

# **2011 Resource Adequacy Report**

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# 2011 Resource Adequacy Report

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## Table of Acronyms

AS	Ancillary Services	LI	Load Impact
BCR	Bid Cost Recovery	LOLP	Loss of Load Probability
CAISO	California Independent System Operator	LSE	Load Serving Entity
CAM	Cost-Allocation Methodology	MCC	Maximum Cumulative Capacity
CCGT	Combined Cycle Gas Turbine	MOO	Must Offer Obligation

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CEC	California Energy Commission	MW	Megawatt
DA	Direct Access	NCF	Net Capacity Factor
DASR	Direct Access Service Request	NDC	Net Dependable Capacity
DG	Distributed Generation	NERC	North American Reliability Corporation
DR	Demand Response	NQC	Net Qualifying Capacity
DSM	Demand Side Management	PRM	Planning Reserve Margin
EAF	Equivalent Availability Factor	QC	Qualifying Capacity
ED	Energy Division	QF	Qualifying Facility
EFORd	Equivalent Forced Outage Rate of demand	RA	Resource Adequacy
ELCC	Effective Load Carrying Capacity	RAR	Resource Adequacy Requirement
ERRA	Energy Resource Recovery Account	RMR	Reliability Must Run
ESP	Electricity Service Provider	RPS	Renewable Portfolio Standard
ETC	Existing Transmission Contract	SCP	Standard Capacity Product
FERC	Federal Energy Regulatory Commission	SFTP	Secure File Transfer Protocol
FOH	Forced Outage Hours	TAC	Transmission Access Charge
HE	Hour Ending	TCPM	Transitional Capacity Procurement Mechanism
ICPM	Interim Capacity Procurement Mechanism	TIC	Total Installed Capacity
IOU	Investor Owned Utility	ULR	Use Limited Resources
LD	Liquidated Damages		

## 1 Executive Summary

The intent of the Resource Adequacy (RA) program is to ensure that sufficient capacity is available to meet the peak load and establish reserve requirements for California Public Utilities Commission (CPUC) jurisdictional Load Serving Entities (LSEs).<sup>1</sup> This Report provides a review of the CPUC's RA program, summarizing RA

<sup>1</sup> Commission Jurisdictional LSEs include all Investor Owned Utilities (IOUs) Electricity Service Providers  
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program experience during the 2011 RA compliance year. While this report does not make explicit policy recommendations, it is intended to provide factual information relevant to the currently open RA rulemaking (R.11-10-023) and ongoing implementation of the RA program in California.

Each year, the RA program requires LSEs to submit a Year-Ahead filing due in October and twelve Month-Ahead filings during the compliance year. In 2011, the RA program worked as intended and sufficient resources were available to meet peak load and contingencies.

Peak Demand was forecasted to occur in August 2011 at 48,726 MW<sup>2</sup>. The RA capacity procurement to meet peak demand in August totaled 56,714 MWs<sup>3</sup>. Of this CPUC jurisdictional LSEs procured 48,461 MW of RA capacity<sup>4</sup>.

Actual peak load for 2011 occurred in September at 45,569 MW, and corresponding capacity resources procured by all LSEs (CPUC jurisdictional and non-CPUC jurisdictional) totaled 53,079<sup>5</sup> MW. During September CPUC jurisdictional LSEs were collectively required to procure 43,768<sup>6</sup> MW of resources to meet expected system needs (which included a 15 percent reserve margin). These LSEs procured 1,119 MWs in excess of the total System Resource Adequacy Requirement (RAR), or 44,786<sup>7</sup> MW.

LSEs fulfilled their Local RA obligations during 2011 compliance year. Local RA procurement obligations during 2011 of 21,502 MW<sup>8</sup> for CPUC jurisdictional LSEs were met with 24,626 MW of RA capacity from physical resources.<sup>9</sup> Because sufficient RA capacity procurement met all local RA obligations the CAISO took no backstop procurement actions caused by RA deficiencies.

A key to establishing good RA procurement targets starts with good forecasts of demand. We gauge the reasonableness of LSE forecasts by the level of California Energy Commission plausibility adjustments<sup>10</sup>. In 2011 compliance year the California Energy Commission (CEC) made larger plausibility adjustments to certain LSE forecasts indicating uncertainty over customer migration due to reopening of Direct Access.

The Commission decision (D.)10-03-022 allowed Direct Access (DA) customers to migrate freely between LSEs, resulting in the registration of several new ESPs to serve DA load in 2011. In 2010 the RA program instituted a Local RA True up process to

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(ESPs) and Community Choice Aggregators (CCAs)

<sup>2</sup> Figure 2. Total CAISO Summer 2011 Forward Procurement Obligation and Forward Procurement vs. LSE Demand Forecast and Actual Monthly Peak Demand (MW)pg. 14

<sup>3</sup> Ibid.

<sup>4</sup>Table 4. 2011 RA Filing Summary - CPUC Jurisdictional Entities (MWs) pg. 11

<sup>5</sup> Figure 2. Total CAISO Summer 2011 Forward Procurement Obligation and Forward Procurement vs. LSE Demand Forecast and Actual Monthly Peak Demand (MW)Pg. 14

<sup>6</sup> Table 4. 2011 RA Filing Summary - CPUC Jurisdictional Entities (MWs) pg. 11

<sup>7</sup> Ibid.

<sup>8</sup> 2011 Annual Local CPUC Filings

<sup>9</sup> The Local RA shown does not include DR, RMR, and CAM resources as these resources are used to reduce an LSE's Local RA obligation. See Table 5

<sup>10</sup> To correct LSE estimations of customer retention, the CEC prepares a plausibility adjustment that properly estimates customer retention by certain LSEs.

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adjust each LSE's Local RA obligations due to inter LSE load shifting and changes in DA participation.

In 2011 new generation of 504 MWs came on line comprised mostly of conventional and several small renewable generation resources. The new conventional resources included the Canyon Power Plant (198MWs)<sup>11</sup>, and expansions to the Riverside Energy Resource Center (99MWs)<sup>12</sup>. Also, 833 MWs of generation retired in 2011, including the remaining three units at the South Bay Power plant (310 MWs)<sup>13</sup> and the Potrero Power Plant (362 MWs)<sup>14</sup>. The additions and deletions resulted in an incremental decrease of 329 MWs of Net Qualifying Capacity (NQC).

Since the beginning of the Market Redesign and Technology Upgrade (MRTU), California Independent System Operator (CAISO) altered and automated their unit commitment process. To augment the automated dispatch function, the CAISO uses Exceptional Dispatch (ExD) for most out of market unit commitments required when the market run does not fully anticipate all the system reliability needs in the Day Ahead and Real Time markets. In general ExD Megawatt volume declined slightly between 2010 and 2011, though some Local Areas saw increases in 2011. The downward trend in CAISO Reliability Must-Run (RMR) designations documented in earlier RA reports continued through the 2011 compliance year.

Because the RA program requires LSE acquisition of capacity to meet load and reserve requirements, when LSEs do not fully comply<sup>15</sup> with RA program rules the Commission issues citations or starts enforcement actions. In total the Commission issued two citations for violations related to compliance year 2011 and collected \$7,000 in payments from LSEs arising from these citations. In addition, the Commission started one enforcement case that settled in February 2012 for assessed penalties of \$215,000.

To ensure and facilitate that LSEs demonstrate procurement of valid RA capacity per their RA obligations in 2010 the CAISO implemented the Standard Capacity Product (SCP) tariff which includes performance and availability penalties that remained in effect in 2011.

## 2 Load Forecast and Resource Adequacy Program Requirements

Each year the RA program requires LSEs to submit a series of filings including load forecasts and RA compliance showings. Generally, LSEs file year ahead filings in October and twelve Month-Ahead filings due monthly during the compliance year. Each compliance filing is preceded by a load forecast for the same period.

In 2011, the RA program worked as intended, providing LSEs with timely information on RA Requirements and an opportunity to make adjustments. Both

<sup>11</sup>Table 6 New Resources that came online in 2011 since the 2011 NQC list. Pg. 13

<sup>12</sup> Ibid.

<sup>13</sup>Table 7 Resources that retired in 2011. Pg. 14

<sup>14</sup> Ibid.

<sup>15</sup> Due to either a procurement deficiency (i.e., it did not meet its RA obligations) or filing violations with compliance rules (i.e., files late, or not at all)

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customer migration adjustments and plausibility adjustments continued to decrease relative to previous years, although uncertainty related to the reopening of direct access led to increased plausibility adjustments in 2011.

## 2.1 Yearly and Monthly Load Forecast Process

The RA program relies on a process of LSE forecasts that CEC compares to historical load data and trends to establish each LSE's RA Requirement. In order to establish the System RA Requirement, CEC staff review load forecasts submitted by each LSE, reconcile those load forecasts against its own forecast for the entire IOU service territories, and generates individual monthly load forecast for each LSE. For the 2011 Year-Ahead System RA filings, CPUC staff sent a spreadsheet containing Local RA obligations, final load forecasts, and allocations for DR, RMR, and Capacity Allocation Mechanism (CAM) resources to each LSE via password protected email on July 30, 2010.<sup>16</sup>

CPUC jurisdictional LSEs submitted their Year-Ahead compliance filings on or before October 31, 2011; Energy Division evaluated the Year-Ahead RA filings for compliance. Each LSE's Year-Ahead System RA obligation was based on two levels of load forecasting produced by the LSEs and the CEC. D.05-10-042 required LSEs to submit historical sales figures and forecasts for the following compliance year based on a reasonable assumptions for load growth and customer retention.<sup>17</sup> This is referred to as the "Best Estimate" approach. After the Year-Ahead forecast process, LSEs adjust their load forecasts during the compliance year to account for load migration.

D.05-10-042 outlined a process whereby LSEs adjust their load forecasts on a monthly basis. The CPUC directed the LSEs to submit revised forecasts two months prior to the filing month, as discussed in the RA Guide for 2011 compliance year.<sup>18</sup> These load forecast adjustments are solely for the purpose of accounting for load migration between LSEs, not changing demographic or electrical conditions.

LSEs submit these forecasts to the CEC for evaluation; the CEC adjusts for transmission losses and customer load migrating back to IOU service from direct access ESPs. The CEC adjusted some individual LSE forecasts for plausibility when the LSE submitted forecast diverge unreasonably from the LSE's actual peak loads or the LSE's historical usage. With that said, load migration can have very large effects on LSE forecasts, particularly small ESP forecasts. As specified by D.05-10-042, adjustments were made to account for the impact of energy efficiency (EE), distributed generation (DG) and coincidence of peak load.

### 2.1.1 Yearly Load Forecast Results

Table 1 shows the aggregate LSE submissions for 2011 and the adjustments that

<sup>16</sup> CAM resources are those built for system needs, not just IOU specific needs; allocations of capacity credit for CAM resources are performed according to the mechanism adopted in D.07-09-044

<sup>17</sup> Final CPUC decisions may be found at

<http://docs.cpuc.ca.gov/cyberdocs/Libraries/WEBPUB/Common/decSearchDsp.asp>

<sup>18</sup> Annual RA Filing Guides are available on the CPUC website:

[http://www.cpuc.ca.gov/PUC/energy/Procurement/RA/ra\\_compliance\\_materials.htm](http://www.cpuc.ca.gov/PUC/energy/Procurement/RA/ra_compliance_materials.htm)

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were made across all three IOU service areas. Because the historic and forecast data submitted by participating LSEs contain market sensitive information, results are discussed and presented in aggregate. These adjustments include plausibility adjustments, demand side management adjustments, and a prorated adjustment to each LSE's forecast to bring the total forecasts within one percent of the CEC's service area forecasts. Finally, aggregate service area forecasts were adjusted to produce a forecast of each LSE's contribution towards coincident service area peak. The forecast for CPUC jurisdictional LSEs showed an expected peak in August 2011 at 44,847 MW, which represents a .3% decrease from the peak forecast of 44,979 MW in 2010.<sup>19</sup>

**Table 1. 2011 Aggregated Load Forecast Data (MW)**

SUMMARY TOTAL													
Peak Demand for Month of Calendar 2011 (MW)													
Element	Service Area	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Submitted LSE Forecast (Metered Load + T&D Losses + UFE)	Total	29,813	28,909	28,671	29,939	34,806	39,026	42,416	45,394	40,191	33,526	30,062	31,453
CEC Adjustment for Plausibility/Migrating load	Total	(0)	28	38	39	161	210	1,381	115	1,256	42	33	66
EE/DG Adjustment	Total	(29)	(22)	(23)	(26)	(30)	(32)	(36)	(38)	(35)	(32)	(28)	(29)
Pro rata adjustment to match CEC forecast within 1%	Total	10	41	(10)	53	142	145	119	239	130	12	81	149
Non-coincident Peak Demand	Total	29,427	28,522	28,349	30,196	34,735	39,370	43,727	45,729	41,658	33,640	29,657	31,299
Coincidence Adjustment	Total	(421)	(510)	(223)	(552)	(699)	(611)	(554)	(882)	(693)	(555)	(533)	(362)
<b>Final Load Forecast Used for Compliance</b>	<b>Total</b>	<b>29,006</b>	<b>28,012</b>	<b>28,126</b>	<b>29,645</b>	<b>34,036</b>	<b>38,759</b>	<b>43,173</b>	<b>44,847</b>	<b>40,965</b>	<b>33,084</b>	<b>29,124</b>	<b>30,937</b>

Source: CEC Staff aggregate Load Forecast adjustment

In 2011 the CEC increased the total plausibility adjustments by month, which indicated a mismatch between forecasts of customer retention and actual retention during the year, largely due to customer retention assumptions used to develop the forecasts. The LSE forecasts for 2011 compliance year demonstrated large increases in plausibility adjustments potentially due to the uncertainty regarding the broadening of direct access.

Table 2 illustrates the magnitude of plausibility adjustments in each month and compares 2009, 2010, and 2011 compliance years. Eight of twelve ESPs and two of three IOUs serving load in 2011 required plausibility adjustments applied to the Year-Ahead forecast in any month of the 2011 compliance year. In 2011, plausibility adjustments were both larger in magnitude and a larger group of LSEs required them.

<sup>19</sup> 2010 RA report is linked to the CPUC website here:  
<http://www.cpuc.ca.gov/PUC/energy/Procurement/RA/index.htm#Final%20Reports>  
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**Table 2 CEC Plausibility adjustments 2009-2011 (MW)**

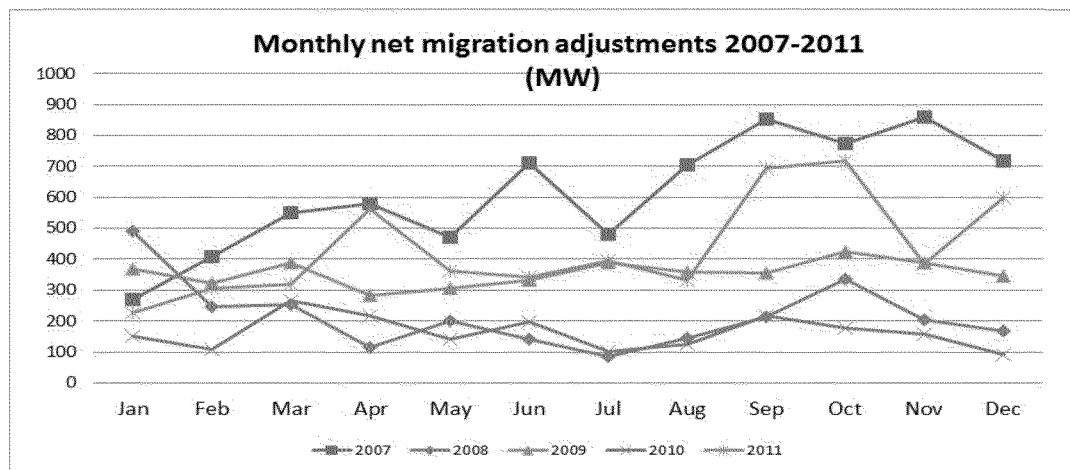
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2009 Compliance Year	437	436	441	459	519	553	605	-188	595	514	484	481
2010 Compliance Year	50	48	19	65	21	22	225	-44	352	155	17	15
2011 Compliance Year	0	28	38	39	161	210	1,381	115	1,256	42	33	66
Percentage increase/decrease 2010-2011	-100%	-41%	103%	-40%	674%	853%	515%	364%	257%	-73%	96%	349%

Source: Aggregated year-Ahead CEC load forecasts 2009-2011

## 2.1.2 Monthly Load Migration Adjustments

The graph in Figure 1 illustrates the trend in monthly net migration adjustments to LSE forecasts during compliance years 2007-2011. There was a significant decrease in net load adjustments from 2007 until 2010, and then a significant increase in net migration adjustments in 2011. This is a significant increase from the monthly load adjustment range of 93 to 268 MW during 2010 and of 283 to 425 MW during 2009. This significant increase correlates with the 2010 reopening of Direct Access (DA), which may have caused a large amount of uncertainty regarding customer migration.

**Figure 1. Monthly Net Migration Adjustments from 2007-2011**



Source: Monthly Forecast adjustments submitted by LSEs, 2007-2011

Table 3 shows the progression of the load forecast process in 2011, from initial forecasts sent in July to final monthly load forecasts used for RA obligations. The monthly load forecast adjustments ranging between 226 and 717 MW in 2011.

**Table 3. Summary of Load Forecast Adjustments in 2011 (in MW)**

Description	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1 Total Forecasts sent out in Jul. 2011	29,006	28,012	28,126	29,645	34,036	38,759	43,173	44,847	40,965	33,084	29,124	30,937
2 Monthly Load Forecast adjustments through 2011	226	305	320	562	361	341	394	333	695	717	385	601
3 Total forecasts used												

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	in 2011 monthly RA filings												
4	Line 3 as percent of Line 1	101%	101%	101%	102%	101%	101%	101%	101%	102%	102%	101%	102%

Source – Aggregated Load Forecast Adjustments submitted to the CEC and CPUC through 2011

## 2.2 System RA Requirements - CPUC Jurisdictional LSEs

The CPUC-jurisdictional LSEs satisfied their individual and collective system RAR for every month of 2011. The total MWs of RA resources procured exceeded the total System RAR range from 1 to 8 percent, depending on the month. RA resources include physical resources within the CAISO’s control area, Demand Response, remaining DWR contracts and imports.

Remaining non unit specific DWR contracts began to expire in 2010, with two final non-unit specific DWR contracts ending in June 2012 (i.e. Kings River Conservation District and Shell).

Table 4 shows total CPUC jurisdictional RA procurement for each month of 2011. During the forecasted peak month of August 2011 CPUC jurisdictional LSEs were required to procure 47,861 MW of resources to meet expected system needs which included the 15 percent planning reserve margin. These LSEs procured in excess of the total System RAR, or 48,461 MW; which represents 556 MW excess beyond the RA program requirements.

The LSEs’ individual forecasts are summed each month after being adjusted for load migration in column B, Demand Response resources are subtracted to create a Net Demand in Column E, a Planning Reserve Margin (PRM) is applied to create the RA obligation in Column F, and non-DR resources are compared to the resulting RA obligation and Net Demand in Columns H and I. Compliance is represented by procurement over 100 percent of the RA obligation in column H, which is 115 percent of the peak demand forecasts.

**Table 4. 2011 RA Filing Summary - CPUC Jurisdictional Entities (MWs)**

A	B	C	D	E	F	G	H	I
2011	Demand Forecast <sup>1</sup>	Demand Response	CAM/RMR	Net Demand	RAR	Total RA Reported	Resources Reported as % of RAR	Resources Reported as % of Net Demand
				$E=B-C$	$F=(E*1.15)-D$		$G=F/E$	$H=F/D$
Jan	29,212	1,065	1,084	28,147	31,285	32,898	105%	117%
Feb	28,285	1,110	1,084	27,175	30,167	32,067	106%	118%
Mar	28,414	1,150	1,084	27,264	30,269	32,750	108%	120%
Apr	30,175	1,265	1,084	28,910	32,162	34,515	107%	119%
May	34,397	1,740	1,084	32,656	36,471	37,576	103%	115%
Jun	39,063	2,337	1,084	36,726	41,150	42,633	104%	116%
Jul	43,527	2,688	1,084	40,839	45,881	46,886	102%	115%
Aug	45,141	2,580	1,084	42,561	47,861	48,461	101%	114%

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Sep	41,620	2,619	1,084	39,001	43,767	44,787	102%	115%
Oct	33,764	1,738	1,084	32,027	35,746	37,154	104%	116%
Nov	29,474	1,347	1,084	28,127	31,261	33,116	106%	118%
Dec	31,504	1,276	1,084	30,228	33,678	35,266	105%	117%

Source: Aggregated LSE Monthly RA Filings<sup>20</sup>

## 2.3 Local RA Program – CPUC Jurisdictional LSEs

Beginning with the 2007 compliance year, the CPUC required LSEs to file an annual demonstration that they acquired adequate generation capacity within defined transmission-constrained areas. D.10-03-022 adopted a biannual Local RA true up process for 2010, and D.10-12-038 modified and adopted an alternative mechanism for 2011 and beyond.<sup>21</sup> For the 2011 compliance year, there were two cycles of Local RA True-ups, where incremental amounts of load migration meant incremental adjustments made to each LSE’s Local RA obligation. One adjustment is made in February for the May and June 2011 compliance months, and the second is made in April for the July through December 2011 compliance months.

### 2.3.1 Year Ahead Local RA Procurement

In D.10-06-036 the CPUC established Local RA obligations for 2011 compliance year and ordered LSEs to procure Local RA capacity in each of five Local Areas (Big Creek/Ventura, LA Basin, San Diego, Greater Bay Area, and Other PG&E Local). These Local Area obligations are informed by the CAISO’s 2011 Local Capacity Technical Analysis.<sup>22</sup>

CPUC jurisdictional LSEs’ overall Local RA procurement for 2011 is summarized in Table 5. CPUC jurisdictional LSEs procured Local RA Resources sufficient to meet CPUC Local RA obligations in all five Local Areas of California in 2011, with aggregate minimum procurement exceeding Local RAR by 10 percent for all Local Areas, and from 2 to 30 percent in individual Local Areas.

**Table 5. Local RA procurement in 2011 – CPUC jurisdictional LSEs**

Local Areas in 2011	Total LCR	CPUC Juris Local RAR	Minimum Physical Resources per Month	Local CAM/RMR /DR credit	Minimum procurement as percent of Local RAR
	A	B	C	D	(C+D)/B
LA Basin	10,589	9,493	8,473	1,688	107%
Big Creek/Ventura	2,786	2,498	2,316	243	102%
San Diego	3,146	3,146	3,037	210	103%
Greater Bay Area	4,804	4,437	5,391	357	130%
Other PG&E Areas	5,769	5,328	5,354	278	106%
<b>Totals</b>	<b>27,094</b>	<b>24,902</b>	<b>24,571</b>	<b>2,278</b>	<b>110%</b>

Source: Aggregated 2011 Local RA filings

<sup>20</sup> The Monthly CEC Load Forecast is the same forecast as applicable to the Monthly Filings, from Line 3 in Table 3

<sup>21</sup> More detail regarding the overall Local RA program can be found in Section 3.3 of the 2007 Resource Adequacy Report

<sup>22</sup> LCR studies and materials for 2011 and previous years are posted at the following link:  
<http://www.caiso.com/planning/Pages/ReliabilityRequirements/LocalCapacityRequirements.aspx>  
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## 2.3.2 Local RA True-ups

Beginning with the 2010 reopening of direct access the Commission adopted a true up mechanism early in 2010 in the Direct Access decision D.10-03-022 to ensure that all service providers were subject to the same RA treatment.

During 2010 Energy Division and CEC staff helped LSEs participate in the Local RA True up process in order to complete the 2010 RA compliance year successfully. Nevertheless, staff found the Local true-up process time consuming for all parties resulting in lessons learned in 2010 that informed the final adopted process for 2011.

Energy Division worked with LSEs and the ALJ to develop an alternative reallocation approach for 2011 compliance year, and the Commission adopted D.10-12-038 at the end of 2010 which replaces the local true-up process adopted in D.10-03-022.

The new local true up process requires LSEs to file revised load forecasts for August's peak load twice during the year. The CEC uses these revised August load forecasts to update each LSE's load share which is used to reallocate the adopted local capacity requirements. The difference between the original allocations and the reallocations gets distributed to LSEs as the incremental Local requirement for their required monthly filing.

LSEs submitted their first revised August forecast to the CEC on January 31<sup>st</sup> along with their 60 day-ahead (April) load forecast. After vetting these values the CEC revised the August load shares, then ED applied the revised load shares to the aggregate local requirements and sent out the incremental local allocation values with the CAM-RMR allocations to be used in the Month-ahead May and June 2011 filings. Energy division checked to make sure that each LSE meet their reallocated local requirement, using these values, for May and June 2011. The same process gets repeated again beginning with a revised August Forecast filed on April 2<sup>nd</sup>. The second local true-up values were sent out on April 18<sup>th</sup> with the July CAM-RMR letter. These incremental values were used for the remainder of 2011 (July to December MA filings). Energy Division checked to make sure each LSE meet their second revised local requirement for July-December MA filings.

## 2.4 Total RA Resources Available to the CAISO

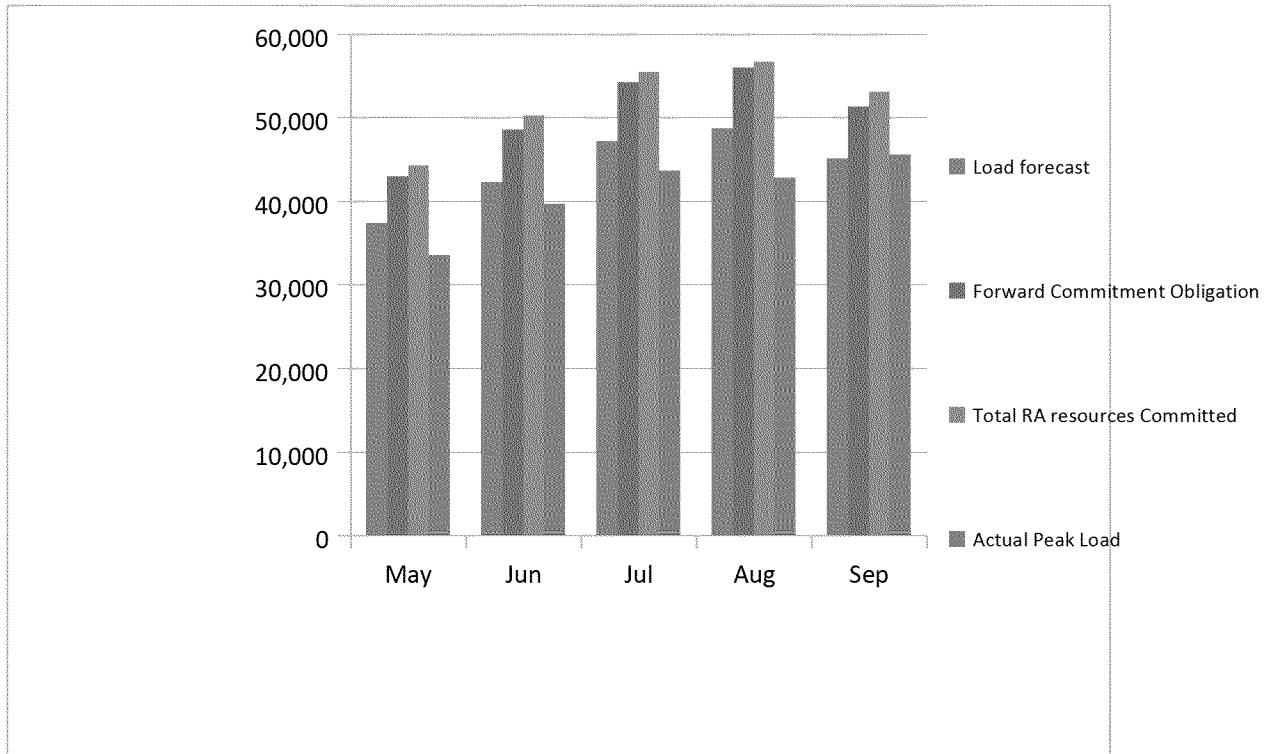
The CPUC has coordinated its RA program with the CAISO's reliability requirements. The CAISO also receives resource adequacy filings from non-CPUC jurisdictional LSEs. Figure 2 compares the total LSE forecasts used for compliance across the CAISO against the CAISO Procurement obligation, total RA procured by LSEs within CAISO, and the actual CAISO peak load in the summer months of 2011. In all months, the capacity available to CAISO exceeded the actual monthly peak load, and only September's actual peak load approached the Year-Ahead load forecast for that month.

Actual peak load for 2011 occurred in September, when capacity resources

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procured by all LSEs, CPUC jurisdictional and non-CPUC jurisdictional totaled 53,079 MW of resources to meet 45,569 MW of actual CAISO peak load. System RA resources, including Demand Response resources, ranged between 44,252 MW in May to 56,714 MW in August, or between 101 and 103 percent of CAISO total procurement obligations.

**Figure 2. Total CAISO Summer 2011 Forward Procurement Obligation and Forward Procurement vs. LSE Demand Forecast and Actual Monthly Peak Demand (MW)**



Source: Aggregated data compiled from CAISO MRTU Analysis and checked against Monthly CPUC and non-CPUC RA Filings

Table 18 (Appendix 1) illustrates total procurement for the summer of 2011 for all LSEs by contract type, and compares such procurement to the CAISO procurement obligation. The data represented in Figure 2 derives from Table 18. Significantly, 78 to 80 percent of all procured resources for summer 2011 were unit specific physical resources within the CAISO control area; 8 to 11 percent were imports, and about 1 percent was non-DWR Liquidated Damages contracts listed by the POUs.

## 3 Process for Determining NQC of RA Resources

NQC is the amount of a resource's capacity that can be counted for RA compliance filings. The CPUC established NQC counting conventions, which are computed based on the applicable resource type. Qualifying Capacity (QC) represents the maximum capacity eligible to be counted for meeting the CPUC's RAR prior to assessing the deliverability of the resource. The CAISO adjusts a resource's QC for deliverability; the resulting value is the NQC. Each year, the CPUC posts on its website the NQC for each resource that is eligible to sell RA capacity to CPUC jurisdictional LSEs. The CPUC adopted the current QC counting conventions in D.10-06-036.<sup>23</sup>

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The NQC increased by 105MWs in 2011 from 2010. This increase can be attributed to both new resources that came online in 2010 that were added to the NQC list for 2011 and the changes in resource performance from one year to the next. For resources whose NQC is based on performance, such as wind and solar resources, each year new data replaces a portion of the old data causing some year to year variation.

There were several additions to the overall fleet in 2011 after the publishing of the 2011 NQC list.<sup>24</sup> Overall there was a loss of 329 MWs of NQC after netting 504MWs of online additions with 833 MW of retirements in 2011.

**Table 6 New Resources that came online in 2011 since the 2011 NQC list**

Resource Name	Technology	NQC
CPC East - Alta Wind 4	Wind	16.98
CPC East - Alta Wind 5	Wind	27.97
CPC West - Alta 3	Wind	24.98
CANYON POWER PLANT UNIT 1	Peaker	49.50
CANYON POWER PLANT UNIT 2	Peaker	49.50
CANYON POWER PLANT UNIT 3	Peaker	49.50
CANYON POWER PLANT UNIT 4	Peaker	49.50
Avenal Park Solar Project	Solar	5.03
Sand Drag Solar Project	Solar	15.94
Sun City Solar Project	Solar	16.78
FPL Energy Montezuma Wind	Wind	6.13
Shiloh III Wind Project, LLC	Wind	16.65
CSUEB Fuel Cell Station	Fuel Cell	1.55
Sycamore Energy 1	Landfill	1.90
Copper Mountain 10	Solar	8.39
SF State Fuel Cell Station	Fuel Cell	1.75
Lake Hodges Pumped Hydro unit 1	Pumped Hydro	20.00
Ontario RT Solar	Solar	4.19
Riverside Energy Res. Ctr Unit 3	Peaker	49.50
Riverside Energy Res. Ctr Unit 4	Peaker	49.50
Redlands RT Solar	Solar	2.10
Westside Solar Station	Solar	12.58
San Marcos Energy	Landfill	1.60

<sup>23</sup> [http://docs.cpuc.ca.gov/PUBLISHED/FINAL\\_DECISION/119856.htm](http://docs.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/119856.htm) (QC manual adopted as Appendix B).

<sup>24</sup> The 2011 compliance year NQC list is posted to the CPUC website: <http://www.caiso.com/1796/179688b22c970.html>

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SIERRA PACIFIC IND. (ANDERSON)	Biomass	5.00
Stroud Solar Station	Solar	16.78
Rialto RT Solar	Solar	0.84
<b>Total</b>		<b>504.14</b>

**Table 7 Resources that retired in 2011**

Resource Name	Technology	NQC
POTRERO UNIT 3	Thermal	206.00
POTRERO UNIT 4	Thermal	52.00
POTRERO UNIT 5	Thermal	52.00
POTRERO UNIT 6	Thermal	52.00
SOUTHBAY GAS TURBINE 1	Thermal	15.00
SOUTHBAY UNIT 1	Thermal	146.00
SOUTHBAY UNIT 2	Thermal	149.60
Humboldt Bay Mobile Unit 2	Thermal	15.00
Humboldt Bay Mobile Unit 3	Thermal	15.00
Humboldt Bay Unit 1	Thermal	52.00
Humboldt Bay Unit 2	Thermal	53.00
Cogen National	Cogeneration	25.46
<b>Total</b>		<b>833.06</b>

Source: 2011 and 2012 NQC lists posted to the CPUC website

A summary of the current status of plants subject to CEC siting review and under construction, which may eventually be added to California's resource pool, can be found on the CEC website.<sup>25</sup>

## 3.1 Establishment of Final NQC Values

Input data to calculate the NQC values comes from the CAISO and IOUs. The applicable data sets and data conventions are laid out in the Adopted QC methodology manual, which is posted to the CPUC website.<sup>26</sup> The NQC list includes information related to; Local Area, Zonal Area, and Deliverability for each resource. Energy Division performs the QC calculations each summer, and then posts the NQC list to the CPUC website.<sup>27</sup> Once posted no changes are permitted on the list except to add new resources or correct clerical errors.

<sup>25</sup> [http://www.energy.ca.gov/sitingcases/all\\_projects.html](http://www.energy.ca.gov/sitingcases/all_projects.html)

<sup>26</sup> [http://www.cpuc.ca.gov/PUC/energy/Procurement/RA/ra\\_compliance\\_materials.htm](http://www.cpuc.ca.gov/PUC/energy/Procurement/RA/ra_compliance_materials.htm)

<sup>27</sup> Ibid.

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## 3.2 Aggregate NQC Values 2006 through 2011

Table 8 shows aggregate NQC values from the CAISO NQC list for 2006-2011. While many large resources have become available over the previous few years, total NQC has not grown accordingly, partially due to resources retiring and the effect of new CPUC QC counting conventions that decrease the NQC of many intermittent resources. Part of the change in NQC values has been a gradual increase in the number of resources that receive a monthly NQC value instead of an annual NQC value. While several resources now receive a monthly value pursuant to changes in QC counting conventions adopted by the Commission (most notably, cogeneration and hydro resources now get monthly values) several larger thermal resources have begun to supply information to support monthly NQC values in light of performance due to differing ambient weather conditions. For those facilities that were given monthly NQC values, this table shows August NQC values.

**Table 8. NQC for 2006-2011**

Year	Total NQC (MW)	Total Number of Scheduling Resource IDs	Net NQC change (MW)	Net Gain in CAISO IDs on list
2006	46,687	563		
2007	46,504	572	(183)	9
2008	48,056	600	1,552	30
2009	48,899	613	843	13
2010	51,790	646	2,891	33
2011	51,895	649	105	3

Source: NQC lists from 2006 through 2011

## 3.3 Allocation of Import Capability for RA

The CAISO allocates available import capacity to CPUC jurisdictional and non-CPUC jurisdictional LSEs annually to ensure that California is not relying on more imports than could be accommodated by the current transmission system. The CPUC worked closely with the CAISO on the development of this process for use in the CPUC RA program. The CAISO has a 13 step process in the CAISO tariff to perform this allocation.<sup>28</sup> The steps of the process are summarized in the CPUC RA Guide for 2011 and the results of selected steps are summarized in the table 9 below.

**Table 9. 2011 Import Allocations process (MW)**

<b>Step 1</b>	<b>Maximum Imports</b>	<b>16956</b>
<b>Step 2</b>	<b>Available Import Capability (for loads in the control area)</b>	<b>13573</b>
<b>Step 4a</b>	<b>Total Pre-RA Import Commitments</b>	<b>7311</b>
<b>Step 4</b>	<b>Total Pre-RA Import Commitments &amp; ETC</b>	<b>8891</b>
	<b>Remaining Import Capability after Step 4</b>	<b>4682</b>
<b>Step 9</b>	<b>Assigned Remaining Import Capability during Step 9</b>	<b>3304</b>
<b>Step 10</b>	<b>Available Import Capability after Step 9</b>	<b>1378</b>

<sup>28</sup>CAISO tariff section 40.5.2.2



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<b>Step 11</b>	<b>Assigned Remaining Import Capability during Step 11</b>	<b>1052</b>
<b>Step 12</b>	<b>Available Import Capability after Step 11</b>	<b>326</b>
<b>Step 13</b>	<b>Assigned Remaining Import Capability after Step 12</b>	<b>320</b>
	<b>Available Import Capability after Step 13</b>	<b>6</b>

Source: Aggregate CAISO import allocations posted here  
<http://www.caiso.com/Documents/2011AssignedandUnassignedRAImportCapabilityonBranchGroups-AfterStep6.pdf>

Throughout the summer of 2011, the CAISO allocated 13,573 MW out of 16,956 MW of import capacity to LSEs, and 3,383 MW to Existing Transmission Contracts (ETCs) outside the CAISO control area. Table 10 below summarizes 2011 Import Allocations and the use of Import Allocations in RA filings. All LSEs in CAISO reported between 3,560 and 6,150 MW of import capacity. LSEs used between 40 and 69 percent of their total import allocations during the summer of 2011. Imports represented between 8 and 11 percent of all RA capacity.

**Table 10. 2011 Import Allocations and Usage (MW)**

Line	Element	May	June	July	August	September
1	<b>Import Allocations provided to LSEs for use in RA filings</b>	8,891	8,891	8,891	8,891	8,891
2	<b>Imports shown by CPUC jurisdictional LSEs</b>	2,674	2,830	3,979	5,119	4,489
3	<b>Imports shown by non-CPUC jurisdictional LSEs</b>	886	966	1,045	1,031	1,059
4	<b>Total Imports shown</b>	3,560	3,796	5,024	6,150	5,548
5	<b>Percentage used of allocated (line 4/Line 1)</b>	40%	43%	57%	69%	62%

Source: Import Allocation information posted on the CAISO website as well as aggregate RA filing information

## 4 Commitment, Dispatch, and Pricing of RA Resources

Since the implementation of MRTU, the mechanism of CAISO commitment has changed significantly. Whereas before, CAISO would issue a must offer waiver denial, now the CAISO utilizes market commitment mechanisms, such as Day Ahead, Real Time Market, and Residual Unit Commitment (RUC). During 2011, the CAISO also relied on out-of-market commitments (e.g. ExD, Interim Capacity Procurement Mechanism (ICPM) and Reliability Must Run (RMR) contracts), which illustrated reliability needs that could not be satisfied by the Day Ahead, Real Time and RUC market mechanisms. Out-of-market commitments declined substantially since before MRTU, as well as since the implementation of MRTU.

The RA program requires LSEs to enter into bilateral contracts with generating facilities. These contracts carry a must offer obligation in order to meet the RA obligation. The must offer obligation requires that these resources submit self-schedules or bids into the CAISO markets that make these resources available for dispatch. Prices of bilateral contracts could vary substantially depending on unit location, transmission constraints and/or the unit's ability to exercise market power.

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## 4.1 Trends in Exceptional Dispatch by MWh volume

Since the implementation of MRTU in April 2009, the CAISO has managed a Day Ahead (DAM) and Real Time (RTM) market. These markets attempt to produce optimized results, but there are sometimes reasons for the CAISO to commit resources outside of these markets. ExD usually is where individual resources are managed manually or via dispatch instructions not arising directly from market dispatch. An examination of the DAM and RTM is included in CAISO Annual and Monthly Market Performance Reports<sup>29</sup>. Energy Division also conducts analysis of ExD based on CAISO published data. Included in this section is analysis of ExD in the DA market to highlight trends in MWh volume across Local Area, by reason code, and across months of 2010 and 2011.

Energy Division staff took data from the ExD reports posted to the CAISO website.<sup>30</sup> With this information, Energy Division staff aggregated ExD across a set of categories and summed by month and year across causes and Local Areas. CPM and RMR designations are not included in this analysis, although ExD is the triggering mechanism for a CPM designation. There have not been any CPM designations unrelated to ExD except the outage on San Onofre during the middle of 2012. There will be greater analysis of ExD related to the outage on San Onofre in the 2012 RA report.

Table 11 correlates the reasons listed in the CAISO's ExD reports with the categories Energy Division used for the reason analysis. These categories in large part overlap with categories the CAISO uses to analyze ExD in the monthly Market Performance reports, although Energy Division breaks the information down into more categories. Some Energy Division categories are labeled differently than those used by the CAISO, and may reflect a different grouping. For example, in large part the category called Ramp Rate that the CAISO uses correspond to the Dispatchability category used by Energy Division. Energy Division uses the term dispatchability to reflect the grouping of ramp rate with other dispatch related reasons.

**Table 11 ExD Reason Codes Correlated Into Categories for Analysis**

<b>Specific reason in ExD reports</b>	<b>Energy Division Category for Analysis</b>
Failed telemetry, Telemetry error, software limitation, software error, software issue, bad transition, bridging schedules, suspect modeling issue	Software Limitation
Dispatchability, Dispatchable, ramp rate, Unit Control, Dispatch Modification	Dispatchability
Load forecast uncertainty, forecast error, forecast margin uncertainty	Forecast uncertainty
All T codes	Transmission procedure

<sup>29</sup> Market Reports are linked to the CAISO website here:  
<http://www.caiso.com/market/Pages/ReportsBulletins/Default.aspx>

<sup>30</sup> Monthly ExD reports are posted on the CAISO website here:  
<http://www.caiso.com/241d/241dca223c760.html>

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All G codes	Generation procedure
COI Limitation, COI Mitigation, COI overload, PACI Scheduling Rights, all Path Mitigation, Congestion Mitigation, DC Circulation. SP26 mitigation, Intertie Block, Thermal Margin	Transmission mitigation
MSG unit startup, peaker management, pump management, fast start unit management, ELC Commitment	Generation unit startup and management
System Reliability, System Capacity, SP26 Capacity, NP 26 Capacity, System Energy, System Restoration	System Reliability
Generation outage, SLIC Derate, Transmission outage, Transmission outage SCE, Transmission outage PG&E, etc.	Generation/Transmission outage
SDG&E Import, SDG&E Imports, SDG&E Import Limits, SDG&E Generation Requirement, SCE Imports, PG&E Import Limit	Zonal import limits
SDG&E Gas Shortage, Fuel Curtailment, Fuel Shortage, Fuel supply outage	Fuel Shortage or Curtailment
Market Disruption, SC or customer request, Intertie Emergency Assistance, Over Generation, Voltage Control, Voltage Support, Regain ACE, Risk Prediction, Stranded AS, Wrong Start time, Contingency, Missing Bids, Infeasible Day Ahead Schedule, Fuel Shortage or Curtailment	Other

Source: ExD reports posted to CAISO website

## 4.1.1 Trends in ExD by Local Area

ExD as a whole declined five percent overall MW volumes between 2010 and 2011 in MWh volume (although some Local Areas saw increases and in some reason codes).

**Table 12 Comparison of ExD Volume per month and Local Area (MW)**

Local Area	2011 Total MWh	2010 Total MWh	Y-O-Y Change	2011 % of total
Bay Area	76614	34441	122%	6%
Big Creek-Ventura	47010	139233	-66%	4%
Fresno	71657	53584	34%	6%
Humboldt	42147	11687	261%	3%
Kern	0	0	0%	0%
LA Basin	613029	594294	3%	47%
NCNB	949	4151	-77%	0%
San Diego	197319	259887	-24%	15%
Sierra	9917	40633	-76%	1%

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Stockton	50530	410	12230%	4%
CAISO System	189618	234649	-19%	15%
<b>Total</b>	<b>1298791</b>	<b>1372967</b>	<b>-5%</b>	<b>100%</b>

Source: Monthly CAISO ExD Reports (<http://www.caiso.com/241d/241dca223c760.html>)

## 4.1.2 Trends in ExD by Reason Category

ExD MWh volume changes between 2010 and 2011 include a 23% drop in ExD related to System Reliability, a 48% drop in ExD related to transmission procedures, offset by a 58% growth in ExD related to dispatchability, and a 14% growth due to software limitations. Table 13 illustrates the breakdown of ExD MWh volumes by Energy Division's categories. A monthly breakdown of ExD volumes by category is included as Appendix 2

**Table 13 Breakdown of ExD MWh volumes by reason categories**

	<b>2011 Total MWh</b>	<b>2010 Total MWh</b>	<b>Y-O-Y Change</b>	<b>2011 % of Total</b>
Dispatchability	215973	137094	58%	17%
Forecast Uncertainty	10360	13108	-21%	1%
Generation procedure	59275	51339	15%	5%
Generation/Transmission Outage	268603	267650	0%	21%
Software Limitation	135986	119617	14%	11%
System Reliability	197495	257691	-23%	15%
Transmission Mitigation	52642	85702	-39%	4%
Transmission procedure	155459	299429	-48%	12%
Unit Testing	44047	85508	-48%	3%
Zonal Import Limits	487	17348	-97%	0%
Other	138833	16422	745%	11%
<b>Total</b>	<b>1279159</b>	<b>1350908</b>	<b>-5%</b>	<b>100%</b>

Source: ExD reports posted to CAISO website

Although there was slight overall decline in ExD MW volumes between 2010 and 2011, certain reason categories saw significant increases. In particular, the "Other" category increase was driven by August, September, and October ExD related to "risk prediction" that contributed over 90,000 MWh to "Other".

Software limitation and Dispatchability ExDs are supplanting general system reliability as the main reasons for resorting to ExD. CAISO market performance reports give more detail on the CAISO efforts to improve and to limit ExD but it appears significant issues remain.

## 4.2 Reliability Must Run Designations

Generating resources with existing RMR contracts must be redesignated by the CAISO for the next compliance year and presented to the CAISO Board of Governors for approval by October 1<sup>st</sup> of each year. Designations for new RMR contracts are more

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flexible, and may arise during the relevant compliance year. RMR resources are placed into two classes: Condition 1 contracts are allowed to operate in the energy market even if not dispatched by the CAISO for reliability purposes, and Condition 2 units are generally not allowed to operate in the energy market but are under the full dispatch of the CAISO for reliability purposes. Both types of RMR contracts are paid for by all customers in the transmission area.

Condition 1 units are able to competitively earn revenue in the energy market in addition to the capacity payments under the RMR Agreement. In D.06-06-064 the CPUC ordered that capacity from Condition 1 RMR contracts to be allocated to LSEs to count only towards the LSEs' Local RA obligation, while Condition 2 RMR units may be counted towards both the System and Local RAR obligations. Because they are able to participate in the market, Condition 1 units are allowed to sell their System RA credit to a third party, typically through a "wrap around" contract. RMR units with RA contracts that set the fixed cost recovery via the RMR contract to \$0 are not allocated to LSEs and are able to count towards the RAR of the LSE that has entered into wraparound RA contracts with them.

Pursuant to the stated policy preference of the Commission,<sup>31</sup> Local RA began to supplant RMR contracting for the 2007 compliance year and a significant decline was seen in 2007 RMR designations. That trend continued through to the 2011 compliance year, where now there is only one remaining RMR contract with the Oakland Power Plant. Table 14 provides a summary of the CAISO's 2009, 2010, and 2011 RMR designations and year-over-year decrease.

Continuing that trend, units released from RMR contracts before or shortly into 2011 compliance year include:

- The remaining South Bay Power Plant units
- The entire Potrero Power Plant
- Gilroy Energy Center units 1 and 2, Yuba City Energy Center, and Feather River Energy Center

**Table 14. RMR designations and RMR allocations for 2008-2011**

Year		PG&E	SC E	SDG&E	Total
2009	Approved by CAISO Board of Governors	1,263	0	979	2,242
	Local RMR Allocations Executed	709	0	132	841
	<b>Difference in CAISO designations from previous year</b>	<b>(40)</b>	<b>0</b>	<b>(982)</b>	<b>(1,022)</b>
2010	Approved by CAISO Board of Governors	709	0	311	1,020
	Local RMR Allocations Executed	709	0	311	1,020
	<b>Difference in CAISO designations from previous year</b>	<b>(554)</b>	<b>0</b>	<b>(668)</b>	<b>(1,222)</b>

<sup>31</sup> California Public Utilities Commission D.06-06-064, Section 3.3.7.1.

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2011	Approved by CAISO Board of Governors	165	0	0	165
	Local RMR Allocations Executed	165	0	0	165
	<b>Difference in CAISO designations from previous year</b>	<b>(544)</b>	<b>0</b>	<b>(311)</b>	<b>(855)</b>

Source: CAISO Board of governors meetings for 10/29/08, and 10/21/09, and 10/26/10

## 4.3 RA Contract Prices 2010-2012

Energy Division staff requested data from all LSEs regarding prices paid for RA capacity. This data request was sent to both IOUs and ESPs. The Data request covered RA only capacity both bought and sold for every RA contract covering all periods of 2010 to 2012 compliance years. The data request excluded Combined Heat and Power (CHP), Renewable Portfolio Standard (RPS) and Qualifying Facility (QF) contracts provided that those contracts are not easily comparable to contracts for conventional capacity. Tolling contracts were also excluded from the data request.

In addition to the data responses received in 2012, Energy Divisions staff included RA contracts from the 2011 data request that fell within the parameters of the 2012 data request. This included an additional 83 contracts. The purpose of this section is to present aggregated estimates drawn from the responses Energy Division received for the defined parameters. Noting that the data set used in this analysis is incomplete because only two out of 13 ESPs responded to the data request, and the completeness of those responses have not been verified.

Therefore, to increase the completeness of the data, energy division staff included the data responses from the 2011 data request that fit the parameters of the 2012 data request (these were not duplicative). By including this data it increased the total number of contracts used in analysis by 83. A total of 450 contracts with an aggregate of 36,788 MW were analyzed as part of this data set. This included capacity prices for 10,840 MW of capacity effective in August 2011, which is 22.6 percent of the total CPUC jurisdictional RA obligation of 47,866 MW for that month.

These contracts include those that began delivery as early as 2006 and end delivery as late as 2016. The data set includes RA capacity only contracts; to prevent distortion of prices the contracts that include energy have not been included in the data analysis. Energy Division staff sought to analyze contracts entered into particularly for RA compliance purposes delivering during the 2010-2012 compliance period.

To that end Energy Division staff sorted contracts into a variety of categories, and performed statistical analysis of each category. For example, the System only category includes only contracts with units located outside of Local Areas. NP26 and SP26 Local categories include all contracts with facilities located in Local Areas, regardless of what type of contract the LSE signed with the facilities. In short, Local and System are differentiated by unit location, not LSE contractual terms. In some cases, single contracts that pay different prices each year of the contract were split into separate contracts for purposes of this analysis. Table 15 below presents summary statistics from this analysis. All prices represent nominal dollars in kw/month.

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In addition to the analysis done on RA price by zone and local area, Energy division staff looked at the correlation between the length (in months) of the contract and the price of the contract as well as the correlation between the price and MW size of contract. The correlation between these variables showed a weak relationship that was considered statistically insignificant.

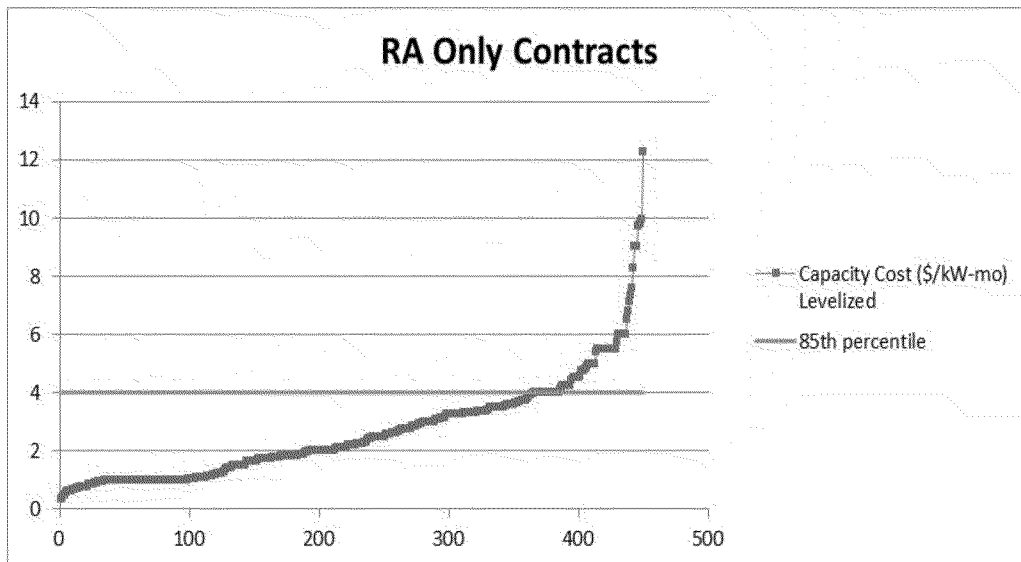
The table below shows that Capacity contracts in the south were more expensive than contracts in the north. However, contracts in local areas in the north were significantly more expensive than local areas in the south. By examining the 85th percentile and seeing that it is about double the median of these categories, it also appears that several categories are significantly skewed, meaning a weighted average analysis could be misleading.

**Table 15 Summary statistics of RA Prices by category**

	RA/ Capacity only	NP26	SP26	CASIO System	Local	NP26 Local	SP26 Local
<b>Median</b>	\$2.20	\$2.00	\$2.25	\$1.65	\$2.68	\$3.30	\$2.50
<b>85 percentile</b>	\$4.00	\$4.00	\$4.23	\$3.27	\$4.42	\$5.50	\$4.25
<b>Max</b>	\$12.25	\$9.95	\$12.25	\$9.95	\$12.25	\$9.00	\$12.25
<b>Number of contracts</b>	450	157	293	140	300	39	261

The figures below are price curves for RA only contracts in each category. Price is represented in nominal dollars per kw/month for each contract. Price is on the vertical axis and number of contracts in each category is on the horizontal axis.

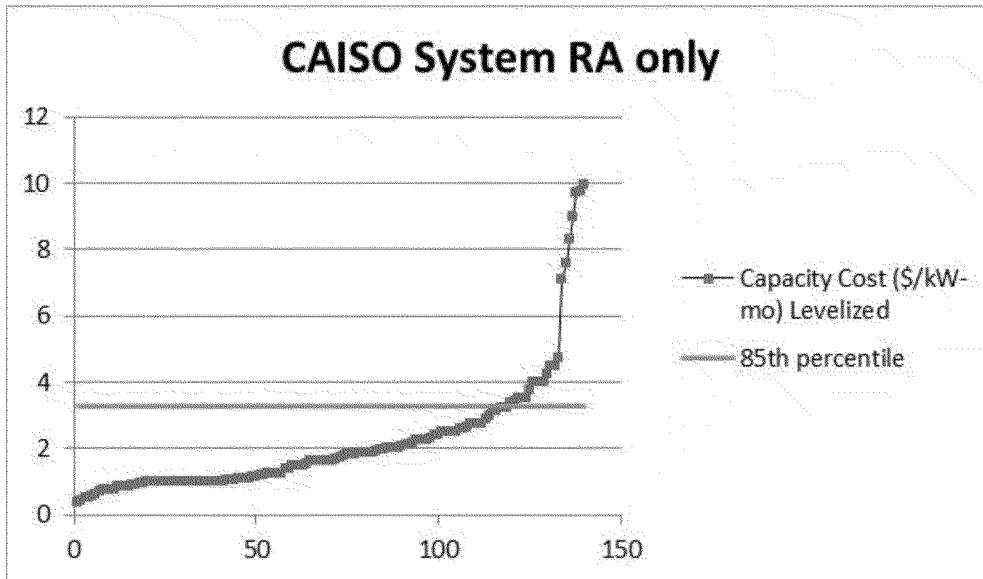
**Figure 3 Breakdown of prices paid for RA only contracts in data set**



Source: 2012 Energy Division survey of IOUs and ESPs, September 2012

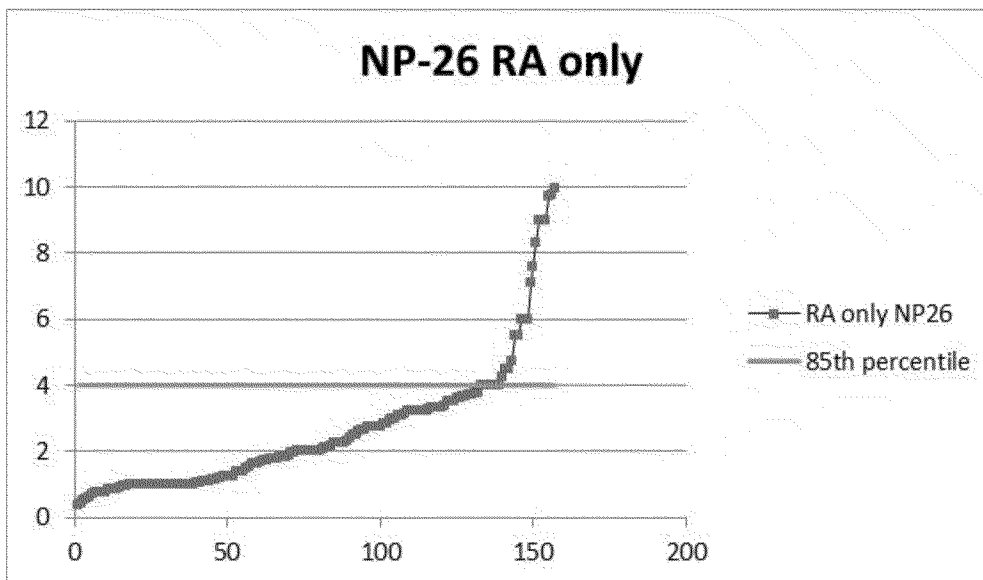
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Figure 4 Breakdown of prices paid for RA only contracts with System Resources



Source: 2012 Energy Division survey of IOUs and ESPs, September 2012

Figure 5 Breakdown of prices paid for RA contracts with NP26 Resources



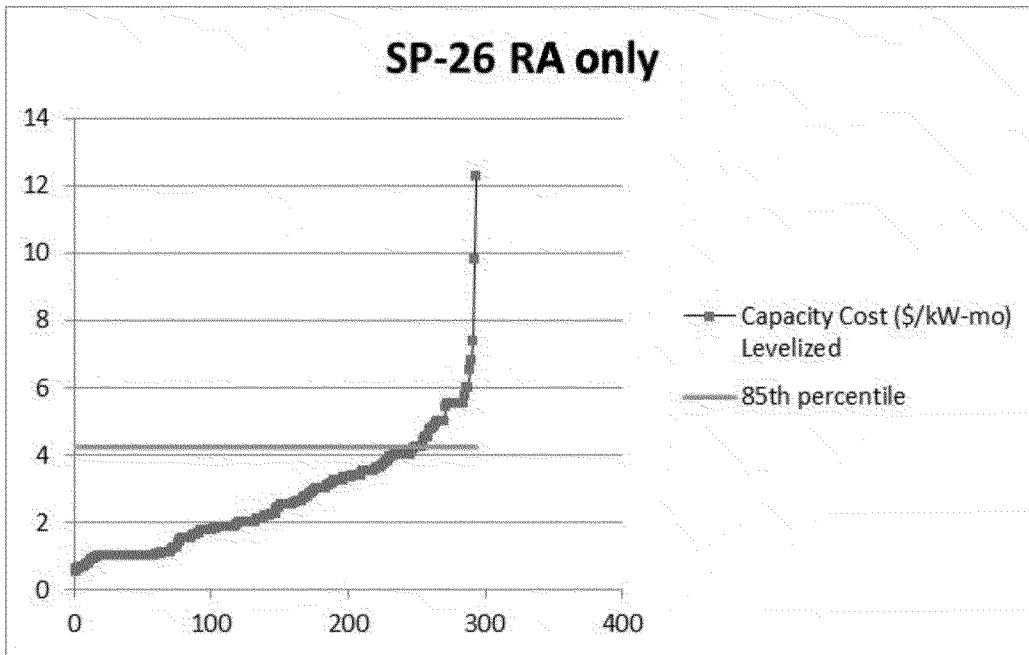
Source: 2012 Energy Division survey of IOUs and ESPs, September 2012

Figure 6 Breakdown of prices paid for RA only contracts with SP26 Resources

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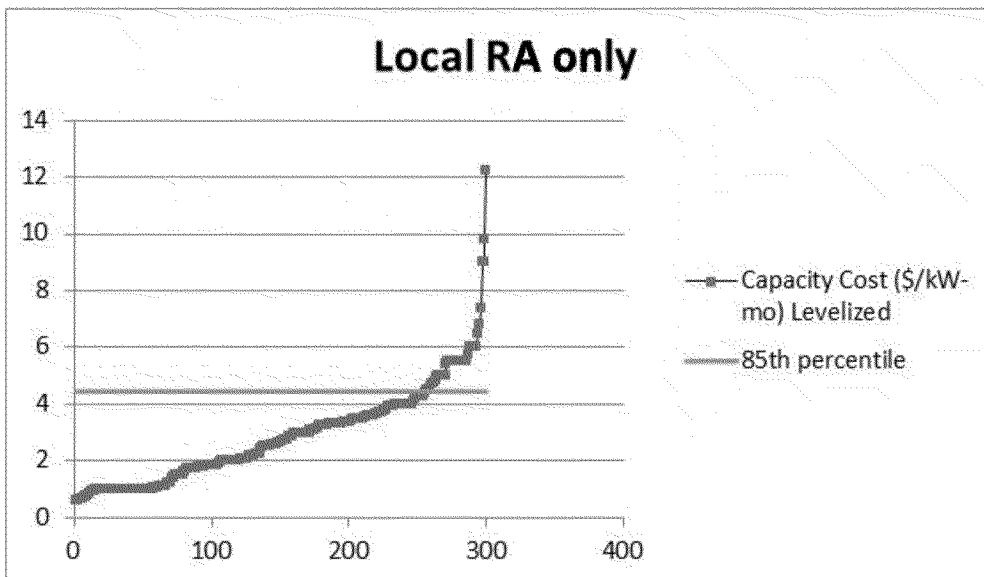


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Source: 2012 Energy Division survey of IOUs and ESPs, September 2012

Figure 7 Breakdown of prices paid for Local RA only contracts

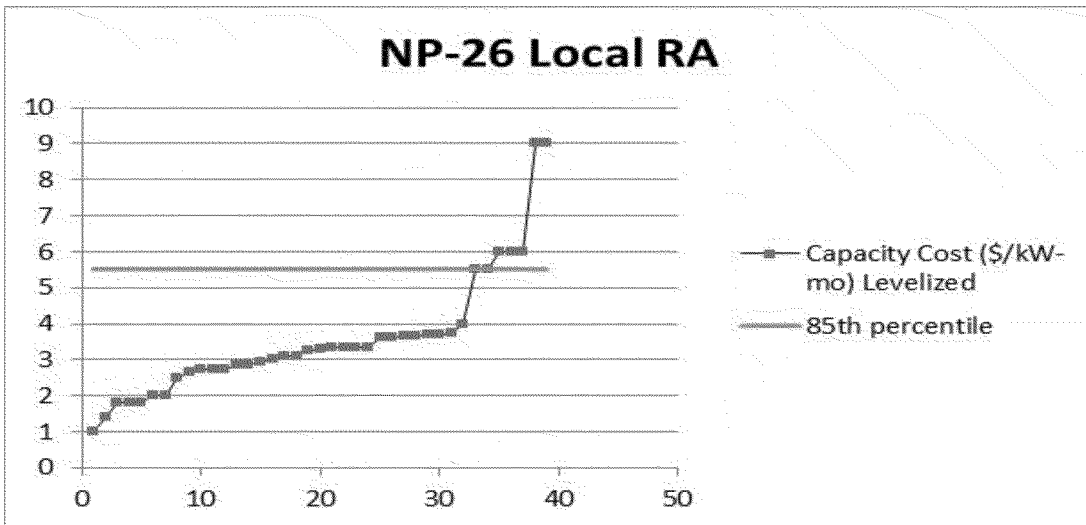


Source: 2012 Energy Division survey of IOUs and ESPs, September 2012

Figure 8 Local RA Prices Paid NP26

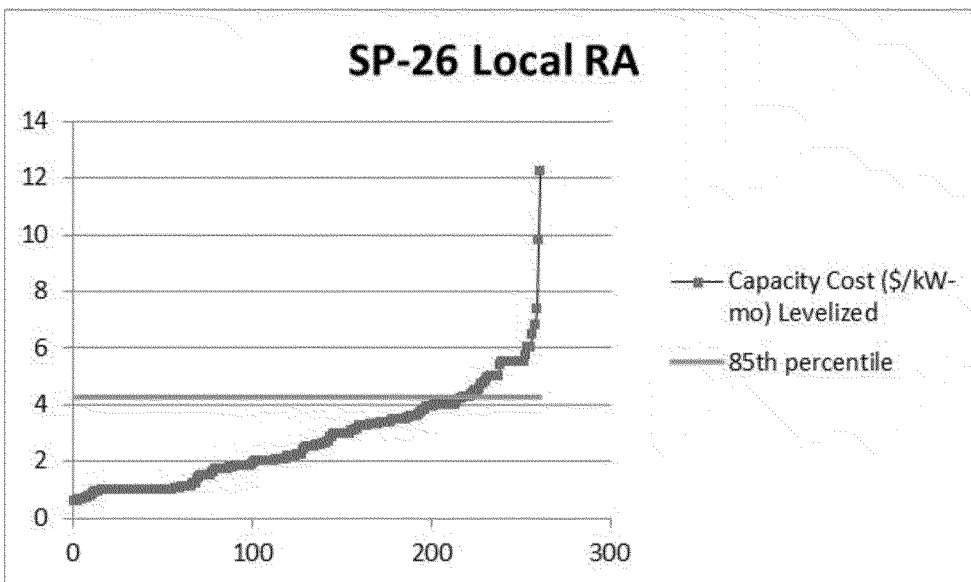
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Source: 2012 Energy Division survey of IOUs and ESPs, September 2012

Figure 9 Local RA Prices Paid SP 26



Source: 2012 Energy Division survey of IOUs and ESPs, September 2012

## 5 Compliance with RAR

CPUC staff continued the implementation of the RA program during 2011 and built on accrued experience from past years. As in previous years, Energy Division hosted a workshop on July 2010 to discuss general compliance rules as well as to highlight changes in procedures or filing rules new to 2011 compliance year. Final 2011 templates and guides were made available to LSEs on August, 2010.

### 5.1 Overview of the RA Filing Process

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The 2011 System and Local RA filing templates and guides were very similar to the 2010 filing templates and guides. Some changes were made to accommodate the new Local RA True up process. As with previous years, the CPUC required that all filings be submitted simultaneously to the CAISO, CPUC, and CEC.

The RA filing process involves load forecasting duties performed by the CEC, supply plan validations performed by the CAISO, with Demand Response, Local RA, and CAM and RMR allocations performed by the Energy Division. Additionally Energy Division evaluates every submitted RA filing, and continually works with LSEs to improve the RA administration process.

## 5.2 Working with Stakeholders to Improve the Compliance Review Process

The CPUC checked the filings for compliance by verifying that each LSE's submittal was accurate, timely, and satisfied all requirements. The CAISO reviewed the filings to check whether the RA filings submitted by LSEs were consistent with the supply plans submitted by generators, and used the submittals to let CAISO operations staff know which units were under contract and available. The CEC reviewed the filings and the historical load information provided by the LSEs for the appropriate time period to determine whether those filings matched load forecasts.

In 2010, CPUC Staff continued to work closely with LSEs to resolve any questions regarding the RA filing process and templates. CPUC Staff provide answers to numerous questions raised by LSEs that have special or unique circumstances. CPUC Staff expects that training and working with the LSEs to reconcile differences and make revisions will continue to lead to fewer questions in the future and make the RA filing process smoother. Due to the administrative obligations of the RA Program, Energy Division Staff tries to continually simplify and streamline filing procedures, e.g. accepting RA Filings electronically via a Secure FTP application to reduce late filings.

CPUC Staff, in a coordinated effort with the CEC and CAISO, reviewed all compliance filings received to date in accordance with comprehensive procedures that include; verifying timely arrival of the filings, matching resources listed against those of the NQC list, confirming compliance with local and Path 26 requirements, and requesting corrections. A vital step of this process relies on the CAISO collecting and organizing supply plans submitted by generators, who then helps Energy Division match the supply plans to the LSE filings. Energy Division verifies compliance and approves filings and sends an approval letter to each LSE.

Every year, Energy Division staff holds a workshop to go over the adopted templates for the up-coming compliance year. Energy Division staff goes through the process of filling out the template and avoiding errors that may lead to non-compliance. There is also an instruction tab located on these templates that details how to fill in the templates. The tools are there to assist all LSEs in showing compliance with the RA program and clarifying any confusion that could lead to errors causing non-compliance.

## 5.3 Enforcement and Compliance

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The essence of the RAR program is mandatory LSE acquisition of capacity to meet load and reserve requirements. The short timeframes in which CPUC, CAISO and CEC Staff must verify that adequate capacity has been procured and to complete backstop procurement if necessary creates a need for filings to arrive on time and be correct. Non-compliance occurs if either an LSE files with a procurement deficiency (i.e. it did not meet its RA obligations) or does not file at all, files late, or not in the manner required. These types of non-compliance generally lead to enforcement actions or citations. Although CPUC staff has not experienced a situation where backstop procurement by the CAISO has resulted from CPUC jurisdictional LSE procurement deficiencies, the situation may occur if compliance is not strictly enforced.

## 5.3.1 Enforcement actions taken 2006-2011 compliance years

Pursuant to Commission Resolution E-4195<sup>32</sup>, Energy Division refers potential violations to the CPUC's Consumer Protection and Safety Division (CPSD), which prosecutes enforcement cases related to the RA program on behalf of the Commission. In 2011 overall compliance actions decreased from the previous year.

Table 16 summarizes enforcement actions and citations taken by the Commission since inception of the RA program in 2006. From 2006 through 2011 the Commission issued 22 citations for violations and initiated four enforcement cases, collecting \$82,500 and \$847,500 respectively from LSEs. In 2011 the Commission issued two citations and took one enforcement action eventually collecting \$7,000 and \$215,000 respectively from LSEs.

An enforcement action taken against Constellation New Energy in 2007 for failure to comply with the 2007 Year-Ahead Local RA obligation and settled in Resolution L-350 for \$107,500.<sup>33</sup> In 2008 the Commission took enforcement action against Calpine Power America-CA, LLC related to the 2008 System and Local RA Filings and subsequently settled for \$225,000 in I.09-01-017.<sup>34</sup> The 2009 Commission enforcement action against Constellation New Energy for under procurement related to 2009 compliance year filings and reached a settlement of \$300,000 in I.10-04-010 on March 10, 2011.<sup>35</sup> The 2011 Commission enforcement case against PG&E for failure to comply with the Month-ahead RA obligations and reached settlement of \$215,000 in Decision 12-02-030 under OII 11-06-011.

**Table 16. Enforcement Summary Pursuant to the RA program since 2006**

Compliance Year	2006	2007	2008	2009	2010	2011	Total
Citations	1	3	7	4	5	2	22

<sup>32</sup> Posted to the CPUC website here:

[http://docs.cpuc.ca.gov/PUBLISHED/FINAL\\_RESOLUTION/93662.htm](http://docs.cpuc.ca.gov/PUBLISHED/FINAL_RESOLUTION/93662.htm)

<sup>33</sup> [http://docs.cpuc.ca.gov/PUBLISHED/FINAL\\_RESOLUTION/73108.htm](http://docs.cpuc.ca.gov/PUBLISHED/FINAL_RESOLUTION/73108.htm)

<sup>34</sup> The docket card for this proceeding can be accessed here:

<http://docs.cpuc.ca.gov/published/proceedings/I0901017.htm>

<sup>35</sup> Documents for this proceeding are posted here:

<http://docs.cpuc.ca.gov/published/proceedings/I1004010.htm>

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<b>LSEs cited</b>	Commerce Energy	3Phases; Commerce Energy; Amer. Util. Network	3Phases (2); Commerce Energy (2); Corona DWP; Sempra Energy; Shell Energy	Commerce Energy (3); CNE	Commerce Energy; Pilot Power (2), Dir. Energy Bus., SDG&E	Liberty Power; Tiger Nat Gas	
<b>Penalties paid on citations</b>	\$1,500	\$5,000	\$17,000	\$26,500	\$25,500	\$7,000	<b>\$82,500</b>
<b>Enforcement Cases</b>	0	1	1	1	0	1	3
<b>Penalties paid in enforcement cases</b>	0	\$107,500	\$225,000	\$300,000	0	\$215,000	<b>\$847,500</b>

Source – CPUC enforcement records

In 2011 there was a large improvement in the quality of the RA filings, and a decrease in the amount of recurrent minor errors in the filings. The small errors continued to be related to the outage counting protocol or mismatched supply plans. There is also the continued need to monitor administrative issues such as filing dates and filing procedures.

## 6 Generator Performance and Availability

To facilitate and ensure that generators perform in accordance with their RA capacity contracts, and are available as per agreement. To this end, CAISO developed and implemented Standard Capacity Product (SCP) provisions, monitor and penalize generator’s Scheduling Coordinators (SCs) with performance and availability penalties, on January 1, 2010. SCP penalties could apply to both generation confirmed as RA resources for the month and located inside CAISO and resources confirmed as RA for the month and located external to CAISO. SCP reporting information is posted to the CAISO website.<sup>36</sup>

To better understand and bench mark power plant performance, availability and reliability the North American Electric Reliability Corporation (NERC) via the Generator Availability Data System (GADS) application also tracks, records and measures generator performance data. General Order 167 requires large generating facilities in California to submit data to GADS, but the process is underway at NERC to create a mandatory reporting requirement for most generators.

### 6.1 Performance and Availability for RA Resources in CAISO

On January 1, 2011 the CAISO implemented newly developed SCP provisions for resources whose QC is based on historical values. Demand Response resources currently remain exempt. In 2011 the SCP program established an availability standard for each month.

The CAISO performed a monthly review of all RA resources subject to SCP to determine whether the resource’s monthly availability met the monthly availability

<sup>36</sup> SCP tariff and implementation information posted to the CAISO website here: <http://www.caiso.com/1796/179688b22c970.html#2406b60b7570>

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standard. When an RA resource's availability is greater than 2.5 % of the monthly availability standard, the resource becomes eligible for an availability incentive payment. When an RA resource's availability falls 2.5 % below the monthly availability standard, the resource becomes subject to a non-availability charge.<sup>37</sup> To maintain a revenue neutral program the performance payments for a particular month are drawn from the pool of performance penalties paid for that month.

The CAISO calculates the monthly availability standard using the historical forced outages of RA resources over the range of availability assessment hours for each month of the year for the past three years.

The CAISO calculates individual resource availability by taking the total RA capacity available reported in SLIC divided by all the availability assessment hours in the month. A resource is considered 100% available if the resource has no forced outages or temperature related ambient de-rates that impact the RA capacity during the availability assessment hours.

In contrast non-resource specific System resource availability (intertie availability) is not based on outages in SLIC. The availability of a NRS System Resource will be measured by its hourly offers (e.g. Economic Bids or Self-Schedules) to provide energy, per Tariff Section 40.9.7.2 Availability Calculation for Non-Resource-Specific System Resources Providing Resource Adequacy Capacity.

Table 17 provides SCP data<sup>38</sup> for January to December 2011. This chart shows that in 2011 on average 21,355 MW<sup>39</sup> of RA capacity from generators and 590 MW<sup>40</sup> of RA capacity from interties were subject to SCP rules. The monthly availability standard ranged from just under 98 percent to just under 96 percent during 2011; actual availability of generators averaged at 98 percent, which exceeded the availability standards in several months, while intertie resources had an average availability of 92 percent, dipping as low as 78% in April and July. The monthly availability standards are listed in the top row followed by the non-availability charges and availability incentive payments. Additionally, this chart shows the available capacity subject to SCP and the average actual availability. All the values are calculated for both generators and interties.

**Table 17 2011 SCP charges (\$)**

		Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
2011 Mthly Avail. Stnds.	Generator	98%	98%	96%	95%	95%	97%	96%	96%	96%	98%	96%	98%
	Intertie	98%	98%	96%	95%	95%	97%	96%	96%	96%	98%	96%	98%
Non-Avail. Charges	Generator	\$219,403	\$316,375	\$681,052	\$1,219,631	\$1,088,173	\$1,279,459	\$554,338	\$4,120,218	\$2,099,562	\$1,336,811	\$1,622,840	\$885,087
	Intertie	\$68,793	\$47,376	\$55,041	\$170,714	\$32,515	\$456,494	\$913,075	\$222,827	\$3,592	\$90,977	\$4,676	\$36,376
Avail. Incentive payments	Generator	\$-	\$-	\$681,052	\$1,219,631	\$1,088,173	\$1,184,030	\$554,338	\$3,720,905	\$2,099,562	\$-	\$1,622,840	\$-
	Intertie	\$-	\$-	\$22,033	\$53,344	\$32,515	\$31,116	\$144,935	\$199,353	\$3,592	\$-	\$4,676	\$-
Mthly. Surplus	Generator	\$219,403	\$316,375	\$-	\$-	\$-	\$95,429	\$-	\$399,314	\$-	\$1,336,811	\$-	\$885,087

<sup>37</sup> CAISO posts SCP information to the CAISO website here:

<http://www.aiso.com/Documents/2011MonthlyResourceAdequacyAvailabilityStandards.pdf>

<sup>38</sup> Data in Table 17 does not reflect adjustments made after publication on the ISO website.

<sup>39</sup> This does not include RA capacity that is grandfathered from SCP availability standards.

<sup>40</sup> *Ibid.*

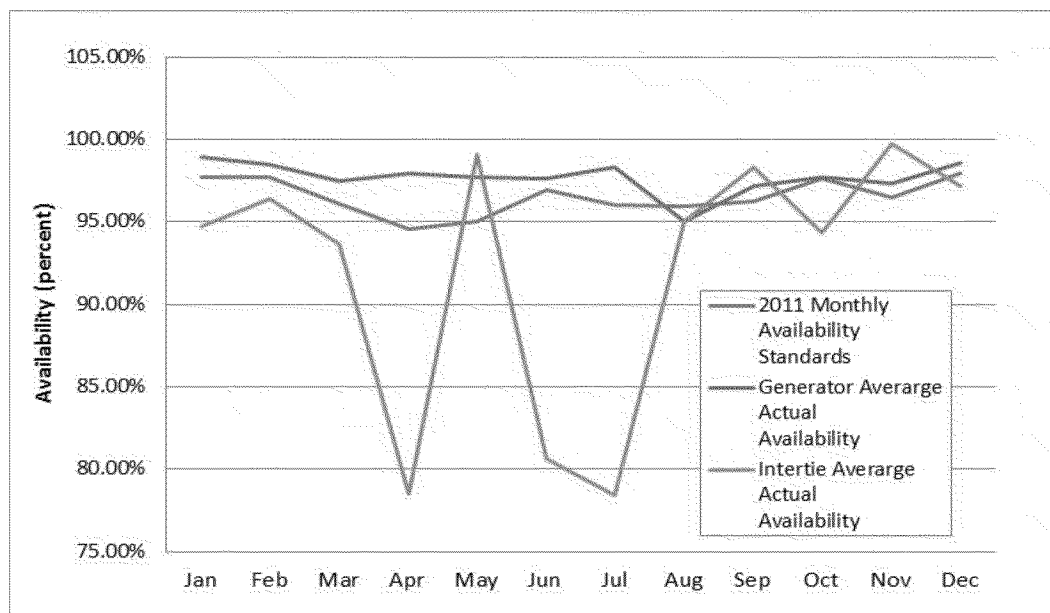
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	Intertie	\$68,793	\$47,376	\$33,008	\$117,370	\$-	\$425,378	\$768,140	\$23,474	\$-	\$90,977	\$-	\$36,376
Average Actual Avail. (%)	Generator	99%	98%	98%	98%	98%	98%	98%	95%	97%	98%	97%	99%
	Intertie	95%	96%	94%	78%	99%	81%	78%	95%	98%	94%	100%	97%
RA Capacity (MW) subject to SCP	Generator	16,791	17,395	18,331	19,448	20,996	23,890	25,703	27,216	24,976	21,267	19,660	20,587
	Intertie	407	432	464	174	804	515	925	1,092	862	463	463	476

Source: CAISO 2011 Standard Capacity Product Report  
<http://www.caiso.com/Documents/2011StandardCapacityProductAnnualReport.pdf>

Figure 10 shows the availability standard for January to December 2011 and the average actual availability of both generators and interties over that same time period. For Interties 9 out of 12 months show a lower average actual availability than the availability standard whereas generators for all 12 months average actual availability very close to the monthly availability standard, dipping slightly below the availability standard in only one month.

**Figure 10 Average Actual Availability 2011**



Source: CAISO 2011 Standard Capacity Product Report -  
<http://www.caiso.com/Documents/2011StandardCapacityProductAnnualReport.pdf>

## 7 Changes to the RA Program for 2011

The Commission made minor changes to the NQC counting conventions for intermittent resources. D.10-06-036 adopted a final QC manual as Appendix B. The main changes between 2010 compliance year and 2011 compliance year were to harmonize hydro with other intermittent resources, and to add data from weekends and holidays into the data set for all intermittent resources (such as cogeneration, wind, solar, and hydro resources). Hydro resources no longer receive NQC based on a 1 in 5 dry hydro year, but instead receive NQC based on a historical average of performance over the previous three years.

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D.11-10-023 abolished the preliminary year-ahead filing. Therefore, beginning in 2011, when LSEs made their 2012 year-ahead showing, LSEs were no longer required to make a preliminary system showing in September.

That decision also modified the penalty structure of the RA program, creating streamlining penalties for LSEs that remedy deficiencies within five business days. Instead of penalties based on kw-month charges, the decision created a class of Specified Violation applicable to instances where LSEs remedy deficiencies within five business days as directed by Energy Division. This change allowed the CPUC to issue less onerous citations to LSEs instead of pursuing OIIs.



## 8 Appendix 1 - Total CAISO LSE Procurement as Percentage of Total Obligation

Table 18. Total CAISO LSE Procurement as Percentage of Total CAISO Obligation

2011	Type of LSE	Peak Demand Forecast	Forward Commitment Obligation	I. Physical Resources in ISO Control Area	II. DWR contracts	III. Total Imports	V. Dispatchable DR and Participating Load	Liquidated Damages Contracts	CAM/RM R/Other	Total RA Capacity	RA Capacity as a Percentage of Obligation
May-11	CPUC LSEs	34,397	39,556	33,804	1,098	2,674	1,740	0	1,085	40,663	103%
	Non-CPUC LSEs	3,037	3,463	1,758		886	364	527	0	3,589	104%
	Total RA capacity	37,434	43,019	35,562	1,098	3,560	2,104	527	1,085	44,252	103%
	% of Capacity			80%	2%	8%	5%	1%	2%	100%	
Jun-11	CPUC LSEs	39,100	44,965	38,068	1,735	2,830	2,337	0	1,085	46,406	103%
	Non-CPUC LSEs	3,214	3,678	2,200		966	136	526	0	3,849	105%
	Total RA capacity	42,314	48,643	40,268	1,735	3,796	2,473	526	1,085	50,254	103%
	% of Capacity			80%	3%	8%	5%	1%	2%	100%	
Jul-11	CPUC LSEs	43,567	50,102	41,049	1,675	3,979	2,688	0	1,085	50,879	102%
	Non-CPUC LSEs	3,680	4,213	2,533		1,045	196	571	0	4,375	104%
	Total RA capacity	47,247	54,315	43,582	1,675	5,024	2,884	571	1,085	55,254	102%
	% of Capacity			79%	3%	9%	5%	1%	2%	100%	
Aug-11	CPUC LSEs	45,180	51,957	41,647	1,695	5,119	2,580	0	1,085	52,513	101%
	Non-CPUC LSEs	3,585	4,053	2,393		1,031	226	517	0	4,201	104%
	Total RA capacity	48,765	56,010	44,039	1,695	6,150	2,806	517	1,085	56,714	101%
	% of Capacity			78%	3%	11%	5%	1%	2%	100%	
Sep-	CPUC	41,660	47,908	38,902	1,395	4,489	2,619	0	1,085	48,884	102%

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11	LSEs										
	Non-CPUC LSEs	3,498	3,498	2,221		1059	339	526	0	4,195	120%
	Total RA capacity	45,158	51,406	41,123	1,395	5,548	2,958	526	1,085	53,079	103%
	% of Capacity			77%	3%	10%	6%	1%	2%	100%	

Source: Aggregated RA data collected by CPUC along with Non-CPUC jurisdictional data from CAISO

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## 9 Appendix 2

**Table 19 ExD by reason and by month (MWh)**

	2011 Total	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11
Dispatchability	215973	19544	21574	13112	16044	649	34785	22400	12449	40488	13350	15471	6107
Forecast Uncertainty	10360	0	0	0	1127	0	1673	1057	0	6488	14	0	0
Generation procedure	59275	187	1671	22543	4941	599	436	695	0	11415	1995	11237	3557
Generation/ Transmission Outage	268603	8934	34668	53016	33235	8109	7752	10478	3391	42643	39359	21340	5677
Software Limitation	135986	22538	13251	16128	4195	3403	14233	10865	6284	17923	17502	6139	3524
System Reliability	197495	6283	12990	23649	9546	8594	25701	55442	3502	50521	164	1104	0
Transmission Mitigation	52642	544	0	1232	8361	1168	1803	12379	352	18484	2522	5797	0
Transmission procedure	155459	9024	67775	5613	4624	5068	11272	18938	7554	15677	6439	28	3448
Unit Testing	44047	7909	1388	12294	4219	7135	7312	21	122	2	194	2491	960
Zonal Import Limits	487	45	15	0	427	0	0	0	0	0	0	0	0
Other	138833	7456	13435	993	2955	183	8	3771	17376	67431	18981	639	5605
<b>Total</b>	<b>1279159</b>	<b>82465</b>	<b>166767</b>	<b>148581</b>	<b>89673</b>	<b>34907</b>	<b>104974</b>	<b>136047</b>	<b>51030</b>	<b>271072</b>	<b>100522</b>	<b>64246</b>	<b>28877</b>

	2010 Total	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10
Dispatchability	137094	3605	0	284	1569	773	16672	45951	26574	12275	7286	16245	5861
Forecast Uncertainty	13108	11992	0	0	0	0	0	0	0	1116	0	0	0
Generation procedure	51339	1891	0	0	12968	8060	4968	4021	0	12172	5010	2201	47
Generation/ Transmission Outage	267650	11966	7547	32841	45039	49902	18392	9237	9023	7614	24371	40004	11714
Software Limitation	119617	6703	2190	3263	5289	9600	9198	6019	17787	22180	18444	6411	12533
System Reliability	257691	16640	3108	8904	1620	1619	40229	46094	131469	260	267	4958	2522
Transmission Mitigation	85702	0	0	0	0	386	524	13652	0	37267	17809	15958	107
Transmission procedure	299429	3423	1581	33463	48421	7030	5196	53039	38328	30476	47859	26688	3927
Unit Testing	85508	192	491	215	0	64	145	1152	276	3191	177	202	79404
Zonal Import Limits	17348	8660	677	0	4935	0	0	0	0	188	1606	1282	0
Other	16422	1522	0	70	981	352	2096	528	2151	470	1911	201	6140
<b>Total</b>	<b>1350908</b>	<b>66594</b>	<b>15594</b>	<b>79040</b>	<b>120821</b>	<b>77786</b>	<b>97420</b>	<b>179694</b>	<b>225608</b>	<b>127208</b>	<b>124740</b>	<b>114150</b>	<b>122253</b>

Source: ExD reports downloaded from CAISO website