

Application: 15-09-001
(U 39 M)
Exhibit No.: (PG&E-47)
Date: July 10, 2017
Witness: Cynthia Lorie



FILED
7-10-17
04:59 PM

PACIFIC GAS AND ELECTRIC COMPANY

2017 GENERAL RATE CASE

SUPPLEMENTAL TESTIMONY

EXHIBIT (PG&E-47)

**SMARTMETER™ COST EFFECTIVENESS UPDATE IN COMPLIANCE
WITH ORDERING PARAGRAPH 20 OF CALIFORNIA PUBLIC UTILITIES
COMMISSION DECISION NO. 17-05-013**



**PACIFIC GAS AND ELECTRIC COMPANY
SMARTMETER™ COST EFFECTIVENESS UPDATE IN
COMPLIANCE WITH ORDERING PARAGRAPH 20 OF
CALIFORNIA PUBLIC UTILITIES COMMISSION
DECISION NO. 17-05-013**

PACIFIC GAS AND ELECTRIC COMPANY
SMARTMETER™ COST EFFECTIVENESS UPDATE IN COMPLIANCE WITH
ORDERING PARAGRAPH 20 OF CALIFORNIA PUBLIC UTILITIES COMMISSION
DECISION NO. 17-05-013

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2 **SMARTMETER™ COST EFFECTIVENESS UPDATE IN**
3 **COMPLIANCE WITH ORDERING PARAGRAPH 20 OF CALIFORNIA**
4 **PUBLIC UTILITIES COMMISSION DECISION NO. 17-05-013**

5 **A. Introduction**

6 This late-filed testimony is prepared as directed in Ordering Paragraph
7 (OP) 20 of the California Public Utilities Commission Decision (D.) 17-05-013
8 Authorizing PG&E's General Rate Case Revenue Requirement for 2017-2019.
9 OP 20 states:

10 Pacific Gas and Electric Company (PG&E) shall prepare a complete update
11 of Table 3 and Table 4 from Decision 09-03-026, following the instructions
12 provided in Section 5 of this decision, and file and serve that update in this
13 proceeding no later than 60 days after the date of today's decision. The
14 assigned Commissioner and assigned Administrative Law Judge shall
15 determine further procedural steps upon receipt of PG&E's updated
16 analysis.¹

17 Section 5 of the Decision states:

18 By "fully update" we mean that PG&E should provide revised values for
19 every line item in the original tables, with full support in workpapers for each
20 revised value. If a line item is added to either table, PG&E shall provide full
21 workpapers for that as well. As part of the analysis, PG&E shall provide a
22 narrative document that explains and justifies the revisions to each line item,
23 or the reason for leaving a line item unchanged, or the reason for adding a
24 line item. PG&E shall serve the updated analysis on the service list in this
25 proceeding no later than 60 days after today's date.²

26 Section B of this report includes the updated analysis.

27 **B. Updated Tables 3 and 4 From D.09-03-026**

28 This section includes: (1) a summary of the results including key drivers of
29 the updates compared to the original SmartMeter™ Upgrade (SMU) analysis;
30 (2) updated Tables 3 and 4 from D.09-03-026; and (3) narrative explanations for
31 each line item in the updated tables.

32 PG&E used current cost and benefit information to update the values
33 included in the tables and to explain its rationale for each line item in the
34 narrative section below. For clarity, PG&E notes that—as it discussed in its

1 D.17-05-013, OP 20.

2 *Id.* at p. 214.

December 1, 2015 report³—there are other incremental future potential benefits from SMU technology, primarily related to Electric Program Investment Charge and Smart Grid programs and other pilots, which are not yet quantifiable and therefore, are not reflected in the tables below or the narrative explanations that follow.⁴ PG&E does not address these future potential benefits further here except to reiterate its belief that they are an important aspect of evaluating the cost effectiveness of the SMU technology in addition to the costs and benefits that are capable of quantification and shown in the tables that follow.

1. Summary of Costs and Benefits From Updated Tables 3 and 4

As shown in the tables below, the updated analysis shows incremental SMU costs exceeding incremental SMU benefits by approximately \$278.8 million.⁵ The Present Value Revenue Requirement (PVRR) of costs declined from \$749.0 million in the original SMU analysis to \$575.7 million. The primary drivers for the decline in costs are: (1) a reduction in the actual and forecast number of meters to be installed; (2) unanticipated tax rules providing accelerated depreciation on capital costs; and (3) removal of operations and maintenance costs associated with Home Area Network (HAN) and Program Costs associated with Title 24 A/C Cycling. The updated cost number also reflects the higher forecast cost of Time-of-Use (TOU) programs compared to the Peak Time Rebate (PTR) Program.

³ Exhibit (PG&E-16) “SmartMeter Cost Effectiveness Update in Compliance with Ordering Paragraph 5 of California Public Utilities Commission Decision No. 15-07-008.”

⁴ For example, among others, PG&E discussed potential benefits associated with Volt/VAR Optimization (VVO) in the December 1, 2015 report. Since the time that report was filed, PG&E filed Advice 4990-E, which estimated a range of net benefits for VVO of \$92 million to \$295 million on a total resource cost basis. While SMU potentially supports and enhances a portion of VVO benefits, the report filed in Advice 4990-E does not identify what portion that may be. For that reason, PG&E has not included these costs and benefits in Tables 3 and 4.

⁵ The \$278.8 million is calculated as \$575.7 million (PVRR Costs shown in Table 3) less \$297.0 million (PVRR Benefits shown in Table 4). While the updated analysis indicates that the costs of the SMU program exceed the benefits, as discussed in Exhibit (PG&E-16), the Commission in D.09-03-026 and other decisions determined not to require a guarantee that the forecast benefits of the SMU program would be realized, but instead adopted what it considered to be reasonable estimates of benefits based on the record. The Commission decisions adopted a ratemaking mechanism that required PG&E to deliver specific monetary credits to customers to reflect certain operating benefits from the overall SmartMeter™ project. (See Exhibit (PG&E-16), pp. 3-4.)

1 The PVRR of benefits declined from \$779.6 million in the original SMU
2 analysis to \$297.0 million. The primary drivers for the decline are: (1) a
3 reduction in the actual and forecast number of meters to be installed and the
4 related reduction in benefits in the operation of remote connect/disconnect
5 switches; (2) removal of benefits associated with HAN (Electric
6 Conservation) and Title 24 A/C Cycling; and (3) removal of benefits
7 associated with PTR, and replacement with lower benefits associated with
8 TOU programs.

9 **2. Updated Tables 3 and 4 From D.09-03-026**

10 Updated Tables 3 and 4 below provide: (1) cost or benefit information
11 from D.09-03-026, which PG&E has converted to a PVRR;⁶ (2) updated cost
12 or benefit information, which PG&E has also converted to PVRR; and (3) a
13 “Status” column, which identifies whether the Current Update line item was
14 revised, remains unchanged, or represents an added item compared to the
15 original line items adopted in D.09-03-026. Section B3, which follows the
16 updated tables, provides narrative explanations for each line item in the
17 tables explaining the treatment of each line item stated in the Status column.

6 Table 3 includes two columns. The “Nominal” column represents the incremental costs of the SMU to be funded by the SmartMeter™ project (the Project Costs). The “PVRR” column represents the Present Value of the Revenue Requirements associated with those nominal Project Costs, as well as the PVRR associated with the forecast ongoing costs of operating and maintaining the program over its useful life.

In Table 4, the “Annualized” column represents the estimated annual amount of operational benefits at the completion of the project, in 2008 dollars. The PVRR column represents the Present Value of Revenue Requirements for all benefit streams over the 20-year life of the program.

TABLE 3
ADOPTED AND UPDATED ESTIMATES OF ALLOCATED INCREMENTAL COSTS

	From SMU Decision <i>p. 151 of D.09-03-026</i> Incremental Costs		Current Update <i>See Workpaper 1</i> Incremental Costs		Status	Section B3 Reference
	Nominal (Dollars in thousands)	PVRR	Nominal (Dollars in thousands)	PVRR		
Deployment Costs						
Meter Devices (Less HAN and Electromechanical Meter Upgrades)	\$ 310,757	\$ 486,358	\$ 325,116	\$ 406,858	Revised	[A]
HAN Retrofit	26,532	24,581	21,846	24,947	Revised	[B]
Electromechanical Meter Retrofit	18,800	20,372	22,485	25,677	Revised	[C]
Information Technology	33,600	49,793	22,583	26,610	Revised	[D]
Title 24 Program Costs	-	26,174	-	-	Revised	[E]
Peak-Time Rebate Program Costs	-	27,592	-	-	Revised	[F]
TOU Program Costs	n/a	n/a	-	63,814	Added	[G]
Project Management	-	-	-	-	Unchanged	[H]
Training	1,697	1,592	1,697	1,592	Unchanged	[I]
Risk Based Allowance	<u>44,139</u>	<u>46,724</u>	<u>-</u>	<u>-</u>	Revised	[J]
Subtotal	\$ 435,525	\$ 683,186	\$ 393,728	\$ 549,498		
Operations and Maintenance Costs						
Operations and Maintenance	\$ 4,993	\$ 42,886	\$ 5,978	\$ 15,432	Revised	[K]
Risk Based Allowance	<u>562</u>	<u>503</u>	<u>-</u>	<u>-</u>	Revised	[J]
Subtotal	\$ 5,555	\$ 43,389	\$ 5,978	\$ 15,432		
Other Costs						
Technology Assessment	\$ 21,400	\$ 18,995	\$ 11,344	\$ 10,803	Revised	[L]
Risk Based Allowance	<u>4,280</u>	<u>3,445</u>	<u>-</u>	<u>-</u>	Revised	[J]
Subtotal	\$ 25,680	\$ 22,440	\$ 11,344	\$ 10,803		
Total Incremental Costs	\$ 466,760	\$ 749,015	\$ 411,050	\$ 575,734		

TABLE 4
ADOPTED AND UPDATED ESTIMATES OF ALLOCATED INCREMENTAL BENEFITS

	From SMU Decision <i>p. 152 of D.09-03-026</i> Incremental Benefits		Current Update			
	Annualized (Dollars in thousands)	PVRR	Annualized (Dollars in thousands)	PVRR	Status	Section B3 Reference
Operational Benefits						
Integrated Connect / Disconnect Switches						
Avoided Field Visits	\$ (6,682)	\$ (114,702)	\$ (5,929)	\$ (78,101)	Revised	[M]
Improved Cash Flow	(969)	(11,174)	(475)	(4,214)	Revised	[M]
Reduced Bad Debt	(2,429)	(26,756)	(847)	(6,758)	Revised	[M]
Tax Benefit from Meter Replacement	n/a	(11,799)	n/a	(11,398)	Revised	[N]
Projected Additional Tax Benefits	<u>n/a</u>	<u>n/a</u>	<u>n/a</u>	<u>(12,402)</u>	Added	[O]
Subtotal	\$ (10,080)	\$ (164,431)	\$ (7,252)	\$ (112,872)		
Energy Conservation / Demand Response Benefits						
Electric Conservation	n/a	\$ (268,847)	n/a	\$ -	Revised	[P]
Gas Conservation	n/a	-	n/a	-	Unchanged	[Q]
Peak-Time Rebate	n/a	(262,916)	n/a	-	Revised	[R]
Time of Use (TOU)	n/a	-	n/a	(184,078)	Added	[S]
A/C Cycling	n/a	<u>(83,427)</u>	n/a	<u>-</u>	Revised	[T]
Subtotal	n/a	\$ (615,190)	n/a	\$ (184,078)		
Total Incremental Benefits	n/a	\$ (779,621)	n/a	\$ (296,951)		

3. Narrative Explanations of Line Items in Updated Tables 3 and 4

The following are narrative explanations for each line item in updated Tables 3 and 4. The purpose of the narratives is to explain the revisions to each line item, or the reason for leaving a line item unchanged, or the reason for adding a line item within the tables.

a. Table 3 – Narrative Explanations

[A] – Meter Devices (Less HAN and Electromechanical Meter Upgrades): The forecast Project Costs from the SMU application were replaced with an allocation of actual total SmartMeter project costs to the SMU, as described in the October 17, 2016 report.⁷ In addition, the tax treatment for all program expenditures was also updated to actual tax treatment as also described in the October 17, 2016 report.

In this report, PG&E also updated the forecast ongoing incremental costs of purchasing Meter Devices over the life of the program. PG&E

⁷ Exhibit (PG&E-45) “Late Filed Exhibit on SmartMeter™ Upgrade Cost Effectiveness Update.”

1 updated the number of meters for the actual number of meters deployed
2 through the end of 2016, which was lower than the original SMU
3 application estimate. PG&E also updated the forecast of meter growth
4 over the remainder of the program to reflect current lower growth trends.
5 Regarding the cost of meter devices, the original SMU forecast included
6 a 3 percent annual decline in prices after the end of the project. PG&E
7 reviewed actual meter purchases and determined that meter prices have
8 not declined as forecast, and therefore, removed the annual 3 percent
9 price decline from the calculations. (See Workpapers 1, 8.)

10 [B] – HAN Retrofit: The forecast Project Costs from the SMU
11 application were replaced with an allocation of actual total SmartMeter
12 project costs to the SMU, as described in the October 17, 2016 report.
13 In addition, the tax treatment for all program expenditures was also
14 updated to actual tax treatment as described in the October 17, 2016
15 report. (See Workpaper 1.)

16 [C] – Electromechanical Meter Retrofit: The forecast Project Costs
17 from the SMU application were replaced with an allocation of actual total
18 SmartMeter project costs to the SMU, as described in the October 17,
19 2016 report. In addition, the tax treatment for all program expenditures
20 was also updated to actual tax treatment as described in the
21 October 17, 2016 report. (See Workpaper 1.)

22 [D] – Information Technology (IT): The forecast Project Costs from
23 the SMU application were replaced with an allocation of actual total
24 SmartMeter project costs to the SMU, as described in the October 17,
25 2016 report. In addition, the tax treatment for all program expenditures
26 was also updated to actual tax treatment as also described in the
27 October 17, 2016 report.

28 In this report, PG&E also updated IT costs associated with Title 24
29 A/C Cycling. In the SMU application, PG&E assumed the new Title 24
30 residential building code air conditioning standards, which included
31 mandatory Programmable Communicating Thermostats (PCTs), would
32 be effective in 2012. However, the California Energy Commission
33 (CEC) withdrew its Title 24 building code air conditioning standards
34 recommendation and the plans for a mandatory PCT direct load control

1 program were put on hold. It is unclear at this time if or when PCTs will
2 be required by residential building codes. Therefore, PG&E has
3 removed the IT costs associated with supporting a PCT direct load
4 control program. (See Workpaper 1.)

5 [E] – Title 24 Program Costs: For the same reasons stated in note
6 [D] above, PG&E has also removed the other Program Costs associated
7 with supporting a PCT direct load control program.

8 [F] – Peak Time Rebate Program Costs: PG&E has removed the
9 Program Costs associated with supporting PTR.

10 [G] – Time of Use (TOU) Program Costs: In place of PTR, PG&E
11 added estimates for the costs of supporting TOU programs. In the
12 October 17, 2016 report, PG&E used the costs of the PTR program as a
13 proxy for TOU programs. In this report, PG&E has updated TOU costs
14 used in the current analysis to reflect actual TOU costs for 2015-2016
15 and forecast TOU program costs from the 2017 General Rate Case
16 (GRC) for 2017-2019. For years beyond 2019, PG&E assumed \$3 per
17 customer per year for outreach to an estimated 2.9 million TOU
18 customers beginning in 2020 through the end of the program. (See
19 Workpapers 1, 9.)

20 [H] – Project Management: This line item is unchanged. It was not
21 adopted in D.09-03-026.

22 [I] – Training: This line item is unchanged. Training costs are not
23 material, and costs for training were not separately tracked in the
24 SmartMeter project actuals.

25 [J] – Risk Based Allowance: As described in note [A] above,
26 forecast SMU project costs were replaced with an allocation of actual
27 total SmartMeter project costs to the SMU. Because all of the Risk
28 Based Allowance was used during the project, those forecast costs are
29 shown on the line items as actually spent (this applies to all three Risk
30 Based Allowance lines).

31 [K] – Operations and Maintenance: The forecast Project Costs from
32 the SMU application were replaced with an allocation of actual total
33 SmartMeter project costs to the SMU, as described in the October 17,
34 2016 report. In addition, the tax treatment for all program expenditures

1 were also updated to actual tax treatments as described in the
2 October 17, 2016 report.

3 In this report, PG&E also updated the forecast ongoing costs of
4 operating and maintaining (O&M) the program. The primary driver for
5 ongoing O&M costs is the forecast of the number of meters deployed
6 over the life of the program. PG&E updated the number of meters for
7 the actual number of meters deployed through the end of 2016, which
8 was lower than the original SMU application estimate. PG&E also
9 updated the forecast of meter growth over the remainder of the program
10 to reflect current lower growth trends.

11 Finally, in the SMU application, PG&E assumed it would incur costs
12 to connect In Home Display (IHD) devices developed by third-party
13 vendors to PG&E's HAN. That market has not developed as anticipated
14 and, at this time, customer devices connected to the PG&E HAN are
15 minimal. PG&E has removed the O&M costs associated with supporting
16 HAN devices. (See Workpapers 1, 8.)

17 [L] – Technology Assessment: The forecast Project Costs from the
18 SMU application were replaced with an allocation of actual total
19 SmartMeter project costs to the SMU, as described in the October 17,
20 2016 report. In addition, the tax treatment for all program expenditures
21 were also updated to actual tax treatments as described in the
22 October 17, 2016 report. (See Workpaper 1.)

23 **b. Table 4 – Narrative Explanations**

24 [M] – Integrated Connect / Disconnect Switches: One of the primary
25 drivers for operational benefits of integrated connect/disconnect
26 switches is the forecast of the number of meters deployed over the life
27 of the program. PG&E updated the number of meters for the actual
28 number of meters deployed through the end of 2016, which was lower
29 than the original SMU application estimate. PG&E also updated the
30 forecast of meter growth over the remainder of the program to reflect
31 current lower growth trends. PG&E has also used actual data regarding
32 the rate of activation of switches, as well as the data regarding average
33 balances, collections and bad debt write-offs associated with Shut Offs
34 for Non-Payment (SONPs), to update the model calculations for Avoided

1 Field Visits, Improved Cash Flows and Reduced Bad Debt. (See
2 Workpaper 10.)

3 [N] – Tax Benefit from Meter Replacement: In the SMU application,
4 there was an estimate of the time-value of the immediate tax benefits of
5 writing off retired electro-mechanical meters upon replacement,
6 compared with waiting for those benefits to occur through depreciation.
7 This estimate was based on the forecast deployment plan at the
8 beginning of the SMU. In this report, PG&E updated the estimate of this
9 benefit based on the actual timing of meter replacements over the
10 project. (See Workpaper 12.)

11 [O] – Projected Additional Tax Benefits: Table 45-4 of the
12 October 17, 2016 report detailed potential incremental tax benefits
13 associated with shortened depreciation lives of SmartMeter assets
14 above those already reflected in Table 3. As discussed in the
15 October 17, 2016 report, the Internal Revenue Service (IRS) has
16 released a Technical Advice Memorandum (TAM) supporting PG&E's
17 position on electric meters. While the California Franchise Tax Board
18 (FTB) has generally followed IRS rulings, there is no guarantee that will
19 continue. Therefore, in Table 4, PG&E is adding the tax benefits
20 associated with electric solid state meters funded by the SMU, and only
21 for Federal tax purpose. (See Workpaper 4.)

22 [P] – Electric Conservation: In the SMU application, PG&E included
23 benefits associated with connection of IHD devices developed by
24 third-party vendors to PG&E's HAN. As described above, that market
25 has not developed as anticipated, and at this time, customer devices
26 connected to the PG&E HAN are minimal. PG&E has removed electric
27 conservation benefits associated with supporting HAN devices.

28 [Q] – Gas Conservation: This line item is unchanged. It was not
29 adopted in D.09-03-026.

30 [R] – Peak Time Rebate: PG&E has removed the benefits
31 associated with PTR.

32 [S] – Time of Use (TOU): In place of PTR, PG&E added estimates
33 for the benefits of TOU programs. PG&E prepared an initial estimate of
34 TOU energy conservation and avoided cost of capacity benefits in the

1 December 1, 2015 report. In the October 17, 2016 report, PG&E
2 updated that analysis using the market-based power pricing
3 assumptions included in the most recent E3 Avoided Cost Calculator. In
4 this report, PG&E has updated the avoided cost of capacity MW
5 estimates, and the energy conservation GWh estimates based on
6 preliminary actual results of the TOU programs in terms of customer
7 participation and response. (See Workpaper 13.)

8 [T] – A/C Cycling: In the SMU application, PG&E assumed the new
9 Title 24 residential building code air conditioning standards, which
10 included mandatory PCTs, would be effective in 2012. However, as
11 described above, the CEC withdrew its Title 24 building code air
12 conditioning standards recommendation and the plans for a mandatory
13 PCT direct load control program were put on hold. It is unclear at this
14 time if or when PCTs will be required by residential building codes.
15 Therefore, PG&E has removed the benefits associated with supporting a
16 PCT direct load control program.

PACIFIC GAS AND ELECTRIC COMPANY
APPENDIX A
STATEMENT OF QUALIFICATIONS

PACIFIC GAS AND ELECTRIC COMPANY
STATEMENT OF QUALIFICATIONS OF CYNTHIA LORIE

Q 1 Please state your name and business address.

A 1 My name is Cynthia Lorie, and my business address is
PricewaterhouseCoopers LLP (PwC), Three Embarcadero Center,
San Francisco, California.

Q 2 Briefly describe your responsibilities at PwC.

A 2 I am Director in PwC's Capital Projects and Infrastructure organization. In
this position, I work with PwC's clients on different types of construction and
regulatory matters. For the past 15 years, most of my work has involved
advising and supporting clients involved in rate case filings, regulatory
investigations, and rate recovery efforts. I supported development of
PG&E's 2007 SmartMeter™ Upgrade application filing. In 2016, I supported
the witness sponsoring Exhibit (PG&E-45) in PG&E's 2017 General Rate
Case, the Late Filed Exhibit on SmartMeter™ Upgrade Cost Effectiveness
Update.

Q 3 Please summarize your educational and professional background.

A 3 I received a Bachelor of Arts degree from Connecticut College and a
Master's degree in Business Administration from St. Mary's College. I
joined PwC in 2006. Prior to joining PwC, I worked for 10 years with other
consulting companies focusing on construction and environmental matters.

Q 4 What is the purpose of your testimony?

A 4 I am sponsoring the following testimony and workpapers in PG&E's 2017
General Rate Case:

- Exhibit (PG&E-47), "SmartMeter™ Upgrade Cost Effectiveness Update
in Compliance with Ordering Paragraph 20 of Decision No. 17-05-01."

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.

PACIFIC GAS AND ELECTRIC COMPANY
APPENDIX B
WORKPAPERS

TABLE OF CONTENTS FOR WORKPAPERS SUPPORTING EXHIBIT (PG&E-47)

Worksheet	Page	Description
Table 3	B-2	Same as found in testimony
Table 4	B-3	Same as found in testimony
Workpaper 1	B-4 to B-5	Support for Table 3
Workpaper 2	B-6 to B-8	Support for Table 3 / Workpaper 1
Workpaper 3	B-9 to B-11	Support for Table 3 / Workpaper 2
Workpaper 4	B-12 to B-13	Support for Table 4
Workpaper 5	B-14 to B-15	PVRR financial assumptions
Workpaper 6	B-16 to B-21	Support for Workpapers 2 and 3 -- PVRR factor calculations
Workpaper 7	B-22 to B-23	Support for Workpaper 6 -- depreciation and tax assumptions
Workpaper 8	B-24 to B-25	Support for Workpaper 2 - updated meter devices and operations and maintenance costs (O&M)
Workpaper 9	B-26	Support for Workpaper 2 -- updated TOU program costs
Workpaper 10	B-27	Support for Table 4 -- operational benefits for integrated connect/disconnect switches
Workpaper 11	B-28	Support for Workpapers 8, 9 and 10 -- updated meter forecast
Workpaper 12	B-29	Support for Table 4 -- tax benefits from meter replacements
Workpaper 13	B-30	Support for Table 4 -- benefits associated with TOU

Table 3
Adopted and Updated Estimates of Allocated Incremental Costs

	From SMU Decision <i>p. 151 of D.09-03-026</i>		Current Update <i>Workpaper 1</i>			
	Incremental Costs		Incremental Costs			
	Nominal (Dollars in thousands)	PVRR	Nominal (Dollars in thousands)	PVRR	Status	Reference
Deployment Costs						
Meter Devices (Less HAN and Electromechanical Meter Upgrades)	\$ 310,757	\$ 486,358	\$ 325,116	\$ 406,858	Revised	[A]
HAN Retrofit	26,532	24,581	21,846	24,947	Revised	[B]
Electromechanical Meter Retrofit	18,800	20,372	22,485	25,677	Revised	[C]
Information Technology	33,600	49,793	22,583	26,610	Revised	[D]
Title 24 Program Costs	-	26,174	-	-	Revised	[E]
Peak Time Rebate Program Costs	-	27,592	-	-	Revised	[F]
TOU Program Costs	n/a	n/a	-	63,814	Added	[G]
Project Management	-	-	-	-	Unchanged	[H]
Training	1,697	1,592	1,697	1,592	Unchanged	[I]
Risk Based Allowance	44,139	46,724	-	-	Revised	[J]
Subtotal	\$ 435,525	\$ 683,186	\$ 393,728	\$ 549,498		
Operations and Maintenance Costs						
Operations and Maintenance	\$ 4,993	\$ 42,886	\$ 5,978	\$ 15,432	Revised	[K]
Risk Based Allowance	562	503	-	-	Revised	[J]
Subtotal	\$ 5,555	\$ 43,389	\$ 5,978	\$ 15,432		
Other Costs						
Technology Assessment	\$ 21,400	\$ 18,995	\$ 11,344	\$ 10,803	Revised	[L]
Risk Based Allowance	4,280	3,445	-	-	Revised	[J]
Subtotal	\$ 25,680	\$ 22,440	\$ 11,344	\$ 10,803		
Total Incremental Costs	\$ 466,760	\$ 749,015	\$ 411,050	\$ 575,734		

Table 4
Adopted and Updated Estimates of Incremental Benefits

	From SMU Decision <i>p. 152 of D.09-03-026</i>		Current Update			
	Annualized	PVRR	Annualized	PVRR		
	(Dollars in thousands)		(Dollars in thousands)		Status	Reference
Operational Benefits						
Integrated Connect / Disconnect Switches						
Avoided Field Visits	\$ (6,682)	\$(114,702)	\$ (5,929)	(\$78,101)	Revised	[M]
Improved Cash Flow	(969)	(11,174)	(475)	(\$4,214)	Revised	[M]
Reduced Bad Debt	(2,429)	(26,756)	(847)	(\$6,758)	Revised	[M]
Tax Benefit from Meter Replacement	n/a	(11,799)	n/a	(11,398)	Revised	[N]
Projected Additional Tax Benefits	n/a	n/a	n/a	(12,402)	Added	[O]
Subtotal	\$ (10,080)	\$(164,431)	\$ (7,252)	\$(112,872)		
Energy Conservation/Demand Response Benefits						
Electric Conservation	n/a	\$(268,847)	n/a	\$ -	Revised	[P]
Gas Conservation	n/a	-	n/a	-	Unchanged	[Q]
Peak Time Rebate	n/a	(262,916)	n/a	-	Revised	[R]
Time of Use (TOU)	n/a	n/a	n/a	(184,078)	Added	[S]
A/C Cycling	n/a	(83,427)	n/a	-	Revised	[T]
Subtotal	n/a	\$(615,190)	n/a	\$(184,078)		
Total Benefits	n/a	\$(779,621)	n/a	\$(296,951)		

Pacific Gas and Electric Company
Exhibit (PG&E-47) – Late Filed SmartMeter™ Upgrade Cost Effectiveness Update in Compliance with Ordering Paragraph 21 of Decision 17-05-013
WORKPAPER 1 - Updated Cost Tables in Support of Table 3

Per Workpapers in Support of Table 3 of D.09-03-026										Corresponding Estimated Actual Cost										Cost Profile	Allocated PVRR
Meter Devices (Less HAN and Electromechanical Meter Upgrades)										Meter Devices (Less HAN and Electromechanical Meter Upgrades)											
New Meter Devices	(5,447,286 - 230,000)	x	\$107.12	=	\$558,896					New Meter Devices	(5,217,511 - 226,000)	x	\$118.23	=	\$590,146						
Less: Funded by AML	(5,447,286 - 230,000)	x	(\$50.80)	=	(\$265,030)					Less: Funded by AML	(4,991,511 - 0)	x	\$118.23	=	(\$265,030)						
	(5,217,286 - 337,826)	x	\$56.33	=	\$293,866									=	\$325,116			12/13	\$406,858		
HAN Bridge/Repeaters			\$50.00	=	\$16,891					HAN Bridge/Repeaters				=	\$0			*	1		
				=	\$310,757									=	\$325,116			*			
HAN Retrofit										HAN Retrofit											
Field Exchange Labor	288,000	x	\$21.89	=	\$6,304					Field Exchange Labor	144,495	x	\$32.96	=	\$4,763						
Plant Retrofit Labor	288,000	x	\$24.85	=	\$7,156					Plant Retrofit Labor	144,495	x	\$0.00	=	\$0						
NIC / HAN Devices	288,000	x	\$45.39	=	\$13,071					New Meter Devices	144,495	x	\$118.23	=	\$17,084						
	288,000		\$92.12	=	\$26,532						144,495		\$151.19	=	\$21,846			12/13	\$24,947		
Electromechanical Retrofit										Electromechanical Retrofit											
Field Exchange Labor	230,000	x	\$27.58	=	\$6,343					Field Exchange Labor	226,000	x	\$32.96	=	\$7,449						
New Meter Devices	230,000	x	\$104.96	=	\$24,140					New Meter Devices	226,000	x	\$118.23	=	\$26,720						
Less: Funded by AML	230,000	x	(\$50.80)	=	(\$11,684)					Less: Funded by AML				=	(\$11,684)						
			\$81.74	=	\$18,800						226,000		\$99.49	=	\$22,485			12/13	\$25,677		
Information Technology										Information Technology											
PTR - Systems Integration - Capital			\$3,025							PTR - Systems Integration - Capital					\$3,595			2	\$3,783		
PTR - Systems Integration - Expense			\$975							PTR - Systems Integration - Expense					\$0			1	\$0		
HAN Infrastructure (SSN) - HW			\$2,285	*						HAN Infrastructure (SSN) - HW					\$2,285			*	5		
HAN Infrastructure (SSN) - SW/Labor			\$11,136	*						HAN Infrastructure (SSN) - SW/Labor					\$6,541			*	2		
HAN Infrastructure (Hex) - HW			\$2,285	*						HAN Infrastructure (Hex) - HW					\$0			*	5		
HAN Infrastructure (Hex) - SW/Labor			\$7,333	*						HAN Infrastructure (Hex) - SW/Labor					\$0			*	2		
Title 24 AC Program			\$0	*						Title 24 AC Program					\$0			*	2		
Load Limiting Functionality			\$3,721							Load Limiting Functionality					\$5,420				2		
Incremental PMO			\$2,840							Incremental PMO					\$2,840				2		
										Upgrade Share of Release X (Scalability)					\$2,102				2		
															\$22,583						
Title 24 Program Costs (Only GRC-recurring Costs)				*	\$0					Title 24 Program Costs (Only GRC-recurring Costs)				*	\$0			*			
Peak Time Rebate Program Costs (Only GRC-recurring Costs)				*	\$0					Peak Time Rebate Program Costs Zero-out GRC-recurring Costs					\$0						
TOU Program Costs Added to Replace Peak Time Rebate										TOU Program Costs Added to Replace Peak Time Rebate											
Training										Training											
FAS Modifications			\$334							FAS Modifications					\$334						
SERV anywhere			\$356							SERV anywhere					\$356						
Call Center			\$1,007							Call Center					\$1,007						
															\$1,697			1	\$1,592		
Operations & Maintenance										Operations & Maintenance											
Call Center (HAN related)			\$320	*						Call Center (HAN related)					\$0			*			
Network Operations Center			\$283	*						Network Operations Center					\$1,367			*			
Field Maintenance - Meters			\$625	*						Field Maintenance - Meters					\$625			*			
Field Maintenance - HAN			\$15	*						Field Maintenance - HAN					\$0			*			
Incremental IT Data Center			\$3,750	*						Incremental IT Data Center					\$3,986			*			
				*	\$4,993										\$5,978			*	1		
Technology Assessment										Technology Assessment											
Technology Assessment Staff			\$4,000							Technology Assessment Staff					\$203				1		
Pilots - Hardware			\$500							Pilots - Hardware					\$294				12		
Pilots - Capital Labor			\$800							Pilots - Capital Labor					\$470				2		
Pilots - Expense			\$5,100							Pilots - Expense					\$2,996				1		
HAN Standards			\$5,000							HAN Standards					\$3,857				1		
HAN Lab - Hardware			\$2,500							HAN Lab - Hardware					\$1,468				12		
HAN Lab - Expense			\$3,500							HAN Lab - Expense					\$2,056				1		
															\$11,344						
Subtotal Excl. Risk Based Allowance					\$417,779					Subtotal Excl. Risk Based Allowance					\$411,050						
Risk Based Allowances					\$48,981					Risk Based Allowances					\$0						
Grand Total					\$466,760					Grand Total					\$411,050						

Pacific Gas and Electric Company
Exhibit (PG&E-47) – Late Filed SmartMeter™ Upgrade Cost Effectiveness Update in Compliance with Ordering Paragraph 21 of Decision 17-05-013
WORKPAPER 1 - Updated Cost Tables in Support of Table 3

Per Workpapers in Support of Table 3 of D.09-03-026		Corresponding Estimated Actual Cost		Cost Profile	Allocated PVRR
Project Costs by PVRR Cost Profile		Project Costs by PVRR Cost Profile			
Meter Devices / Retrofits profile 13	\$267,352	Meter Devices / Retrofits profile 13	\$291,886	13	\$332,549
Meter Devices / Retrofits profile 12	\$68,386	Meter Devices / Retrofits profile 12	\$77,582	12	\$89,336
Technology Assessment profile 12	\$3,000	Technology Assessment profile 12	\$1,762	12	\$2,030
Computer Hardware profile 7	\$4,570	Computer Hardware profile 7	\$2,285	7	\$2,339
Capitalized Labor profile 2	\$28,855	Capitalized Labor profile 2	\$20,768	2	\$21,854
Expense profile 1	\$55,617	Expense profile 1	\$16,787	1	\$15,304
Risk Allowances	\$48,981	Risk Allowances	\$0		\$0
	<u>\$466,760</u>		<u>\$411,050</u>		<u>\$463,412</u>
GRC / Other Program Costs		GRC / Other Program Costs			
Meter Devices / Retrofits profile 13		Meter Devices / Retrofits profile 13			\$31,654
Meter Devices / Retrofits profile 12		Meter Devices / Retrofits profile 12			\$3,942
Computer Hardware profile 7		Computer Hardware profile 7			\$2,911
Computer Software profile 6		Computer Software profile 6			\$0
Capitalized Labor profile 2		Capitalized Labor profile 2			\$0
Expenses - TOU Program Costs		Expenses - TOU Program Costs			\$63,814
Expenses - T-24 PCT Program Costs		Expenses - T-24 PCT Program Costs			\$0
Expenses - Meter Devices (per SMU WPs)		Expenses - Meter Devices (per SMU WPs)			\$0
Expenses - O&M		Expenses - O&M			\$10,000
					<u>\$112,322</u>
					<u>\$575,734</u>

WORKPAPER 2 - Updated Cost Tables in Support of Table 3 / Workpaper 1

B-6

Pacific Gas and Electric Company
Exhibit (PG&E-47) – Late Filed SmartMeter/TM Upgrade Cost Effectiveness Update in Compliance with Ordering Paragraph 21 of Decision 17-05-013
WORKPAPER 2 - Updated Cost Tables in Support of Table 3 / Workpaper 1

Line

103	D:09-03-026 SmartMeter Upgrade																																							
104	Actual Project Costs					Profile [a]	Federal Tax	State Tax	Book [c]	2005-2013	2011-2030	PVRR (2005)	PVRR (2008)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
105	Electric Meters	11	MACRS 20/10*	ADR-SYD 30	27	\$ -	-	-	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
106	Electric Meters - COR	4	Expense	Expense	27	\$ -	-	-	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
107	Smart Electric Meters	12	MACRS 20/10*	ADR-SYD 30	27	\$ 291,886	-	-	-	\$ 266,943	\$ 332,549	\$ -	-	\$ -	-	\$ -	18,777	\$ 120,448	\$ 110,415	\$ 35,008	\$ 6,970	\$ 267																		
108	CIS Mainframe Comp SW	6	SL 3*	SL 3	15	\$ 20,768	-	-	-	\$ 17,542	\$ 21,854	\$ -	-	\$ -	-	\$ -	5,413	\$ 6,222	\$ 3,985	\$ 3,141	\$ 1,892	\$ 115																		
109	CIS Mainframe Comp HW	7	MACRS 5*	ADR-SYD 6	15	\$ 2,285	-	-	-	\$ 1,877	\$ 2,339	\$ -	-	\$ -	-	\$ -	109	\$ 312	\$ 1,375	\$ 475	\$ 13	\$ 1																		
110	Electric Modules	9	MACRS 20/10*	ADR-SYD 30	20	\$ 79,324	-	-	-	\$ 73,341	\$ 91,366	\$ -	-	\$ -	-	\$ -	25,925	\$ 19,261	\$ 13,004	\$ 18,305	\$ 2,655	\$ 173																		
111	Networks	10	MACRS 20/10*	ADR-SYD 30	20	\$ -	-	-	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
112	Subtotal - Capital					\$ 394,263	\$ -	-	-	\$ 359,705	\$ 448,108	\$ -	-	\$ -	-	\$ -	50,225	\$ 146,243	\$ 128,780	\$ 56,929	\$ 11,530	\$ 556	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
113	Expense - Other	1	Expense	Expense	-	\$ 16,787	-	-	-	\$ 12,285	\$ 15,304	\$ -	-	\$ -	-	\$ -	1,994	\$ 5,214	\$ 5,408	\$ 3,579	\$ 589	\$ 4																		
114	Subtotal - Expense					\$ 16,787	\$ -	-	-	\$ 12,285	\$ 15,304	\$ -	-	\$ -	-	\$ -	1,994	\$ 5,214	\$ 5,408	\$ 3,579	\$ 589	\$ 4	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
115	Subtotal					\$ 411,050	\$ -	-	-	\$ 371,989	\$ 463,412	\$ -	-	\$ -	-	\$ -	52,218	\$ 151,457	\$ 134,188	\$ 60,508	\$ 12,119	\$ 560	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
116	Projected GRC Costs					Profile [a]	Federal Tax	State Tax	Book [c]	2005-2013	2011-2030	PVRR (2005)	PVRR (2008)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
117	Smart Electric Meters	12	MACRS 20/10*	ADR-SYD 30	27	\$ 57,975	-	-	-	\$ 57,975	\$ 25,409	\$ 31,654	\$ -	-	\$ -	-	\$ -	243	\$ 333	\$ 836	\$ 2,198	\$ 3,245	\$ 4,406	\$ 4,101	\$ 5,025	\$ 5,236	\$ 5,259	\$ 5,235	\$ 5,370	\$ 5,488	\$ 5,546	\$ 5,453	\$ -	\$ -	\$ -	\$ -	\$ -			
118	Electric Modules	9	MACRS 20/10*	ADR-SYD 30	20	\$ 6,765	-	-	-	\$ 6,765	\$ 3,164	\$ 3,942	\$ -	-	\$ -	-	\$ -	218	\$ 239	\$ 315	\$ 347	\$ 363	\$ 416	\$ 302	\$ 521	\$ 566	\$ 565	\$ 552	\$ 578	\$ 600	\$ 607	\$ 577	\$ -	\$ -	\$ -	\$ -	\$ -			
119	CIS Mainframe Comp HW	7	MACRS 5*	ADR-SYD 6	15	\$ 4,409	-	-	-	\$ 4,409	\$ 2,337	\$ 2,911	\$ -	-	\$ -	-	\$ -	-	\$ -	239	\$ 312	\$ 1,375	\$ 475	\$ 13	\$ 1															
120	CIS Mainframe Comp SW	6	SL 3*	SL 3	15	\$ -	-	-	-	\$ -	-	\$ -	-	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-		
121	Software - Expensed (Book)	2	SL 3	SL 3	-	\$ -	-	-	-	\$ -	-	\$ -	-	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-		
122	Expenses - TOU Program Costs	1	Expense	Expense	-	\$ 176,178	-	-	-	\$ 51,225	\$ 63,814	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ 666	\$ 7,441	\$ 6,888	\$ 28,054	\$ 32,831	\$ 8,700	\$ 8,779	\$ 8,862	\$ 8,948	\$ 9,035	\$ 9,118	\$ 9,201	\$ 9,285	\$ 9,370	\$ 9,456	\$ 9,543	
123	Expenses - T-24 PCT Program Costs	1	Expense	Expense	-	\$ -	-	-	-	\$ -	-	\$ -	-	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-		
124	Expenses - Other	1	Expense	Expense	-	\$ -	-	-	-	\$ 19,599	\$ 8,027	\$ 10,000	\$ -	-	\$ -	-	\$ -	2,311	\$ 1,590	\$ 871	\$ 904	\$ 938	\$ 974	\$ 1,011	\$ 1,050	\$ 1,093	\$ 1,138	\$ 1,184	\$ 1,232	\$ 1,283	\$ 1,336	\$ 1,390	\$ 242	\$ 250	\$ 258	\$ 267	\$ 276			
125	Subtotal					\$ -	\$ 264,927	\$ 90,163	\$ 112,322	\$ -	\$ -	\$ -	\$ 2,772	\$ 2,162	\$ 4,215	\$ 3,449	\$ 5,212	\$ 13,237	\$ 13,447	\$ 34,650	\$ 39,727	\$ 15,662	\$ 16,348	\$ 16,042	\$ 16,319	\$ 15,662	\$ 16,348	\$ 16,042	\$ 16,319	\$ 16,524	\$ 16,850	\$ 9,443	\$ 9,536	\$ 9,629	\$ 9,886	\$ 9,819				
126	Total					\$ 411,050	\$ 264,927	\$ 462,152	\$ 575,734	\$ -	\$ -	\$ -	\$ 52,218	\$ 151,457	\$ 134,188	\$ 63,280	\$ 14,280	\$ 4,774	\$ 3,449	\$ 5,212	\$ 13,237	\$ 13,447	\$ 34,650	\$ 39,727	\$ 15,662	\$ 16,348	\$ 16,042	\$ 16,319	\$ 16,524	\$ 16,850	\$ 9,443	\$ 9,536	\$ 9,629	\$ 9,886	\$ 9,819					
127	Actual PVRR Factors																																							
128	PVRR Factors by Cost Profile [d]					Profile [a]	Federal Tax	State Tax	Book [c]																															
129	Expenses	1	Expense	Expense	-																																			
130	Software - Expensed (Book)	2	SL 3	SL 3	-																																			
131	Site Costs - Building Attachments	3	SL 15	SL 15	-																																			
132	Electric Meters - Cost of Removal (COR)	4	Expense	Expense	27																																			
133	Gas Meters - Cost of Removal (COR)	5	Expense	Expense	20																																			
134	CMP 30304 (CIS Mainframe Comp SW)	6	SL 3*	SL 3	15																																			
135	CMP 39104 (CIS Mainframe Comp HW)	7	MACRS 5*	ADR-SYD 6	15																																			
136	CMP 39706 (Gas Modules)	8	MACRS 15/20*	ADR-SYD 35	20																																			
137	CMP 39707 (Electric Modules)	9	MACRS 20/10*	ADR-SYD 30	20																																			
138	CMP 39708 (Networks)	10	MACRS 20/10*	ADR-SYD 30	20																																			
139	EDP 37000 (Electric Meters)	11	MACRS 20/10*	ADR-SYD 30	27																																			
140	EDP 37001 (Smart Electric Meters)	12	MACRS 20/10*	ADR-SYD 30	27																																			
141	GDP 38100 (Gas Meters)	13	MACRS 15/20*	ADR-SYD 35	20																																			
142	CMP 39707 (Computer - Fed)	14	MACRS 20/5*	ADR-SYD 30	20																																			
143	CMP 39707 (Computer - Fed/State)	15	MACRS 20/5*	ADR-SYD 30/6	20																																			
144	EDP 37000/1 (Computer - Fed)	16	MACRS 20/5*	ADR-SYD 30	27																																			
145	EDP 37000/1 (Computer - Fed/State)	17	MACRS 20/5*	ADR-SYD 30/6	27																																			
146	CMP 39706 (Computer - Fed)	18	MACRS 15/5*	ADR-SYD 35	20																																			
147	CMP 39706 (Computer - Fed/State)	19	MACRS 15/5*	ADR-SYD 35/6	20																																			
148	Delta					Profile [a]	Federal Tax	State Tax	Book [c]	2005-2013	2011-2030	PVRR (2005)	PVRR (2008)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
149										\$ -	-	\$ -	(48,142)	(59,974)	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -	-
150	Calculated PVRR by Year (2005 Dollars)										PVRR (2005)	PVRR (2008)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030		
151	Electric											\$ 420,083		\$ -	\$ -	\$ -	\$ 46,675	\$ 134,601	\$ 109,989	\$ 41,686	\$ 7,812	\$ 1,131	\$ 1,674	\$ 2,529	\$ 6,165	\$ 5,261	\$ 13,936	\$ 14,863	\$ 5,555	\$ 5,151	\$ 4,845	\$ 4,543	\$ 4,228	\$ 3,874	\$ 2,050	\$ 1,797	\$ 1,092	\$ 551	\$ 73	
152	IT / Network											\$ 42,069		\$ -	\$ -	\$ -	\$ 6,657	\$ 9,836	\$ 8,319	\$ 6,635	\$ 2,710	\$ 2,042	\$ 485	\$ 468	\$ 451	\$ 998	\$ 420	\$ 407	\$ 393	\$ 368	\$ 356	\$ 345	\$ 417	\$ 54	\$ 48	\$ 30	\$ 25	\$ 2		
153	Combined											\$ 462,152		\$ -	\$ -	\$ -	\$ 53,333	\$ 144,437	\$ 118,308	\$ 48,320	\$ 10,527	\$ 3,173	\$ 2,159	\$ 2,997	\$ 6,617	\$ 6,259	\$ 14,356	\$ 15,269	\$ 5,948	\$ 5,753	\$ 5,213	\$ 4,899	\$ 4,572	\$ 4,290	\$ 2,104	\$ 1,845	\$ 1,122	\$ 576	\$ 75	
154	Calculated PVRR by Year (2008 Dollars)																																							
155	Electric											\$ 523,326	\$ -	\$ -	\$ -	\$ -	\$ 58,147	\$ 167,681	\$ 137,021	\$ 51,931	\$ 9,739	\$ 1,408	\$ 2,085	\$ 3,150	\$ 7,680	\$ 6,554	\$ 17,361	\$ 18,516	\$ 6,920	\$ 6,417	\$ 6,036	\$ 5,659	\$ 5,267	\$ 4,825	\$ 2,553	\$ 2,239	\$ 1,361	\$ 686	\$ 91	
156	IT / Network											\$ 52,408	\$ -	\$ -	\$ -	\$ -	\$ 8,294	\$ 12,254	\$ 10,364	\$ 8,265	\$ 3,376	\$ 2,544	\$ 604	\$ 583	\$ 562	\$ 1,243	\$ 524	\$ 507	\$ 490	\$ 458	\$ 444	\$ 429	\$ 519	\$ 67	\$ 60	\$ 38	\$ 31	\$ 3		
157	Combined											\$ 575,																												

Pacific Gas and Electric Company
Exhibit (PG&E-45) - Late-Filed SmartMeter™ Upgrade Cost Effectiveness Filing
WORKPAPER 3 - Updated Cost Tables in Support of Table 3 / Workpaper 2

[illegible]

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WORKPAPER 3 - Updated Cost Tables in Support of Table 3 / Worksheet 2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
Line	Calculated PVRR by Year - PTR Program Costs (2008 Dollars)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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Pacific Gas and Electric Company
Exhibit (PG&E-45) - Late-Filed SmartMeter™ Upgrade Cost Effectiveness Filing
WORKPAPER 3 - Updated Cost Tables in Support of Table 3 / Worksheet 2

Line																																					
167	Original AMI Project + SMU Combined																																				
168	Actual Project Costs	Profile [a]	Federal Tax	State Tax	Book [c]	2005-2013	2011-2030	PVRR (2005)	PVRR (2008)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030		
169	Electric Meters	11	MACRS 20/10*	ADR-SYD 30	27	\$	100,738	\$	96,025	\$	119,625	\$	6	\$	3,356	\$	15,923	\$	(3,013)	\$	28,367	\$	29,395	\$	16,204	\$	11,624	\$	(1,125)								
170	Electric Meters - COR	4	Expense	Expense	27	\$	18,806	\$	15,286	\$	19,043	\$	-	\$	240	\$	617	\$	1,084	\$	4,600	\$	5,736	\$	4,514	\$	2,230	\$	(214)								
171	Smart Electric Meters	12	MACRS 20/10*	ADR-SYD 30	27	\$	749,874	\$	687,823	\$	856,867	\$	-	\$	-	\$	48,239	\$	309,439	\$	283,665	\$	89,939	\$	17,906	\$	686										
172	Gas Meters	13	MACRS 15/20*	ADR-SYD 35	20	\$	108,857	\$	110,174	\$	137,251	\$	-	\$	4,318	\$	16,108	\$	23,050	\$	26,493	\$	16,968	\$	13,374	\$	8,058	\$	490								
173	Gas Meters - COR	5	Expense	Expense	20	\$	2,049	\$	1,774	\$	2,210	\$	-	\$	107	\$	419	\$	208	\$	222	\$	735	\$	207	\$	143	\$	9								
174	CIS Mainframe Comp SW	6	SL 3*	SL 3	15	\$	303,708	\$	295,748	\$	368,433	\$	-	\$	19,557	\$	150,642	\$	43,634	\$	32,418	\$	21,887	\$	30,809	\$	4,469	\$	291								
175	CIS Mainframe Comp HW	7	MACRS 5*	ADR-SYD 6	15	\$	89,192	\$	88,060	\$	109,702	\$	-	\$	1,793	\$	58,175	\$	1,396	\$	3,991	\$	17,589	\$	6,074	\$	162	\$	11								
176	Gas Modules	8	MACRS 15/20*	ADR-SYD 35	20	\$	352,411	\$	359,840	\$	448,277	\$	37	\$	2,573	\$	33,423	\$	104,576	\$	98,366	\$	87,257	\$	20,962	\$	4,971	\$	245								
177	Electric Modules	9	MACRS 20/10*	ADR-SYD 30	20	\$	7,148	\$	15,285	\$	19,042	\$	46	\$	2,003	\$	19,469	\$	3,625	\$	(12,461)	\$	(477)	\$	(4,998)	\$	(60)	\$	-								
178	Networks	10	MACRS 20/10*	ADR-SYD 30	20	\$	118,739	\$	113,899	\$	141,891	\$	-	\$	-	\$	16,737	\$	12,113	\$	31,684	\$	32,860	\$	21,747	\$	3,576	\$	22								
179	Subtotal - Capital					\$	1,851,522	\$	-	\$	1,783,913	\$	89	\$	33,948	\$	311,514	\$	234,912	\$	523,119	\$	495,616	\$	198,832	\$	53,080	\$	413	\$	-	\$	-	\$	-	\$	-
180	Expense - Other	1	Expense	Expense	-	\$	383,986	\$	301,704	\$	375,852	\$	2,058	\$	37,517	\$	37,947	\$	55,415	\$	97,161	\$	111,730	\$	34,780	\$	6,553	\$	824								
181	Expense - Customer Acquisition	1	Expense	Expense	-	\$	53,193	\$	36,884	\$	45,949	\$	-	\$	349	\$	1,166	\$	6,811	\$	6,828	\$	2,500	\$	19,385	\$	10,641	\$	5,515								
182	Subtotal - Capital					\$	437,180	\$	-	\$	338,588	\$	2,058	\$	37,866	\$	39,113	\$	62,226	\$	103,988	\$	114,230	\$	54,165	\$	17,194	\$	6,339	\$	-	\$	-	\$	-	\$	-
183	Subtotal					\$	2,288,702	\$	-	\$	2,122,501	\$	2,147	\$	71,814	\$	350,627	\$	297,138	\$	627,107	\$	609,845	\$	252,997	\$	70,274	\$	6,752	\$	-	\$	-	\$	-	\$	-
184	Projected GRC Costs	Profile [a]	Federal Tax	State Tax	Book [c]	2005-2013	2011-2030	PVRR (2005)	PVRR (2008)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030		
185	Smart Electric Meters	12	MACRS 20/10*	ADR-SYD 30	27	\$	89,539	\$	43,984	\$	54,794	\$	-	\$	3,843	\$	3,389	\$	3,546	\$	4,766	\$	5,711	\$	6,625	\$	6,766	\$	6,751	\$	6,711	\$	6,669	\$	6,687	\$	
186	Networks	10	MACRS 20/10*	ADR-SYD 30	20	\$	88,338	\$	46,269	\$	57,641	\$	-	\$	7,171	\$	6,061	\$	5,767	\$	5,742	\$	5,825	\$	5,523	\$	5,461	\$	5,679	\$	5,437	\$	5,476	\$	5,721	\$	
187	Gas Modules	8	MACRS 15/20*	ADR-SYD 35	20	\$	76,154	\$	42,758	\$	53,266	\$	-	\$	5,570	\$	6,496	\$	5,819	\$	5,819	\$	5,499	\$	4,923	\$	4,630	\$	4,604	\$	4,568	\$	4,278	\$	4,239	\$	
188	Site Costs - Building Attachments	3	SL 15	SL 15	-	\$	262	\$	168	\$	209	\$	-	\$	98	\$	14	\$	14	\$	14	\$	12	\$	12	\$	10	\$	12	\$	10	\$	12	\$	10	\$	
189	CIS Mainframe Comp HW	7	MACRS 5*	ADR-SYD 6	15	\$	29,339	\$	16,301	\$	20,307	\$	-	\$	9,947	\$	2,192	\$	-	\$	-	\$	6,109	\$	-	\$	1,144	\$	3,752	\$	-	\$	2,901	\$	-	\$	
190	CIS Mainframe Comp SW	6	SL 3*	SL 3	15	\$	12,831	\$	8,102	\$	10,094	\$	-	\$	-	\$	4,726	\$	8,105	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	
191	Software - Expensed (Book)	2	SL 3	SL 3	-	\$	2,000	\$	1,235	\$	1,539	\$	-	\$	-	\$	-	\$	2,000	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	
192	Expenses - PTR Program Costs	1	Expense	Expense	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-	\$	
193	Expenses - T-24 PCT Program Costs	1	Expense	Expense	-	\$	69,011	\$	21,010	\$	26,174	\$	-	\$	-	\$	1,338	\$	2,631	\$	3,331	\$	4,059	\$	4,316	\$	4,555	\$	4,780	\$	4,994	\$	5,196	\$	5,053	\$	
194	Expenses - Other	1	Expense	Expense	-	\$	1,180,757	\$	394,809	\$	491,840	\$	-	\$	-	\$	41,376	\$	42,071	\$	50,690	\$	52,254	\$	56,146	\$	61,353	\$	61,426	\$	62,151	\$	64,683	\$	56,889	\$	
195	Subtotal					\$	-	\$	1,548,231	\$	574,637	\$	-	\$	-	\$	58,058	\$	67,979	\$	76,707	\$	79,330	\$	82,633	\$	82,497	\$	83,753	\$	87,504	\$	86,190	\$	78,318	\$	
196	Total					\$	2,288,702	\$	1,548,231	\$	2,697,137	\$	2,147	\$	71,814	\$	350,627	\$	297,138	\$	627,107	\$	609,845	\$	311,055	\$	138,252	\$	83,459	\$	79,330	\$	82,633	\$	82,497	\$	
197	Actual PVRR Factors																																				
198	PVRR Factors by Cost Profile [d]	Profile [a]	Federal Tax	State Tax	Book [c]					Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20	Year 21	Year 22	Year 23	Year 24	Year 25		
199	Expenses	1	Expense	Expense	-					1.000	0.964	0.896	0.833	0.774	0.719	0.668	0.621	0.577	0.537	0.499	0.463	0.431	0.400	0.372	0.346	0.321	0.299	0.278	0.258	0.240	0.223	0.194	0.117	0.058			
200	Software - Expensed (Book)	2	SL 3	SL 3	-					1.051	1.032	0.959	0.891	0.828	0.770	0.715	0.665	0.618	0.574	0.534	0.496	0.461	0.428	0.398	0.370	0.344	0.320	0.297	0.276	0.256	0.237	0.204	0.120	0.059			
201	Site Costs - Building Attachments	3	SL 15	SL 15	-					1.255	1.225	1.138	1.058	0.983	0.914	0.849	0.789	0.733	0.681	0.633	0.587	0.544	0.503	0.465	0.429	0.395	0.362	0.332	0.302	0.275	0.249	0.209	0.121	0.059			
202	Electric Meters - Cost of Removal (COR)	4	Expense	Expense	27					1.133	1.087	1.009	0.937	0.869	0.805	0.746	0.691	0.640	0.593	0.549	0.508	0.470	0.435	0.402	0.372	0.344	0.317	0.293	0.270	0.249	0.229	0.197	0.118	0.058			
203	Gas Meters - Cost of Removal (COR)	5	Expense	Expense	20					1.123	1.080	1.005	0.935	0.868	0.805	0.746	0.691	0.640	0.593	0.549	0.508	0.470	0.435	0.402	0.372	0.344	0.317	0.293	0.270	0.249	0.229	0.197	0.118	0.058			
204	CMP 30304 (CIS Mainframe Comp SW)	6	SL 3*	SL 3	15					1.158	1.132	1.053	0.956	0.888	0.827	0.746	0.672	0.662	0.614	0.584	0.541	0.501	0.463	0.428	0.396	0.366	0.338	0.312									

Pacific Gas and Electric Company
Exhibit (PG&E-47) – Late Filed SmartMeter™ Upgrade Cost Effectiveness Update in Compliance with Ordering Paragraph 21 of Decision 17-05-013
WORKPAPER 4 - Projected Additional Tax Benefits in Support of Table 4

This workpaper examines different scenarios to calculate the projected additional tax benefits triggered by potential legislative changes that allow PG&E to classify SmartMeter as computers.

Scenario	Description	Description of Increment	Calculated as:	SM Program Upgrade Funded Assets	
				Adopted as of 7/2017	Not Fully Adopted
				Incremental Benefits in PVRR (2008)	Incremental Benefits in PVRR (2008)
Scenario A	Elec and Gas not treated as computers	Electric for Federal Electric for State	Scenario A - Scenario B Scenario B - Scenario C	\$ 12,402	\$ -
Scenario B	Elec treated as computers for Fed			\$ -	\$ 10,296
Scenario C	Elec treated as computers for Fed & State			\$ 12,402	\$ 10,296

Scenario A Electric & Gas Meters Not Treated as Computers									
Actual Project Costs	Profile	Federal Tax	State Tax	Book	2005-2013	2011-2030	PVRR (2008)		
Smart Electric Meters	12	MACRS 20/10*	ADR-SYD 30	27	\$ 201,886		\$ 332,549		
CIS Mainframe Comp SW	6	SL 3*	SL 3	15	\$ 20,768		\$ 21,854		
CIS Mainframe Comp HW	7	MACRS 5*	ADR-SYD 6	15	\$ 2,285		\$ 2,339		
Electric Modules	9	MACRS 20/10*	ADR-SYD 30	20	\$ 79,324		\$ 91,366		
Subtotal - Capital					\$ 394,263	\$ -	\$ 448,108		
Expense - Other	1	Expense	Expense	-	\$ 16,787		\$ 15,304		
Subtotal - Capital					\$ 16,787	\$ -	\$ 15,304		
Subtotal					\$ 411,050	\$ -	\$ 463,412		

Projected GRC / Program Costs									
Projected GRC / Program Costs	Profile	Federal Tax	State Tax	Book	2005-2013	2011-2030	PVRR (2008)		
Smart Electric Meters	12	MACRS 20/10*	ADR-SYD 30	27	\$	\$ 57,975	\$ 31,654		
Electric Modules	9	MACRS 20/10*	ADR-SYD 30	20	\$	\$ 6,765	\$ 3,942		
CIS Mainframe Comp HW	7	MACRS 5*	ADR-SYD 6	15	\$	\$ 4,409	\$ 2,911		
CIS Mainframe Comp SW	6	SL 3*	SL 3	15	\$	\$ -	\$ -		
Software - Expensed (Book)	2	SL 3	SL 3	-	\$	\$ -	\$ -		
Expenses - TOU Program Costs	1	Expense	Expense	-	\$	\$ 176,178	\$ 63,814		
Expenses - T-24 PCT Program Costs	1	Expense	Expense	-	\$	\$ -	\$ -		
Expenses - Other	1	Expense	Expense	-	\$	\$ 19,599	\$ 10,000		
Subtotal					\$ -	\$ 264,927	\$ 112,322		
Total					\$ 411,050	\$ 264,927	\$ 575,734		

Pacific Gas and Electric Company

Exhibit (PG&E-47) – Late Filed SmartMeter™ Upgrade Cost Effectiveness Update in Compliance with Ordering Paragraph 21 of Decision 17-05-013
WORKPAPER 4 - Projected Additional Tax Benefits in Support of Table 4

Scenario B

Electric Meters Treated as Computers (For Federal only)

Actual Project Costs	Profile	Federal Tax	State Tax	Book	2005-2013	2011-2030	PVRR (2008)
Smart Electric Meters	16	MACRS 20/5*	ADR-SYD 30	27	\$ 291,886	\$	\$ 323,035
CIS Mainframe Comp SW	6	SL 3*	SL 3	15	\$ 20,768	\$	\$ 21,854
CIS Mainframe Comp HW	7	MACRS 5*	ADR-SYD 6	15	\$ 2,285	\$	\$ 2,339
Electric Modules	14	MACRS 20/5*	ADR-SYD 30	20	\$ 79,324	\$	\$ 90,114
Subtotal - Capital					\$ 394,263	\$ -	\$ 437,342
Expense - Other	1	Expense	Expense	-	\$ 16,787	\$	\$ 15,304
Subtotal - Capital					\$ 16,787	\$ -	\$ 15,304
Subtotal					\$ 411,050	\$ -	\$ 452,645
Projected GRC / Program Costs	Profile	Federal Tax	State Tax	Book	2005-2013	2011-2030	PVRR (2008)
Smart Electric Meters	16	MACRS 20/5*	ADR-SYD 30	27	\$	\$ 57,975	\$ 30,188
Electric Modules	14	MACRS 20/5*	ADR-SYD 30	20	\$	\$ 6,765	\$ 3,772
CIS Mainframe Comp HW	7	MACRS 5*	ADR-SYD 6	15	\$	\$ 4,409	\$ 2,911
CIS Mainframe Comp SW	6	SL 3*	SL 3	15	\$	\$ -	\$ -
Software - Expensed (Book)	2	SL 3	SL 3	-	\$	\$ -	\$ -
Expenses - TOU Program Costs	1	Expense	Expense	-	\$	\$ 176,178	\$ 63,814
Expenses - T-24 PCT Program Costs	1	Expense	Expense	-	\$	\$ -	\$ -
Expenses - Other	1	Expense	Expense	-	\$	\$ 19,599	\$ 10,000
Subtotal					\$ -	\$ 264,927	\$ 110,686
Total					\$ 411,050	\$ 264,927	\$ 563,332

Scenario C

Electric Meters Treated as Computers (For Federal and State)

Actual Project Costs	Profile	Federal Tax	State Tax	Book	2005-2013	2011-2030	PVRR (2008)
Smart Electric Meters	17	MACRS 20/5*	ADR-SYD 30/6	27	\$ 291,886	\$	\$ 315,015
CIS Mainframe Comp SW	6	SL 3*	SL 3	15	\$ 20,768	\$	\$ 21,854
CIS Mainframe Comp HW	7	MACRS 5*	ADR-SYD 6	15	\$ 2,285	\$	\$ 2,339
Electric Modules	15	MACRS 20/5*	ADR-SYD 30/6	20	\$ 79,324	\$	\$ 88,492
Subtotal - Capital					\$ 394,263	\$ -	\$ 427,700
Expense - Other	1	Expense	Expense	-	\$ 16,787	\$	\$ 15,304
Subtotal - Capital					\$ 16,787	\$ -	\$ 15,304
Subtotal					\$ 411,050	\$ -	\$ 443,004
Projected GRC / Program Costs	Profile	Federal Tax	State Tax	Book	2005-2013	2011-2030	PVRR (2008)
Smart Electric Meters	17	MACRS 20/5*	ADR-SYD 30/6	27	\$	\$ 57,975	\$ 29,612
Electric Modules	15	MACRS 20/5*	ADR-SYD 30/6	20	\$	\$ 6,765	\$ 3,695
CIS Mainframe Comp HW	7	MACRS 5*	ADR-SYD 6	15	\$	\$ 4,409	\$ 2,911
CIS Mainframe Comp SW	6	SL 3*	SL 3	15	\$	\$ -	\$ -
Software - Expensed (Book)	2	SL 3	SL 3	-	\$	\$ -	\$ -
Expenses - TOU Program Costs	1	Expense	Expense	-	\$	\$ 176,178	\$ 63,814
Expenses - T-24 PCT Program Costs	1	Expense	Expense	-	\$	\$ -	\$ -
Expenses - Other	1	Expense	Expense	-	\$	\$ 19,599	\$ 10,000
Subtotal					\$ -	\$ 264,927	\$ 110,033
Total					\$ 411,050	\$ 264,927	\$ 553,036

1 Pacific Gas and Electric Company
2 Exhibit (PG&E-47) – Late Filed SmartMeter™ Upgrade Cost Effectiveness Update in Compliance with Ordering Paragraph 21 of Decision 17-05-013
3 WORKPAPER 5 - PVRR Financial Assumptions

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015+	2016
Notes												
Financial Assumptions												
Present Value to End of: Module Life for Terminal Value	2008 20 years											
WACC	7.60% Sep-06											
First meter installed:												
Cash flow for NPV (1=BOP, 2=Mid Year, 3=EOP)	2 Mid Year											
Federal Income Tax Rate	35.00%											
State Income Tax Rate (Net of Fed Benefit)	5.75%											
Effective Corporate State / Federal Tax Rate	40.75%											
Property Taxes	0.70%											
Insurance	0.30%											
Total	1.00%	1.00%	1.00%	1.10%	1.18%	1.16%	1.13%	1.12%	1.13%	1.13%	1.13%	1.13%
Extend Bonus Depreciation through 2019	TRUE	(2015 = 50%, 2016 = 50%, 2017 = 50%, 2018 = 40%, 2019 = 30%)										
Adopted Tax Scenario	Scenario A	1										
Replace PTR Program costs with TOU Program costs	TRUE											

1 Pacific Gas and Electric Company
2 Exhibit (PG&E-47) – Late Filed SmartMeter™ Upgrade Cost Effectiveness I
3 WORKPAPER 5 - PVRR Financial Assumptions

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
5														
6	Financial Assumptions													
7	Notes													
8	Present Value to End of:													
9	Module Life for Terminal Value													
10	WACC													
11	First meter installed:													
12	Cash flow for NPV (1=BOP, 2=Mid Year, 3=EOP)													
13	Federal Income Tax Rate													
14	State Income Tax Rate (Net of Fed Benefit)													
15	Effective Corporate State / Federal Tax Rate													
16	Property Taxes													
17	Insurance													
18	Total													
19	Extend Bonus Depreciation through 2019													
20	Adopted Tax Scenario													
21	Replace PTR Program costs with TOU Program costs													
22	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%
23	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%
24	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%
25	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%
26	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%
27	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%
28	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%
29	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%	1.13%

1 Pacific Gas and Electric Company
2 Exhibit (PG&E-47) – Late Filed SmartMeter™ Upgrade Cost Effectiveness Update in Compliance with Ordering Paragraph 21 of Decision 17-05-01
3 WORKPAPER 6 - PVRR Factor Calculations

[illegible]

1 Pacific Gas and Electric Company
2 Exhibit (PG&E-47) – Late Filed SmartMeter™ Upgrade Cost Effectiveness Update in Compliance with Ordering Paragraph 21 of Decision 17-05-01
3 WORKPAPER 6 - PVRR Factor Calculations

					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
5					2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030		2031	2032	2033	2034	2035	2036
87																																					
88	Profile	Federal Tax Treatment	State Tax Treatment	Useful Life	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030							
89	1	Expense	Expense	-	1.000	1.000	1.000	1.000	0.964	0.896	0.833	0.774	0.719	0.668	0.621	0.577	0.537	0.499	0.463	0.431	0.400	0.372	0.346	0.321	0.299	0.278	0.241	0.145	0.073	0.010							
90	2	Expense	Expense	20	1.148	1.141	1.134	1.127	1.082	1.003	0.929	0.861	0.798	0.739	0.684	0.633	0.586	0.542	0.501	0.463	0.428	0.395	0.365	0.337	0.310	0.286	0.246	0.147	0.073	0.010							
91	3	Expense	Expense	27	1.159	1.149	1.139	1.129	1.083	1.003	0.929	0.861	0.798	0.739	0.684	0.633	0.586	0.542	0.501	0.463	0.428	0.395	0.365	0.337	0.310	0.286	0.246	0.147	0.073	0.010							
92	4	100% Bonus	SL 3	15	1.127	1.122	1.119	1.118	1.077	1.000	0.929	0.864	0.802	0.745	0.690	0.639	0.591	0.547	0.506	0.468	0.432	0.399	0.368	0.340	0.313	0.288	0.248	0.147	0.073	0.010							
93	5	100% Bonus	ADR-SYD 6	15	1.128	1.125	1.122	1.121	1.080	1.003	0.932	0.866	0.805	0.747	0.692	0.641	0.593	0.549	0.507	0.469	0.433	0.400	0.369	0.341	0.314	0.289	0.248	0.147	0.073	0.010							
94	6	100% Bonus	ADR-SYD 30	20	1.180	1.175	1.173	1.169	1.124	1.042	0.966	0.895	0.829	0.767	0.710	0.657	0.607	0.561	0.518	0.479	0.441	0.407	0.375	0.345	0.316	0.290	0.249	0.148	0.073	0.010							
95	7	100% Bonus	ADR-SYD 30	27	1.192	1.185	1.178	1.172	1.125	1.042	0.966	0.895	0.829	0.767	0.710	0.657	0.607	0.561	0.518	0.479	0.441	0.407	0.375	0.345	0.316	0.290	0.249	0.148	0.073	0.010							
96	8	100% Bonus	ADR-SYD 35	20	1.189	1.184	1.180	1.176	1.130	1.047	0.970	0.898	0.832	0.770	0.712	0.659	0.609	0.563	0.519	0.479	0.442	0.407	0.375	0.345	0.317	0.290	0.249	0.148	0.073	0.010							
97	9	SL 3	SL 3	-	1.000	1.004	1.020	1.051	1.032	0.959	0.891	0.828	0.770	0.715	0.665	0.618	0.574	0.534	0.496	0.461	0.428	0.398	0.370	0.344	0.319	0.296	0.254	0.150	0.073	0.010							
98	10	SL 3	SL 3	15	1.127	1.126	1.136	1.162	1.135	1.054	0.979	0.910	0.846	0.785	0.728	0.674	0.624	0.577	0.534	0.494	0.456	0.421	0.389	0.359	0.331	0.304	0.259	0.151	0.074	0.010							
99	11	SL 3 Bonus	SL 3	15	1.127	1.124	1.128	1.140	1.106	1.027	0.954	0.887	0.824	0.765	0.709	0.656	0.608	0.562	0.520	0.481	0.444	0.410	0.379	0.349	0.322	0.296	0.253	0.149	0.073	0.010							
100	12	SL 3 / 3 Bonus 2008 Blend	SL 3	15	1.127	1.124	1.128	1.141	1.107	1.029	0.956	0.888	0.825	0.766	0.710	0.657	0.608	0.563	0.521	0.481	0.445	0.411	0.379	0.350	0.323	0.297	0.253	0.149	0.073	0.010							
101	13	SL 3 / 3 Bonus 2010 Blend	SL 3	15	1.127	1.124	1.129	1.143	1.110	1.031	0.958	0.890	0.827	0.768	0.711	0.659	0.610	0.564	0.522	0.482	0.446	0.412	0.380	0.351	0.323	0.297	0.254	0.149	0.073	0.010							
102	14	SL 3 40% Bonus 2018	SL 3	15	1.127	1.124	1.129	1.144	1.112	1.033	0.959	0.892	0.828	0.769	0.713	0.660	0.611	0.565	0.523	0.483	0.447	0.412	0.381	0.351	0.324	0.298	0.254	0.150	0.073	0.010							
103	15	SL 3 30% Bonus 2019	SL 3	15	1.127	1.125	1.131	1.148	1.117	1.038	0.964	0.896	0.833	0.773	0.716	0.663	0.614	0.568	0.525	0.486	0.449	0.415	0.383	0.353	0.326	0.299	0.255	0.150	0.074	0.010							
104	16	MACRS 5	ADR-SYD 6	15	1.134	1.140	1.152	1.176	1.147	1.066	0.990	0.920	0.855	0.794	0.736	0.681	0.631	0.584	0.540	0.499	0.461	0.426	0.394	0.363	0.333	0.305	0.259	0.151	0.074	0.010							
105	17	MACRS 5 Bonus	ADR-SYD 6	15	1.131	1.132	1.137	1.148	1.113	1.034	0.961	0.893	0.830	0.770	0.714	0.661	0.612	0.566	0.524	0.484	0.447	0.413	0.381	0.352	0.324	0.297	0.253	0.149	0.073	0.010							
106	18	MACRS 5 / 5 Bonus 2008 Blend	ADR-SYD 6	15	1.131	1.133	1.138	1.150	1.115	1.036	0.963	0.894	0.831	0.771	0.715	0.662	0.613	0.567	0.524	0.485	0.448	0.414	0.382	0.352	0.324	0.297	0.254	0.149	0.073	0.010							
107	19	MACRS 5 / 5 Bonus 2010 Blend	ADR-SYD 6	15	1.130	1.130	1.133	1.141	1.105	1.026	0.953	0.886	0.823	0.764	0.708	0.656	0.607	0.562	0.519	0.480	0.444	0.410	0.378	0.349	0.321	0.295	0.252	0.149	0.073	0.010							
108	20	MACRS 5 40% Bonus 2018	ADR-SYD 6	15	1.132	1.134	1.140	1.154	1.120	1.041	0.967	0.899	0.835	0.775	0.718	0.665	0.616	0.570	0.527	0.487	0.450	0.416	0.384	0.354	0.326	0.299	0.254	0.150	0.073	0.010							
109	21	MACRS 5 30% Bonus 2019	ADR-SYD 6	15	1.132	1.135	1.143	1.159	1.127	1.047	0.973	0.904	0.840	0.780	0.723	0.669	0.619	0.573	0.530	0.490	0.453	0.418	0.386	0.356	0.328	0.300	0.255	0.150	0.074	0.010							
110	22	MACRS 5	ADR-SYD 6	20	1.155	1.160	1.171	1.192	1.162	1.077	0.998	0.925	<																								

4				33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
5				2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060

87

88	Profile	Federal Tax Treatment	State Tax Treatment
89	1	Expense	Expense
90	2	Expense	Expense
91	3	Expense	Expense
92	4	100% Bonus	SL 3
93	5	100% Bonus	ADR-SYD 6
94	6	100% Bonus	ADR-SYD 30
95	7	100% Bonus	ADR-SYD 30
96	8	100% Bonus	ADR-SYD 35
97	9	SL 3	SL 3
98	10	SL 3	SL 3
99	11	SL 3 Bonus	SL 3
100	12	SL 3 / 3 Bonus 2008 Blend	SL 3
101	13	SL 3 / 3 Bonus 2010 Blend	SL 3
102	14	SL 3 40% Bonus 2018	SL 3
103	15	SL 3 30% Bonus 2019	SL 3
104	16	MACRS 5	ADR-SYD 6
105	17	MACRS 5 Bonus	ADR-SYD 6
106	18	MACRS 5 / 5 Bonus 2008 Blend	ADR-SYD 6
107	19	MACRS 5 / 5 Bonus 2010 Blend	ADR-SYD 6
108	20	MACRS 5 40% Bonus 2018	ADR-SYD 6
109	21	MACRS 5 30% Bonus 2019	ADR-SYD 6
110	22	MACRS 5	ADR-SYD 6
111	23	MACRS 5	ADR-SYD 6
112	24	MACRS 5 Bonus	ADR-SYD 6
113	25	MACRS 5 Bonus	ADR-SYD 6
114	26	MACRS 5 / 5 Bonus 2010 Blend	ADR-SYD 6
115	27	MACRS 5 / 5 Bonus 2010 Blend	ADR-SYD 6
116	28	MACRS 5 40% Bonus 2018	ADR-SYD 6
117	29	MACRS 5 40% Bonus 2018	ADR-SYD 6
118	30	MACRS 5 30% Bonus 2019	ADR-SYD 6
119	31	MACRS 5 30% Bonus 2019	ADR-SYD 6
120	32	MACRS 5	ADR-SYD 30
121	33	MACRS 5	ADR-SYD 30
122	34	MACRS 5	ADR-SYD 35
123	35	MACRS 5 Bonus	ADR-SYD 30
124	36	MACRS 5 Bonus	ADR-SYD 30
125	37	MACRS 5 Bonus	ADR-SYD 35
126	38	MACRS 5 / 5 Bonus 2010 Blend	ADR-SYD 30
127	39	MACRS 5 / 5 Bonus 2010 Blend	ADR-SYD 30
128	40	MACRS 5 / 5 Bonus 2010 Blend	ADR-SYD 35
129	41	MACRS 5 40% Bonus 2018	ADR-SYD 30
130	42	MACRS 5 40% Bonus 2018	ADR-SYD 30
131	43	MACRS 5 40% Bonus 2018	ADR-SYD 35
132	44	MACRS 5 30% Bonus 2019	ADR-SYD 30
133	45	MACRS 5 30% Bonus 2019	ADR-SYD 30
134	46	MACRS 5 30% Bonus 2019	ADR-SYD 35
135	47	MACRS 10	ADR-SYD 30
136	48	MACRS 10	ADR-SYD 30
137	49	MACRS 10 Bonus	ADR-SYD 30
138	50	MACRS 10 Bonus	ADR-SYD 30
139	51	MACRS 10 40% Bonus 2018	ADR-SYD 30
140	52	MACRS 10 40% Bonus 2018	ADR-SYD 30
141	53	MACRS 10 30% Bonus 2019	ADR-SYD 30
142	54	MACRS 10 30% Bonus 2019	ADR-SYD 30
143	55	MACRS 15	ADR-SYD 35
144	56	MACRS 15 / 20 Bonus 2008 Blend	ADR-SYD 35
145	57	MACRS 20 / 20 Bonus 2010 Blend	ADR-SYD 35
146	58	SL 15	SL 15
147	59	MACRS 20	ADR-SYD 30
148	60	MACRS 20	ADR-SYD 30
149	61	MACRS 20 Bonus	ADR-SYD 35
150	62	MACRS 20 / 20 Bonus 2008 Blend	ADR-SYD 30
151	63	MACRS 20 / 20 Bonus 2008 Blend	ADR-SYD 30
152	64	MACRS 20 40% Bonus 2018	ADR-SYD 35
153	65	MACRS 20 30% Bonus 2019	ADR-SYD 35
154	66	MACRS 5 / 5 Bonus 2010 Blend 1	ADR-SYD 6
155	67	MACRS 5 / 5 Bonus 2010 Blend 1	ADR-SYD 30
156	68	MACRS 10 / 10 Bonus 2010 Blend 1	ADR-SYD 30
157	69	MACRS 10 / 10 Bonus 2010 Blend 2	ADR-SYD 30

158		
159	Depreciation Methods / Rates	
160	Expense	
161	100% Bonus	
162	SL 3	
163	SL 3 Bonus	
164	SL 3 / 3 Bonus 2008 Blend	
165	SL 3 / 3 Bonus 2010 Blend	
166	SL 3 40% Bonus 2018	
167	SL 3 30% Bonus 2019	
168	SL 15	
169	MACRS 5	
170	MACRS 5 Bonus	
171	MACRS 5 / 5 Bonus 2008 Blend	
172	MACRS 5 / 5 Bonus 2010 Blend	
173	MACRS 5 40% Bonus 2018	
174	MACRS 5 30% Bonus 2019	
175	MACRS 10	
176	MACRS 10 Bonus	
177	MACRS 10 40% Bonus 2018	
178	MACRS 10 30% Bonus 2019	
179	MACRS 15	
180	MACRS 15 / 20 Bonus 2008 Blend	
181	MACRS 20 / 20 Bonus 2010 Blend	
182	MACRS 20	
183	MACRS 20 Bonus	
184	MACRS 20 / 20 Bonus 2008 Blend	
185	MACRS 20 40% Bonus 2018	
186	MACRS 20 30% Bonus 2019	
187	MACRS 5 / 5 Bonus 2010 Blend 1	
188	MACRS 10 / 10 Bonus 2010 Blend 1	
189	MACRS 10 / 10 Bonus 2010 Blend 2	
190	ADR-SYD 6	
191	ADR-SYD 30	
192	ADR-SYD 35	

1 Pacific Gas and Electric Company
2 Exhibit (PG&E-47) – Late Filed SmartMeter™ Upgrade Cost Effectiveness Update in Compliance with Ordering Paragraph 21 of Decision 17-05-01
3 WORKPAPER 6 - PVRR Factor Calculations

4			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32			
5			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036			
193																																					
194	Profile	Federal Tax Treatment	State Tax Treatment	Useful Life	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030							
195	1 Expense	Expense	-	-	1.000	1.000	1.000	1.000	0.964	0.896	0.833	0.774	0.719	0.668	0.621	0.577	0.537	0.499	0.463	0.431	0.400	0.372	0.346	0.321	0.299	0.278	0.241	0.145	0.073	0.010							
196	2 SL 3	SL 3	-	-	1.000	1.004	1.020	1.051	1.032	0.959	0.891	0.828	0.770	0.715	0.665	0.618	0.574	0.534	0.496	0.461	0.428	0.398	0.370	0.344	0.319	0.296	0.254	0.150	0.073	0.010							
197	3 SL 15	SL 15	-	-	1.171	1.198	1.226	1.255	1.225	1.138	1.058	0.983	0.913	0.849	0.788	0.731	0.678	0.627	0.579	0.534	0.492	0.451	0.413	0.377	0.342	0.310	0.260	0.151	0.074	0.010							
198	4 Expense	Expense	27	27	1.159	1.149	1.139	1.129	1.083	1.003	0.929	0.861	0.798	0.739	0.684	0.633	0.586	0.542	0.501	0.463	0.428	0.395	0.365	0.337	0.310	0.286	0.246	0.147	0.073	0.010							
199	5 Expense	Expense	20	20	1.148	1.141	1.134	1.127	1.082	1.003	0.929	0.861	0.798	0.739	0.684	0.633	0.586	0.542	0.501	0.463	0.428	0.395	0.365	0.337	0.310	0.286	0.246	0.147	0.073	0.010							
200	6 SL 3	SL 3	15	15	1.127	1.126	1.136	1.141	1.106	1.031	0.925	0.887	0.824	0.765	0.709	0.656	0.608	0.565	0.525	0.486	0.446	0.406	0.366	0.326	0.286	0.246	0.151	0.074	0.010								
201	7 MACRS 5*	ADR-SYD 6	15	15	1.134	1.140	1.152	1.150	1.113	1.028	0.932	0.893	0.830	0.770	0.714	0.661	0.612	0.570	0.530	0.490	0.451	0.412	0.373	0.334	0.295	0.255	0.151	0.074	0.010								
202	8 MACRS 15/20*	ADR-SYD 35	20	20	1.319	1.336	1.355	1.304	1.255	1.163	0.970	0.998	0.923	0.854	0.789	0.729	0.672	0.631	0.591	0.550	0.511	0.472	0.432	0.393	0.354	0.315	0.264	0.153	0.074	0.010							
203	9 MACRS 20/10*	ADR-SYD 30	20	20	1.364	1.381	1.399	1.300	1.199	1.092	0.966	0.955	0.885	0.819	0.759	0.702	0.649	0.608	0.569	0.545	0.502	0.461	0.421	0.384	0.349	0.315	0.264	0.152	0.074	0.010							
204	10 MACRS 20/10*	ADR-SYD 30	20	20	1.364	1.381	1.399	1.300	1.199	1.109	0.966	0.955	0.885	0.819	0.759	0.702	0.649	0.608	0.569	0.545	0.502	0.461	0.421	0.384	0.349	0.315	0.264	0.152	0.074	0.010							
205	11 MACRS 20/10*	ADR-SYD 30	27	27	1.376	1.389	1.404	1.302	1.200	1.112	0.966	0.955	0.885	0.819	0.759	0.702	0.649	0.608	0.569	0.545	0.502	0.461	0.421	0.384	0.349	0.315	0.264	0.152	0.074	0.010							
206	12 MACRS 20/10*	ADR-SYD 30	27	27	1.376	1.389	1.404	1.302	1.200	1.112	0.966	0.955	0.885	0.819	0.759	0.702	0.649	0.608	0.569	0.545	0.502	0.461	0.421	0.384	0.349	0.315	0.264	0.152	0.074	0.010							
207	13 MACRS 15/20*	ADR-SYD 35	20	20	1.319	1.336	1.355	1.304	1.255	1.131	0.970	0.998	0.923	0.854	0.789	0.729	0.672	0.631	0.591	0.550	0.511	0.472	0.432	0.392	0.354	0.318	0.265	0.153	0.074	0.010							
208	14 MACRS 20/5*	ADR-SYD 30	20	20	1.364	1.381	1.399	1.300	1.158	1.065	0.966	0.922	0.854	0.791	0.732	0.677	0.626	0.582	0.541	0.509	0.469	0.433	0.399	0.367	0.336	0.307	0.260	0.151	0.074	0.010							
209	15 MACRS 20/5*	ADR-SYD 30/6	20	20	1.364	1.381	1.399	1.300	1.128	1.037	0.932	0.898	0.832	0.771	0.712	0.661	0.612	0.570	0.530	0.499	0.461	0.426	0.394	0.363	0.333	0.305	0.259	0.151	0.074	0.010							
210	16 MACRS 20/5*	ADR-SYD 30	27	27	1.376	1.389	1.404	1.302	1.159	1.074	0.966	0.922	0.854	0.791	0.732	0.677	0.626	0.582	0.541	0.509	0.469	0.433	0.399	0.367	0.336	0.307	0.260	0.151	0.074	0.010							
211	17 MACRS 20/5*	ADR-SYD 30/6	27	27	1.376	1.389	1.404	1.302	1.129	1.046	0.932	0.898	0.832	0.771	0.712	0.661	0.612	0.570	0.530	0.499	0.461	0.426	0.394	0.363	0.333	0.305	0.259	0.151	0.074	0.010							
212	18 MACRS 15/5*	ADR-SYD 35	20	20	1.319	1.336	1.355	1.304	1.163	1.070	0.970	0.925	0.857	0.793	0.734	0.679	0.628	0.583	0.542	0.509	0.470	0.433	0.399	0.367	0.336	0.307	0.260	0.151	0.074	0.010							
213	19 MACRS 15/5*	ADR-SYD 35/6	20	20	1.319	1.336	1.355	1.304	1.128	1.038	0.932	0.898	0.832	0.771	0.714	0.661	0.612	0.570	0.530	0.499	0.461	0.426	0.394	0.363	0.333	0.305	0.259	0.151	0.074	0.010							
214																																					
215			year =>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26								
216			bop	1.0000	1.0000	1.0000	1.0000	1.0000	0.9294	0.8637	0.8027	0.7460	0.6933	0.6444	0.5988	0.5565	0.5172	0.4807	0.4468	0.4152	0.3859	0.3586	0.3333	0.3097	0.2879	0.2675	0.2486	0.2311	0.2148	0.1996	0.1855	0.1724	0.1602	0.1489	0.1384		
217			mid-yr	1.0000	1.0000	1.0000	1.0000	0.9640	0.8959	0.8327	0.7739	0.7192	0.6684	0.6212	0.5773	0.5365	0.4986	0.4634	0.4307	0.4003	0.3720	0.3457	0.3213	0.2986	0.2775	0.2579	0.2397	0.2228	0.2070	0.1924	0.1788	0.1662	0.1544	0.1435	0.1334		
218			eop	1.0000	1.0000	1.0000	1.0000	0.9294	0.8637	0.8027	0.7460	0.6933	0.6444	0.5988	0.5565	0.5172	0.4807	0.4468	0.4152	0.3859	0.3586	0.3333	0.3097	0.2879	0.2675	0.2486	0.2311	0.2148	0.1996	0.1855	0.1724	0.1602	0.1489	0.1384	0.1286		
219																																					
220																																					
221				0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	7%	34%	27%	27%	4%	0%	0%	0%	0%	0%	0%
222			inclusion factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	93%	59%	31%	4%	0%	0%	0%	0%	0%	0%
223																																					

1 Pacific Gas and Electric Company
2 Exhibit (PG&E-47) – Late Filed SmartMeter™ Upgrade Cost Effectiv
3 WORKPAPER 6 - PVRR Factor Calculations

4			33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
5			2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
193																										
194	Profile	Federal Tax Treatment																								
195	1	Expense																								
196	2	SL 3																								
197	3	SL 15																								
198	4	Expense																								
199	5	Expense																								
200	6	SL 3*																								
201	7	MACRS 5*																								
202	8	MACRS 15/20*																								
203	9	MACRS 20/10*																								
204	10	MACRS 20/10*																								
205	11	MACRS 20/10*																								
206	12	MACRS 20/10*																								
207	13	MACRS 15/20*																								
208	14	MACRS 20/5*																								
209	15	MACRS 20/5*																								
210	16	MACRS 20/5*																								
211	17	MACRS 20/5*																								
212	18	MACRS 15/5*																								
213	19	MACRS 15/5*																								
214																										
215																										
216		year = >	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
217		bop	0.1286	0.1195	0.1111	0.1032	0.0959	0.0892	0.0829	0.0770	0.0716	0.0665	0.0618	0.0575	0.0534	0.0496	0.0461	0.0429	0.0398	0.0370	0.0344	0.0320	0.0297	0.0276	0.0257	0.0239
218		mid-yr	0.1240	0.1152	0.1071	0.0995	0.0925	0.0860	0.0799	0.0742	0.0690	0.0641	0.0596	0.0554	0.0515	0.0478	0.0445	0.0413	0.0384	0.0357	0.0332	0.0308	0.0286	0.0266	0.0247	0.0230
219		eop	0.1195	0.1111	0.1032	0.0959	0.0892	0.0829	0.0770	0.0716	0.0665	0.0618	0.0575	0.0534	0.0496	0.0461	0.0429	0.0398	0.0370	0.0344	0.0320	0.0297	0.0276	0.0257	0.0239	0.0222
220																										
221			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
222		inclusion factor	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
223																										
END																										

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015+
Factors											
1.125505% Property Tax Rate 2012-2013											
1.107648% Property Tax Rate 2011-2012											
1.154651% Property Tax Rate 2010-2011											
1.156101% Property Tax Rate 2009-2010											
1.203531% Property Tax Rate 2008-2009											
0.998000% Property Tax Rate Prior											
Property Tax Rate	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
All Asset Classes	1.00%	1.00%	1.00%	1.10%	1.18%	1.16%	1.13%	1.12%	1.13%	1.13%	1.13%
Book Depreciation Rates											
EDP 37000	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
COR flow thru	3.76%	3.76%	3.76%	3.27%	3.27%	3.27%	3.96%	3.96%	3.96%	3.96%	3.96%
EDP 37001	3.76%	3.76%	3.76%	3.27%	3.27%	3.27%	3.96%	3.96%	3.96%	3.96%	3.96%
GDP 38100	4.90%	4.90%	4.90%	4.90%	4.90%	4.90%	5.10%	5.10%	5.10%	5.10%	5.10%
COR flow thru	4.90%	4.90%	4.90%	4.90%	4.90%	4.90%	5.10%	5.10%	5.10%	5.10%	5.10%
CMP 39304	6.67%	6.67%	6.67%	6.67%	6.67%	6.67%	6.59%	6.59%	6.59%	6.59%	6.59%
CMP 39104	6.67%	6.67%	6.67%	6.67%	6.67%	6.67%	6.59%	6.59%	6.59%	6.59%	6.59%
CMP 39706	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
CMP 39707	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
CMP 39708	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
Book Life	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Electric Meters	27	27	31	31	31	31	25	25	25	25	25
COR flow thru	27	27	31	31	31	31	25	25	25	25	25
EDP 37001	27	27	31	31	31	31	31	31	31	31	31
GDP 38100	20	20	20	20	20	20	20	20	20	20	20
COR flow thru	20	20	20	20	20	20	20	20	20	20	20
CMP 30304	15	15	15	15	15	15	15	15	15	15	15
CIS Mainframe Comp SW	15	15	15	15	15	15	15	15	15	15	15
CMP 39104	15	15	15	15	15	15	16	16	16	16	16
CMP 39706	20	20	20	20	20	20	20	20	20	20	20
CMP 39707	20	20	20	20	20	20	20	20	20	20	20
CMP 39708	20	20	20	20	20	20	20	20	20	20	20
Electric Modules											
Networks											
Federal Tax Depreciation											
EDP 37000	MACRS 20	MACRS 20	MACRS 20	MACRS 20 Bonus	MACRS 10 Bonus	0% MACRS 10 / 100% MACRS 10 Bonus	100% Bonus	MACRS 10 Bonus	MACRS 10 Bonus	MACRS 10 Bonus	MACRS 10 Bonus
COR flow thru	Expense	Expense	Expense	Expense	Expense	Expense	Expense	Expense	Expense	Expense	Expense
EDP 37001	MACRS 20	MACRS 20	MACRS 20	MACRS 20 Bonus	MACRS 10 Bonus	0% MACRS 10 / 100% MACRS 10 Bonus	100% Bonus	MACRS 10 Bonus	MACRS 10 Bonus	MACRS 10 Bonus	MACRS 10 Bonus
GDP 38100	MACRS 15	MACRS 15	MACRS 15	MACRS 15 Bonus	MACRS 20 Bonus	8.72% MACRS 20 / 91.28% MACRS 20 Bonus	100% Bonus	MACRS 20 Bonus	MACRS 20 Bonus	MACRS 20 Bonus	MACRS 20 Bonus
COR flow thru	Expense	Expense	Expense	Expense	Expense	Expense	Expense	Expense	Expense	Expense	Expense
CMP 30304	SL 3	SL 3	SL 3	SL 3	SL 3 Bonus	13.44% SL 3 / 86.56% SL 3 Bonus	100% Bonus	SL 3 Bonus	SL 3 Bonus	SL 3 Bonus	SL 3 Bonus
CIS Mainframe Comp SW	MACRS 5	MACRS 5	MACRS 5	MACRS 5 Bonus	MACRS 5 Bonus	10.48% MACRS 5 / 89.52% MACRS 5 Bonus	100% Bonus	MACRS 5 Bonus	MACRS 5 Bonus	MACRS 5 Bonus	MACRS 5 Bonus
CMP 39104	MACRS 15	MACRS 15	MACRS 15	MACRS 15 Bonus	MACRS 20 Bonus	0% MACRS 20 / 100% MACRS 20 Bonus	100% Bonus	MACRS 20 Bonus	MACRS 20 Bonus	MACRS 20 Bonus	MACRS 20 Bonus
CMP 39706	MACRS 20	MACRS 20	MACRS 20	MACRS 20 Bonus	MACRS 10 Bonus	6.77% MACRS 10 / 93.23% MACRS 10 Bonus	100% Bonus	MACRS 10 Bonus	MACRS 10 Bonus	MACRS 10 Bonus	MACRS 10 Bonus
CMP 39707	MACRS 20	MACRS 20	MACRS 20	MACRS 20 Bonus	MACRS 10 Bonus	42.88% MACRS 10 / 57.12% MACRS 10 Bonus	100% Bonus	MACRS 10 Bonus	MACRS 10 Bonus	MACRS 10 Bonus	MACRS 10 Bonus
CMP 39708	MACRS 20	MACRS 20	MACRS 20	MACRS 20 Bonus	MACRS 10 Bonus			MACRS 10 Bonus	MACRS 10 Bonus	MACRS 10 Bonus	MACRS 10 Bonus
State Tax Depreciation											
EDP 37000	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30
COR flow thru	Expense	Expense	Expense	Expense	Expense	Expense	Expense	Expense	Expense	Expense	Expense
EDP 37001	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30
GDP 38100	ADR-SYD 35	ADR-SYD 35	ADR-SYD 35	ADR-SYD 35	ADR-SYD 35	ADR-SYD 35	ADR-SYD 35	ADR-SYD 35	ADR-SYD 35	ADR-SYD 35	ADR-SYD 35
COR flow thru	Expense	Expense	Expense	Expense	Expense	Expense	Expense	Expense	Expense	Expense	Expense
CMP 30304	SL 3	SL 3	SL 3	SL 3	SL 3	SL 3	SL 3	SL 3	SL 3	SL 3	SL 3
CIS Mainframe Comp SW	ADR-SYD 6	ADR-SYD 6	ADR-SYD 6	ADR-SYD 6	ADR-SYD 6	ADR-SYD 6	ADR-SYD 6	ADR-SYD 6	ADR-SYD 6	ADR-SYD 6	ADR-SYD 6
CMP 39104	ADR-SYD 35	ADR-SYD 35	ADR-SYD 35	ADR-SYD 35	ADR-SYD 35	ADR-SYD 35	ADR-SYD 35	ADR-SYD 35	ADR-SYD 35	ADR-SYD 35	ADR-SYD 35
CMP 39706	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30
CMP 39707	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30
CMP 39708	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30	ADR-SYD 30

Pacific Gas and Electric Company
Exhibit (PG&E-47) – Late Filed SmartMeter™ Upgrade Cost Effectiveness Update in Compliance with Ordering Paragraph 21 of Decision 17-05-013
WORKPAPER 8 - Updated Meter Devices and Operations and Maintenance Costs

Line Updated Meter Devices and O&M

1 Incremental Meter Devices		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
2 SMU Growth Meter Devices																					
3 New Meters (Growth Volume)		20,196	22,100	29,192	32,094	33,566	38,510	27,918	48,238	52,378	52,258	51,095	53,501	55,505	56,151	53,409					
4 Average Upgrade	All Meters	\$58.76	\$58.80	\$58.80	\$58.80	\$58.80	\$58.80	\$58.80	\$58.80	\$58.80	\$58.80	\$58.80	\$58.80	\$58.80	\$58.80	\$58.80					
5 Cost per Unit	Disconnect	\$23.38	\$23.36	\$23.36	\$23.36	\$23.36	\$23.36	\$23.36	\$23.36	\$23.36	\$23.36	\$23.36	\$23.36	\$23.36	\$23.36	\$23.36					
6	HAN	\$10.81	\$10.81	\$10.81	\$10.81	\$10.81	\$10.81	\$10.81	\$10.81	\$10.81	\$10.81	\$10.81	\$10.81	\$10.81	\$10.81	\$10.81					
7	Average	\$92.94	\$92.97	\$92.97	\$92.97	\$92.97	\$92.97	\$92.97	\$92.97	\$92.97	\$92.97	\$92.97	\$92.97	\$92.97	\$92.97	\$92.97					
8 SMU Growth Meter Devices		\$1,877	\$2,055	\$2,714	\$2,984	\$3,120	\$3,580	\$2,595	\$4,484	\$4,869	\$4,858	\$4,750	\$4,974	\$5,160	\$5,220	\$4,965					
9 SMU Replacement Meter Devices																					
10 Replacement SMU 1P Meters		45,290	45,472	45,692	45,956	46,238	46,548	46,833	47,160	47,593	48,042	48,486	48,936	49,404	49,884	50,354					
11 Add'l Replacements - HAN		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
12 Average SMU Cost / Unit - 1P Meter		\$90.39	\$90.39	\$90.39	\$90.39	\$90.39	\$90.39	\$90.39	\$90.39	\$90.39	\$90.39	\$90.39	\$90.39	\$90.39	\$90.39	\$90.39					
13 Average SMU Cost / Unit - HAN only		\$23.08	\$23.08	\$23.08	\$23.08	\$23.08	\$23.08	\$23.08	\$23.08	\$23.08	\$23.08	\$23.08	\$23.08	\$23.08	\$23.08	\$23.08					
14 Units covered by Warranty - 1P Meter		100.0%	100.0%	95.1%	62.0%	35.9%	11.3%	7.3%	7.3%	7.3%	7.3%	7.3%	7.2%	7.2%	7.2%	7.2%					
15 Units covered by Warranty - HAN		100.0%	100.0%	100.0%	98.3%	62.5%	34.4%	7.9%	7.9%	7.9%	7.8%	7.8%	7.8%	7.7%	7.7%	7.7%					
16 SMU Replacement Meter Devices		\$0	\$0	\$202	\$1,580	\$2,679	\$3,733	\$3,923	\$3,951	\$3,988	\$4,026	\$4,064	\$4,103	\$4,143	\$4,183	\$4,223					
17 Total SMU Meter Devices		\$1,877	\$2,055	\$2,916	\$4,564	\$5,799	\$7,313	\$6,518	\$8,435	\$8,857	\$8,885	\$8,815	\$9,076	\$9,303	\$9,403	\$9,188					
18 AMI Growth Meter Devices																					
19 New Meters (Growth Volume)		20,196	22,100	29,192	32,094	33,566	38,510	27,918	48,238	52,378	52,258	51,095	53,501	55,505	56,151	53,409					
20 Average AMI Cost per Unit - All Meters		\$37.65	\$37.70	\$37.70	\$37.70	\$37.70	\$37.70	\$37.70	\$37.70	\$37.70	\$37.70	\$37.70	\$37.70	\$37.70	\$37.70	\$37.70					
21 AMI Growth Meter Devices		\$760	\$833	\$1,101	\$1,210	\$1,265	\$1,452	\$1,052	\$1,819	\$1,975	\$1,970	\$1,926	\$2,017	\$2,093	\$2,117	\$2,013					
22 AMI Replacement Meter Devices																					
23 Replacement AMI 1P Meters		38,886	39,042	39,231	39,457	39,699	39,965	40,210	40,491	40,862	41,248	41,630	42,015	42,418	42,829	43,234					
24 Average AMI Cost / Unit - 1P Meter		\$28.52	\$28.52	\$28.52	\$28.52	\$28.52	\$28.52	\$28.52	\$28.52	\$28.52	\$28.52	\$28.52	\$28.52	\$28.52	\$28.52	\$28.52					
25 Units covered by Warranty - 1P Meter		40.9%	41.7%	40.7%	28.1%	18.2%	8.8%	7.3%	7.3%	7.3%	7.3%	7.3%	7.2%	7.2%	7.2%	7.2%					
26 AMI Replacement Meter Devices		\$655	\$649	\$664	\$809	\$926	\$1,039	\$1,063	\$1,070	\$1,080	\$1,091	\$1,101	\$1,112	\$1,122	\$1,133	\$1,144					
27 Total AMI Meter Devices		\$1,416	\$1,483	\$1,764	\$2,019	\$2,192	\$2,491	\$2,115	\$2,889	\$3,055	\$3,061	\$3,027	\$3,128	\$3,215	\$3,250	\$3,158					
28 Incremental SMU Meter Devices		\$461	\$572	\$1,152	\$2,545	\$3,608	\$4,822	\$4,403	\$5,546	\$5,802	\$5,824	\$5,787	\$5,948	\$6,088	\$6,153	\$6,031					
29 To Workpaper 2																					
30 Electric Meters		\$243	\$333	\$836	\$2,198	\$3,245	\$4,406	\$4,101	\$5,025	\$5,236	\$5,259	\$5,235	\$5,370	\$5,488	\$5,546	\$5,453					
31 Electric Communication Devices		\$218	\$239	\$315	\$347	\$363	\$416	\$302	\$521	\$566	\$565	\$552	\$578	\$600	\$607	\$577					
32 Meter Devices Subtotal		\$461	\$572	\$1,152	\$2,545	\$3,608	\$4,822	\$4,403	\$5,546	\$5,802	\$5,824	\$5,787	\$5,948	\$6,088	\$6,153	\$6,031					
33 Incremental O&M		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
34 HAN Bridge/Repeater Costs		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
35 Incremental Replacement Units		6,405	6,430	6,462	6,499	6,539	6,582	6,623	6,669	6,730	6,794	6,857	6,920	6,986	7,054	7,121					
36 Labor Cost per Unit		\$103.32	\$106.71	\$110.21	\$113.82	\$117.56	\$121.41	\$125.39	\$129.51	\$133.75	\$138.14	\$142.67	\$147.35	\$152.19	\$157.18	\$162.33					
37 Meter Device Maintenance		\$662	\$686	\$712	\$740	\$769	\$799	\$830	\$864	\$900	\$939	\$978	\$1,020	\$1,063	\$1,109	\$1,156	\$0	\$0	\$0	\$0	\$0
38 HAN Gateway Device Maintenance		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
39 Network Ops Costs		\$149	\$154	\$159	\$164	\$169	\$175	\$181	\$187	\$193	\$199	\$206	\$213	\$220	\$227	\$234	\$242	\$250	\$258	\$267	\$276
40 Call Center Costs		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
41 Data Center Ops Costs		\$1,500	\$750	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
42 Incremental SMU O&M		\$2,311	\$1,590	\$871	\$904	\$938	\$974	\$1,011	\$1,050	\$1,093	\$1,138	\$1,184	\$1,232	\$1,283	\$1,336	\$1,390	\$242	\$250	\$258	\$267	\$276
43 To Workpaper 2		\$2,311	\$1,590	\$871	\$904	\$938	\$974	\$1,011	\$1,050	\$1,093	\$1,138	\$1,184	\$1,232	\$1,283	\$1,336	\$1,390	\$242	\$250	\$258	\$267	\$276

Pacific Gas and Electric Company
Exhibit (PG&E-47) – Late Filed SmartMeter™ Upgrade Cost Effectiveness Update in Compliance with Ordering Paragraph 21 of Decision 17-05-013
WORKPAPER 8 - Updated Meter Devices and Operations and Maintenance Costs

Line **Meter Devices and O&M per SMU**

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
44 Incremental Meter Devices																				
45 SMU Growth Meter Devices																				
46 New Meters (Growth Volume)	92,823	83,467	84,724	86,347	87,302	88,259	89,219	90,553	91,532	92,896	93,896	95,290	96,706	98,142	99,600					
47 Average Upgrade All Meters	\$58.76	\$58.80	\$57.43	\$56.40	\$54.82	\$53.26	\$51.72	\$50.52	\$49.03	\$47.90	\$46.46	\$45.39	\$44.34	\$43.33	\$42.35					
48 Cost per Unit Disconnect	\$23.38	\$23.36	\$22.66	\$21.89	\$21.32	\$20.76	\$20.22	\$19.61	\$19.10	\$18.53	\$18.05	\$17.51	\$16.99	\$16.48	\$15.99					
49 HAN	\$10.81	\$10.81	\$10.48	\$10.17	\$9.86	\$9.57	\$9.28	\$9.00	\$8.73	\$8.47	\$8.21	\$7.97	\$7.73	\$7.50	\$7.27					
50 Average	\$92.94	\$92.97	\$90.57	\$88.46	\$86.00	\$83.59	\$81.22	\$79.14	\$76.87	\$74.90	\$72.73	\$70.87	\$69.06	\$67.31	\$65.62					
51 SMU Growth Meter Devices	\$8,627	\$7,760	\$7,674	\$7,638	\$7,508	\$7,377	\$7,246	\$7,166	\$7,036	\$6,958	\$6,829	\$6,753	\$6,679	\$6,606	\$6,535					
52 SMU Replacement Meter Devices																				
53 Replacement SMU 1P Meters	41,176	47,967	48,686	49,417	50,158	50,911	51,675	52,450	53,237	54,036	54,847	55,670	56,505	57,353	58,213					
54 Add'l Replacements - HAN	214	314	458	699	963	1,258	1,587	2,009	2,491	3,155	3,752	4,203	4,731	5,486	5,576					
55 Average SMU Cost / Unit - 1P Meter	\$90.39	\$90.39	\$88.05	\$85.77	\$83.57	\$81.43	\$79.35	\$77.34	\$75.39	\$73.50	\$71.66	\$69.88	\$68.15	\$66.47	\$64.85					
56 Average SMU Cost / Unit - HAN only	\$23.08	\$23.08	\$23.08	\$23.08	\$23.08	\$23.08	\$23.08	\$23.08	\$23.08	\$23.08	\$23.08	\$23.08	\$23.08	\$23.08	\$23.08					
57 Units covered by Warranty - 1P Meter	100.0%	100.0%	95.1%	62.0%	35.9%	11.3%	7.3%	7.3%	7.3%	7.3%	7.3%	7.2%	7.2%	7.2%	7.2%					
58 Units covered by Warranty - HAN	100.0%	100.0%	100.0%	98.3%	62.5%	34.4%	7.9%	7.9%	7.9%	7.8%	7.8%	7.8%	7.7%	7.7%	7.7%					
59 SMU Replacement Meter Devices	\$0	\$0	\$209	\$1,613	\$2,695	\$3,697	\$3,833	\$3,802	\$3,774	\$3,749	\$3,725	\$3,698	\$3,673	\$3,654	\$3,621					
60 Total SMU Meter Devices	\$8,627	\$7,760	\$7,883	\$9,251	\$10,203	\$11,074	\$11,079	\$10,968	\$10,809	\$10,708	\$10,553	\$10,451	\$10,352	\$10,260	\$10,157					
61 AMI Growth Meter Devices																				
62 New Meters (Growth Volume)	92,823	83,467	84,724	86,347	87,302	88,259	89,219	90,553	91,532	92,896	93,896	95,290	96,706	98,142	99,600					
63 Average AMI Cost per Unit - All Meters	\$37.65	\$37.70	\$36.97	\$36.64	\$35.57	\$34.51	\$33.46	\$32.81	\$31.78	\$31.17	\$30.16	\$29.57	\$29.00	\$28.45	\$27.91					
64 AMI Growth Meter Devices	\$3,495	\$3,147	\$3,132	\$3,163	\$3,105	\$3,046	\$2,985	\$2,971	\$2,909	\$2,895	\$2,832	\$2,818	\$2,805	\$2,792	\$2,780					
65 AMI Replacement Meter Devices																				
66 Replacement AMI 1P Meters	35,353	41,183	41,801	42,429	43,065	43,711	44,367	45,033	45,709	46,395	47,091	47,797	48,514	49,242	49,981					
67 Average AMI Cost / Unit - 1P Meter	\$28.52	\$28.52	\$27.67	\$26.84	\$26.03	\$25.25	\$24.49	\$23.76	\$23.05	\$22.35	\$21.68	\$21.03	\$20.40	\$19.79	\$19.20					
68 Units covered by Warranty - 1P Meter	40.9%	41.7%	40.7%	28.1%	18.2%	8.8%	7.3%	7.3%	7.3%	7.3%	7.3%	7.2%	7.2%	7.2%	7.2%					
69 AMI Replacement Meter Devices	\$596	\$685	\$686	\$819	\$917	\$1,006	\$1,007	\$992	\$977	\$962	\$947	\$932	\$918	\$904	\$890					
70 Total AMI Meter Devices	\$4,091	\$3,832	\$3,818	\$3,982	\$4,022	\$4,052	\$3,992	\$3,963	\$3,885	\$3,857	\$3,779	\$3,750	\$3,723	\$3,696	\$3,670					
71 Incremental SMU Meter Devices	\$4,536	\$3,928	\$4,065	\$5,269	\$6,181	\$7,022	\$7,087	\$7,006	\$6,924	\$6,851	\$6,775	\$6,700	\$6,629	\$6,564	\$6,486					
72 To Workpaper 2																				
73 Electric Meters	\$3,533	\$3,026	\$3,177	\$4,391	\$5,311	\$6,159	\$6,226	\$6,148	\$6,072	\$5,997	\$5,924	\$5,852	\$5,781	\$5,711	\$5,643					
74 Electric Communication Devices	\$1,003	\$902	\$888	\$878	\$869	\$863	\$862	\$858	\$852	\$854	\$851	\$849	\$848	\$853	\$843					
75 Meter Devices Subtotal	\$4,536	\$3,928	\$4,065	\$5,269	\$6,181	\$7,022	\$7,087	\$7,006	\$6,924	\$6,851	\$6,775	\$6,700	\$6,629	\$6,564	\$6,486					
76 Incremental O&M	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
77 HAN Bridge/Repeater Costs	\$0	\$0	\$8,286	\$8,566	\$10,894	\$14,059	\$12,056	\$10,514	\$10,628	\$1,125	\$1,103	\$1,086	\$1,069	\$1,052	\$1,036	\$0	\$0	\$0	\$0	\$0
78 Incremental Replacement Units	5,823	6,783	6,885	6,988	7,093	7,200	7,308	7,417	7,528	7,641	7,756	7,872	7,991	8,111	8,232					
79 Labor Cost per Unit	\$103.32	\$106.71	\$110.21	\$113.82	\$117.56	\$121.41	\$125.39	\$129.51	\$133.75	\$138.14	\$142.67	\$147.35	\$152.19	\$157.18	\$162.33					
80 Meter Device Maintenance	\$602	\$724	\$759	\$795	\$834	\$874	\$916	\$961	\$1,007	\$1,056	\$1,107	\$1,160	\$1,216	\$1,275	\$1,336	\$0	\$0	\$0	\$0	\$0
81 HAN Gateway Device Maintenance	\$23	\$36	\$55	\$88	\$128	\$177	\$234	\$311	\$403	\$525	\$642	\$739	\$856	\$1,021	\$1,067	\$0	\$0	\$0	\$0	\$0
82 Network Ops Costs	\$149	\$154	\$159	\$164	\$169	\$175	\$181	\$187	\$193	\$199	\$206	\$213	\$220	\$227	\$234	\$242	\$250	\$258	\$267	\$276
83 Call Center Costs	\$341	\$242	\$388	\$650	\$1,038	\$1,601	\$2,090	\$2,747	\$3,662	\$3,803	\$4,667	\$5,397	\$6,271	\$7,508	\$7,877	\$7,444	\$7,690	\$7,944	\$8,206	\$8,477
84 Data Center Ops Costs	\$1,500	\$750	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
85 Incremental SMU O&M	\$2,615	\$1,906	\$9,646	\$10,263	\$13,062	\$16,886	\$15,478	\$14,718	\$15,893	\$6,708	\$7,724	\$8,595	\$9,631	\$11,082	\$11,551	\$7,686	\$7,940	\$8,202	\$8,473	\$8,752
86 To Workpaper 2	\$2,615	\$1,906	\$9,646	\$10,263	\$13,062	\$16,886	\$15,478	\$14,718	\$15,893	\$6,708	\$7,724	\$8,595	\$9,631	\$11,082	\$11,551	\$7,686	\$7,940	\$8,202	\$8,473	\$8,752

Pacific Gas and Electric Company
Exhibit (PG&E-47) – Late Filed SmartMeter™ Upgrade Cost Effectiveness Update in Compliance with Ordering Paragraph 21 of Decision 17-05-013
WORKPAPER 9 - Updated TOU Program Costs

Notes		PVRR	[1]	[1]	[2]	[2]	[2]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	[3]	
Line	Description	Line	(2008)	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
1	Residential TOU Pilots	35	\$11,411	\$666	\$6,961	\$3,650	\$6,760	\$3,560											
2	Default TOU and Implementation	29	\$42,636	\$0	\$373	\$0	\$13,136	\$20,855	\$8,700	\$8,779	\$8,862	\$8,948	\$9,035	\$9,118	\$9,201	\$9,285	\$9,370	\$9,456	\$9,543
3	Billing Ops	39	\$9,767		\$108	\$3,238	\$8,158	\$8,416											
4	Total (\$000)		\$63,814	\$666	\$7,441	\$6,888	\$28,054	\$32,831	\$8,700	\$8,779	\$8,862	\$8,948	\$9,035	\$9,118	\$9,201	\$9,285	\$9,370	\$9,456	\$9,543

Notes
[1] - Source: PDFa_ResidentialRatesOIR_Report_PGE_20170501.pdf, Table 9, p. 24 (for 2015-16)
[2] - Source: GRC-2017-PhI_DR_ORa_062-Q004_354558Atch01_354559.xlsx, Tab: 2015-'19 Nominal Exp Cap (for 2017-19)
[3] - Estimated at \$3/customer/year for outreach for an estimated 2,900,000 customers, with growth based on the Meter growth rate (for 2020+)

Pacific Gas and Electric Company																													
Exhibit (PG&E-47) – Late Filed SmartMeter™ Upgrade Cost Effectiveness Update in Compliance with Ordering Paragraph 21 of Decision 17-05-0*																													
WORKPAPER 10 - Updated Operational Benefits from Integrated Connect/Disconnect Switches (Based on WP Exh3Ch3b from SMU Application)																													
Line	Integrated Connect/Disconnect Switch Benefits	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030		
1		6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		
2	End Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030		
3	Avoided Field Visits - Revised Original AMI Project	2011			0%	50%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
4																													
5	Average Electric Meters (000s)	4,991	5,054	5,134	5,216	5,299	5,379	5,460	5,542	5,626	5,710	5,797	5,884	5,972	6,061	6,152	6,243	6,336	6,430	6,526	6,622	6,720	6,820	6,921	7,024	7,128	7,233	7,341	
6	Average Electric Meters with AMI Activated (000s)	Escalation		1	60	371	1,566	3,276	4,791	5,582	5,666	5,751	5,838	5,926	6,015	6,105	6,196	6,288	6,381	6,476	6,572	6,669	6,768	6,857	6,959	7,062	7,167	7,274	
7	Meters Requiring Shut Off (000) 2004 Actuals	278																											
8	% Requiring Shut Off	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%	
9	Meters Requiring Shut Off (000)	282	286	291	295	300	304	309	314	318	323	328	333	338	343	348	353	358	364	369	375	380	386	391	397	403	409		
10	Percent New Locations	Repeats	24.0%	100%	100%	100%	100%	99%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%		
11	Remote shut-off Devices Placed (000)		0				43.6	180.7	253.0	122.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
12	Total Remote Shut-off Devices in Place (000)		0	0	0	0	44	224	477	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600		
13	% Meters With Remote Shut-off Devices		0%	0%	0%	0%	1%	4%	9%	11%	11%	10%	10%	10%	10%	10%	10%	9%	9%	9%	9%	9%	9%	9%	8%	8%	8%		
14																													
15	First Restore Power Visit		0.0	0	0	44	181	253	123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
16	Subsequent Power Shut-off Visits	24.0%	-	-	-	-	-	54	115	144	144	144	144	144	144	144	144	144	144	144	144	144	144	144	144	144	144		
17	Subsequent Restore Visit	100%					10	54	115	144	144	144	144	144	144	144	144	144	144	144	144	144	144	144	144	144	144		
18	Cost Per Shut-off/Restore Visit	3.3%	\$ (32.06)	\$ (34.20)	\$ (35.32)	\$ (36.48)	\$ (37.67)	\$ (38.91)	\$ (40.18)	\$ (41.50)	\$ (42.86)	\$ (44.27)	\$ (45.72)	\$ (47.22)	\$ (48.77)	\$ (50.37)	\$ (52.02)	\$ (53.73)	\$ (55.49)	\$ (57.31)	\$ (59.19)	\$ (61.13)	\$ (63.14)	\$ (65.21)	\$ (67.35)	\$ (69.55)	\$ (71.84)		
19	Fee per Restore SONP Visit	42%	0.0%	\$ 21.00	\$ 21.00	\$ 21.00	\$ 21.00	\$ 21.00	\$ 21.00	\$ 21.00	\$ 21.00	\$ 21.00	\$ 21.00	\$ 21.00	\$ 21.00	\$ 21.00	\$ 21.00	\$ 21.00	\$ 21.00	\$ 21.00	\$ 21.00	\$ 21.00	\$ 21.00	\$ 21.00	\$ 21.00	\$ 21.00	\$ 21.00		
20	Severance Costs For SMRs & Credit Clerks Performing SONPs		\$ -	\$ -	\$ -	\$ -	\$ 207.5	\$ 686.0	\$ 309.5																				
21	Annual Benefit (\$000)	Annualized \$	(8,897)	(in 2008 \$)	\$ -	\$ -	\$ -	(997.7)	(5,219.5)	(11,010.5)	(12,036.2)	(10,678.4)	(11,070.5)	(11,475.4)	(11,893.6)	(12,325.4)	(12,771.5)	(13,232.2)	(13,708.0)	(14,199.4)	(14,707.0)	(15,231.1)	(15,772.5)	(16,331.6)	(16,909.1)	(17,505.5)	(18,121.5)	(18,757.7)	(19,414.7)
22																													
23	Avoided Field Visits - SM Upgrade																												
24																													
25	Total Remote Shut-off Devices in Place (000)						196	1,009	2,688	3,866	4,314	4,503	4,614	4,668	4,722	4,897	4,940	4,987	5,034	5,080	5,128	5,177	5,228	5,275	5,275	5,275	5,275		
26	Average Remote Shut-off Devices in Place (000)						196	602	1,848	3,277	4,090	4,408	4,558	4,641	4,695	4,809	4,918	4,964	5,010	5,057	5,104	5,152	5,202	5,252	5,275	5,275	5,275		
27																													
28	% Annual Events																												
29	SO Trips																												
30	SONP Trips			5.4%			1.4%	0.0%	0.0%	1.0%	0.5%	0.6%	0.5%	0.3%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%		
31	TO Trips				4.0%	4.0%	4.0%	4.0%	4.0%	4.5%	5.0%	4.8%	4.9%	5.1%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%		
32	RSONP Trips			5.3%			2.5%	0.0%	0.0%	1.2%	1.5%	1.5%	1.5%	1.3%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%		
33	Total				2.7%	2.7%	2.7%	2.7%	2.7%	3.3%	4.1%	3.7%	3.9%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%	3.8%		
34					0.0%	1.7%	3.4%	3.4%	3.4%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%		
35	Number of Annual Events (000)																												
36	SO Trips																												
37	SONP Trips																												
38	TO Trips																												
39	RSONP Trips																												
40	Total																												
41																													
42	Average Cost per Event																												
43	SO Trips	3.3%	\$ (33.15)	\$ (33.15)	\$ (34.23)	\$ (35.36)	\$ (36.52)	\$ (37.71)	\$ (38.95)	\$ (40.23)	\$ (41.55)	\$ (42.91)	\$ (44.32)	\$ (45.77)	\$ (47.27)	\$ (48.82)	\$ (50.43)	\$ (52.08)	\$ (53.79)	\$ (55.55)	\$ (57.37)	\$ (59.26)	\$ (61.20)	\$ (63.21)	\$ (65.28)	\$ (67.42)	\$ (69.63)	\$ (71.92)	
44	SONP Trips	3.3%	\$ (23.79)	\$ (23.79)	\$ (24.57)	\$ (25.37)	\$ (26.21)	\$ (27.07)	\$ (27.95)	\$ (28.87)	\$ (29.82)	\$ (30.80)	\$ (31.81)	\$ (32.85)	\$ (33.93)	\$ (35.04)	\$ (36.19)	\$ (37.38)	\$ (38.60)	\$ (39.87)	\$ (41.18)	\$ (42.53)	\$ (43.92)	\$ (45.36)	\$ (46.85)	\$ (48.39)	\$ (49.97)	\$ (51.61)	
45	TO Trips	3.3%	\$ (44.69)	\$ (44.69)	\$ (46.16)	\$ (47.67)	\$ (49.24)	\$ (50.85)	\$ (52.52)	\$ (54.24)	\$ (56.02)	\$ (57.86)	\$ (59.75)	\$ (61.71)	\$ (63.74)	\$ (65.83)	\$ (67.99)	\$ (70.22)	\$ (72.52)	\$ (74.90)	\$ (77.36)	\$ (79.89)	\$ (82.52)	\$ (85.22)	\$ (88.02)	\$ (90.90)	\$ (93.89)	\$ (96.97)	
46	RSONP Trips	3.3%	\$ (38.13)	\$ (38.13)	\$ (39.38)	\$ (40.67)	\$ (42.01)	\$ (43.38)	\$ (44.81)	\$ (46.28)	\$ (47.79)	\$ (49.36)	\$ (50.98)	\$ (52.65)	\$ (54.38)	\$ (56.16)	\$ (58.01)	\$ (59.91)	\$ (61.87)	\$ (63.90)	\$ (66.00)	\$ (68.16)	\$ (70.40)	\$ (72.71)	\$ (75.09)	\$ (77.56)	\$ (80.10)	\$ (82.73)	
47	Total				\$ -	\$ (32.59)	\$ (33.66)	\$ (34.77)	\$ (35.97)	\$ (37.12)	\$ (38.31)	\$ (39.54)	\$ (40.81)	\$ (42.12)	\$ (43.47)	\$ (44.86)	\$ (46.29)	\$ (47.76)	\$ (49.26)	\$ (50.79)	\$ (52.35)	\$ (53.94)	\$ (55.56)	\$ (57.21)	\$ (58.89)	\$ (60.60)	\$ (62.34)	\$ (64.11)	
48																													
49	Fee per Restore SONP Visit																												
50	Care Customers	Straight	30.0%	65.0%	19.5%																								

Pacific Gas and Electric Company
Exhibit (PG&E-47) – Late Filed SmartMeter™ Upgrade Cost Effectiveness Update in Compliance with Ordering Paragraph 21 of Decision 17-05-013
WORKPAPER 11 - Updated Meter Forecast

Line	UPDATED METER FORECAST	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
1	METER GROWTH																
2	Year-end Electric Meters	5,260,391	5,280,587	5,302,687	5,331,879	5,363,973	5,397,539	5,436,049	5,463,967	5,512,204	5,564,582	5,616,840	5,667,935	5,721,436	5,776,941	5,833,092	5,886,501
3	Annual Growth		20,196	22,100	29,192	32,094	33,566	38,510	27,918	48,238	52,378	52,258	51,095	53,501	55,505	56,151	53,409
4	Forecast Annual Growth Rate		0.38%	0.42%	0.55%	0.60%	0.63%	0.71%	0.51%	0.88%	0.95%	0.94%	0.91%	0.94%	0.97%	0.97%	0.92%
5	SMU METER REPLACEMENTS																
6	Single Phase percentage		86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%
7	Assumed Maintenance Rate		0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%
8	Forecast Annual Maintenance		45,290	45,472	45,692	45,956	46,238	46,548	46,833	47,160	47,593	48,042	48,486	48,936	49,404	49,884	50,354
9	AMI METER REPLACEMENTS																
10	Single Phase percentage		86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%
11	Assumed Maintenance Rate		0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%
12	Forecast Annual Maintenance		38,886	39,042	39,231	39,457	39,699	39,965	40,210	40,491	40,862	41,248	41,630	42,015	42,418	42,829	43,234
Line	METER FORECAST PER SMU	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
13	METER GROWTH																
14	Year-end Electric Meters	5,447,286	5,540,109	5,623,576	5,708,300	5,794,647	5,881,949	5,970,207	6,059,427	6,149,979	6,241,512	6,334,407	6,428,303	6,523,594	6,620,300	6,718,442	6,818,042
15	Annual Growth		92,823	83,467	84,724	86,347	87,302	88,259	89,219	90,553	91,532	92,896	93,896	95,290	96,706	98,142	99,600
16	Forecast Annual Growth Rate		1.70%	1.51%	1.51%	1.51%	1.51%	1.50%	1.49%	1.49%	1.49%	1.49%	1.48%	1.48%	1.48%	1.48%	1.48%
17	SMU METER REPLACEMENTS																
18	Single Phase percentage		86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.9%	86.9%
19	Assumed Maintenance Rate		0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%	0.99%
20	Forecast Annual Maintenance		41,176	47,967	48,686	49,417	50,158	50,911	51,675	52,450	53,237	54,036	54,847	55,670	56,505	57,353	58,213
21	AMI METER REPLACEMENTS																
22	Single Phase percentage		86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.8%	86.9%	86.9%
23	Assumed Maintenance Rate		0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%	0.85%
24	Forecast Annual Maintenance		35,353	41,183	41,801	42,429	43,065	43,711	44,367	45,033	45,709	46,395	47,091	47,797	48,514	49,242	49,981

Pacific Gas and Electric Company
Exhibit (PG&E-47) – Late Filed SmartMeter™ Upgrade Cost Effectiveness Update in Compliance with Ordering Paragraph 21 of Decision 17-05-013
WORKPAPER 12 - Tax Benefits from Meter Replacement in Support of Table 4

Updated Calculation with Actual Deployment																					
Line	Tax Benefit From Meter Retirement	Incremental	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
1	Federal Income Tax Rate	35.00%																			
2	Actual Deployment		4.5%	36.1%	33.4%	19.1%	3.1%	2.9%													
3	Federal Depreciation Schedule as of 1/1/2008		\$ 16,214	\$ 15,074	\$ 13,939	\$ 12,841	\$ 11,802	\$ 10,984	\$ 10,341	\$ 9,732	\$ 9,070	\$ 8,139	\$ 7,056	\$ 6,057	\$ 5,132	\$ 4,292	\$ 3,604	\$ 3,018	\$ 2,497	\$ 1,773	\$ 638
4	Cumulative Remaining Federal Depreciation		\$ 152,202	\$ 135,988	\$ 120,914	\$ 106,975	\$ 94,134	\$ 82,332	\$ 71,348	\$ 61,007	\$ 51,275	\$ 42,205	\$ 34,066	\$ 27,011	\$ 20,954	\$ 15,822	\$ 11,530	\$ 7,925	\$ 4,908	\$ 2,411	\$ 638
5	Federal Depreciation as Scheduled	\$ 152,202	\$ 16,214	\$ 15,074	\$ 13,939	\$ 12,841	\$ 11,802	\$ 10,984	\$ 10,341	\$ 9,732	\$ 9,070	\$ 8,139	\$ 7,056	\$ 6,057	\$ 5,132	\$ 4,292	\$ 3,604	\$ 3,018	\$ 2,497	\$ 1,773	\$ 638
6	Federal Income Tax Rate		35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%
7	Federal Tax Benefit		\$ (5,675)	\$ (5,276)	\$ (4,879)	\$ (4,494)	\$ (4,131)	\$ (3,845)	\$ (3,619)	\$ (3,406)	\$ (3,174)	\$ (2,849)	\$ (2,470)	\$ (2,120)	\$ (1,796)	\$ (1,502)	\$ (1,262)	\$ (1,056)	\$ (874)	\$ (621)	\$ (223)
8	Federal Depreciation / Write-off based on Deployment	\$ 152,202	\$ 22,398	\$ 58,006	\$ 44,055	\$ 21,342	\$ 3,378	\$ 2,452	\$ 83	\$ 78	\$ 73	\$ 65	\$ 56	\$ 48	\$ 41	\$ 34	\$ 29	\$ 24	\$ 20	\$ 14	\$ 5
9	Federal Income Tax Rate		35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%
10	Federal Tax Benefit		\$ (7,839)	\$ (20,302)	\$ (15,419)	\$ (7,470)	\$ (1,182)	\$ (858)	\$ (29)	\$ (27)	\$ (25)	\$ (23)	\$ (20)	\$ (17)	\$ (14)	\$ (12)	\$ (10)	\$ (8)	\$ (7)	\$ (5)	\$ (2)
11	Incremental Tax Benefit		\$ (2,165)	\$ (15,026)	\$ (10,541)	\$ (2,975)	\$ 2,949	\$ 2,986	\$ 3,590	\$ 3,379	\$ 3,149	\$ 2,826	\$ 2,450	\$ 2,103	\$ 1,782	\$ 1,490	\$ 1,251	\$ 1,048	\$ 867	\$ 616	\$ 221
12	Present Value factors		1.000	0.964	0.896	0.833	0.774	0.719	0.668	0.621	0.577	0.537	0.499	0.463	0.431	0.400	0.372	0.346	0.321	0.299	0.278
13	Present Value of Revenue Requirement (PVRR - 2008)	\$ (11,398)	\$ (2,165)	\$ (14,486)	\$ (9,444)	\$ (2,478)	\$ 2,282	\$ 2,148	\$ 2,400	\$ 2,099	\$ 1,818	\$ 1,516	\$ 1,222	\$ 974	\$ 767	\$ 597	\$ 466	\$ 362	\$ 279	\$ 184	\$ 61

Original Calculation per SMU Workpapers																					
Line	Tax Benefit From Meter Retirement	Incremental	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
14	Federal Income Tax Rate	35.00%																			
15	Deployment Plan		9.7%	34.9%	28.1%	27.3%															
16	Federal Depreciation Schedule as of 1/1/2008		\$ 16,214	\$ 15,074	\$ 13,939	\$ 12,841	\$ 11,802	\$ 10,984	\$ 10,341	\$ 9,732	\$ 9,070	\$ 8,139	\$ 7,056	\$ 6,057	\$ 5,132	\$ 4,292	\$ 3,604	\$ 3,018	\$ 2,497	\$ 1,773	\$ 638
17	Cumulative Remaining Federal Depreciation		\$ 152,202	\$ 135,988	\$ 120,914	\$ 106,975	\$ 94,134	\$ 82,332	\$ 71,348	\$ 61,007	\$ 51,275	\$ 42,205	\$ 34,066	\$ 27,011	\$ 20,954	\$ 15,822	\$ 11,530	\$ 7,925	\$ 4,908	\$ 2,411	\$ 638
18	Federal Depreciation as Scheduled	\$ 152,202	\$ 16,214	\$ 15,074	\$ 13,939	\$ 12,841	\$ 11,802	\$ 10,984	\$ 10,341	\$ 9,732	\$ 9,070	\$ 8,139	\$ 7,056	\$ 6,057	\$ 5,132	\$ 4,292	\$ 3,604	\$ 3,018	\$ 2,497	\$ 1,773	\$ 638
19	Federal Income Tax Rate		35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%
20	Federal Tax Benefit		\$ (5,675)	\$ (5,276)	\$ (4,879)	\$ (4,494)	\$ (4,131)	\$ (3,845)	\$ (3,619)	\$ (3,406)	\$ (3,174)	\$ (2,849)	\$ (2,470)	\$ (2,120)	\$ (1,796)	\$ (1,502)	\$ (1,262)	\$ (1,056)	\$ (874)	\$ (621)	\$ (223)
21	Federal Depreciation / Write-off based on Deployment	\$ 152,202	\$ 29,424	\$ 55,799	\$ 37,744	\$ 29,235	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
22	Federal Income Tax Rate		35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%	35%
23	Federal Tax Benefit		\$ (10,298)	\$ (19,529)	\$ (13,210)	\$ (10,232)	\$ (0)	\$ (0)	\$ (0)	\$ (0)	\$ (0)	\$ (0)	\$ (0)	\$ (0)	\$ (0)	\$ (0)	\$ (0)	\$ (0)	\$ (0)	\$ (0)	\$ (0)
24	Incremental Tax Benefit		\$ (4,624)	\$ (14,254)	\$ (8,332)	\$ (5,738)	\$ 4,131	\$ 3,845	\$ 3,619	\$ 3,406	\$ 3,174	\$ 2,849	\$ 2,470	\$ 2,120	\$ 1,796	\$ 1,502	\$ 1,262	\$ 1,056	\$ 874	\$ 621	\$ 223
25	Present Value factors		1.000	0.964	0.896	0.833	0.774	0.719	0.668	0.621	0.577	0.537	0.499	0.463	0.431	0.400	0.372	0.346	0.321	0.299	0.278
26	Present Value of Revenue Requirement (PVRR - 2008)	\$ (11,799)	\$ (4,624)	\$ (13,741)	\$ (7,465)	\$ (4,778)	\$ 3,197	\$ 2,765	\$ 2,419	\$ 2,116	\$ 1,833	\$ 1,528	\$ 1,231	\$ 982	\$ 774	\$ 601	\$ 469	\$ 365	\$ 281	\$ 185	\$ 62

Pacific Gas and Electric Company
Exhibit (PG&E-47) – Late Filed SmartMeter™ Upgrade Cost Effectiveness Update in Compliance with Ordering Paragraph 21 of Decision 17-05-013
WORKPAPER 13 - Benefits Associated with TOU (formerly Attachment B)

Line	Item		--> Default TOU																Ramp Down based on useful life of meter							
			2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
1	Avoided Cost of Capacity Associated with TOU																									
2	Residential [a], [d], [e], [f]	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
3	Non-Residential [f]	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	66.5	103.9	97.7	98.4	98.6	98.8	98.9	99.1	99.2	99.4	99.6	100.9	79.1	33.2	7.4	0.3
4	Incremental[b], [i]		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.9	9.4	0.5	1.2	1.4	1.6	1.7	1.9	2.0	2.2	2.4	2.4	1.9	0.8	0.2	0.0
5	Embedded[b], [j]		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	99.6	136.5	139.2	139.2	139.2	139.2	139.2	139.2	139.2	139.2	139.2	141.0	110.6	46.4	10.4	0.4
6	Adjustment for A6, E19V [g]		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-42.0	-42.0	-42.0	-42.0	-42.0	-42.0	-42.0	-42.0	-42.0	-42.0	-42.0	-42.5	-33.4	-14.0	-3.1	-0.1
7	Subtotal - Avoided Capacity associated with TOU (MW)	MW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	66.5	107.0	105.8	111.4	116.7	122.1	127.5	132.9	138.4	143.9	149.6	151.5	118.8	49.8	11.1	0.5
8	Reserve Margin Factors [h]	1.15																								
9	Line Loss Factors [h]	1.11																								
10	Avoided Cost of Capacity (\$, million) [h]	\$	135.50	\$ / kW-yr	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 11.5	\$ 18.5	\$ 18.3	\$ 19.2	\$ 20.2	\$ 21.1	\$ 22.0	\$ 23.0	\$ 23.9	\$ 24.9	\$ 25.8	\$ 26.2	\$ 20.5	\$ 8.6	\$ 1.9	\$ 0.1
11	Annual Energy Conservation Associated with TOU																									
12	Residential [a], [f]	GWh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13	Non-Residential [f]	GWh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	158.4	214.8	198.4	199.4	199.8	200.0	200.1	200.3	200.5	200.7	200.9	203.4	159.8	64.3	10.6	0.0
14	Incremental[b], [i]		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.0	21.3	0.9	1.9	2.3	2.5	2.6	2.8	3.0	3.2	3.4	3.4	2.7	1.1	0.3	0.0
15	Embedded[b], [j]		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	146.9	223.0	227.0	227.0	227.0	227.0	227.0	227.0	227.0	227.0	229.9	180.3	75.6	16.9	0.7	
16	Adjustment for A6, E19V [g]		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-29.5	-29.5	-29.5	-29.5	-29.5	-29.5	-29.5	-29.5	-29.5	-29.5	-29.9	-23.2	-12.4	-6.6	-0.7	
17	Subtotal - Energy Conservation (GWh)	GWh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	158.4	215.5	200.2	202.3	203.9	205.3	206.6	208.0	209.4	210.9	212.3	215.0	168.9	68.2	11.4	0.0
18	Power Price Forecast (\$/MWh) [c], [h]		\$ 78.5	\$ 37.8	\$ 39.7	\$ 33.7	\$ 32.4	\$ 32.2	\$ 38.1	\$ 44.9	\$ 49.1	\$ 53.4	\$ 57.8	\$ 63.2	\$ 69.2	\$ 73.0	\$ 76.9	\$ 81.7	\$ 86.8	\$ 85.7	\$ 89.6	\$ 93.5	\$ 97.0	\$ 100.4	\$ 103.4	
19	Benefits from Energy Conservation (\$, million)		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 7.1	\$ 10.6	\$ 10.7	\$ 11.7	\$ 12.9	\$ 14.2	\$ 15.1	\$ 16.0	\$ 17.1	\$ 18.3	\$ 18.2	\$ 19.3	\$ 15.8	\$ 6.6	\$ 1.1	\$ 0.0	
20	Total Annual Benefits Associated with TOU (\$, million)		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 18.6	\$ 29.1	\$ 29.0	\$ 30.9	\$ 33.0	\$ 35.3	\$ 37.1	\$ 39.0	\$ 41.0	\$ 43.2	\$ 44.0	\$ 45.4	\$ 36.3	\$ 15.2	\$ 3.1	\$ 0.1	
21	PVRR Factor [h]	7.60%	1.000	0.964	0.896	0.833	0.774	0.719	0.668	0.621	0.577	0.537	0.499	0.463	0.431	0.400	0.372	0.346	0.321	0.299	0.278	0.240	0.144	0.072	0.009	
22	PVRR (2008)		\$ 184.1 million																							

Assumptions and Notes:

a Line 2 and 12 - Source: Statewide Time-of-Use Scenario modeling for 2015 California Energy Commission Integrated Energy Policy Report, Christensen Associates, 2015.

b Line 4, 5, 14, and 15 - Source: 2014 Load Impact Evaluation of Pacific Gas and Electric Company's Mandatory Time-of-Use Rates for Small and Medium Non-residential Customers: Ex-post and Ex-ante Report, Christensen Associates, 2015.

c Source: E3 Avoided cost calculator at http://Ethree.com/public_projects/cpucSGIP.php. File name: http://ethree.com/documents/E3_NEM_Avoided_Cost%20Model_SGIP_Update_20150521.xlsm. This version was used for 2017 DR bridge year funding request per ALJ ruling December 3, 2015. Resource balance year was set to only long-run capacity cost consistent with Resolution E-4801 (September 29, 2016) as required by D.16-06-007 (June 16, 2016) in DER R.14-10-003.

d Assumed that behavioral impact from residential customers from default TOU will be effectively similar to Scenario #3 (30% opt-in with proposed TOU rates).

e From 2016 through 2024 represents the increase in adoption rates and learning curve.

f From 2026 to 2030, peak load reduction numbers have been reduced to match the useful life of the meters (20 yrs).

g Adjusted for A6 and E19V customers as they were already under TOU rates.

h Assumed same reserve margin factors, line loss factors, and PVRR factor as the previous workpapers submitted for D.09-03-026 (A.07-12-009).

i Incremental Non Residential customers refer to the new customers enrolled in to the TOU program.

j Embedded Non Residential customers refer to the existing customers in the TOU program for that specific year.