dispersed experts needed to address structural encroachments identified by patrols.	Unit (hours)	1,650	1,650	Average unit cost for land agents, environmental staff, supervision, and project management, etc. The average Unit Cost is based on 2016 actuals from SAP escalated through 2019.
			Unit (FTEs)	1.5	1.5	
			Unit Cost	$87	$90	
			Subtotal for Land Rights Support- in thousands of dollars	$216	$222	
	Land Rights Contingency	Contingency is for unforeseen events including communities that oppose tree removals thus needing additional support and environmental policy changes that increase costs and permit costs. Also, due to population growth and residences being built near pipelines generally contributes to increased frequency of encroachments and increased monitoring costs.	Approximately 15% Contingency based on Vegetation Management Subject Matter Expert within PG&E Land Operations	$33	$33	Contingency is for unforeseen events including communities that oppose tree removals thus needing additional support, environmental policy changes that increase costs and permit costs. Also due to population growth and residences are built near pipelines that generally contributes to increased frequency of encroachments thus increase monitoring costs.
	Subtotal for Land Rights and Land Rights Contingency - in thousands of dollars			**$249**	**$256**	

MAT	Activity	Activity Description		2018 Forecast	2019 Forecast	Notes
JTO (Encroachment Structures and ROW Clean-Up)	Public Affairs (Community, Government Outreach and Communications)	This Public Affairs program will interface with local jurisdictions and customers with proactive messaging to bring awareness to pipeline safety.	Total Public Affairs Cost	$1,841,972	$1,886,271	The JTO Public Affairs program makes up 20% of the total public affairs effort forecast. The JTK Public affairs program makes up the other 80%.
			JTO Proportion (20%)	20%	20%	
			Subtotal for Public Affairs - in thousands of dollars	**$368**	**$377**	

MAT	Activity	Activity Description		2018 Forecast	2019 Forecast	Notes
JTO (Encroachment Structures and ROW Clean-Up)	ROW Clean-Up	ROW Clean-Up program is conducted to remove trash and graffiti, and perform repairs to pipeline access roads.	**Subtotal for ROW Clean-Up - in thousands of dollars**	**$286**	**$293**	PG&E's 2019 forecast is based on the 2017 project list in PG&E's project reporting system as of 2016.
	Total Cost for Encroachment Management and Row Clean-Up (JTO) - in thousands of dollars			**$903**	**$926**	

MAT	MAT Description	2018 Forecast	2019 Forecast	Notes
JOS	Pipeline Marker Maintenance	$924	$946	
JOT	Routine Weed Abatement	$275	$282	
JTK	Vegetation Management	$8,849	$9,093	
JTO	Encroachment Structures and ROW Clean-Up	$903	$926	
Total Costs for Right-of-Way Maintenance (JOS, JOT, JTK, JTO) - in thousands of dollars		**$10,951**	**$11,246**	

Note: 2016 recorded and 2017 forecast totals differ from costs shown in standard workpapers due to timing differences in extraction of data.