California Solar Initiative Progress Report

2014 Annual Data Annex

4/27/2015

This report was compiled by the California Solar Initiative (CSI) Program Administrators (PA or PAs) – Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), and the Center for Sustainable Energy (CSE) – pursuant to direction from the California Public Utilities Commission (CPUC or Commission).

Table of Contents

Table of Contents 3
List of Tables 3
List of Figures 4
1. Introduction and Background 5
2. Administrative Performance 6
2.1 CSI Program and Interconnection Metrics 6
2.1.1 Project Completion Time 6
2.1.2 Application to Reservation Time 6
2.1.3 Installation Time 6
2.1.4 ICF Processing Time (without Inspection) 6
2.1.5 ICF Processing Time (with Inspection) 7
2.1.6 Payment Time 7
2.1.7 Interconnection Time 7
2.2 Standards of Performance 7
2.3 Real-time Tabular Data 7
2.4 Graphics for CSI Residential and Non-Residential Program Metrics 7
2.5 Factors Affecting Administrative Performance 21
2.6 Issues Interconnection Departments Faced 22
3. Program Dropouts 23
4. CSI Program Trainings 25
4.1 PG&E Training Offerings 26
4.2 SCE Training Offerings 27
4.3 CSE Training Offerings 28
5. Net Energy Metering 30

List of Tables

Table 1: CSI General Market Budget and Allocation by Utility 5
Table 2: Application Processing Guidelines 7
Table 3: Megawatts Dropped Out Divided by Megawatts Reserved (Bucketed by Quarter Reserved) 23
Table 4: Megawatts Dropped Out Divided by the Sum of Megawatts Dropped Out and Completed (Bucketed by Quarter Dropped Out) 24
Table 5: NEM Capacity, Customers and Percentage of Aggregate Customer Peak Demand as of December 31, 2014 30
Table 6: NEM Capacity in MW and in Percent of Aggregate Customer Peak Demand by Quarter 31

List of Figures

Figure 1: Residential Project Completion Time 8
Figure 2: Non-Residential Project Completion Time 9
Figure 3: Residential Application to Reservation Time 10
Figure 4: Non-Residential Application to Reservation Time 11
Figure 5: Residential Installation Time 12
Figure 6: Non-Residential Installation Time 13
Figure 7: Residential ICF Processing Time without Inspection 14
Figure 8: Non-Residential ICF Processing Time without Inspection 15
Figure 9: Residential ICF Processing Time with Inspection 16
Figure 10: Non-Residential ICF Processing Time with Inspection 17
Figure 11: Residential Payment Time 18
Figure 12: Non-Residential Payment Time 19
Figure 13: Residential Interconnection Time 20
Figure 14: Non-Residential Interconnection Time 20
Figure 15: Number of Trainings by Program Administrator 25
Figure 16: Number of Training Attendees by Program Administrator 25
Figure 17: Total NEM Capacity 32
Figure 18: NEM Capacity as a Percentage of Aggregate Customer Peak Demand (Coincident) 32
Figure 19: NEM Capacity as a Percentage of Aggregate Customer Peak Demand (Non-Coincident) 33

1. Introduction and Background

The CSI Program was authorized by the CPUC in a series of regulatory decisions throughout 2006. In addition, the Legislature expressly authorized the CPUC to create the CSI Program in 2006 in Senate Bill (SB) 1 (Murray, 2006). Its original budget was $2.167 billion. The original step allocations and megawatt (MW) goals were divided among the three investor-owned utilities (IOUs) according to the proportion of their respective electricity sales. The goals and budgets were determined by each utility's percentage of electricity sales compared to the total of all three IOUs sales. These allocated percentages are:

Program Administrator	Allocated Percent (%)
PG&E	43.7
SCE	46.0
SDG&E	10.3

Pursuant to Senate Bill 585 an additional $200 million was allocated to PG&E, SCE, and SDG&E using the allocation percentages as adopted by the Commission through the Decision (D.) 11-12-019. Moreover, Table 1 shows the CSI general market M&O budget of $15 million is equally split ($5 million each) among three PAs.

Table 1: CSI General Market Budget and Allocation by Utility

		Allocation by Utility		
Program Component	Total Budget	PG&E	SCE	SDG&E
D.06-08-028 allocation	100.00%	43.70%	46.00%	10.30%
General Market Program Incentives	$1,747,810,000	$763,792,970	$803,992,600	$180,024,430
SB 585 Budget Increase*	$200,000,000	$114,000,000	$64,000,000	$22,000,000
Total Incentives	**$1,947,810,000**	**$877,792,970**	**$867,992,600**	**$202,024,430**
Program Administration	**$94,860,000**	**$41,453,820**	**$43,635,600**	**$9,770,580**
Total Measurement & Evaluation (M&E)	**$26,700,000**	**$11,667,900**	**$12,282,000**	**$2,750,100**
M&O, general market CSI**	$15,000,000	$5,000,000	$5,000,000	$5,000,000
M&O, CSI-Thermal Electric Only	$6,250,000	$2,731,250	$2,875,000	$643,750
Total Marketing and Outreach (M&O)	**$21,250,000**	**$7,731,250**	**$7,875,000**	**$5,643,750**
Unallocated	**$6,900,000**	**$3,015,300**	**$3,174,000**	**$710,700**
Total General Market Program	***$2,097,520,000***	***$941,661,240***	***$934,959,200***	***$220,899,560***

Source: CPUC Decision (D.) 11-12-019 issued December 12, 2011.

Notes: *The original allocation percentages are not applicable to the SB 585 budget increase.

**The CSI General Market M&O budget was adopted in D.11-07-031.

2. Administrative Performance

The CPUC tracks a number of administrative metrics in order to monitor potential program administration issues. In particular, the CPUC is interested in application and payment processing times, including the amount of time needed to move projects from: application to project completion, application to reservation, reservation to installation, incentive claim request to payment approval, and from payment approval to payment issued. Additionally, the CPUC monitors the average number of days for interconnection applications to be completed.

2.1 CSI Program and Interconnection Metrics

Reported metrics are described in the section below. For more detailed definitions, please visit http://csi.powerclerk.com/ProgramDocs/CSI/PowerClerk_Status_Info.pdf.

2.1.1 Project Completion Time

Project Completion is measured from time between "First Reservation Request Review Date" to either "First Completed Date" or "First PBI-In Payment Date" in calendar days for all projects completed through December 31, 2014. These times reflect both the PA processing times and host customer responsiveness to inquiries, requests for additional data and inspection scheduling. The data in the figures below is divided by residential and non-residential customer projects completed in each given month, for each PA.

2.1.2 Application to Reservation Time

The PAs strive to process reservation requests in 30 days or less for both residential and non-residential customer applications. Application to Reservation includes the application processing time, from the date the application is electronically received through PowerClerk and time-stamped to the date that a reservation is granted (either “first reservation reserved” status or “first pending RFP” for non-residential applications or “first confirmed reservation” status for residential applications). This time period includes both PA application processing time and the time that the host customer takes to respond to requests for more information or application corrections.

2.1.3 Installation Time

The average installation time is determined by the applicant and not the PA. Residential applicants have 12 months and non-residential applicants have 18 months from the date of the confirmed reservation to submit an Incentive Claim Form (ICF). In certain cases applicants request and may be granted extensions. Installation times also vary according to residential and non-residential projects. The average number of calendar days is measured between the customer’s confirmed reservation date and the date that the ICF was received by the PA, for all applications for which an ICF was received.

2.1.4 ICF Processing Time (without Inspection)

For CSI Program participants, incentive claim processing is an extremely important part of the project timeline. Incentive Claim Processing (without Inspection) measures how quickly incentive claims are processed for different types of projects, from the date that the ICF is electronically received and time-stamped, through PowerClerk by the PA, to the date that the application is changed to “pending payment” status.

2.1.5 ICF Processing Time (with Inspection)

Incentive Claim Processing (with Inspection) measures how quickly incentive claims are processed for different types of projects, from the date that the ICF is electronically received and time-stamped, through PowerClerk by the PA, to the date that the application is changed to "pending payment" status. After the ICF is submitted, the PA selects a random sampling of projects for on-site field inspection, during which inspectors verify that the installed system matches the system identified in the paperwork. As scheduling and inspection times often vary, projects identified for inspection are sorted into groups that were or were not inspected.

2.1.6 Payment Time

Payment time is measured from the time a project enters "Pending Payment" status to when it reaches either "Completed" or "PBI-In Payment" status. This reflects the amount of time it takes to issue payment to the applicant.

2.1.7 Interconnection Time

Interconnection is measured from the date the utility's interconnection department deems the interconnection application to be complete (e.g., final single line diagram, final building permit, etc.) to the date the "permission to operate" letter is issued. This time is generally under the utility's control and does not depend on additional inputs from other entities, such as cities, counties, etc. However, exogenous factors such as customer availability, adverse weather conditions, or unexpectedly high volume of applications may impact this process.

2.2 Standards of Performance

Decision (D.) 11-07-031 requires PAs to process 95% of applications within a specified number of calendar days, depending on whether the application was for a residential or non-residential system, and whether an inspection was required. Please refer to Table 2 below.

Table 2: Application Processing Guidelines

PA Action	Residential Systems	Non-Residential Systems
Reservation Issued	30 days	60 days
ICF Claim Processed (no inspection)	30 days	60 days
ICF Claim Processed (with inspection)	60 days	90 days
Incentive Paid after ICF claim approval	30 days	30 days

Source: CPUC Decision (D.) 11-07-031 issued July 20, 2011.

2.3 Real-time Tabular Data

The six metrics described in section 2.1 are available and updated every Wednesday on California Solar Statistics at www.californiasolarstaticstics.ca.gov.

2.4 Graphics for CSI Residential and Non-Residential Program Metrics

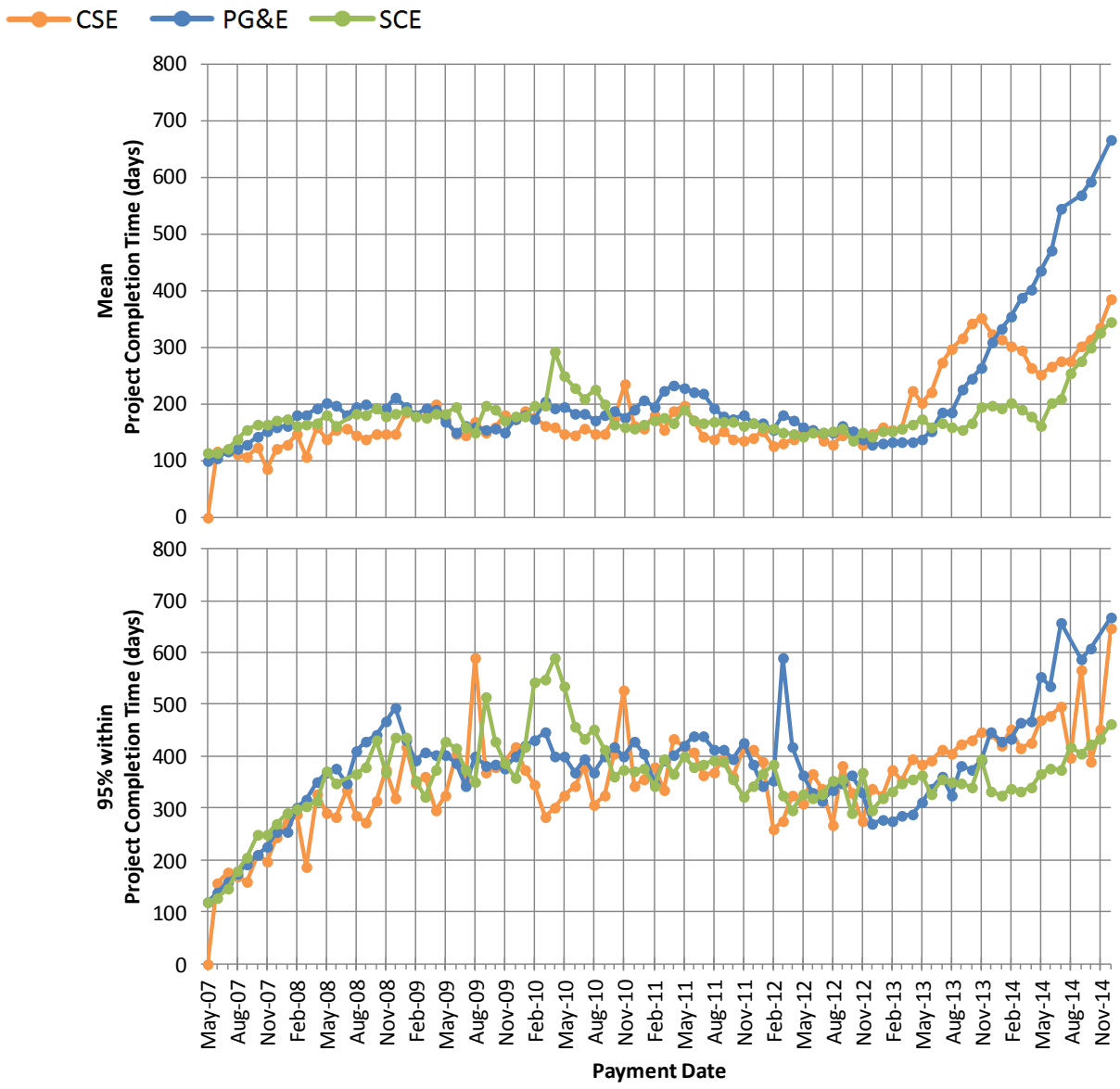

Figure 1: Residential Project Completion Time

Source: Data from California Solar Statistics at www.californiasolarstatistics.ca.gov

Notes: Data markers are displayed only for months in which at least one application was processed for a given administrative metric.

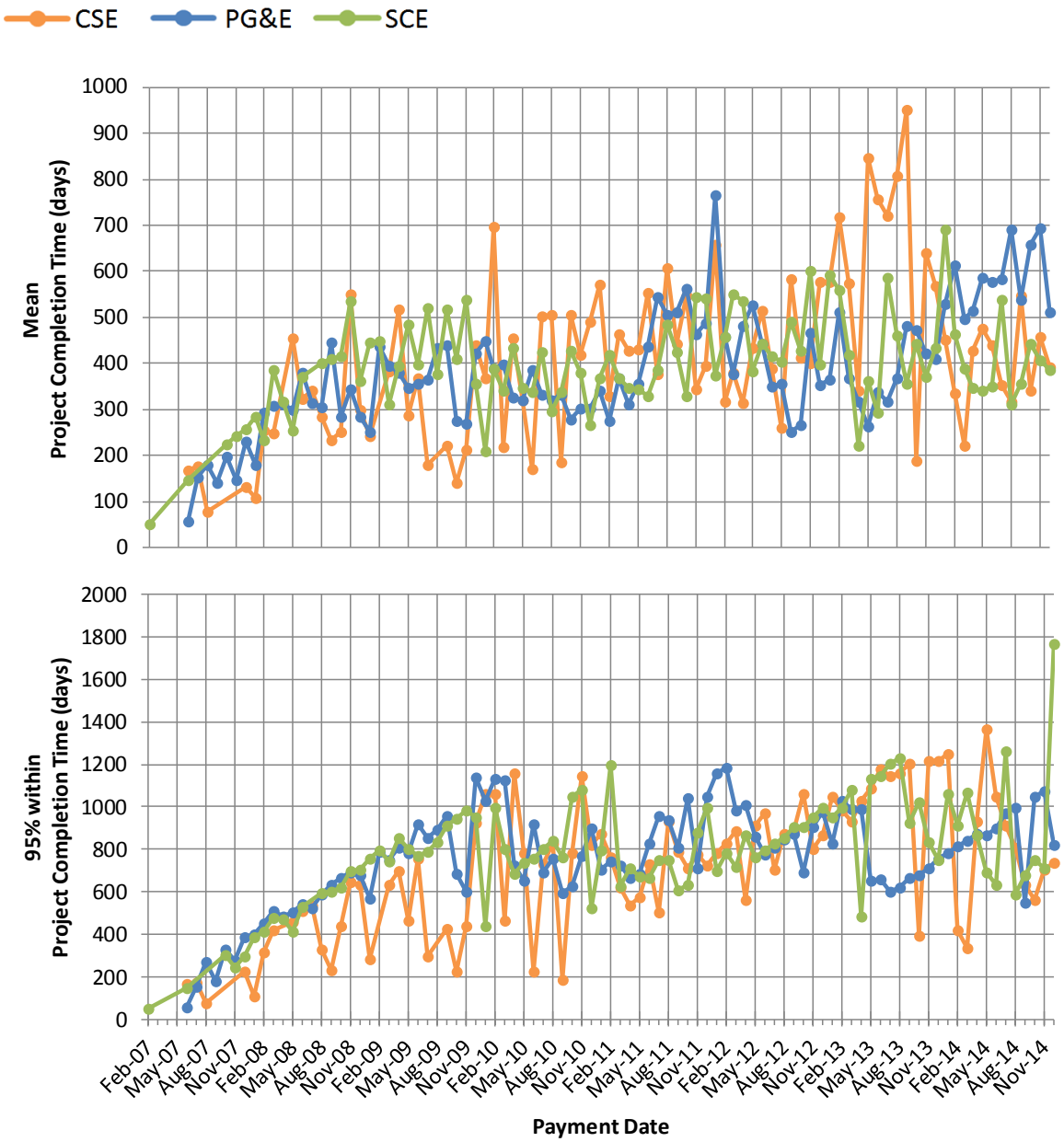

Figure 2: Non-Residential Project Completion Time

Source: Data from California Solar Statistics at www.californiasolarstatistics.ca.gov

Notes: Data markers are displayed only for months in which at least one application was processed for a given administrative metric.

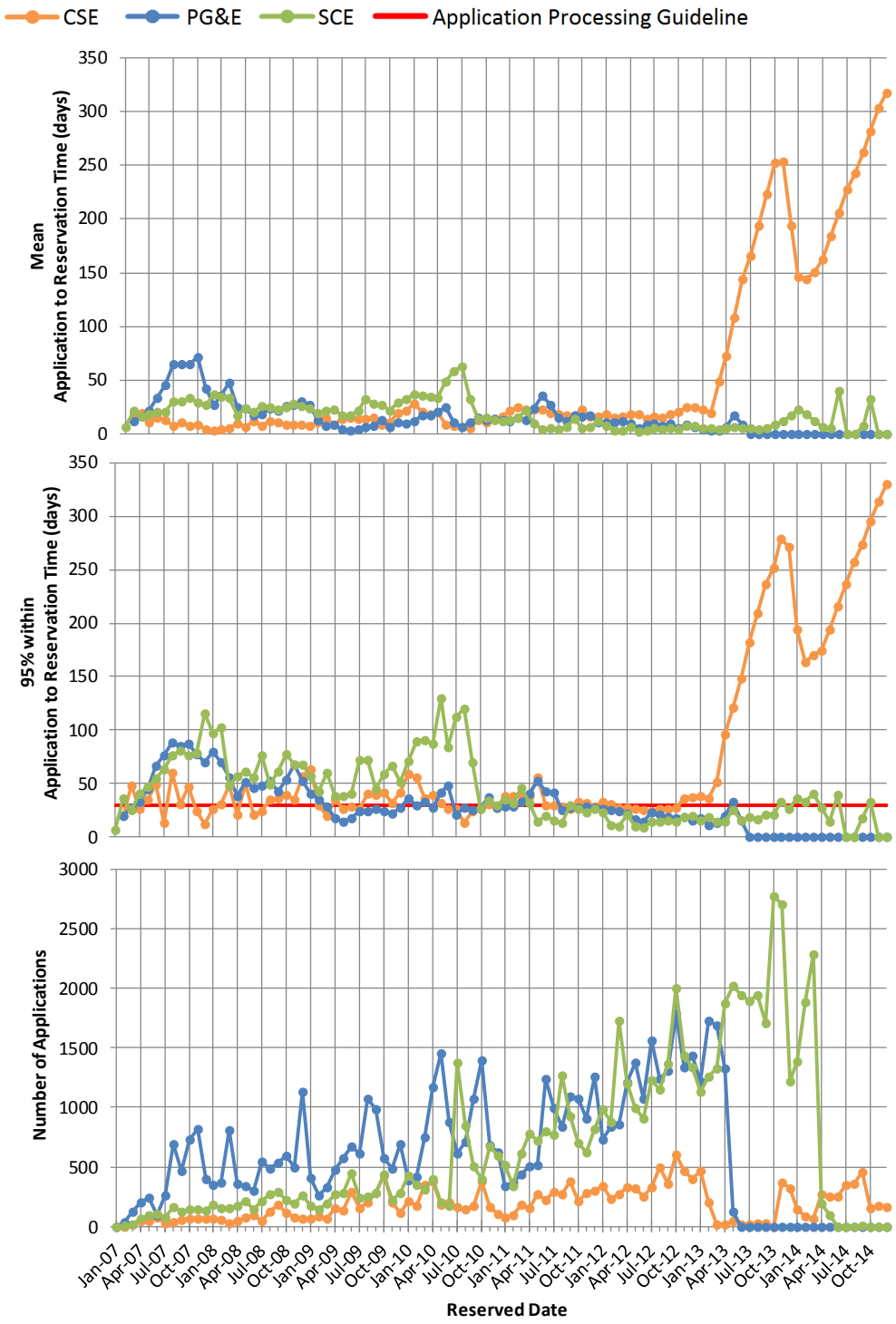

Figure 3: Residential Application to Reservation Time

Source: Data from California Solar Statistics at www.californiasolarstatistics.ca.gov

Notes: Data markers are displayed only for months in which at least one application was processed for a given administrative metric. Number of applications represents total number of applications reserved in a given month.

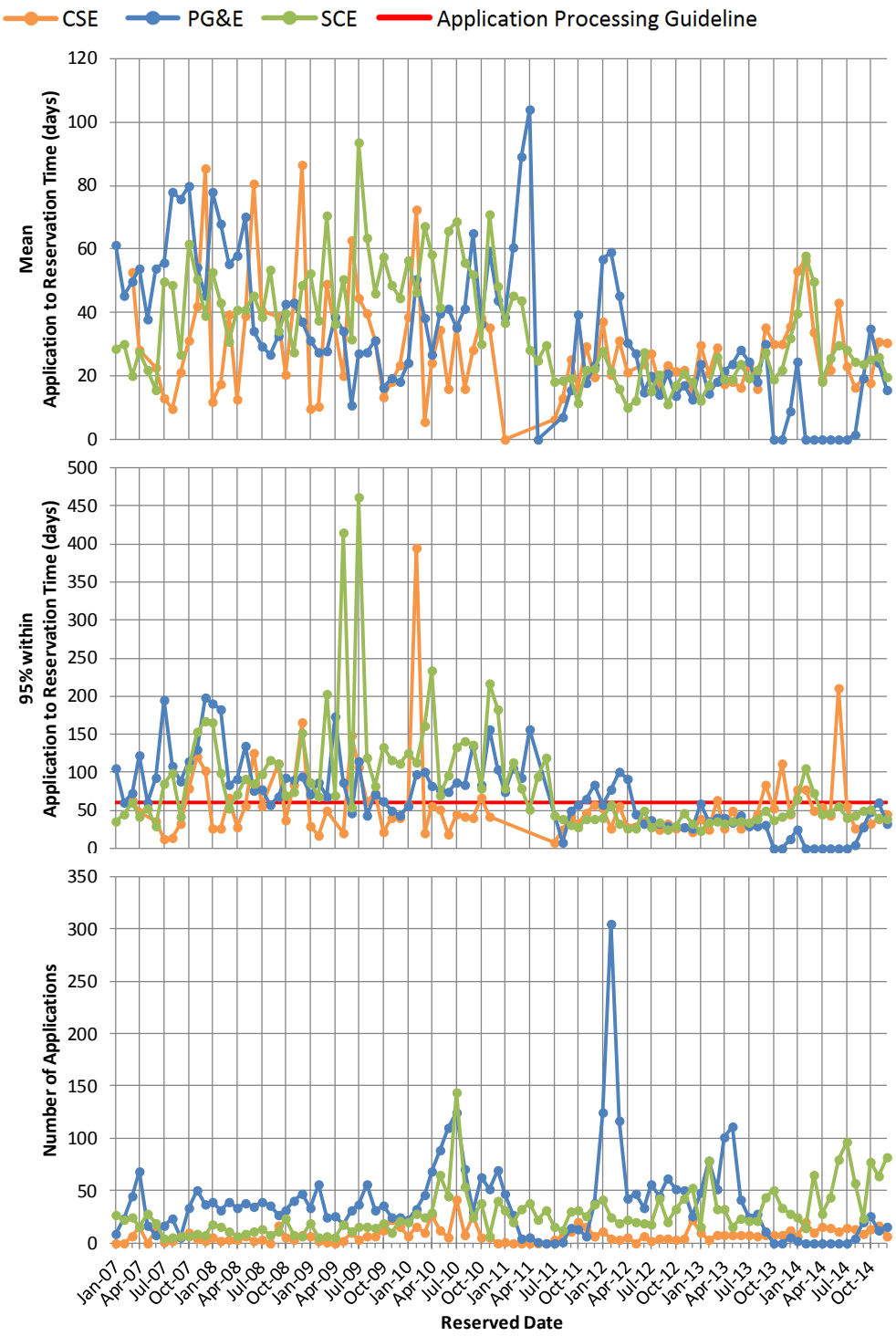

Figure 4: Non-Residential Application to Reservation Time

Source: Data from California Solar Statistics at www.californiasolarstatistics.ca.gov

Notes: Data markers are displayed only for months in which at least one application was processed for a given administrative metric.

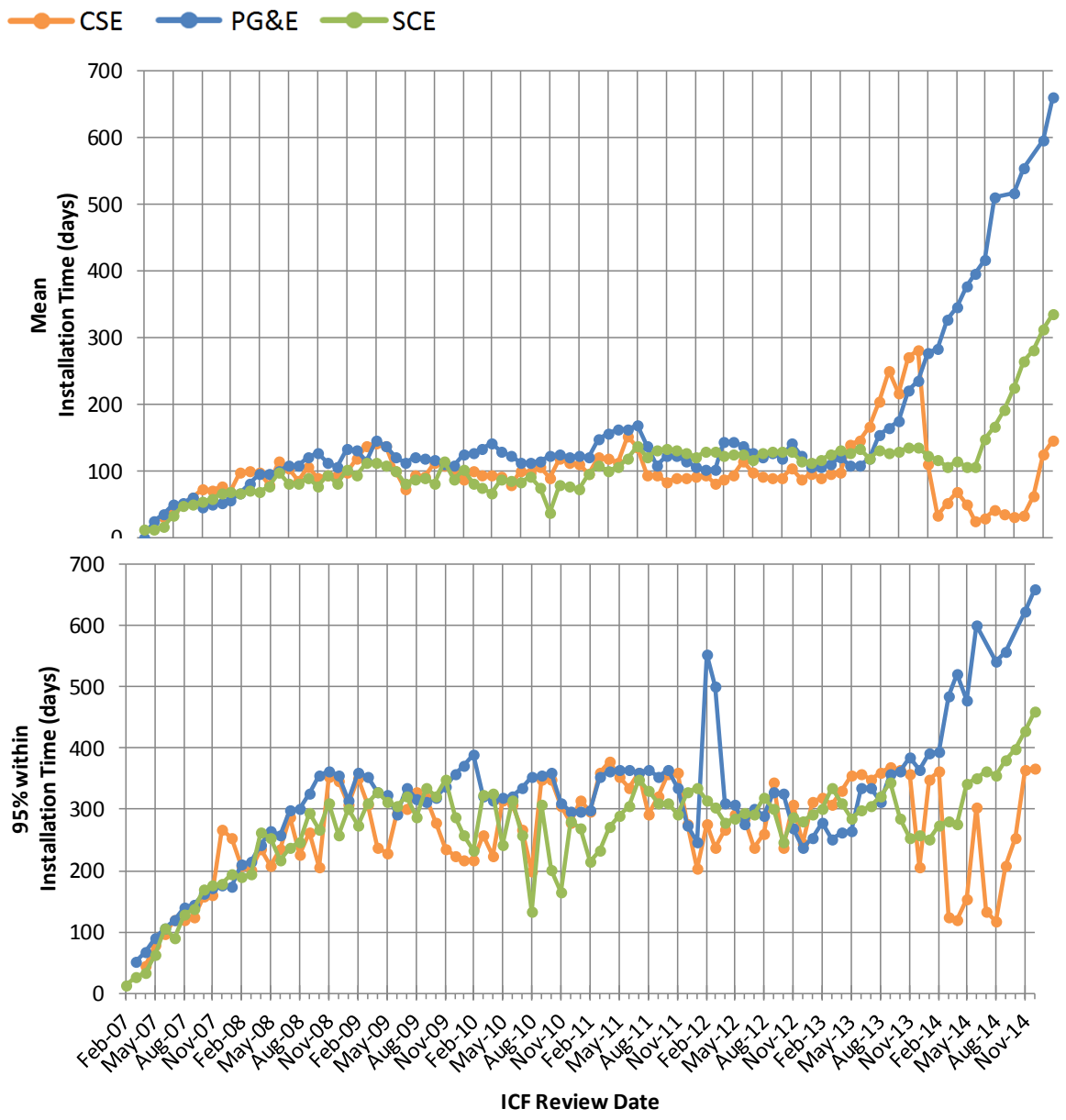

Figure 5: Residential Installation Time

Source: Data from California Solar Statistics at www.californiasolarstatistics.ca.gov

Notes: Data markers are displayed only for months in which at least one application was processed for a given administrative metric.

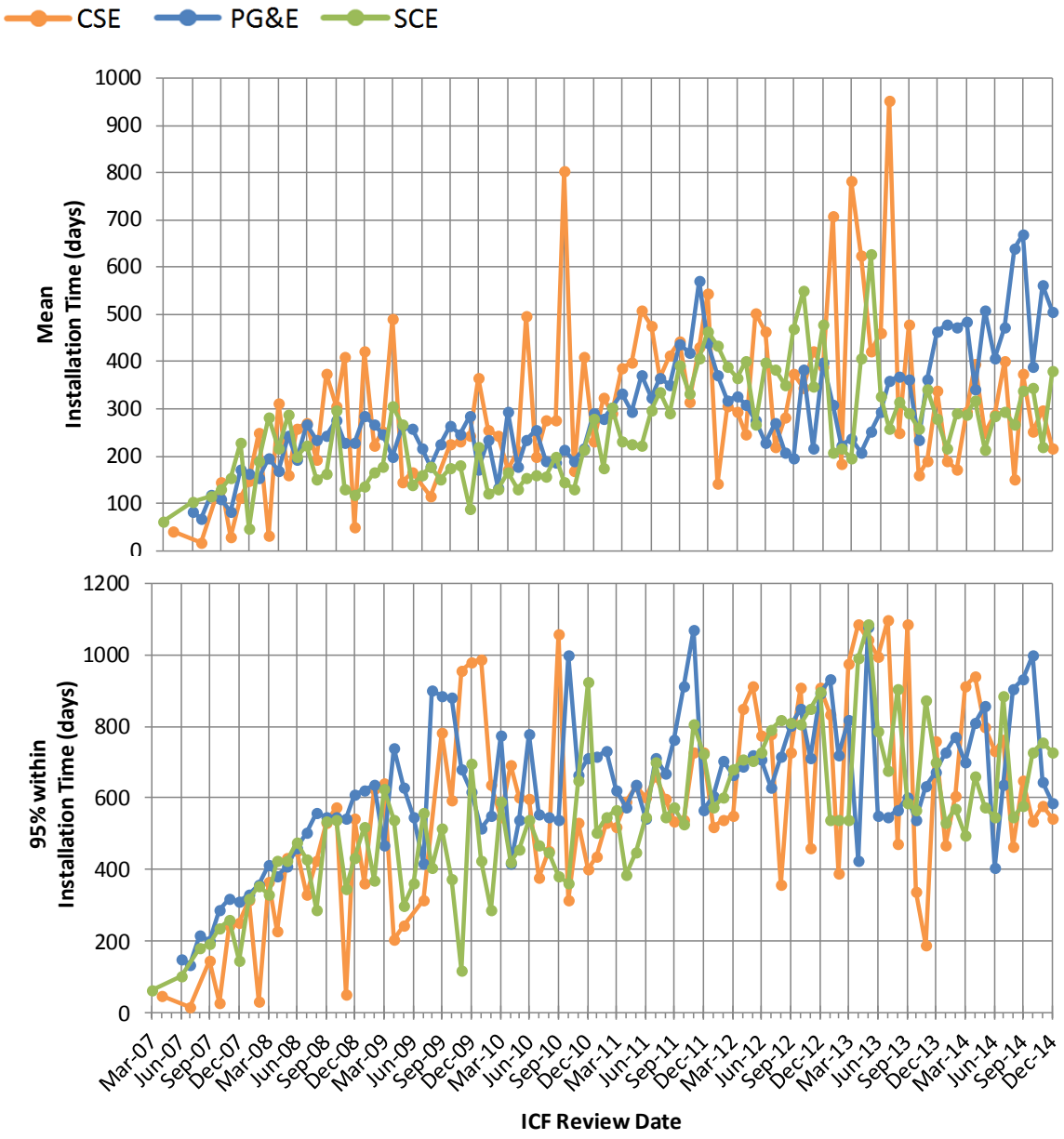

Figure 6: Non-Residential Installation Time

Source: Data from California Solar Statistics at www.californiasolarstatistics.ca.gov

Notes: Data markers are displayed only for months in which at least one application was processed for a given administrative metric.

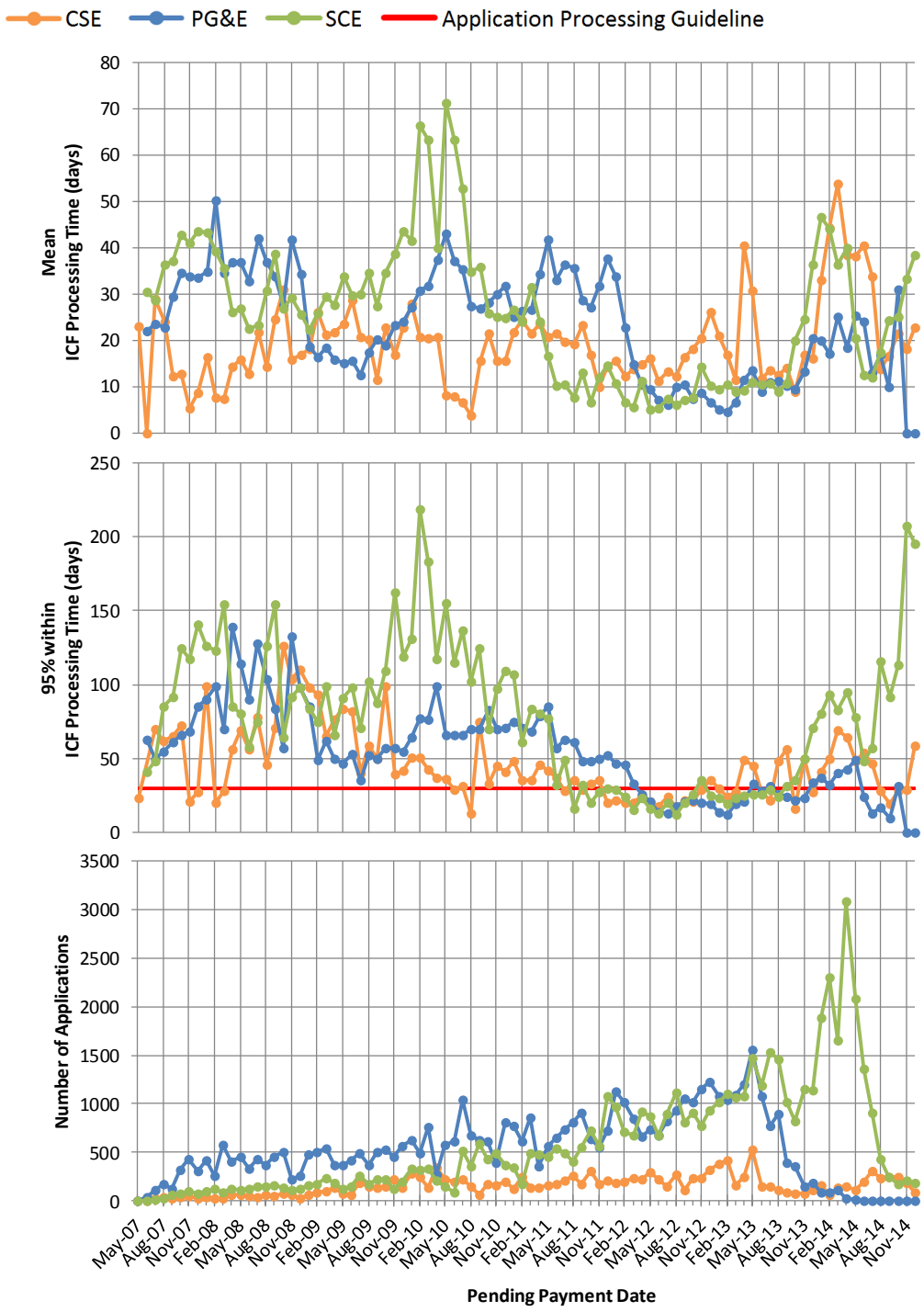

Figure 7: Residential ICF Processing Time without Inspection

Source: Data from California Solar Statistics at www.californiasolarstatistics.ca.gov

Notes: Data markers are displayed only for months in which at least one application was processed for a given administrative metric. Number of applications represents total ICF applications processed to pending payment in a given month.

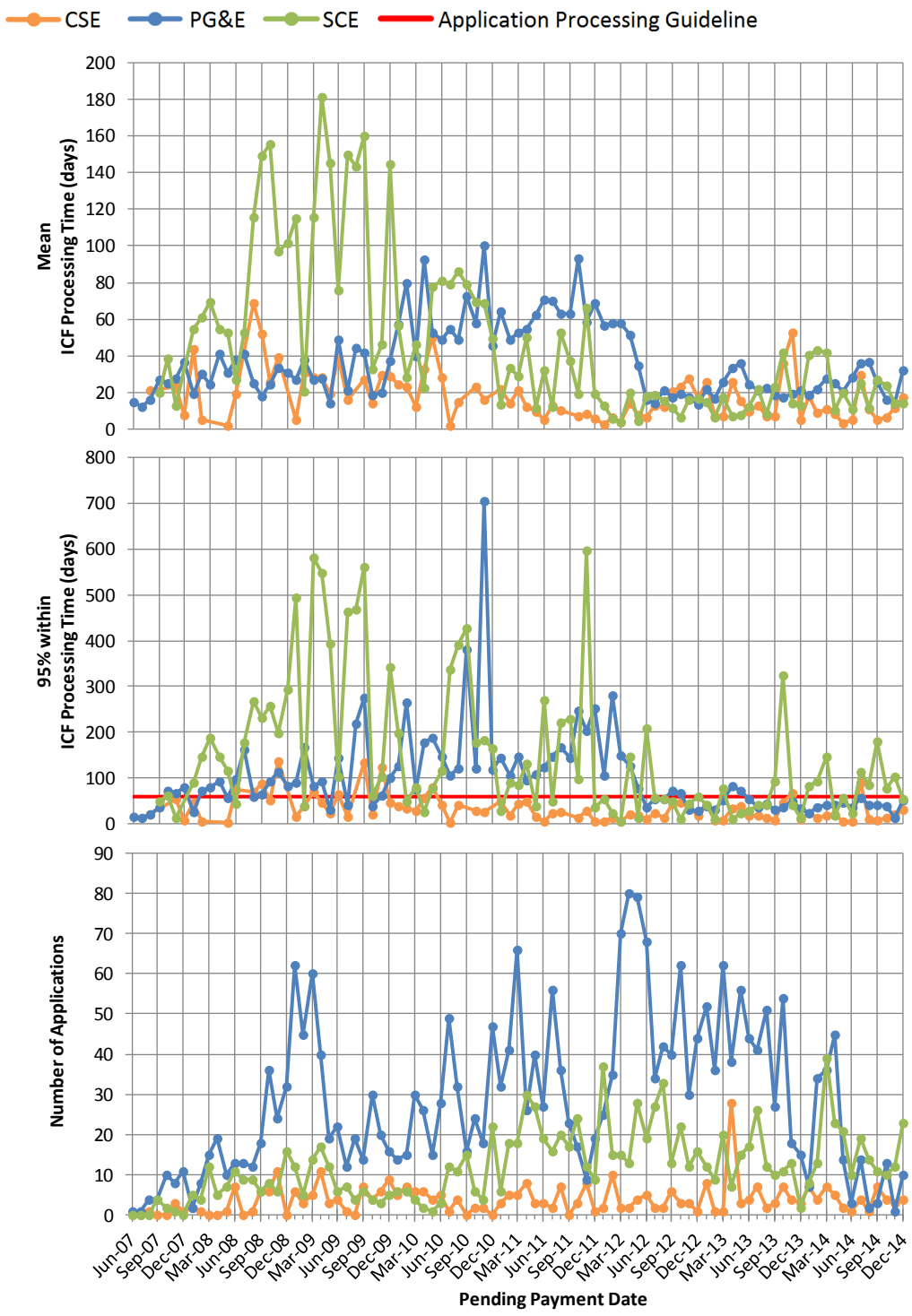

Figure 8: Non-Residential ICF Processing Time without Inspection

Source: Data from California Solar Statistics at www.californiasolarstatistics.ca.gov

Notes: Data markers are displayed only for months in which at least one application was processed for a given administrative metric.

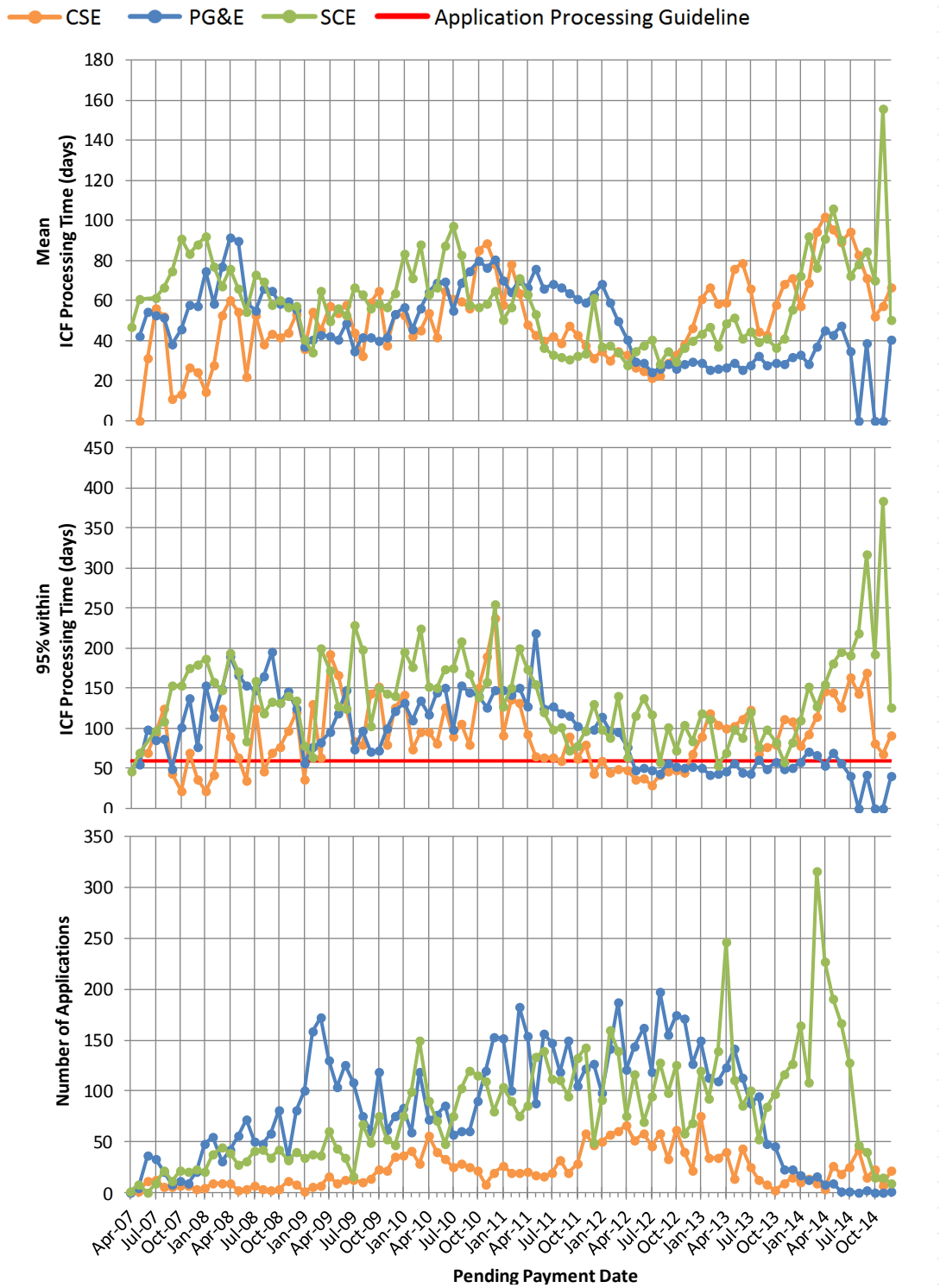

Figure 9: Residential ICF Processing Time with Inspection

Source: Data from California Solar Statistics at www.californiasolarstatistics.ca.gov

Notes: Data markers are displayed only for months in which at least one application was processed for a given administrative metric.

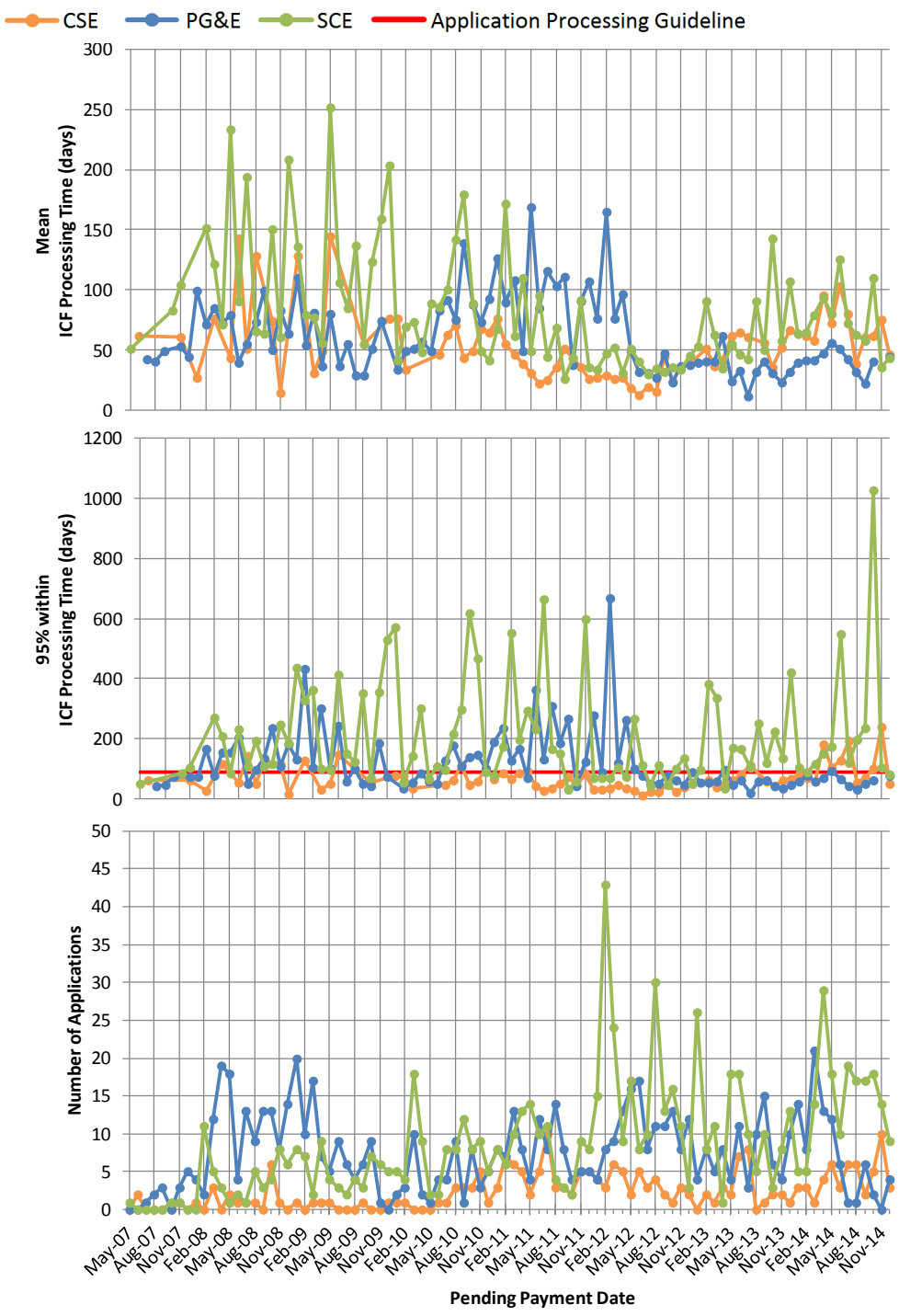

Figure 10: Non-Residential ICF Processing Time with Inspection

Source: Data from California Solar Statistics at www.californiasolarstatistics.ca.gov

Notes: Data markers are displayed only for months in which at least one application was processed for a given administrative metric.

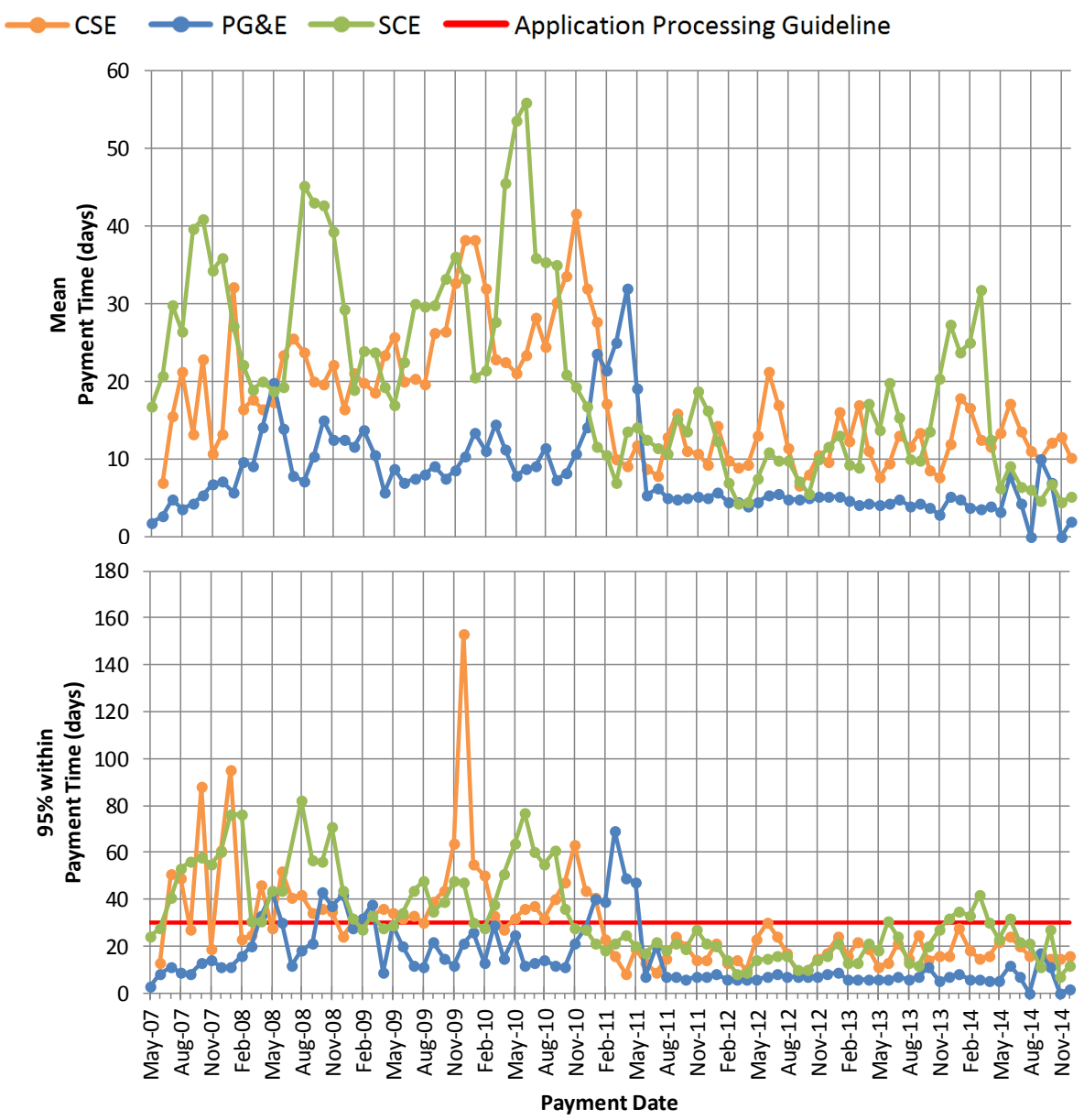

Figure 11: Residential Payment Time

Source: Data from California Solar Statistics at www.californiasolarstatistics.ca.gov

Notes: Data markers are displayed only for months in which at least one application was processed for a given administrative metric.

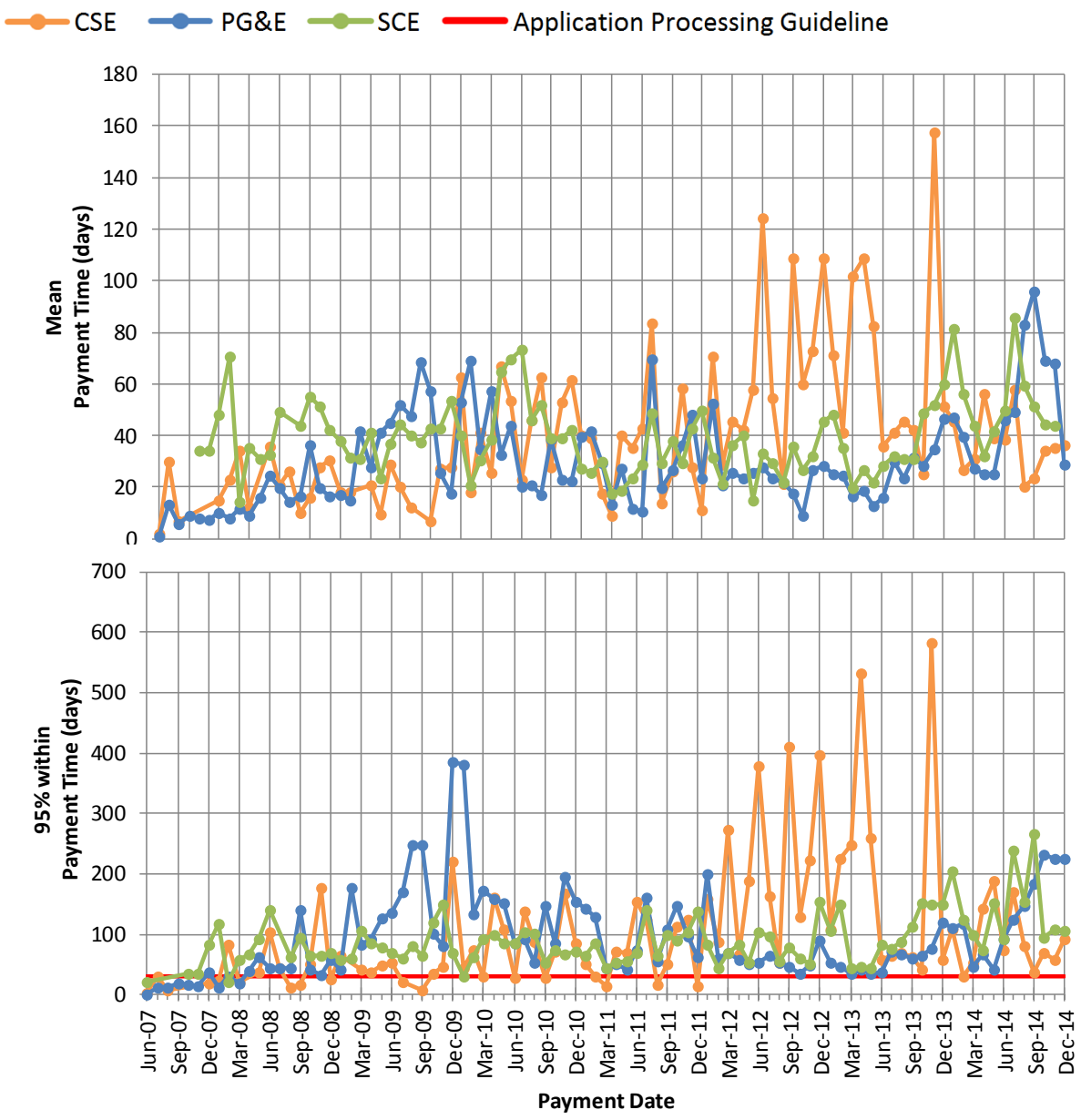

Figure 12: Non-Residential Payment Time

Source: Data from California Solar Statistics at www.californiasolarstatistics.ca.gov

Notes: Data markers are displayed only for months in which at least one application was processed for a given administrative metric.

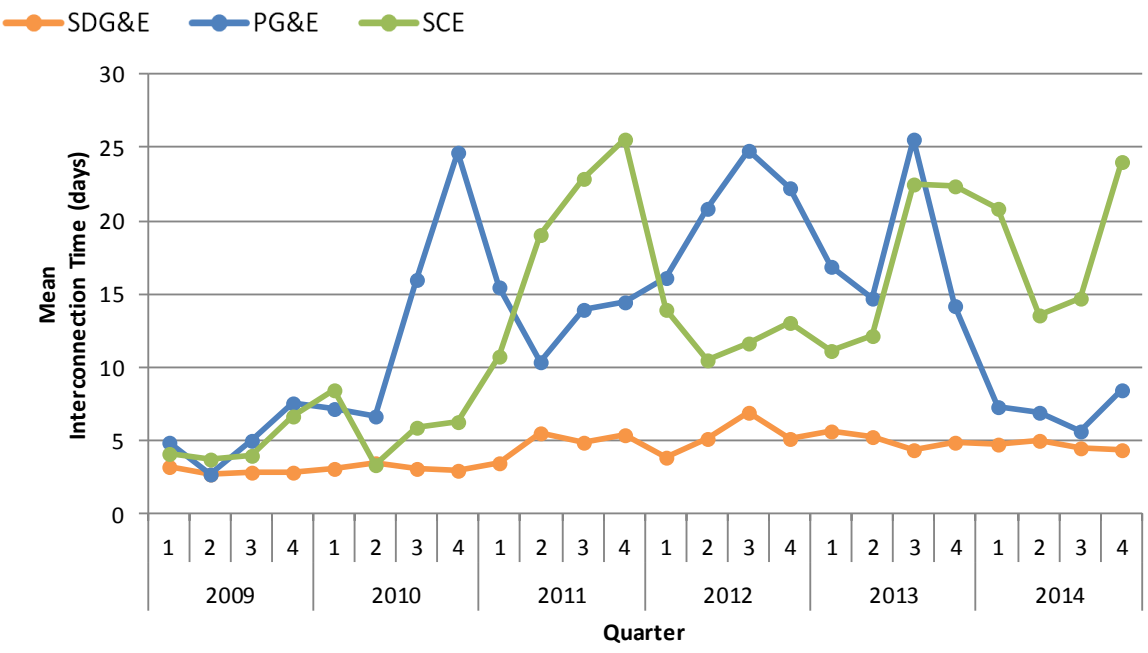

Figure 13: Residential Interconnection Time

Source: Data from California Solar Statistics at www.californiasolarstatistics.ca.gov

Notes: Data markers are displayed only for months in which at least one application was processed for a given administrative metric.

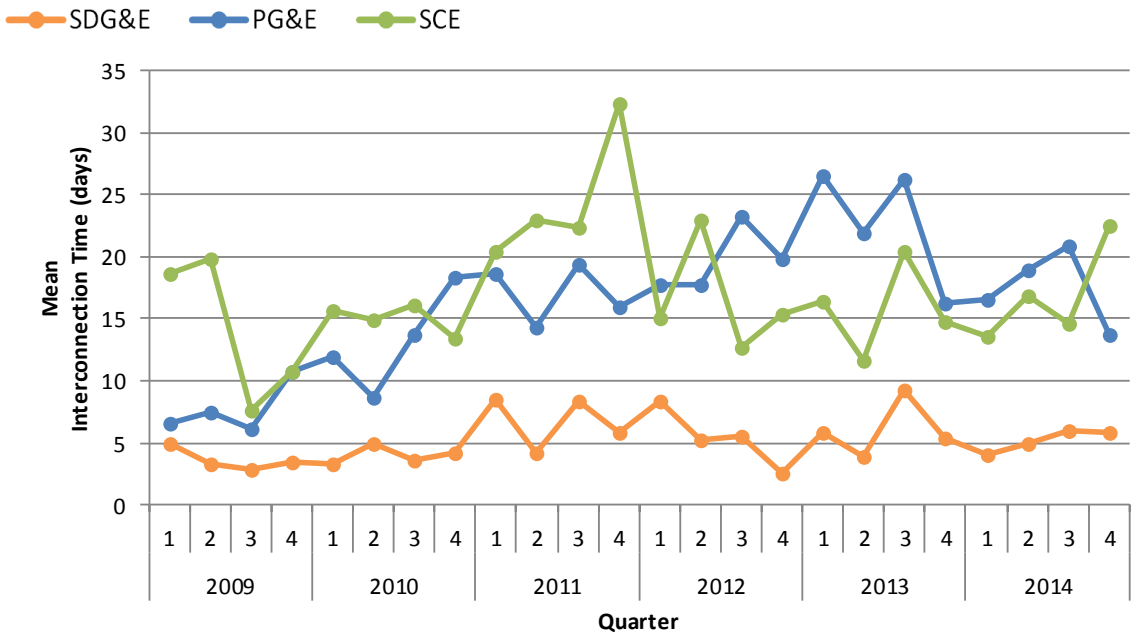

Figure 14: Non-Residential Interconnection Time

Source: Data from California Solar Statistics at www.californiasolarstatistics.ca.gov

Notes: Data markers are displayed only for months in which at least one application was processed for a given administrative metric.

2.5 Factors Affecting Administrative Performance

The first list describes the factors affecting administrative performance from application to reservation. Applications for which the PA takes more than 60 days to grant a reservation typically have a problem. Problems encountered in these applications include, but are not limited to:

- Mailing address is different from the project site address
- Missing signatures
- Missing or incomplete documentation
- Slow customer responsiveness

The next list describes the factors affecting administrative performance during incentive claim processing. Applications for which the PA takes more than 90 days to process the incentive claim typically have a problem. Problems encountered with applications at the ICF stage include, but are not limited to:

- Mailing address is different from the project site address
- Missing signatures
- Missing or incomplete documentation
- Slow customer responsiveness
- Staffing short-fall
- Increase in residential application volume
- Approaching the end of incentive funding for residential systems

Factors influencing CSE's Administrative Performance:

Since 2012, CSE faced a precarious situation with residential incentive processing for a number of reasons. First, in August of that year, CSE filed to the CPUC a Petition to Modify (PTM) that asked the Commission to, among other things, allow CSE to reallocate 25.2 MWs and the corresponding incentives from the non-residential sector goals over to the residential sector. CSE felt this was necessary due to a higher than anticipated inflow of government/non-profit projects, that are paid at a higher incentive rate compared to commercial projects, CSE calculated that if the trend continued it would fall significantly short in reaching its non-residential MW goal of 120 MWs. With the burgeoning residential market, CSE felt it could supplement the lack of MWs received from the non-residential sector with increased MWs from the residential sector. In the process of waiting for a decision on the PTM, CSE exhausted its residential incentive funds in January 2013. At that time a waitlist was started in hope that CSE's PTM would be approved quickly by the CPUC. CSE accrued nearly 5 MWs of waitlisted projects which equated to nearly 900 projects by the time the PTM was approved in September 2013. During the month of October 2013, CSE continued to review waitlisted applications, without "Confirming", in anticipation of the final transfer of MW and incentive dollars. On October 31, 2013 the 25.2 MW were officially transferred to the Residential sector, allowing CSE to resume incentivizing projects on November 11, 2013. . The demand for the program was so great over the next four months, that CSE started a second residential wait list on February 14, 2014. Upon receiving more than 1000 applications, equating to over $1,000,000 worth of requested incentives, CSE closed the Residential waitlist on April 11, 2014.

This confluence of events explains why CSE's average processing times increased drastically since Q4 of 2013. Compounded program changes affected the processing times into 2014, during which CSE was working towards integrating all changes into CSI process.

Factors Influencing PG&E's Administrative Performance:

PG&E closed both the residential and non-residential programs to applicants in 2013. Therefore, in 2014 there was minimal activity related to application processing. Although the residential component of the program was closed out, there are still several non-residential projects that remain in the incentive payment phase.

Factors Influencing SCE's Administrative Performance:

SCE closed its residential program to applicants in April 2014. However, before the residential program was closed, SCE received an influx of applications which impacted the processing times. Additionally, issues faced by the interconnection department were also a factor in processing ICF applications in the second half of 2014. See Section 2.6 for details.

2.6 Issues Interconnection Departments Faced

The CSI administrators and Interconnection departments experienced a record number of applications during the past year. The application volume was higher than forecast, despite the declining CSI incentive levels. Specific to PG&E, incentives were not available at all, but there was significant growth in the number of interconnections.

Additionally, over the past year, SCE's interconnection department was faced with 1) Higher volume of applications, 2) Transition to a new software platform over the summer that led to a slower turnaround time through the fall, and 3) ongoing efforts to convince installers to submit interconnection paperwork prior to system installation.

3. Program Dropouts

The report shows, by quarter for 2007-2014, by each PA's Res and Non-Res program, the MW and percentage of projects dropped out. Dropouts are presented using two different definitions: MW dropped out divided by MW reserved in that quarter (where the MW dropped out and the MW reserved are assigned to quarters based on when they were reserved) AND MW dropped out divided by the sum of MW dropped out and completed (where the MW are assigned to quarters based on when they dropped out). Note that for the first method the values will change, as more projects which were reserved in that quarter drop out over time, whereas for the second method no subsequent change to the statistics should occur.

Table 3: Megawatts Dropped Out Divided by Megawatts Reserved (Bucketed by Quarter Reserved)

%drop by quarter reserved uses the Working Data Set from 3/31/2015

Year/ Quarter	CSE				SCE				PG&E			
	Residential		Non-Residential		Residential		Non-Residential		Residential		Non-Residential	
	MWd[1]	%drop by quarter reserved	MWd[1]	%drop by quarter reserved	MWd[1]	%drop by quarter reserved	MWd[1]	%drop by quarter reserved	MWd[1]	%drop by quarter reserved	MWd[1]	%drop by quarter reserved
2007 Q1	0.04	28%	0.00	0%	0.01	8%	4.12	16%	0.04	5%	3.27	14%
2007 Q2	0.04	6%	0.51	6%	0.24	15%	8.11	28%	0.11	5%	4.48	18%
2007 Q3	0.02	3%	0.76	28%	0.22	11%	8.13	88%	0.52	7%	1.22	37%
2007 Q4	0.07	9%	1.41	71%	0.24	11%	3.66	54%	0.98	11%	9.50	47%
2008 Q1	0.13	16%	1.47	68%	0.24	9%	13.18	50%	0.72	10%	9.36	42%
2008 Q2	0.01	1%	0.45	42%	0.35	12%	0.57	26%	0.54	11%	3.11	20%
2008 Q3	0.08	5%	2.40	45%	0.45	11%	1.52	31%	0.60	9%	1.23	10%
2008 Q4	0.06	5%	1.01	38%	0.52	14%	0.04	3%	1.52	14%	8.22	42%
2009 Q1	0.10	10%	0.00	4%	0.36	13%	0.63	20%	0.65	13%	7.10	23%
2009 Q2	0.11	4%	0.00	0%	0.76	14%	0.03	0%	0.45	6%	1.29	21%
2009 Q3	0.21	7%	0.13	5%	0.28	7%	0.11	2%	1.41	10%	2.80	31%
2009 Q4	0.41	10%	2.40	15%	0.35	8%	3.39	28%	0.72	8%	0.28	3%
2010 Q1	0.19	6%	2.41	48%	0.37	7%	3.80	29%	0.67	9%	3.63	33%
2010 Q2	0.75	18%	4.07	43%	0.39	10%	9.01	18%	3.50	17%	6.73	9%
2010 Q3	0.27	11%	0.84	7%	1.62	11%	22.96	31%	1.48	12%	8.70	19%
2010 Q4	0.48	15%	0.98	36%	1.04	12%	5.84	26%	2.23	16%	2.75	14%
2011 Q1	0.15	9%	0.00	0%	2.14	24%	5.89	18%	1.09	18%	0.54	5%
2011 Q2	0.15	5%	0.00		1.22	11%	5.42	27%	0.79	8%	0.00	0%
2011 Q3	0.41	9%	0.16	12%	2.24	14%	0.72	9%	1.33	10%	0.02	2%
2011 Q4	0.23	6%	0.82	15%	1.65	14%	3.51	43%	1.88	12%	0.43	7%
2012 Q1	0.34	7%	0.09	5%	3.43	17%	0.21	2%	1.21	11%	15.28	16%
2012 Q2	0.27	6%	0.00	0%	2.40	15%	1.25	12%	1.27	7%	3.31	10%
2012 Q3	0.31	5%	0.03	6%	2.37	12%	0.81	6%	1.53	8%	1.64	9%
2012 Q4	0.35	5%	1.44	24%	3.67	14%	3.51	16%	1.99	9%	0.48	4%
2013 Q1	0.13	3%	0.59	42%	2.36	11%	1.20	7%	2.40	10%	0.64	4%
2013 Q2	0.04	9%	0.30	9%	2.97	9%	3.22	34%	0.76	10%	5.50	12%
2013 Q3	0.01	3%	0.08	2%	3.94	12%	0.02	0%	0.01	60%	0.61	7%
2013 Q4	0.26	7%	0.00	0%	3.44	10%	0.14	1%			0.00	0%
2014 Q1	0.03	2%	1.10	19%	0.71	2%	0.60	3%			0.00	0%
2014 Q2	0.02	0%	1.06	11%	0.05	3%	2.51	4%			0.00	
2014 Q3	0.03	0%	0.17	4%		0%	1.65	3%			0.00	0%
2014 Q4	0.01	0%	0.62	7%		0%	0.15	0%			0.20	2%
Total	5.72	6%	25.29	20%	40.05	11%	115.93	17%	30.40	11%	102.31	17%

1 MWd defined as MW dropped by reserved date

Table 4: Megawatts Dropped Out Divided by the Sum of Megawatts Dropped Out and Completed (Bucketed by Quarter Dropped Out)

%drop by quarter dropped out uses the Working Data Set from 12/31/2014

Year/ Quarter	CSE				SCE				PG&E			
	Residential		Non-Residential		Residential		Non-Residential		Residential		Non-Residential	
	MWd[1]	%drop by quarter dropped out	MWd[1]	%drop by quarter dropped out	MWd[1]	%drop by quarter dropped out	MWd[1]	%drop by quarter dropped out	MWd[1]	%drop by quarter dropped out	MWd[1]	%drop by quarter dropped out
2007 Q1							0.15	83%				
2007 Q2		0%	0.00	0%	0.00	11%	2.56	100%		0%	0.43	98%
2007 Q3	0.00	1%	0.13	93%	0.01	4%	1.45	100%	0.02	1%	2.08	89%
2007 Q4	0.00	0%	0.09	62%	0.01	1%	0.77	63%	0.04	1%	0.88	34%
2008 Q1	0.02	3%	0.28	50%	0.02	1%	1.26	29%	0.10	2%	4.38	60%
2008 Q2	0.01	1%	0.83	50%	0.02	1%	4.58	31%	0.19	3%	8.85	59%
2008 Q3	0.01	2%	0.35	53%	0.12	7%	8.63	59%	0.17	3%	2.69	27%
2008 Q4	0.06	8%	0.16	4%	0.14	4%	5.15	38%	0.99	16%	2.90	41%
2009 Q1	0.06	6%	0.54	22%	0.06	2%	0.92	10%	0.07	1%	8.93	36%
2009 Q2	0.11	7%	0.61	14%	0.71	21%	7.81	45%	0.83	11%	2.13	8%
2009 Q3	0.04	3%	0.59	43%	0.53	14%	3.74	36%	1.40	16%	9.89	47%
2009 Q4	0.11	4%	2.28	77%	0.50	11%	0.50	7%	0.27	3%	0.93	15%
2010 Q1	0.13	4%	0.77	27%	0.20	4%	2.47	57%	0.95	9%	2.45	21%
2010 Q2	0.11	3%	2.90	75%	0.12	3%	0.68	11%	1.01	10%	5.65	40%
2010 Q3	0.07	3%	2.08	49%	0.32	4%	0.70	23%	0.30	3%	1.88	19%
2010 Q4	0.24	9%	1.23	27%	0.57	6%	14.57	53%	1.65	15%	1.85	22%
2011 Q1	0.36	10%	0.22	27%	1.49	23%	10.19	66%	0.57	5%	4.52	27%
2011 Q2	0.68	23%	0.79	10%	0.51	6%	9.52	41%	2.83	19%	2.35	41%
2011 Q3	0.31	11%	2.22	50%	1.45	17%	4.01	21%	2.88	19%	1.44	3%
2011 Q4	0.59	13%	0.10	4%	0.96	8%	6.12	32%	1.84	16%	0.87	6%
2012 Q1	0.21	5%	0.17	3%	2.90	16%	5.35	16%	1.27	8%	6.67	24%
2012 Q2	0.22	5%	0.11	3%	1.10	9%	2.96	11%	0.84	7%	2.60	5%
2012 Q3	0.38	9%	0.47	22%	2.10	11%	2.75	16%	0.69	5%	0.01	0%
2012 Q4	0.26	16%	0.07	9%	3.11	19%	0.56	2%	1.50	8%	4.55	16%
2013 Q1	0.31	5%	1.02	16%	1.83	8%	0.77	3%	2.21	11%	1.81	7%
2013 Q2	0.29	5%	2.75	45%	2.48	11%	4.14	45%	1.37	6%	1.73	7%
2013 Q3	0.30	11%	0.77	20%	4.45	15%	2.31	13%	1.32	10%	5.28	22%
2013 Q4	0.31	26%	0.04	1%	1.82	11%	1.78	19%	0.95	19%	0.53	3%
2014 Q1	0.12	5%	0.22	8%	4.07	12%	0.43	5%	0.78	28%	0.88	4%
2014 Q2	0.07	2%	2.12	41%	2.04	4%	1.13	6%	3.27	86%	8.05	25%
2014 Q3	0.08	2%	0.25	16%	1.38	11%	1.85	10%	0.08	62%	2.70	18%
2014 Q4	0.19	23%	0.60	21%	3.83	51%	3.39	23%		0%	1.16	7%
Total	5.65	7%	24.74	26%	38.87	11%	113.20	26%	30.35	11%	101.07	18%

1 MWd defined as MW dropped by drop date

4. CSI Program Trainings

Each of the PAs regularly offers training for both customers and solar installers in the CSI Program regarding the benefits and technical details of solar in general. In 2014, the CSI PAs held 169 trainings and trained almost 4,408 attendees.

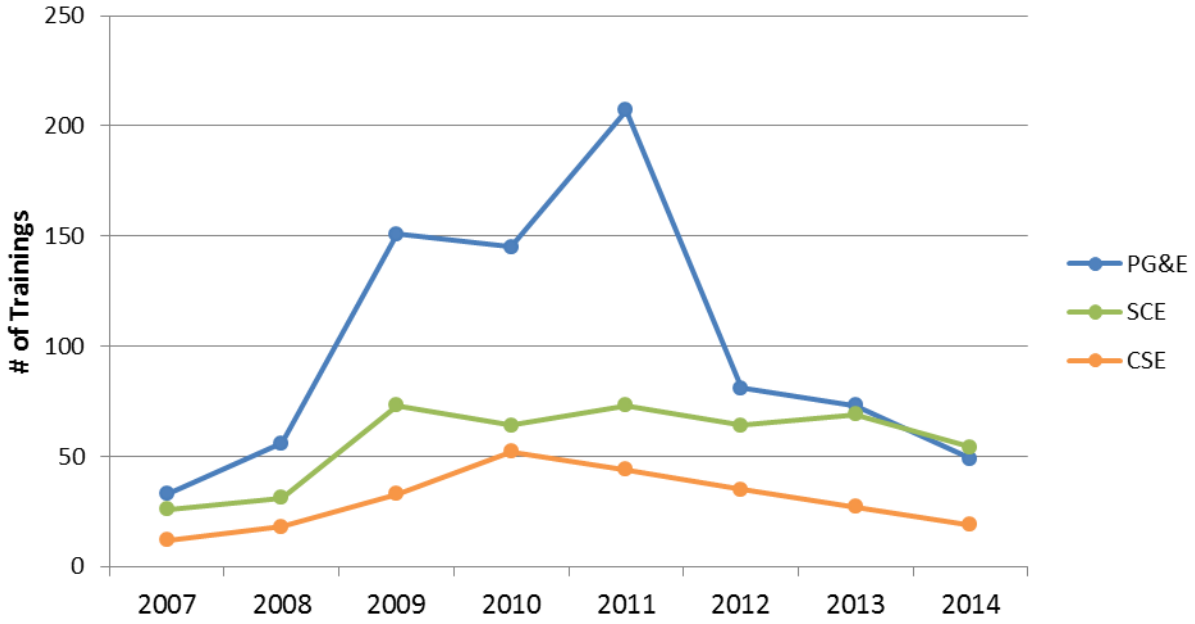

Figure 15: Number of Trainings by Program Administrator
Source: CSI Program Administrators

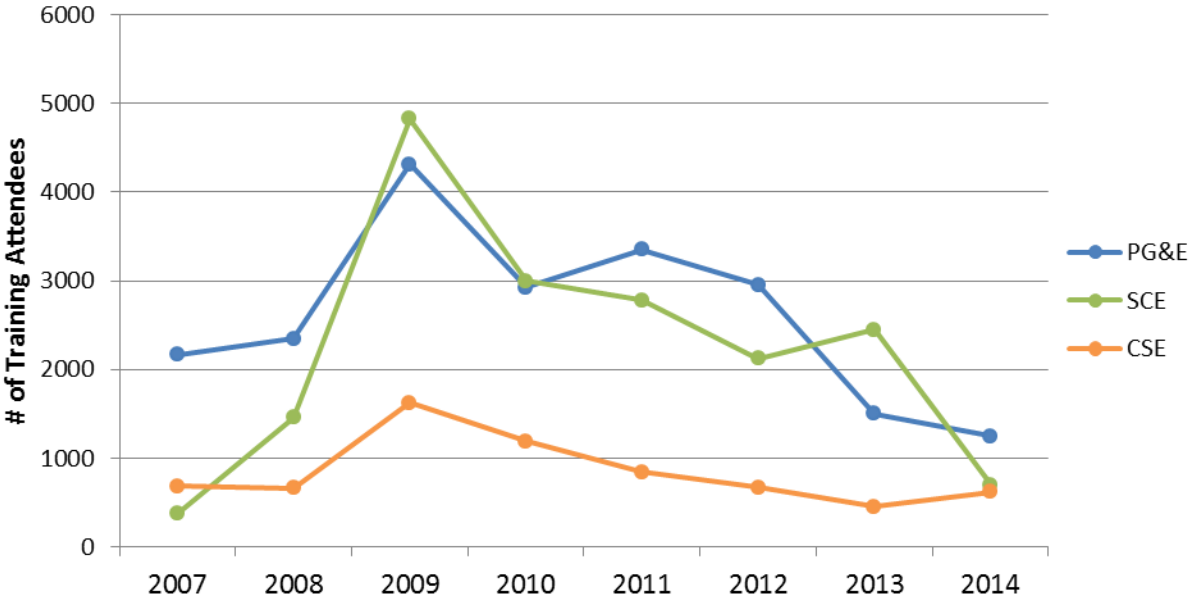

Figure 16: Number of Training Attendees by Program Administrator
Source: CSI Program Administrators

4.1 PG&E Training Offerings

The PG&E CSI Group, in collaboration with the Energy Centers, offered an extensive array of solar classes to both contractors and the general public. These included full-day live classes, many of which were simulcast, as well as one-hour webinars. The bulk of the live classes were in the Pacific Energy Center in San Francisco or the Energy Training Center in Stockton, but there were also classes offered in the following places: San Luis Obispo, San Mateo, Fresno, Santa Cruz, Santa Rosa, Napa, Berkeley, San Leandro, Auburn, and other communities.

There has been a shift in the focus as solar becomes more main stream and the general public is more familiar with the concepts and information. In response to the Workforce Needs Assessment and other directives, the Energy Centers are increasingly targeting workforce development and not so much the public at large.

For Contractors and the General Public:

Basics of Photovoltaic (PV) Systems for Grid-Tied Applications: An introduction to PV systems basics and overview of technical, economic and project evaluation of grid-connected PV projects.

Photovoltaic (PV) Site Analysis and System Sizing: An intermediate class that was for anyone interested in understanding the specific issues associated with PV site analysis and system sizing. Introduction to Photovoltaic (PV) System Financing: provided overview of solar electric (PV) system costs and approximate savings for residential systems as well as information on available incentives.

Inspecting PV Systems for Code Compliance: An advanced class that covered all issues pertaining to inspecting and permitting of photovoltaic grid-tied systems in all sectors, including commercial, industrial, small business, multifamily, and residential

Solar Water Heating Systems Basics: Provided an overview of the design, specification, and installation aspects of Solar Water Heating systems for both commercial and residential applications.

CSI-Thermal Workshop: As a core part of PG&E's ongoing efforts, PG&E continued to offer monthly CSI-Thermal Program Workshops for contractors and self-installers throughout the service territory. The workshops are vital in conveying program requirements and ultimately help ensure contractors are better prepared to submit CSI-Thermal Program paperwork. This workshop is required for anyone looking to become an eligible installer within the CSI-Thermal Program.

Solar Electric and Solar Water Heating Systems for Homeowners: A basic class that provided an overview of the design, specification, and installation aspects of PV and SWH systems for residential applications.

Integrating Energy Efficiency and Renewables in Home Retrofits: Provided a whole-system approach to homes or buildings, performance and how it ties into energy efficiency.

Solar Water Heating - Advanced Commercial Systems: An advanced class that focused on key aspects of large-scale SWH systems for commercial applications.

Solar Cooling: A discussion of the basic physics behind this emerging technology and the various different types of solar cooling systems, along with case studies of existing systems from several vendors.

Heat Pumps: Residential Applications and Integration with Solar Energy Systems: The class will cover all aspects of heat pumps including the fundamentals of technology, site analysis, system design, cost factors, and combining heat pumps with renewable energy systems.

Introduction to Photovoltaic (PV) System Financing: The class will cover the various forms and formats of financing systems, including PACE, Leases, PPAs, and traditional lending. The class will conclude with

an overview of several important PV analysis tools and an interactive demonstration using one of the leading economic analysis tools.

Net Energy Metering Aggregation (NEMA): An overview of the new aggregation provision under the NEM tariff and training on the eligibility requirements and application process for customers.

Webinars Open to the General Public:

New Solar Homes Partnership Program Application Process: Provided an overview of the New Solar Homes Partnership (NSHP) program, including incentives offered and the requirements.

4.2 SCE Training Offerings

SCE continues to offer classes geared toward contractors as well as non-residential and residential customers. During 2014, SCE reached 103 contractors through 4 "CSI Contractor Solar Classes", including participates who joined via video conference; 232 commercial customers through 35 "CSI Commercial Solar Classes", including participants who joined via video conference and Webinar; 60 residential customers through 6 Homeowner Solar Webinars; and 308 residential customers through 9 Solar Connection Events; and CSI Thermal training were all canceled due to no registrations.

The subject matter SCE presents in its classes is updated as program changes dictate. SCE also makes adjustments based on feedback received from attendees.

Intro to CSI Classes: The "Contractor Solar Class" is a course designed for solar contractors, self-installers, managers and PV owners, and features new and updated information on the CSI Program. During the course discussion, information is given to attendees on the following topics: (i) how to participate in the program; (ii) system basics, including the different types of solar systems, metering, monitoring, site and equipment requirements; and (iii) PowerClerk and Net Energy Metering application process. Contractors can register online at www.sce.com/ctac.

Homeowner Solar Classes Webinars: SCE's HSC webinars are 90-minute, easy-to-understand sessions that provide the basics of how residential customers can "go solar" without the "techy" jargon so often used and confusing to potential solar customers. For more information, go to www.sce.com/solartraining.

Commercial Solar Workshop and Webinars: The Commercial Workshop curriculum was specifically geared toward Energy and Facility Managers in SCE's non-residential customer segment, and the course content included a CSI Program Overview, How Solar Systems Work, Application and Reservation Process, CSI Eligibility Requirements, Incentive Amounts and Structure, EPBB Calculator, Interconnection and Online Databases. Energy Managers also learned how solar energy systems can help lower their operating costs, which helps to add more "green" to their business' bottom-line cost and improves their company's reputation for environmental stewardship. This year we added webinars to provide our customers with an additional option for attending a class. Customers can register online at www.sce.com/ctac.

Solar Connection Events: The goals of these unique events remain unchanged: to present solar basics and to bring interested residential customers together with solar contractors to determine their home's potential for solar electric generating systems. For more information, go to www.sce.com/solartraining.

CSI Thermal Contractor & Self-Installer Training: SCE's Thermal Workshop is a required introductory course for contractors, self-installers and applicants interested in participating in the CSI Thermal program. The class is designed to provide a thorough understanding of the program, its requirements and the application process. An overview of solar water heating technologies is also provided. For more information, go to www.sce.com/csithermal.

4.3 CSE Training Offerings

CSE continues to offer classes geared toward contractors as well as non-residential and residential customers. In 2014 CSE reached over 638 homeowners and contractor through 26 in person workshops in addition to offering the CSI Application Process workshop via WebEx to reach more contractors. Trainings are performed by CSE staff and or outside speakers when necessary. Trainings were marketed in CSE and CSI newsletters, through the online calendar as well as in email blasts and other events. For more information please visit: www.energycenter.org/outreach-a-education

Homeowner Targeted Workshops:

Solar for Homeowners: Experts from the Center for Sustainable Energy (CSE) explain the fundamentals of solar electricity, how to apply for available incentives and share valuable consumer awareness tips that can help you feel more confident when evaluating solar for your home.

Topics include:

Calculating your home's energy use

Properly sizing a solar system to meet your unique needs

Financing and ownership considerations

Researching and comparing solar contractors

Evaluating a contractor bid or contract

CSE representatives will be available before and after the workshop to answer any specific solar questions you may have. After attending "Solar for Homeowners," you will have the knowledge and resources necessary to confidently make that final decision to Go Solar!

In addition to the workshops CSE hosted a number of Solar Home Tours where people were invited to see a walk-through and meet with owners of homes that had installed solar PV systems and other energy efficiency technologies to get a firsthand look and direct feedback from the homeowner on their experience. Additionally, following every Solar for Homeowner workshop an assortment of contractors are available for a "Contractor Meet & Greet". Contractors from the CSI approved contractors list in the area are sent out an alert letting them know a workshop will be taking place and invited to be a part of the meet & greet. Reservations are taken for 3-4 contractors on a first-come first-serve basis. Homeowners are told these are not contractors we recommend but individuals who are part of the approved list and available as a resource to answer technical questions.

Contractor Targeted Workshops:

CSI Application Process Made Easy: This workshop outlines the entire CSI application process – from the reservation request to the incentive award – and provides an explanation of all required documentation as well as a demonstration of the online application.

Passing the CSI Inspection Protocol: This workshop is designed for contractors and self-installers who would like to learn about the CSI inspection protocol.

Solectria Renewables: PV Design Considerations and Inverter Training: This training was taught by Solectria Renewables and included various design considerations for 14kW to multi-MW inverters/installations. Specific topics for discussion focused on DC breakers, DC/AC oversizing, string sizing, AC/DC connections, wiring needs, data monitoring and temperature/voltage considerations. 4 NABCEP Credits were available for this training.

Solar Manufacturing Training Day: This technical training provided solar installers the opportunity to ask manufacturers technical questions on products used in the field. 3 different presentations will covered various topics with intent of helping installers select the appropriate products for their projects. NABCEP credits were available.

SolarEdge Roadshow: This SolarEdge Roadshow event was intended for distributors, installers and electricians. It included the following subjects: system overview, product line review, safety features, design guidelines, installation training, monitoring server review, and NEC compliance.

5. Net Energy Metering

The Public Utilities Code (PUC) Section 2827 establishes net energy metering (NEM) for solar and small wind customer-generators. NEM information for each IOU's service territory is included in this section of the report. The NEM data is updated monthly and available at http://www.californiasolarstatistics.com/reports/data_annex

Table 5: NEM Capacity, Customers and Percentage of Aggregate Customer Peak Demand as of December 31, 2014

Section	Question[2]	PG&E	SCE	SDG&E
5.b.1	Number of NEM customers in the service territory.	151,415	103,903	47,681
5.b.2	Number of those NEM customers which are solar generators.	151,364	103,267	47,651
5.b.3	Number of those NEM solar generators who are participants in the CSI program.[1]	59,806	62,860	17,049
5.b.4	Total generating capacity of NEM customer-generators.	1,301.0	884.7	336.3
5.b.5	Total generating capacity of solar NEM customer-generators.	1,295.0	841.3	328.3
5.b.6	Total generating capacity of solar NEM customer-generators who are participants in the CSI program. [1]	750.3	645.2	160.5
5.b.7	Percentage of aggregate customer peak demand (Non-Coincident) represented by all NEM.	2.70%	1.97%	2.77%
5.b.8	Percentage of aggregate customer peak demand (Non-Coincident) represented by solar NEM.	2.69%	1.88%	2.71%
5.b.9	Percentage of aggregate customer peak demand (Non-Coincident) represented by CSI-participating solar NEM. [1]	1.56%	1.44%	1.32%

[1]Interconnection data were provided by each IOU's Interconnection departments except data for questions 5.b.3, 5.b.6 and 5.b.9 which were compiled and calculated from CSI's PowerClerk database and are only an estimate of CSI's interconnection contribution to the NEM program. CSI projects were deemed as interconnected if their status had reached at least Pending Payment in PowerClerk.

[2]Hybrid technologies are excluded from solar numbers.

Table 6: NEM Capacity in MW and in Percent of Aggregate Customer Peak Demand by Quarter

		SDG&E			PG&E			SCE		
Year	Quarter	Cumulative Capacity Interconnected (CEC-AC MW)	NEM Capacity % (Coincident)	NEM Capacity % (Non-Coincident)	Cumulative Capacity Interconnected (CEC-AC MW)	NEM Capacity % (Coincident)	NEM Capacity % (Non-Coincident)	Cumulative Capacity Interconnected (CEC-AC MW)	NEM Capacity % (Coincident)	NEM Capacity % (Non-Coincident)
2007	Q1	3	0.05%	0.02%	103	0.49%	0.21%	48	0.21%	0.11%
	Q2	5	0.11%	0.04%	115	0.55%	0.24%	52	0.22%	0.12%
	Q3	7	0.14%	0.05%	128	0.61%	0.27%	59	0.25%	0.13%
	Q4	9	0.18%	0.07%	147	0.71%	0.31%	70	0.30%	0.16%
2008	Q1	10	0.22%	0.08%	160	0.77%	0.33%	76	0.33%	0.17%
	Q2	14	0.30%	0.12%	176	0.84%	0.37%	85	0.37%	0.19%
	Q3	17	0.37%	0.14%	192	0.92%	0.40%	95	0.41%	0.21%
	Q4	24	0.50%	0.19%	226	1.08%	0.47%	112	0.48%	0.25%
2009	Q1	26	0.55%	0.21%	244	1.17%	0.51%	120	0.52%	0.27%
	Q2	28	0.60%	0.23%	257	1.23%	0.53%	126	0.54%	0.28%
	Q3	32	0.68%	0.26%	274	1.31%	0.57%	132	0.57%	0.29%
	Q4	40	0.86%	0.33%	296	1.42%	0.62%	151	0.65%	0.34%
2010	Q1	45	0.97%	0.37%	313	1.50%	0.65%	161	0.69%	0.36%
	Q2	51	1.09%	0.42%	333	1.60%	0.69%	170	0.73%	0.38%
	Q3	56	1.19%	0.46%	359	1.72%	0.75%	187	0.81%	0.42%
	Q4	66	1.40%	0.54%	400	1.92%	0.83%	207	0.90%	0.46%
2011	Q1	71	1.52%	0.59%	433	2.07%	0.90%	227	0.98%	0.51%
	Q2	79	1.69%	0.65%	463	2.22%	0.96%	250	1.08%	0.56%
	Q3	86	1.84%	0.71%	499	2.39%	1.03%	274	1.18%	0.61%
	Q4	100	2.14%	0.83%	556	2.66%	1.15%	316	1.36%	0.70%
2012	Q1	126	2.70%	1.04%	596	2.85%	1.24%	349	1.51%	0.78%
	Q2	134	2.85%	1.10%	633	3.03%	1.31%	383	1.65%	0.85%
	Q3	143	3.05%	1.18%	673	3.22%	1.40%	422	1.82%	0.94%
	Q4	159	3.39%	1.31%	734	3.51%	1.52%	465	2.01%	1.04%
2013	Q1	171	3.64%	1.41%	781	3.74%	1.62%	498	2.15%	1.11%
	Q2	184	3.93%	1.52%	832	3.99%	1.73%	546	2.36%	1.22%
	Q3	202	4.32%	1.67%	896	4.29%	1.86%	591	2.55%	1.32%
	Q4	226	4.82%	1.86%	980	4.69%	2.03%	656	2.83%	1.46%
2014	Q1	252	5.38%	2.08%	1050	5.03%	2.18%	704	3.04%	1.57%
	Q2	274	5.85%	2.26%	1116	5.34%	2.32%	765	3.30%	1.71%
	Q3	300	6.40%	2.47%	1197	5.73%	2.48%	820	3.54%	1.83%
	Q4	336	7.18%	2.77%	1300	6.23%	2.70%	885	3.82%	1.97%

	SDG&E	PG&E	SCE
coincident peak demand (MW)	4,687	20,883	23,163
non-coincident peak demand (MW)	12,134	48,177	44,807

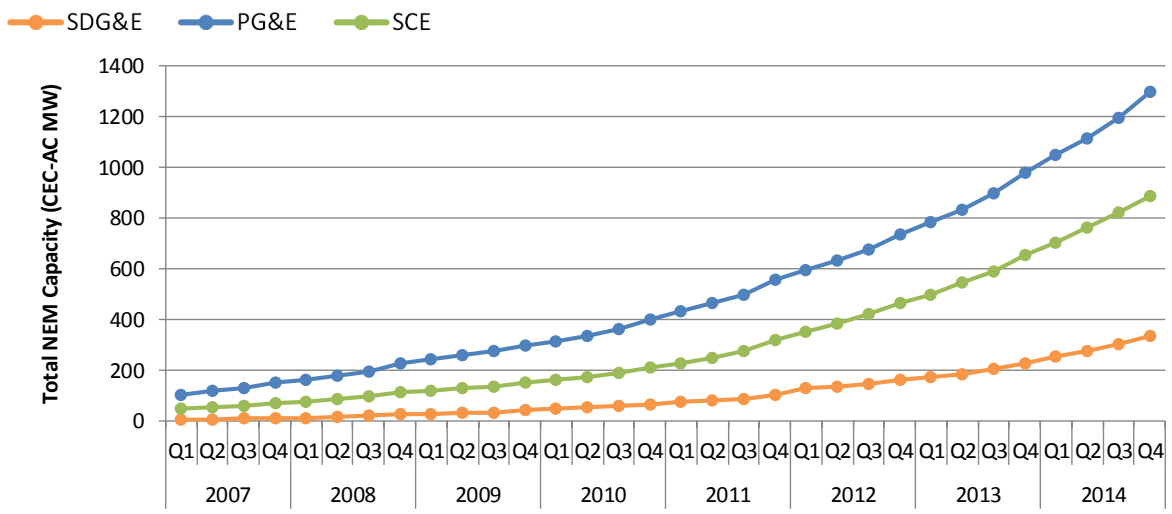

Figure 17: Total NEM Capacity
Source: Data from IOU Interconnection Departments

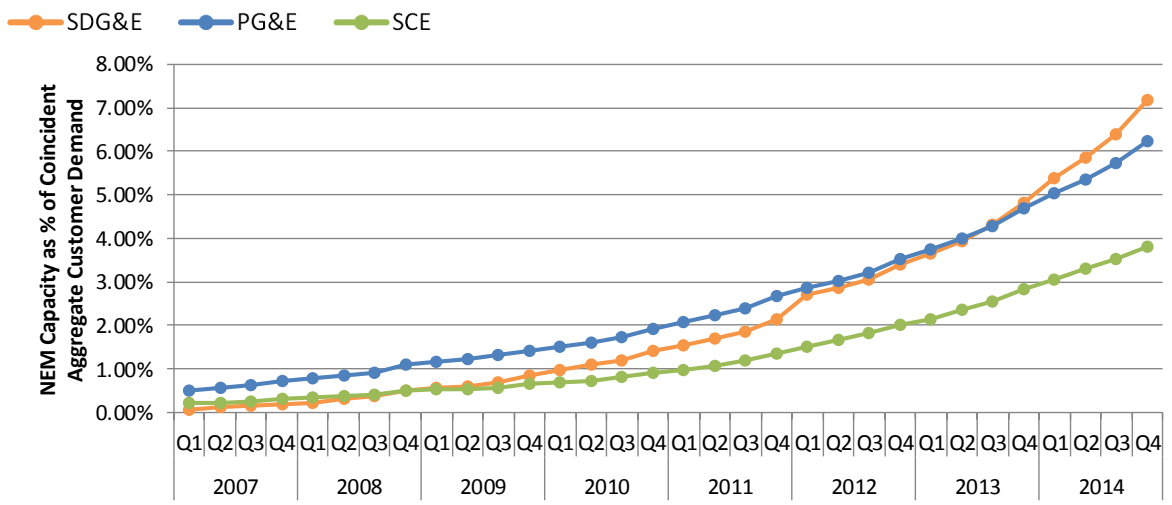

Figure 18: NEM Capacity as a Percentage of Aggregate Customer Peak Demand (Coincident)
Source: Data from IOU Interconnection Departments

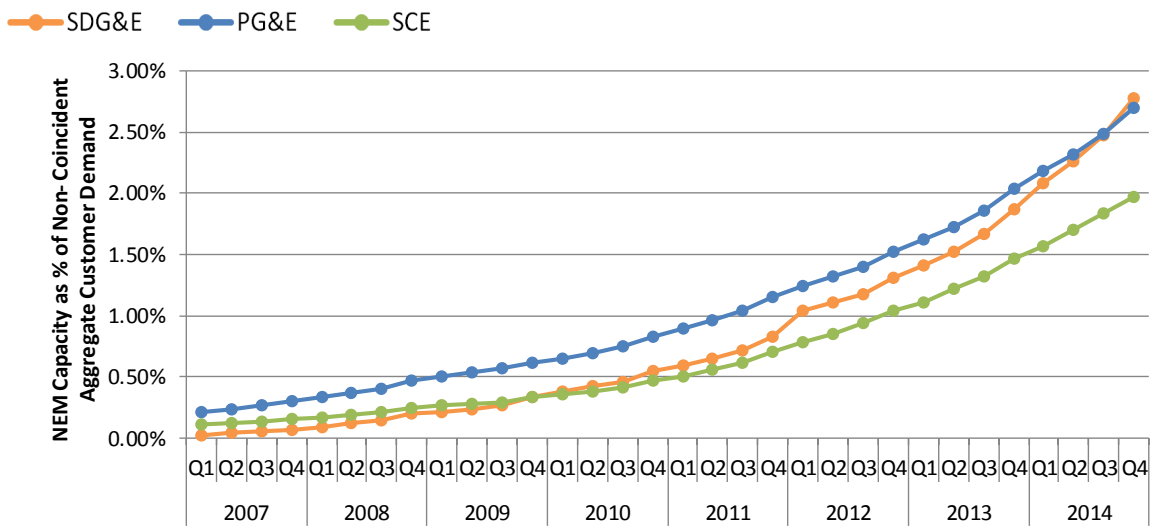

Figure 19: NEM Capacity as a Percentage of Aggregate Customer Peak Demand (Non-Coincident)

Source: Data from IOU Interconnection Departments