California Public Utilities Commission

The Padilla Report to the Legislature

The Costs of Renewables in Compliance with Senate Bill 836 (Padilla, 2011)

March 2013

I. About This Report

Senate Bill 836 (Public Utilities Code § 911) requires the California Public Utilities Commission (CPUC or "Commission") to report to the Legislature "the costs of all electricity procurement contracts for eligible renewable energy resources, including unbundled renewable energy credits, and all costs for utility-owned generation approved by the commission. On February 3, 2012, the Energy Division released the first report on investor-owned utility (IOU) cost information for the 2003 - 2011 timeframe in the 4th Quarter 2011 Renewable Portfolio Standard (RPS) Status Report to the Legislature. This report contains the IOU renewable cost information for 2012, and a revisit of the cost information for 2003 – 2011.

II. Executive Summary

2012 Padilla Report Information

- This report presents historical data on cost trends for calendar year 2012. See **Section III.**
- The weighted average time-of-delivery (TOD) adjusted[1] **price** was approximately 9.6 cents/kilowatt hour (kWh) for all contracts approved in 2012 (including renewable energy credit only, or REC only, transactions) , and approximately 9.9 cents/kWh for bundled energy product (excluding REC transactions). These costs are slightly lower than those approved in 2011, which were 12.6 cents/kWh on average, as a result of lower cost projects contracted through the 2011 RPS solicitations and bilateral transactions.
- The weighted average TOD adjusted RPS procurement **expenditures** for 2012 were approximately 7.7 cents/kWh (including renewable energy credit only, or REC only, transactions), and approximately 7.8 cents /kWh for bundled energy product (excluding REC transactions). The RPS procurement expenditures for 2012 are slightly lower than the RPS procurement expenditures in 2011, which cost 8.0 cents/kWh on average for bundled energy product (excluding REC transactions).
- Contract prices for 2012 show a steady decline from the prices in prior years (2003-2010). The downward trending prices prove that the renewable market in California is robust and competitive, and has matured since the start of the RPS program.

2003 - 2011 Padilla Report Corrections and Methodological Changes

[1] Actual renewable energy payments are based on the contract price multiplied by the IOU Time-of-Day (TOD) factors according to when the RPS facility actually generates electricity. TOD-adjustments effectively allocate higher costs to power supplied during on-peak hours and lower costs to power supplied during the off-peak hours.

- After releasing the 2011 4th Quarter RPS Status Report to the Legislature, Energy Division staff was notified by the utilities that the IOU self-reported data presented in the 2003 - 2011 report had errors. Commission staff worked with the utilities to review and revise the historical data for this report. These corrections are discussed in **Section IV.**
- The weighted average TOD-adjusted price of all contracts approved from 2003-2011 decreased from approximately 11.9 cents/kWh in the original report to approximately 11.4 cents/kWh after the errors in the IOU self-reported data were corrected.
- The weighted average TOD-adjusted RPS procurement expenditures from 2003-2011 increased from approximately 7.6 cents/kWh in the original report to approximately 7.8 cents/kWh after the errors in the IOU self-reported data were corrected.

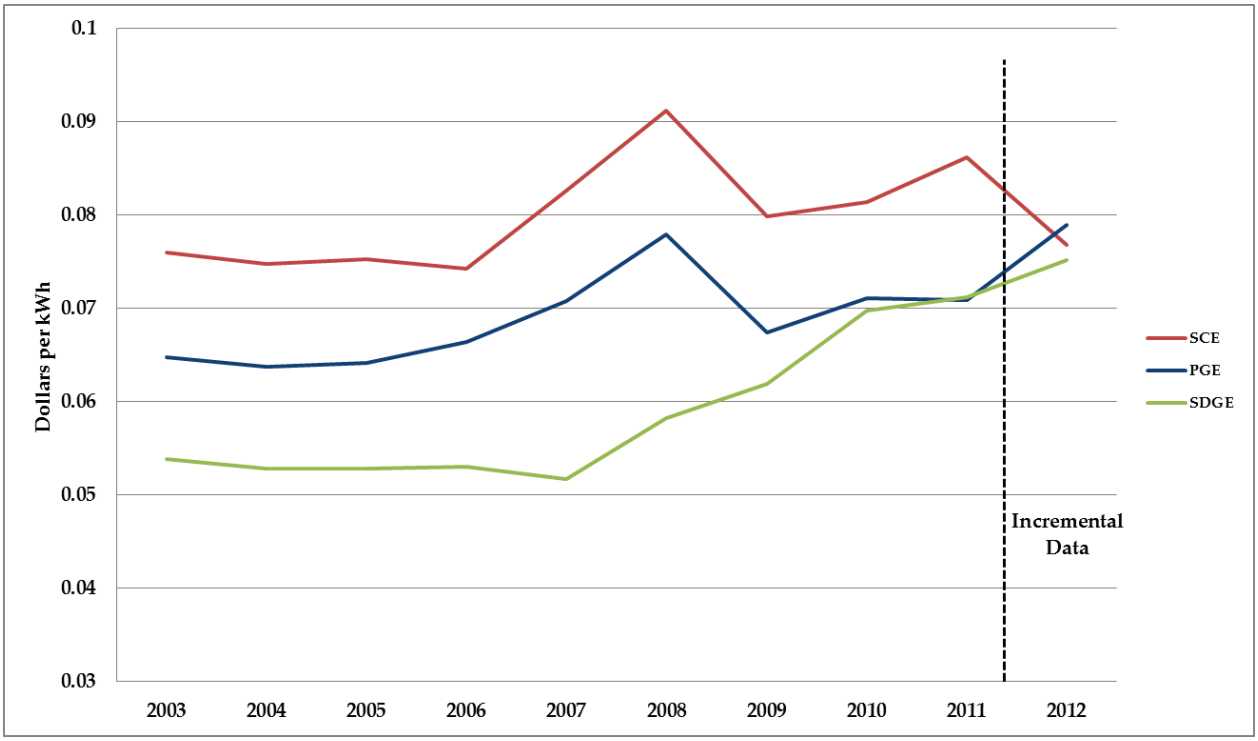
III. 2012 PADILLA REPORT INFORMATION

Tables A-1 and A-2 in Attachment A present the weighted average TOD-adjusted RPS procurement expenditures as well as the weighted average TOD-adjusted contract price of any contracts approved by the CPUC. Specifically Tables A-1 and A-2 include all cost information for RPS eligible projects, including projects which reflect renewable energy credits only, or REC only, transactions. In contrast, Tables A-3 and A-4 in Attachment A present the same information as tables A-1 and A-2, but for bundled energy projects only (projects that only provide RECs have been removed). Pursuant to confidentiality rules in Public Utilities (PU) Code § 911 and D.06-06-066, some of the costs in Attachment A have been redacted.

Figure 1 below compares the weighted average TOD-adjusted RPS procurement expenditures for bundled renewable energy by year in cents per kilowatt hours (¢kWh) for each of the investor-owned utilities (IOUs): Pacific Gas and Electric (PG&E), Southern California Edison (SCE), and San Diego Gas & Electric (SDG&E).

The two key factors that drive the cost differences between the utilities are: (1) the ratio of unbundled renewable energy credits (RECs) to bundled energy product within an IOU's portfolio, and (2) the resource mix of RPS-eligible resources within an IOU's portfolio. It is important to note that these two factors change over time as the renewable market and IOU RPS portfolios change over time.

Figure 1. Weighted Average TOD-Adjusted RPS Procurement Expenditures of Bundled Renewable Energy by Year (2003 – 2012)



Note: The 2003-2011 data in Figure 1 is different than what was presented in the 2003-2011 Padilla Report released on February 3, 2012. See section IV of this report for more details.

From 2003 to 2012, the average TOD-adjusted price of contract approved by the CPUC has increased from 5.4 cents to 9.9 cents/kWh in nominal dollars, or 8.1 cents to 9.9 cents/kWh in real dollars[2]. One reason for this increase is that the IOUs contracted with existing renewable facilities at the beginning of the RPS program and with mostly new facilities in more recent years in order to meet the ambitious 20% and 33% RPS target. These new facilities typically result in higher contract costs in order to recover the capital needed to develop new facilities. In addition, contract costs have increased in part due to changes in the technology mix, increases in commodity costs, and demand exceeding supply.

Finally, it is important to note that prices of contracts approved by the CPUC in 2012 are lower than the contracts approved in 2011 (9.9 cents in 2012 versus 11.4 in 2011). The declining contract costs are a result of projects from the 2010 and 2011 solicitations, which were significantly less costly than projects bid into prior annual RPS solicitations.

IV. 2003-2011 Report Corrections And Methodological Changes

On February 3, 2012, the Energy Division released IOU cost information for the 2003 - 2011 timeframe in the 2011 4th Quarter RPS Status Report to the Legislature. After releasing the report, Energy Division staff was notified by the investor owned utilities that some of the IOU self-reported data had errors. As a result, Commission staff worked with the utilities to review and revise the 2003 – 2011 data and incorporated those corrections in this report. In addition to correcting the IOU data, Energy Division also changed the methodology for calculating the "Average Price of Contracts Approved ($/kWh)" switching from capacity weighted averages to generation weighted averages. This change was made to enable a better comparison between the total average price of contracts approved and the total average RPS procurement expenditures.

Methodological Changes

Energy Division staff changed the methodology for calculating the "Average Price of Contracts Approved ($/kWh)" in the revised 2003 - 2011 dataset. The original methodology for calculating the average price of CPUC approved contracts used a capacity weighted average. However, after consulting with the utilities, Energy Division staff has weighted the cost of CPUC approved contracts by the expected generation (as stated in the Power Purchase Agreement). Weighing the cost of CPUC approved projects on a generation basis serves two important objectives.

The first objective was to create a better comparison between the RPS procurement expenditures and prices of CPUC approved projects – now the costs of both RPS procurement expenditures and the prices of CPUC approved projects are weighted by the same metric. The second objective was to account for

[2] The CUPC used the Handy- Whitman Index of Public Utility Construction Costs – Transmission Production Plant - Pacific region –bulletin #175 - to calculate the real dollar amounts for year 2012.

different capacity factors between different technology types. Comparing a 3 MW solar project to a 200 MW solar project is appropriate because the two projects will have a similar capacity factor. However, comparing a 3 MW solar project to a 200 MW geothermal project, which has a higher capacity factor, is not appropriate and can distort the total weighted averages of contract prices in an IOU's portfolio.

Therefore, all "Average Price of Contracts Approved ($/kWh)" figures in this revised analysis have been weighted according to the "Expected Energy per Year," as presented in the CPUC approved contract. Due to the confidentiality requirements in Public Utilities Code Section 911, some of the costs in Attachment A have been redacted.

CORRECTIONS TO 2003 - 2011 DATA

Changes to the IOU self-reported data are as follows:

PG&E:

- Data corrections to various annual generation and cost figures for projects reflecting a variety of different technology types
- Increase annual kWh generation totals for small hydro UOG projects in all years 2003-2011, which resulted in lower RPS procurement expenditures in all years 2003-2011

SCE:

- Data corrections to various annual generation and cost figures for projects reflecting a variety of different technology types
- Changed technology type classification for various Biomass and Biogas projects

SDG&E:

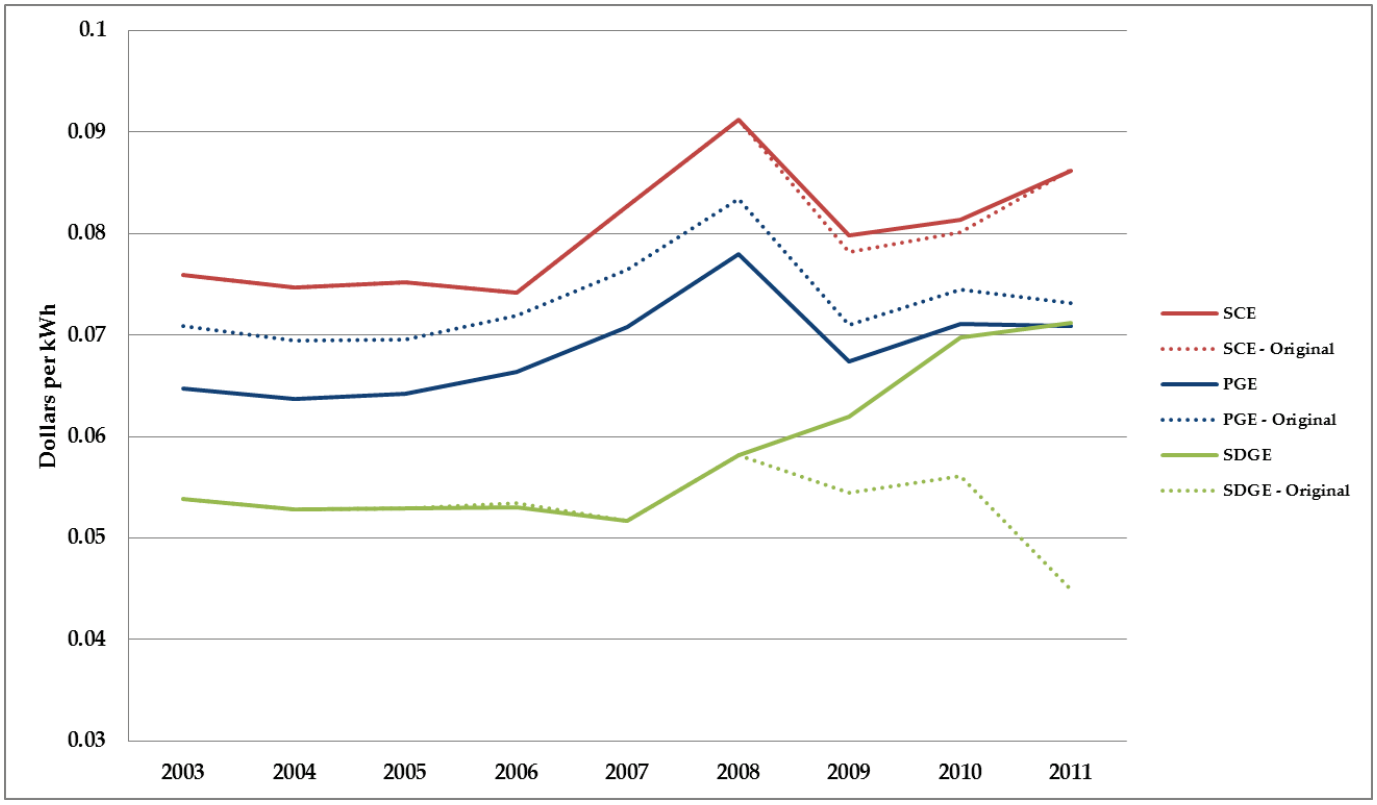
- Data corrections to various annual generation and cost figures for projects reflecting a variety of different technology types
- Changed technology type classification for various Solar PV and Geothermal projects
- Removed a high portion of REC only RPS procurement, which resulted in lower RPS procurement expenditures in years 2009-2011

CONCLUSIONS FROM CORRECTIONS AND METHODOLOGICAL CHANGES

The final results of the cost analysis for 2003-2011 did not materially change after the errors are corrected.

Figure 2 on the next page compares the weighted average TOD-adjusted RPS procurement expenditures by year in dollars per kilowatt hours ($/kWh) for each IOU from the original Padilla Report to legislature, to the revised TOD-adjusted RPS procurement expenditures by year in dollars per kilowatt hours ($/kWh) for each IOU.

Figure 2. Revised Weighted Average TOD-Adjusted RPS Procurement Expenditures by Year (2003 – 2011): Bundled Energy Product Only



ATTACHMENT A

REPORTING YEAR 2012 AND CORRECTIONS TO 2003-2011 INVESTOR-OWNED UTILITY RPS PROCUREMENT EXPENDITURES AND CONTRACT PRICE DATA PER SENATE BILL 836 (PUBLIC UTILITIES CODE § 911)

Tables A-1 through A-7 attached to this document show for each investor-owned utility (IOU) the weighted average TOD-adjusted RPS procurement expenditures per year as well as the weighted average TOD-adjusted contract price of all RPS contracts approved by the CPUC for that year. Per the confidentiality requirements in Public Utilities Code § 911, some of the data within this report are redacted. In addition:

- Contract prices were redacted if a) the power purchase agreement (PPA) is not already public on the CPUC's website per the CPUC's confidentiality rules, or b) there were less than three facilities in each category. If there was only one facility in a category, however, and its PPA is already available on the CPUC's website, then the price information for that facility is reported. In addition, all qualifying facility (QF) contracts that do not require CPUC approval, feed-in tariff contracts, contracts with municipal governments, and utility-owned generation (UOG) costs are public and reported.

- Contract prices and procurement expenditures represent weighted averages on a per kilowatt hours basis. All figures are in nominal dollars.

- All cost numbers have been TOD-adjusted factors since generators are paid based on the time that the facility generates electricity, according to each IOU's TOD factors. For example, since solar PV generates electricity during peak hours, its electricity is more valuable and the solar PV generator receives a higher payment based on the TOD adjustment.

- The "Average Price of Contracts Approved" column includes all CPUC approved contracts except contracts that were subsequently terminated. Specifically, it includes facilities that are operating or in development; it does not include executed contracts that are pending approval and it does not include RPS contracts approved prior to 2003.

- The "Average RPS Procurement Expenditures" column represents the total weighted average payments made to renewable generators for that year.

- The increase in 2008 RPS procurement expenditures may be explained by two factors. First, most of the energy came from renewable qualifying facilities (QFs), whose energy payments fluctuate based on the cost of natural gas. Since gas prices were very high in 2008, the price paid to the renewable QFs was higher in 2008 compared to other years. Second, 2008 was a low hydro year and, as a result, low-cost hydro generation did not factor into the average procurement costs to the same extent it did in other years.

- In 2009 and 2010, the CPUC approved programs authorizing the IOUs to pursue utility-owned solar PV facilities. The CPUC does not separately approve contracts for these utility-owned facilities, thus no contract cost is provided in the following tables for these resources. The CPUC did set energy-based cost caps, however, for SCE and PG&E. The CPUC set SCE's UOG Solar PV cost cap at $0.26/kWh averaged over the five year program and set PG&E's UOG Solar PV cost cap at $0.295/kWh for each project.

- Tables A-1 through A-7 were created using data provided by the IOUs. Given that 2012 data was provided prior to the finalization of meter settlement data, tables A-1 through A-4 may contain some inaccuracies. 2012 data will be revised once the IOUs receive final meter settlement data in the next Padilla Report (2014).

Table A-1.Weighted Average TOD-Adjusted RPS Procurement Expenditures (All Projects – Including REC only transactions)

2012 Average RPS Procurement Expenditures ($/kWh)				
Technology Type by Project Size	**SCE**	**PGE**	**SDGE**	**Total**
Biogas				
0-3 MW	0.0863	0.0595	0.0787	0.0752
+3-20 MW	0.0871	0.0383	0.0558	0.0581
+20-50 MW	0.0682			Only 1 Contract
Biogas Total	**0.0721**	**0.0477**	**0.0648**	**0.0666**
Biomass				
0-3 MW		Only 1 Contract		Only 1 Contract
+3-20 MW		0.0869	Only 2 Contracts	0.0787
+20-50 MW	0.0717	0.0986	Only 1 Contract	0.0935
+50-200 MW		0.1017		Only 1 Contract
Biomass Total	**0.0717**	**0.0960**	**0.0625**	**0.0906**
Geothermal				
0-3 MW		Only 2 Contracts		Only 2 Contracts
+3-20 MW	0.0748			0.0748
+20-50 MW	0.0744	Only 1 Contract	0.0889	0.0785
+50-200 MW	0.0750	0.0526	Only 1 Contract	0.0671
+200 MW	0.0454	Only 1 Contract		Only 2 Contracts
Geothermal Total	**0.0667**	**0.0569**	**0.0856**	**0.0650**
Small Hydro				
0-3 MW	0.0786	0.0620		0.0669
+3-20 MW	0.1031	0.0513	0.0507	0.0574
Small Hydro Total	**0.0953**	**0.0527**	**0.0507**	**0.0589**
Solar PV				
0-3 MW	0.1934	Only 2 Contracts		0.1934
+3-20 MW	Only 1 Contract	0.2324		0.2320
+20-50 MW	0.1150	Only 1 Contract	Only 1 Contract	0.1478
+50-200 MW		Only 2 Contracts	Only 1 Contract	0.1533
+200 MW		Only 2 Contracts		Only 2 Contracts
Solar PV Total	**0.1416**	**0.1747**	**Only 2 Contracts**	**0.1726**
Solar Thermal				
+3-20 MW	Only 2 Contracts			Only 2 Contracts
+20-50 MW	0.1132			0.1132
+50-200 MW	Only 2 Contracts			Only 2 Contracts
Solar Thermal Total	**0.1173**			**0.1173**
Wind				
0-3 MW	0.0404	0.0661		0.0481
+3-20 MW	0.0515	0.0468	Only 2 Contracts	0.0517
+20-50 MW	0.0645	0.0730	0.0424	0.0634
+50-200 MW	0.1019	0.0859	0.0378	0.0838
+200 MW	0.1005	Only 1 Contract	Only 1 Contract	0.0982
Wind Total	**0.0885**	**0.0829**	**0.0401**	**0.0800**
UOG Small Hydro				
+3-20 MW	0.0390	0.0415		0.0407
+20-50 MW		0.0272		0.0272
UOG Small Hydro Total	**0.0390**	**0.0393**		**0.0392**
UOG Solar PV				
0-3 MW	0.3521	0.2511		0.3397
+3-20 MW	0.2675	0.1633		0.1699
UOG Solar PV Total	**0.3295**	**0.1655**		**0.1980**
Grand Total	**0.0786**	**0.0789**	**0.0586**	**0.0768**

Table A-2.Weighted Average Price of All Renewable Energy Contracts Approved (All Projects – Including REC only transactions)

2012 Average Price of All IOU Contracts Approved ($/kWh)				
Technology Type by Project Size	**SCE**	**PGE**	**SDGE**	**Total**
Biogas				
+3-20 MW			Only 1 Contract	Only 1 Contract
Biogas Total			**Only 1 Contract**	**Only 1 Contract**
Biomass				
+3-20 MW		Only 1 Contract	Only 1 Contract	Only 2 Contracts
Biomass Total		**Only 1 Contract**	**Only 1 Contract**	**Only 2 Contracts**
Geothermal				
+3-20 MW		Only 2 Contracts		Only 2 Contracts
+20-50 MW		Only 1 Contract	Only 1 Contract	Only 2 Contracts
+50-200 MW			Only 1 Contract	Only 1 Contract
Geothermal Total		**0.0965**	**Only 2 Contracts**	**0.0821**
Small Hydro				
+3-20 MW			Only 1 Contract	Only 1 Contract
Small Hydro Total			**Only 1 Contract**	**Only 1 Contract**
Solar PV				
0-3 MW	0.0755	0.0832		0.0790
+3-20 MW	0.0801	0.0899	0.0931	0.0850
+50-200 MW	Only 2 Contracts	Only 1 Contract	Only 2 Contracts	0.1191
+200 MW	0.0926			0.0926
Solar PV Total	**0.0922**	**0.1055**	**0.1195**	**0.0980**
Solar Thermal				
+200 MW	Only 1 Contract			Only 1 Contract
Solar Thermal Total	**Only 1 Contract**			**Only 1 Contract**
Wind				
+3-20 MW		Only 2 Contracts	Only 1 Contract	0.0746
+20-50 MW			Only 2 Contracts	Only 2 Contracts
+50-200 MW		0.0909	Only 2 Contracts	0.0830
+200 MW			Only 1 Contract	Only 1 Contract
Wind Total		**0.0899**	**0.0845**	**0.0868**
Grand Total	**0.0999**	**0.0968**	**0.0894**	**0.0961**

Table A-3.Weighted Average TOD-Adjusted RPS Procurement Expenditures (Bundled Energy Only)

2012 Average RPS Procurement Expenditures ($/kWh)				
Technology Type by Project Size	**SCE**	**PGE**	**SDGE**	**Total**
Biogas				
0-3 MW	0.0863	0.0595	0.0787	0.0752
+3-20 MW	0.0871	0.0383	0.0558	0.0581
+20-50 MW	0.0682			Only 1 Contract
Biogas Total	**0.0721**	**0.0477**	**0.0648**	**0.0666**
Biomass				
0-3 MW		Only 1 Contract		Only 1 Contract
+3-20 MW		0.0869	Only 1 Contract	0.0877
+20-50 MW	0.0717	0.0986	Only 1 Contract	0.0935
+50-200 MW		0.1017		Only 1 Contract
Biomass Total	**Only 1 Contract**	**0.0960**	**Only 2 Contracts**	**0.0930**
Geothermal				
0-3 MW		Only 2 Contracts		Only 2 Contracts
+3-20 MW	0.0748			0.0748
+20-50 MW	0.0744	Only 1 Contract	0.0889	0.0785
+50-200 MW	0.0750	0.0526	Only 1 Contract	0.0671
+200 MW	0.0454	Only 1 Contract		Only 2 Contracts
Geothermal Total	**0.0667**	**0.0569**	**0.0856**	**0.0650**
Small Hydro				
0-3 MW	0.0786	0.0620		0.0669
+3-20 MW	0.1031	0.0513	0.0507	0.0574
Small Hydro Total	**0.0953**	**0.0527**	**Only 1 Contract**	**0.0589**
Solar PV				
0-3 MW	0.1934	Only 2 Contracts		0.1934
+3-20 MW	Only 1 Contract	0.2324		0.2320
+20-50 MW	0.1150	Only 1 Contract	Only 1 Contract	0.1478
+50-200 MW		Only 2 Contracts	Only 1 Contract	0.1533
+200 MW		Only 2 Contracts		Only 2 Contracts
Solar PV Total	**0.1416**	**0.1747**	**Only 2 Contracts**	**0.1726**
Solar Thermal				
+3-20 MW	Only 2 Contracts			Only 2 Contracts
+20-50 MW	0.1132			0.1132
+50-200 MW	Only 2 Contracts			Only 2 Contracts
Solar Thermal Total	**0.1173**			**0.1173**
Wind				
0-3 MW	Only 1 Contract	0.0661		0.0481
+3-20 MW	0.0515	0.0468	Only 2 Contracts	0.0517
+20-50 MW	0.0645	0.0730	Only 2 Contracts	0.0658
+50-200 MW	0.1019	0.0859	0.0605	0.0909
+200 MW		Only 1 Contract	Only 1 Contract	Only 2 Contracts
Wind Total	**0.0855**	**0.0829**	**0.0616**	**0.0829**
UOG Small Hydro				
+3-20 MW	0.0390	0.0415		0.0407
+20-50 MW		0.0272		0.0272
UOG Small Hydro Total	**0.0390**	**0.0393**		**0.0392**
UOG Solar PV				
0-3 MW	0.3521	0.2511		0.3397
+3-20 MW	0.2675	0.1633		0.1699
UOG Solar PV Total	**0.3295**	**0.1655**		**0.1980**
Grand Total	**0.0768**	**0.0789**	**0.0752**	**0.0777**

Table A-4.Weighted Average Price of All Renewable Energy Contracts Approved (Bundled Energy Only)

2012 Average Price of Bundled IOU Contracts Approved ($/kWh)				
Technology Type by Project Size	**SCE**	**PGE**	**SDGE**	**Total**
Biogas				
+3-20 MW			Only 1 Contract	Only 1 Contract
Biogas Total			**Only 1 Contract**	**Only 1 Contract**
Biomass				
+3-20 MW		Only 1 Contract		Only 1 Contract
Biomass Total		**Only 1 Contract**		**Only 1 Contract**
Geothermal				
+3-20 MW		Only 2 Contracts		Only 2 Contracts
+20-50 MW		Only 1 Contract	Only 1 Contract	Only 2 Contracts
+50-200 MW			Only 1 Contract	Only 1 Contract
Geothermal Total		**0.0965**	**Only 2 Contracts**	**0.0821**
Small Hydro				
+3-20 MW			Only 1 Contract	Only 1 Contract
Small Hydro Total			**Only 1 Contract**	**Only 1 Contract**
Solar PV				
0-3 MW	0.0755	0.0832		0.0790
+3-20 MW	0.0801	0.0899	0.0931	0.0850
+50-200 MW	Only 2 Contracts	Only 1 Contract	Only 2 Contracts	0.1191
+200 MW	0.0926			0.0926
Solar PV Total	**0.0922**	**0.1055**	**0.1195**	**0.0980**
Solar Thermal				
+200 MW	Only 1 Contract			Only 1 Contract
Solar Thermal Total	**Only 1 Contract**			**Only 1 Contract**
Wind				
+3-20 MW		Only 2 Contracts	Only 1 Contract	0.0746
+20-50 MW			Only 1 Contract	Only 1 Contract
+50-200 MW		0.0909	Only 1 Contract	0.0918
+200 MW			Only 1 Contract	Only 1 Contract
Wind Total		**0.0899**	**0.1009**	**0.0956**
Grand Total	**0.0999**	**0.0968**	**0.1009**	**0.0995**

Table A-5. PG&E, Weighted Average TOD-Adjusted RPS Procurement Expenditures and Average Price of Contracts

	2003		2004		2005		2006		2007		2008		2009		2010		2011		Totals	
Technology Type by Project Size	Average RPS Procurement Expenditures ($/kWh)	Average Price of Contracts Approved ($/kWh)	Average RPS Procurement Expenditures ($/kWh)	Average Price of Contracts Approved ($/kWh)	Average RPS Procurement Expenditures ($/kWh)	Average Price of Contracts Approved ($/kWh)	Average RPS Procurement Expenditures ($/kWh)	Average Price of Contracts Approved ($/kWh)	Average RPS Procurement Expenditures ($/kWh)	Average Price of Contracts Approved ($/kWh)	Average RPS Procurement Expenditures ($/kWh)	Average Price of Contracts Approved ($/kWh)	Average RPS Procurement Expenditures ($/kWh)	Average Price of Contracts Approved ($/kWh)	Average RPS Procurement Expenditures ($/kWh)	Average Price of Contracts Approved ($/kWh)	Average RPS Procurement Expenditures ($/kWh)	Average Price of Contracts Approved ($/kWh)	Average RPS Procurement Expenditures ($/kWh)	Average Price of Contracts Approved ($/kWh)
Biogas																				
0-3	0.0731		0.0723		0.0721		0.0778		0.0827	0.0100	0.0857		0.0723		0.0771		0.0731		0.0762	Only 2 Contracts
+3-20	0.0700		0.0712		0.0694		0.0758		0.0822		0.0829		0.0838		0.0637		0.0668		0.0738	
Biogas Total	**0.0706**		**0.0714**		**0.0699**		**0.0762**		**0.0823**	**0.0100**	**0.0835**		**0.0819**		**0.0657**		**0.0678**		**0.0743**	**Only 2 Contracts**
Biomass																				
0-3	0.0450		0.0474		0.0474		0.0481		0.0471								Only 1 Contract		0.0470	
+3-20	0.0760		0.0711		0.0744		0.0765	0.0598	0.0830	0.1216	0.0892		0.0798	0.0658	0.0858		0.0758		0.0792	0.0881
+20-50	0.0757		0.0747		0.0767		0.0817		0.0893		0.0954		0.0857	Only 2 Contracts	0.0888	Only 2 Contracts	0.0821		0.0833	0.1214
+50-200	0.0771		0.0773		0.0778		0.0827		0.0867		0.0874		0.0881		Only 1 Contract		Only 1 Contract		0.0829	
Biomass Total	**0.0757**		**0.0738**		**0.0760**		**0.0802**	**0.0598**	**0.0867**	**0.1216**	**0.0923**		**0.0843**	**0.0717**	**0.0881**	**Only 2 Contracts**	**0.0803**		**0.0820**	**0.1128**
Geothermal																				
0-3	0.0581		0.0675		0.0670		0.0696		0.0837		0.0922		0.0636		Only 2 Contracts		Only 2 Contracts		0.0705	
+3-20	0.0737		0.0747		0.0750		0.0779	0.1140	0.0814		0.0689		0.0695		Only 1 Contract		Only 1 Contract		0.0746	Only 1 Contract
+20-50	0.0674		0.0638		0.0639		0.0658		0.0800		0.0840								0.0677	
+50-200	0.0633		0.0610		0.0622		0.0635		0.0677		0.0847	0.0949	0.0539		Only 1 Contract		Only 1 Contract		0.0656	Only 1 Contract
+200															Only 1 Contract	Only 1 Contract	Only 1 Contract		Only 2 Contracts	Only 1 Contract
Geothermal Total	**0.0660**		**0.0638**		**0.0644**		**0.0662**	**0.1140**	**0.0704**		**0.0836**	**0.0949**	**0.0543**		**0.0650**	**Only 1 Contract**	**0.0591**		**0.0658**	**0.0835**
Small Hydro																				
0-3	0.0682		0.0681		0.0727		0.0734		0.0807		0.0912		0.0684		0.0726		0.0702	Only 1 Contract	0.0734	Only 1 Contract
+3-20	0.0755		0.0747		0.0729	0.0575	0.0695		0.0755		0.0923		0.0743	Only 1 Contract	0.0733	Only 1 Contract	0.0697		0.0742	0.0743
Small Hydro Total	**0.0734**		**0.0727**		**0.0729**	**0.0575**	**0.0703**		**0.0766**		**0.0920**		**0.0729**	**Only 1 Contract**	**0.0731**	**Only 1 Contract**	**0.0698**	**Only 1 Contract**	**0.0740**	**0.0746**
Solar PV																				
0-3	0.0591		0.0643		0.0788		0.0742		0.0762	0.2240	0.0844		0.0684		Only 1 Contract		Only 1 Contract		0.0652	Only 1 Contract
+3-20												0.2102	0.1177	Only 1 Contract	Only 2 Contracts	0.1964	0.2265	Only 1 Contract	0.1954	0.1773
+20-50															Only 1 Contract	0.1616	Only 1 Contract		Only 2 Contracts	0.1616
+50-200																Only 2 Contracts	Only 1 Contract	Only 1 Contract	Only 1 Contract	0.1392
+200														Only 2 Contracts		Only 2 Contracts				0.1579
Solar PV Total	**0.0591**		**0.0643**		**0.0788**		**0.0742**		**0.0762**	**0.2240**	**0.0844**	**0.2102**	**0.1177**	**0.1579**	**0.1737**	**0.1487**	**0.1868**	**Only 2 Contracts**	**0.1780**	**0.1518**
Solar Thermal																				
+50-200														0.1592		Only 1 Contract				0.1628
+200																Only 1 Contract				Only 1 Contract
Solar Thermal Total														**0.1592**		**Only 2 Contracts**				**0.1680**
Wind																				
0-3	0.0683		0.0686		0.0655		0.0696		0.0804		0.0981		0.0601		0.0679		0.0629		0.0719	
+3-20	0.0686		0.0685	0.0455	0.0618		0.0662		0.0728		0.0678		0.0695		0.0698		0.0586		0.0673	Only 1 Contract
+20-50	0.0696		0.0698		0.0667	0.0569	0.0714		0.0752		0.0720		0.0721		0.0734	Only 1 Contract	0.0777		0.0721	Only 2 Contracts
+50-200	0.0714		0.0722		0.0564	0.0564	0.0572		0.0635		0.0712	0.0868	0.0813	0.0944	0.0760	0.1264	0.0864	0.1177	0.0780	0.1037
+200	0.0687		0.0684		0.0660		0.0702		0.0765		0.0725		0.0740	Only 1 Contract	Only 2 Contracts	Only 1 Contract	0.0711		0.0716	Only 2 Contracts
Wind Total	**0.0694**		**0.0695**	**0.0455**	**0.0623**	**0.0566**	**0.0658**		**0.0715**		**0.0712**	**0.0868**	**0.0780**	**0.0951**	**0.0750**	**0.1204**	**0.0806**	**0.1177**	**0.0742**	**0.1011**
UOG Solar																				
0-3 MW													0.2700		0.2700		0.2700		0.2700	
+3-20 MW																	0.1807		0.1807	
UOG Solar Total													**0.2700**		**0.2700**		**0.1970**		**0.2080**	
UOG Hydro																				
0-3 MW	0.0322		0.0322		0.0333		0.0340		0.0343		0.0351		0.0340		0.0356		0.0373		0.0342	
UOG Hydro Total	**0.0322**		**0.0322**		**0.0333**		**0.0340**		**0.0343**		**0.0351**		**0.0340**		**0.0356**		**0.0373**		**0.0342**	
Grand Total	**0.0647**		**0.0637**	**0.0455**	**0.0642**	**0.0568**	**0.0663**	**0.1022**	**0.0707**	**0.0940**	**0.0780**	**0.0921**	**0.0674**	**0.1244**	**0.0711**	**0.1244**	**0.0709**	**0.1228**	**0.0690**	**0.1217**

Table A-6. SCE, Weighted Average TOD-Adjusted RPS Procurement Expenditures and Average Price of Contracts

	2003		2004		2005		2006		2007		2008		2009		2010		2011		Totals	
Technology Type by Project Size	**Average RPS Procurement Expenditures ($/kWh)**	**Average Price of Contracts Approved ($/kWh)**	**Average RPS Procurement Expenditures ($/kWh)**	**Average Price of Contracts Approved ($/kWh)**	**Average RPS Procurement Expenditures ($/kWh)**	**Average Price of Contracts Approved ($/kWh)**	**Average RPS Procurement Expenditures ($/kWh)**	**Average Price of Contracts Approved ($/kWh)**	**Average RPS Procurement Expenditures ($/kWh)**	**Average Price of Contracts Approved ($/kWh)**	**Average RPS Procurement Expenditures ($/kWh)**	**Average Price of Contracts Approved ($/kWh)**	**Average RPS Procurement Expenditures ($/kWh)**	**Average Price of Contracts Approved ($/kWh)**	**Average RPS Procurement Expenditures ($/kWh)**	**Average Price of Contracts Approved ($/kWh)**	**Average RPS Procurement Expenditures ($/kWh)**	**Average Price of Contracts Approved ($/kWh)**	**Average RPS Procurement Expenditures ($/kWh)**	**Average Price of Contracts Approved ($/kWh)**
Biogas																				
0-3 MW	0.0438	0.1005	0.0511		0.0578		0.0557		0.0535	0.0687	0.0581		0.0607	Only 2 Contracts	0.0910		0.0878		0.0649	0.0920
+3-20 MW	0.0606	0.1005	0.0677		0.0783		0.0724		0.0766	0.0704	0.0858		0.0759		0.0878	Only 2 Contracts	0.0960		0.0725	0.0859
+20-50 MW	0.0789		0.0778		0.0773		0.0776		0.0829		0.0865		0.0892		Only 1 Contract		Only 2 Contracts		0.0830	
Biogas Total	**0.0680**	**0.1005**	**0.0716**		**0.0763**		**0.0738**		**0.0792**	**0.0704**	**0.0837**		**0.0838**	**Only 2 Contracts**	**0.0885**	**Only 2 Contracts**	**0.0894**		**0.0782**	**0.0874**
Biomass																				
+3-20 MW										0.1004	0.0729		0.0841		Only 1 Contract		Only 2 Contracts		0.0853	Only 1 Contract
+20-50 MW	0.0826		0.0819		0.0834		0.0830		0.0876		0.0907		0.0913		Only 1 Contract		Only 2 Contracts		0.0872	
Biomass Total	**0.0826**		**0.0819**		**0.0834**		**0.0830**		**0.0876**	**0.1004**	**0.0905**		**0.0902**		**Only 2 Contracts**		**Only 2 Contracts**		**0.0871**	**Only 1 Contract**
Geothermal																				
+3-20 MW	0.0765		0.0775		0.0794		0.0813		0.0851		0.0900		0.0900		0.0911		0.0925		0.0839	
+20-50 MW	0.0873		0.0854		0.0855		0.0843		0.0903		0.0916	0.0833	0.0885		0.0894		0.0898		0.0879	Only 1 Contract
+50-200 MW	0.0680	0.0380	0.0640		0.0642		0.0643		0.0734		0.0847	0.0960	0.0850		0.0850	Only 2 Contracts	0.0855		0.0729	0.0717
+200 MW		0.0663							0.0773	0.1037	0.0891		0.0525		Only 1 Contract		Only 2 Contracts		0.0633	Only 2 Contracts
Geothermal Total	**0.0754**	**0.0530**	**0.0720**		**0.0726**		**0.0722**		**0.0799**	**0.1037**	**0.0882**	**0.0925**	**0.0780**		**0.0787**	**Only 2 Contracts**	**0.0776**		**0.0772**	**0.0742**
Small Hydro																				
a0-3 MW	0.0786		0.0802		0.0942		0.0846		0.0845		0.0975	0.0938	0.0823		0.0837		0.0827		0.0851	Only 2 Contracts
b+3-20 MW	0.0633	0.0340	0.0526		0.0673		0.0617		0.0555		0.0938	0.1105	0.0928		0.0887		0.0872		0.0708	0.0718
Small Hydro Total	**0.0653**	**0.0340**	**0.0558**		**0.0705**		**0.0641**		**0.0596**		**0.0945**	**0.1087**	**0.0883**		**0.0873**		**0.0864**		**0.0733**	**0.0730**
Solar PV																				
0-3 MW																0.2039	Only 2 Contracts	0.1409	Only 2 Contracts	0.1680
+3-20 MW																0.1608		0.1166		0.1407
+20-50 MW												0.1185	0.0845		Only 1 Contract		Only 2 Contracts		0.1156	Only 1 Contract
+200 MW																Only 2 Contracts				Only 2 Contracts
Solar PV Total												**0.1185**	**0.0845**		**Only 1 Contract**	**0.1660**	**0.1172**	**0.1202**	**0.1162**	**0.1590**
Solar Thermal																				
0-3 MW	0.0577		0.0587		0.0848		0.0842												0.0613	
+3-20 MW													0.0643		Only 1 Contract	Only 1 Contract	Only 2 Contracts		0.0636	Only 1 Contract
+20-50 MW	0.1317		0.1345		0.1519		0.1529		0.1492		0.1501		0.1328		0.1386		0.1358		0.1412	
+50-200 MW	0.1631		0.1651		0.1804		0.1767		0.1786		0.1778		0.1513		Only 2 Contracts	Only 1 Contract	Only 2 Contracts		0.1618	Only 1 Contract
+200 MW																				
Solar Thermal Total	**0.1449**		**0.1476**		**0.1645**		**0.1639**		**0.1622**		**0.1622**		**0.1412**		**0.1396**	**Only 2 Contracts**	**0.1405**		**0.1506**	**Only 2 Contracts**
Wind																				
0-3 MW	0.0588		0.0592		0.0622		0.0637		0.0718		0.0898		0.0520		Only 2 Contracts		Only 2 Contracts		0.0643	
+3-20 MW	0.0687		0.0710		0.0718		0.0708		0.0795		0.0950		0.0651		0.0691		0.0686		0.0731	
+20-50 MW	0.0724		0.0745		0.0730		0.0715	0.0648	0.0777	0.0723	0.0850		0.0700		0.0730	Only 1 Contract	0.0717		0.0743	0.0875
+50-200 MW	0.0717		0.0726		0.0707		0.0708		0.0772	0.0724	0.0885	0.1192	0.0722		0.0744	Only 1 Contract	0.1044		0.0849	0.1180
+200 MW						0.1120														Only 1 Contract
Wind Total	**0.0711**		**0.0730**		**0.0721**	**0.1120**	**0.0711**	**0.0648**	**0.0781**	**0.0723**	**0.0886**	**0.1192**	**0.0689**		**0.0720**	**Only 2 Contracts**	**0.0880**		**0.0767**	**0.1154**
UOG Solar																				
0-3 MW													0.3700		0.3835		0.3144		0.3323	
UOG Solar Total													**0.3700**		**0.3835**		**0.3144**		**0.3323**	
UOG Small Hydro																				
0-3 MW	0.0301		0.0405		0.0334		0.0331		0.0716		0.0486		0.0556		0.0586				0.0443	
+3-20 MW	0.0156		0.0217		0.0186		0.0186		0.0335		0.0332		0.0317		0.0325				0.0247	
+20-50 MW	0.0124		0.0138		0.0135		0.0154		0.0207		0.0250		0.0289		0.0265				0.0175	
UOG Small Hydro Total	**0.0173**		**0.0226**		**0.0199**		**0.0205**		**0.0358**		**0.0356**		**0.0350**		**0.0357**				**0.0266**	
Grand Total	**0.0759**	**0.0529**	**0.0747**		**0.0752**	**0.1120**	**0.0742**	**0.0648**	**0.0827**	**0.0959**	**0.0912**	**0.1140**	**0.0799**	**Only 2 Contracts**	**0.0814**	**0.1351**	**0.0862**	**0.1202**	**0.0802**	**0.1014**

Table A-7. SDG&E, Weighted Average TOD-Adjusted RPS Procurement Expenditures and Average Price of Contracts

	2003		2004		2005		2006		2007		2008		2009		2010		2011		Totals	
Technology Type by Project Size	**Average RPS Procurement Expenditures ($/kWh)**	**Average Price of Contracts Approved ($/kWh)**	**Average RPS Procurement Expenditures ($/kWh)**	**Average Price of Contracts Approved ($/kWh)**	**Average RPS Procurement Expenditures ($/kWh)**	**Average Price of Contracts Approved ($/kWh)**	**Average RPS Procurement Expenditures ($/kWh)**	**Average Price of Contracts Approved ($/kWh)**	**Average RPS Procurement Expenditures ($/kWh)**	**Average Price of Contracts Approved ($/kWh)**	**Average RPS Procurement Expenditures ($/kWh)**	**Average Price of Contracts Approved ($/kWh)**	**Average RPS Procurement Expenditures ($/kWh)**	**Average Price of Contracts Approved ($/kWh)**	**Average RPS Procurement Expenditures ($/kWh)**	**Average Price of Contracts Approved ($/kWh)**	**Average RPS Procurement Expenditures ($/kWh)**	**Average Price of Contracts Approved ($/kWh)**	**Average RPS Procurement Expenditures ($/kWh)**	**Average Price of Contracts Approved ($/kWh)**
BioGas																				
0-3 MW	0.0484		0.0498		0.0507	0.0591	0.0513		0.0518		0.0524		0.0584	Only 1 Contract	0.0637	Only 2 Contracts	0.0648		0.0556	0.0870
+3-20 MW	0.0503		0.0499		0.0503	0.0570	0.0505	0.0756	0.0508		0.0548		0.0548		0.0568		0.0569		0.0530	0.0667
Biogas Total	**0.0500**		**0.0498**		**0.0504**	**0.0584**	**0.0507**	**0.0756**	**0.0512**		**0.0542**		**0.0558**	**Only 1 Contract**	**0.0589**	**Only 2 Contracts**	**0.0596**		**0.0537**	**0.0800**
Biomass																				
+3-20 MW												Only 1 Contract			Only 1 Contract		Only 1 Contract		Only 2 Contracts	Only 1 Contract
+20-50 MW	0.0553		0.0553		0.0576		0.0597	0.0647	0.0564		0.0725		0.0680		Only 1 Contract		Only 1 Contract		0.0635	0.0647
Biomass Total	**0.0553**		**0.0553**		**0.0576**		**0.0597**	**0.0647**	**0.0564**		**0.0725**	**Only 1 Contract**	**0.0680**		**Only 2 Contracts**		**Only 2 Contracts**		**0.0639**	**Only 2 Contracts**
Geothermal																				
+20-50 MW															Only 1 Contract	Only 1 Contract	Only 2 Contracts	Only 1 Contract	0.1038	Only 2 Contracts
+50-200 MWh																	Only 1 Contract		Only 1 Contract	
Geothermal Total															**Only 1 Contract**	**Only 1 Contract**	**0.0853**	**Only 1 Contract**	**0.0910**	**Only 2 Contracts**
Small Hydro																				
+3-20 MW		0.0537							0.0568		0.0529		0.0512		Only 1 Contract		Only 1 Contract		0.0527	0.0537
Small Hydro Total		**0.0537**							**0.0568**		**0.0529**		**0.0512**		**Only 1 Contract**		**Only 1 Contract**		**0.0527**	**0.0537**
Solar PV																				
+3-20 MWh																		Only 2 Contracts		Only 2 Contracts
+20-50 MWh																		0.1440		0.1440
+50-200 MWh										Only 1 Contract								0.1349		0.1365
Solar PV Total										**Only 1 Contract**								**0.1363**		**0.1376**
Wind																				
+3-20 MW			0.0520		0.0519		0.0512		0.0526		0.0527		0.0525		Only 1 Contract	Only 1 Contract	Only 2 Contracts		0.0555	Only 1 Contract
+20-50 MW	0.0414		0.0491	0.0518	0.0492		0.0490		0.0495		0.0501		0.0506		Only 2 Contracts		Only 2 Contracts		0.0499	0.0518
+50-200 MW			0.0492		0.0492		0.0492		0.0492		0.0492		0.0653	Only 1 Contract	Only 2 Contracts	Only 2 Contracts	Only 1 Contract		0.0578	0.1096
Wind Total	**0.0414**		**0.0501**	**0.0518**	**0.0495**		**0.0492**		**0.0495**		**0.0498**		**0.0609**	**Only 1 Contract**	**0.0598**	**0.1144**	**0.0522**		**0.0545**	**0.1041**
Grand Total	**0.0539**	**0.0537**	**0.0529**	**0.0518**	**0.0529**	**0.0584**	**0.0530**	**0.0654**	**0.0517**	**Only 1 Contract**	**0.0582**	**Only 1 Contract**	**0.0619**	**Only 2 Contracts**	**0.0698**	**0.1144**	**0.0712**	**0.1298**	**0.0611**	**0.1161**