



California Independent  
System Operator Corporation

**California ISO**

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*Supplement to August 2010 Report on the Integration of Renewable Resources  
Operational Requirements and Generation Fleet Capability at 20% RPS*

**May 31, 2011**

## EXECUTIVE SUMMARY

The California Independent System Operator (ISO) publishes this report, which was prepared during the month of May 2011, as an informational supplement to the August 31, 2010 *Report on the Integration of Renewable Resources: Operational Requirements and Generation Fleet Capability at a 20% Renewable Portfolio Standard (RPS)*.<sup>1</sup> This supplement is part of the ISO's continuing assessment of fleet capability and renewable integration requirements. The ISO is publishing this information so that it may be considered during the resource adequacy (RA) capacity procurement process.

This report provides an:

- Inventory of the operational characteristics of the existing RA fleet<sup>2</sup> based on the July 2010 through June 2011 month-ahead RA filings,
- Assessment of the degree to which the 2011 RA resource fleet would meet load, reserves and supply variability in 2012 under a 20% RPS, and a
- Quantification of the regulation and load following requirements for 2011, based on updated load, wind and solar forecast error rates determined as part of the ISO's current 33% RPS study work.

This supplement is summarized below. Additional details are provided in subsequent sections of this report.

### ***1. Flexible capacity inventory of the RA fleet, July 2009 - June 2011***

This is an inventory of the ramping capacity, regulation capacity and start-up time capabilities of the existing fleet of RA resources as reflected in the ISO Master File, based on the July 2010 through June 2011 month-ahead RA filings. A month-by-month comparison to the previous year's month-ahead RA filings is provided. The purpose of this inventory is to determine the degree to which the various levels of flexible capacity persist over time and identify any significant changes in the flexibility of the RA fleet. Results indicate that the RA fleet is maintaining or slightly increasing its flexibility when compared to prior year.<sup>3</sup>

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<sup>1</sup> Integration of Renewable Resources: Operational Requirements and Generation Fleet Capability at 20% RPS, August 31, 2010 (also referred to as "2012 RPS Study" or "20% RPS Study"), posted on the ISO website at <http://www.caiso.com/2804/2804d036401f0.pdf>.

<sup>2</sup> Note: Capacity values reflected in this supplemental report are Pmax values that may equal or exceed Net Qualifying Capacity (NQC) resource capacity values. Import RA capacity is not reflected in these value except for resources dynamically scheduled into the ISO.

<sup>3</sup> The amount of RA capacity, with some ramping capability greater than 1MW/minute or start-up time less than 300 minutes, increased in 2011 for the same month over 2010. There is reduction in slower regulation capacity 1-5MW minute while similar quantities of regulation with high ramp capability.

## **2. Flexible capacity assessment of the 2011 RA fleet in 2012**

This analysis re-runs the hourly production simulations and a limited set of 5-minute production simulations for designated hours that were run in the August 2010 20% RPS study, but is limited in this analysis to the pool of RA resources. The objective of this study is to assess for the upcoming year<sup>4</sup> whether the simultaneous energy, operating reserves and regulation requirements can be satisfied by RA resources alone, while also meeting the 5-minute variability in imbalance conditions that result from load and supply variability, assuming 50% fixed imports.<sup>5</sup> Results indicate that if the ISO is limited to using only the RA fleet of resources, the potential for shortfalls of regulation up and spinning reserves increases.

## **3. Flexible capacity requirements assessment of the combined 2011 fleet in 2012**

This is an update of the requirements calculation,<sup>6</sup> which was first developed in the 2007 renewable integration study<sup>7</sup> and used more recently in the 33% study results.<sup>8</sup> The objective of the requirements calculation is to estimate the amount of regulation and load-following capability necessary to meet expected load, wind and solar variability, and forecast uncertainty in 2012. This assessment examines the regulation and load-following capability of the current 2011 combined fleet (RA plus non-RA capacity) to meet the flexibility needs of the system at a 20% RPS compliance level in 2012. The combined operational assessment for 2011 is based on start-up times, energy ramp rates in timeframes needed for load-following,<sup>9</sup> regulation-certified capacity, and ramp rates. The evaluation is based on the most recent load forecasts and simulated wind and solar production profiles and forecast error for the RA compliance year 2011. A key observation discussed below is that the hour-ahead load and wind forecast errors used here were reduced from those of the prior study, which

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<sup>4</sup> Regulation and balancing needs are expected to increase as more variable energy resources are added to the generation fleet in future year.

<sup>5</sup> As in the 20% RPS Study, 50% of the imports in the case are assumed to be fixed and not dispatchable. The other 50% are assumed not to be fixed or economically adjustable at least on an hourly basis.

<sup>6</sup> The requirements calculation is also referred to informally as the “Step 1” analysis, which is described in Appendix B of the 2007 Study cited herein.

<sup>7</sup> Integration of Renewable Resources, Appendix B, November 2007, posted on the ISO’s website at <http://www.aiso.com/1ca5/1ca5a7a026270.pdf>.

<sup>8</sup> Summary of Preliminary Results of 33% Renewable Integration Study – 2010 CPUC LTPP Docket No. R.10-05-006, posted on the ISO’s website at <http://www.aiso.com/2b73/2b73796015b90.pdf>

<sup>9</sup> The term “load-following” in this Supplement is the same as used in the 20% RPS Study. Load-following service may have ramping needs from over 5 minutes to 60 minutes. In the 20% RPS study, for the majority of intervals analyzed, to be able to meet the load-following up requirements simulated for 20 percent RPS within 20 minutes or less. For example, if the 3,737 MW maximum load-following up capacity has to be met within 20 minutes of the start of the hour, the results suggest that in most hours, the current system ramp could on average in most hours sustain 1000 MW/5-minutes or more, meaning that the requirement could be met and slightly exceeded in 4 such intervals. See 20% RPS Report, page vii, <http://www.aiso.com/2804/2804d036401f0.pdf>

reduced the required amount of load-following.<sup>10</sup> At the same time, the 5-minute-ahead load forecast errors increased compared to the prior study, which slightly increased the regulation requirements. The ISO will continue to evaluate forecast error rates, especially to validate simulated wind and solar production profiles against actual production.

The ISO will develop a report in December 2011 that will assess the year-ahead RA showings for 2012, to identify and quantify any deficiencies of RA capacity with specific needed operational characteristics.

## BACKGROUND

The RA program administered by the California Public Utilities Commission (CPUC) imposes year-ahead and month-ahead obligations for its jurisdictional load serving entities (LSEs) to procure RA capacity at both the system level and in designated local resource areas. The supply resources procured under the RA program are then required to be available for scheduling and dispatch through the ISO's spot markets, in accordance with section 40 of the ISO tariff. In contrast, supply capacity within the ISO system that has not been procured by an LSE to provide RA capacity does not have such obligations to be available to the ISO. This distinction, combined with the fact that the ISO's August 2010 study assessed fleet adequacy without regard to the RA status of individual resources, suggests that it is important for the ISO to assess whether the operating needs of the system under 20% RPS can still be met if the ISO must rely only on the designated RA capacity. That question is the primary focus of the present supplemental report.

Another factor motivating the present assessment is the fact that the RA program does not include any obligations for LSEs to procure RA resources with specific operational characteristics. As such, the characteristics of the RA fleet available to the ISO during the compliance period may or may not meet the required operational flexibility dictated by system conditions, load variability, and the escalating levels of generation variability presented by the increased presence of variable energy resources such as wind and solar resources.

Among its other findings, the ISO's August 2010 study indicated that as renewable production increases and satisfies a larger share of the state's energy needs, the spot market revenue stream for thermal resources providing energy and ancillary services will become more uncertain. The ISO therefore believes the August 2010 Study and the present supplement will be informative to LSEs engaged in RA procurement for achieving the RA program objectives to (1) ensure that resources with needed operational flexibility and

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<sup>10</sup> Refer to Appendix A.1.2 and A.2.2 of the 20% RPS report for further insight into the relationship between forecast error on load following and regulation requirements, respectively. Load following is impacted more by hour-ahead load, wind and solar forecast error than variability, whereas regulation is influenced more by variability and less so by load forecast error. That said, 5-minute load forecast error does impact regulation requirements. What the ISO observed in the most recent analysis for 33% is that the 5-minute load forecast error has increased from prior analyses while the hour-ahead load, wind and solar forecast error rates have decreased.

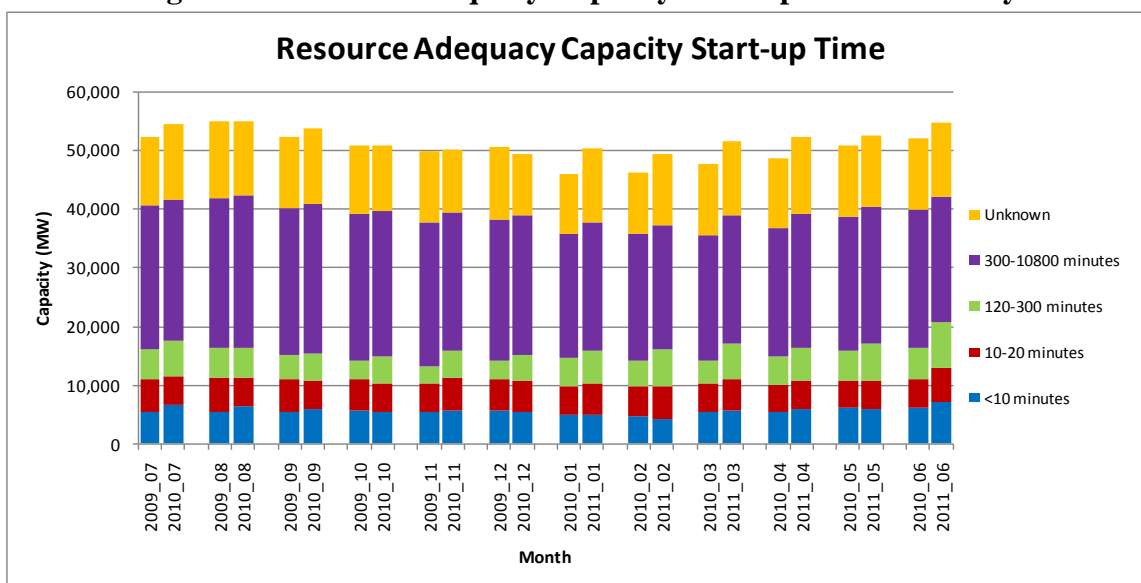
dispatchability, such as thermal generation, are procured in sufficient quantities to maintain reliability under the significantly changed circumstances that the ISO will face with increasing supply from variable energy resources, and (2) minimize the likelihood that procurement of additional capacity by the ISO through backstop capacity mechanisms will be needed.

**1. Flexible capacity inventory of the RA fleet, July 2009 - June 2011**

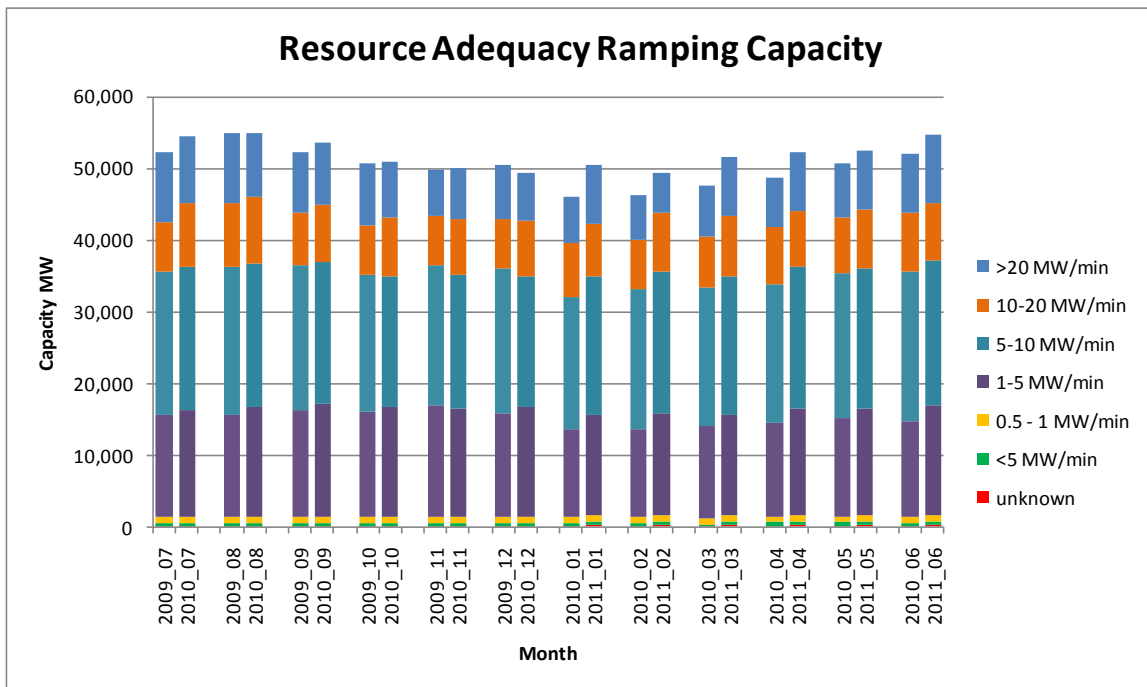
Based on an assessment of the 2011 RA fleet, and a comparison of that fleet to those in 2009 and 2010, the 2011 fleet appears to have comparable or greater flexible capacity than previous years. If the 2012 RA fleet maintains a similar level of flexibility, sufficient flexibility should exist to continue to meet the expected regulation and load following requirements under the 20% RPS. To reaffirm this finding, the ISO will conduct an assessment of the RA fleet in December 2011 based upon the year-ahead RA filings to evaluate the projected sufficiency of the 2012 RA fleet.

The ramping and start-up capability of the 2011 RA fleet is comparable to respective months in 2010. While the flexibility characteristics of the RA fleet is not significantly changing, the ISO expects to have to change how it manages the fleet of resources through resource commitment and reserve product procurement to ensure the right mix of resources are available in the operating timeframe. Figures 1, 2, 3 and 4 provide year over year comparisons by month, e.g., July 2009 vs. July 2010 through June 2010 vs. June 2011, for ramping, regulation, and start-up capability of the RA fleet. The Appendix to this report contains the detailed tabular data by resource type in support of Figures 1 through 4 (see Appendices A, B, and C).

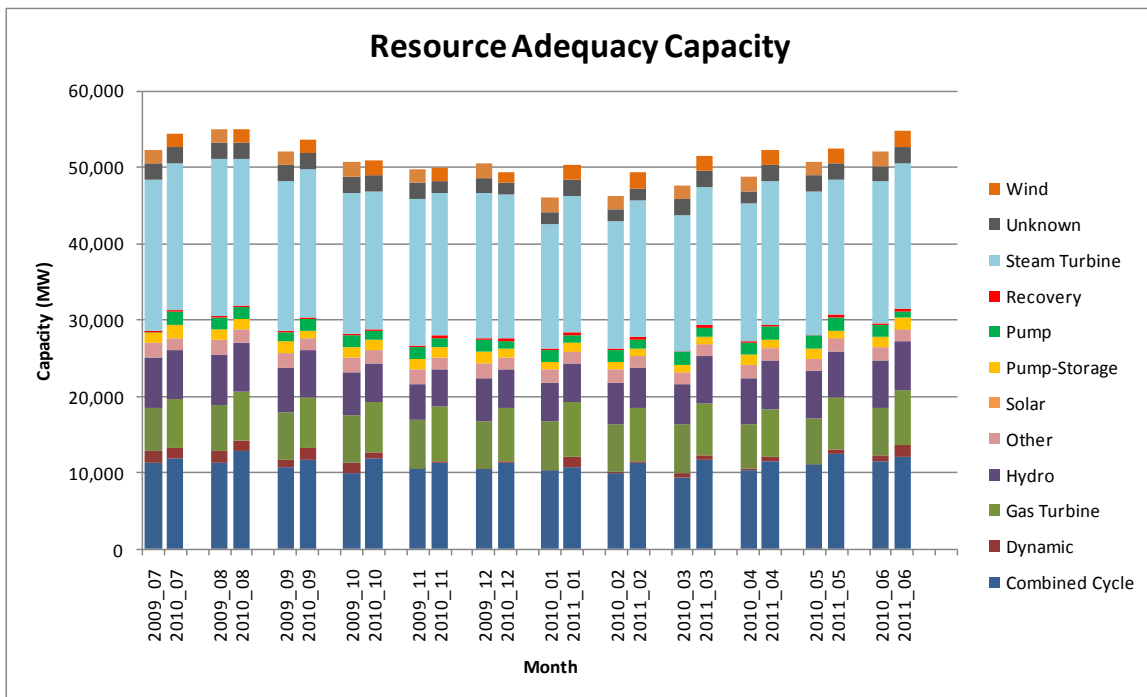
**Figure 1: Resource Adequacy Capacity Start-up Time Inventory**



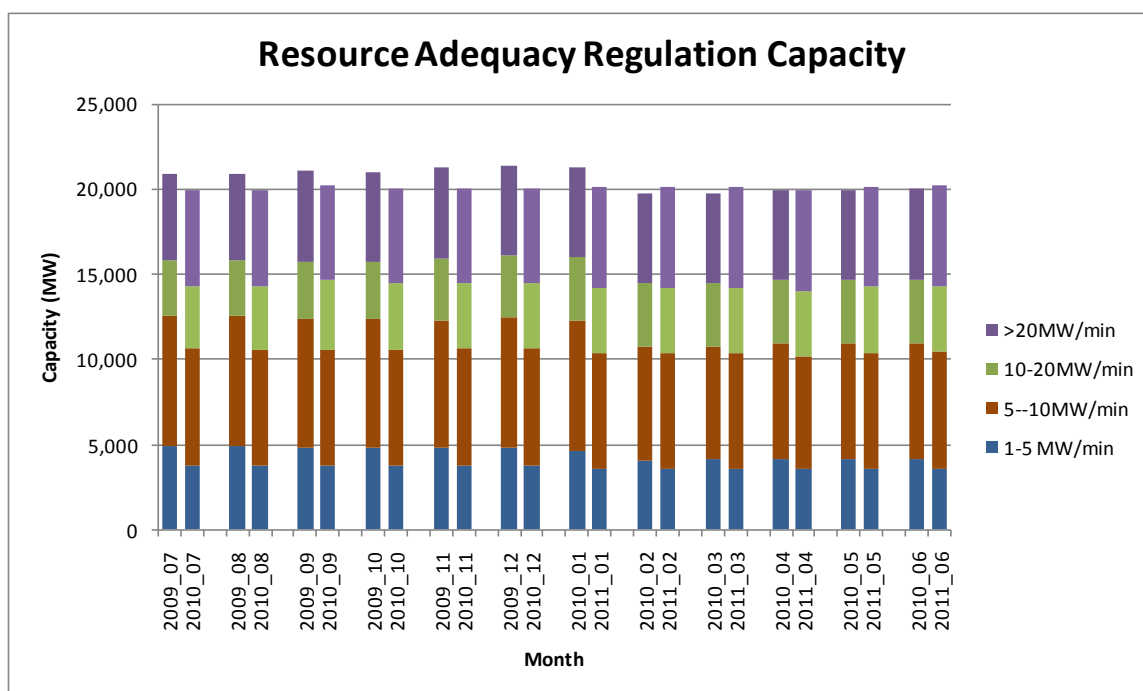
**Figure 2: Resource Adequacy Ramping Capacity Inventory**



**Figure 3: Resource Adequacy Capacity Inventory - Technology**



**Figure 4: Resource Adequacy Regulation Capacity Inventory**



**2. Flexible capacity assessment of the 2011 RA fleet in 2012**

The 2012 RPS study did not include a separate assessment limited to the RA fleet.<sup>11</sup> Instead, the original study considered the ability of all resources in the fleet to meet the flexibility needs of the system. Under the assessment presented, the ISO did perform some limited additional analysis in which the fleet was limited to only RA resources in 2010. The ISO performed an hourly production simulation re-run for some 8,760 hours similar to the 20% RPS study, and limited it to a 5-minute production simulation for designated hours<sup>12</sup> of interest. The objective of this study was to assess whether the simultaneous energy, operating reserves and regulation requirements can be satisfied, through RA resources alone, while also meeting the 5-minute variability in the imbalance conditions that result from load and supply variability, assuming 50% fixed imports.

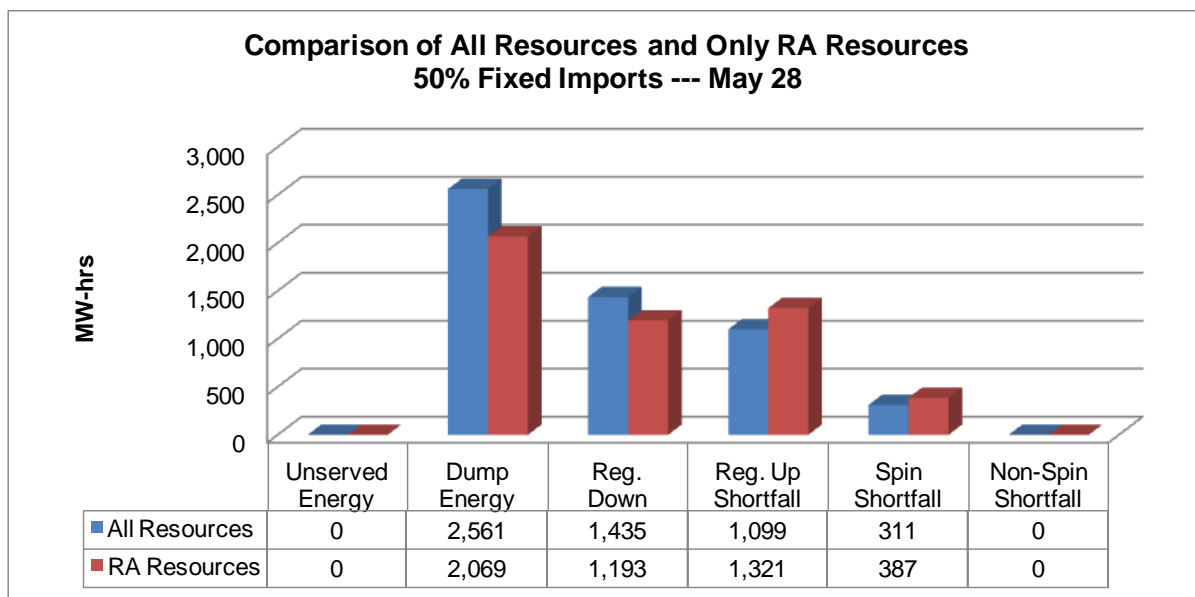
As shown in Figure 5 below, the results of this limited re-run for May 28 indicate an increase of regulation up and spinning reserve shortfalls of 20% and 24%, respectively. A 20% and 17% reduction of overgeneration and regulation down shortfalls, respectively, were also observed. While the results indicate that the resources pool was limited to RA resources only, it should be noted that non RA resources have an opportunity to provide regulation and spinning reserve. The ISO will continue to monitor the frequency and trend of actual

<sup>11</sup> RA designations in the supplemental study were based on the year-ahead, annual RA filings.

<sup>12</sup> In the supplemental assessment, the ISO performed 5-minute production simulation analysis on the identified hours of interest in May identified in the 20% RPS report. Refer to table C-4 of the 20% RPS Study.

regulation up and spinning reserve shortages as more renewable resources interconnect to the system.

**Figure 5: Shortfall Comparison**



Note: dump energy in Figure 5 is over-generation.

**3. Flexible capacity assessment of the combined 2011 fleet in 2012**

As noted, the methodology for the requirements calculation was first developed and explained in detail in the 2007 renewable integration study report published in November 2007. The methodology was revised to incorporate solar resources and this revised model was used to evaluate the operational needs for the CPUC’s 33% RPS scenarios. The production simulation studies examined the regulation and load-following capability of the current 2010 RA resources to meet the flexibility needs of the system at a 20% RPS compliance level in 2012. The combined operational assessment for 2011 is based on start-up times, energy ramp rates in time-frames needed for load-following, and regulation-certified capacity and ramp rates. The evaluation is based on the most recent load forecasts and simulated wind and solar production profiles and forecast error for the RA showing compliance year 2010.

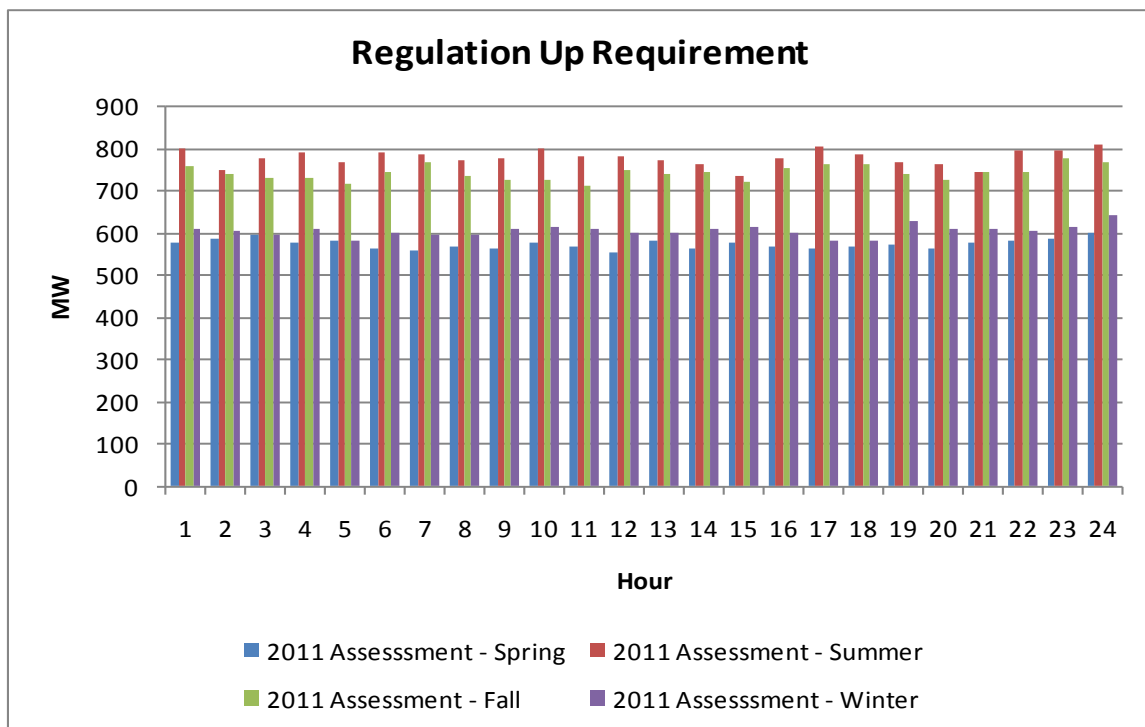
The objective of the Step 1 analysis (requirements calculation) was to calculate the amount of regulation and load-following requirements necessary to meet expected load, wind and solar variability, and forecast uncertainty. Results indicate that with the updated forecast errors for load, wind and solar that were determined for the 33% RPS study work, there is a decrease in the load-following requirements from prior study. Since the 20% RPS study was published in August 2010 through the latest 33% study work, the hour-ahead forecast error rates for load, wind and solar have decreased. Using these latest forecast error rates that were calculated in the 33% study, we observe a reduction in the load following requirements for



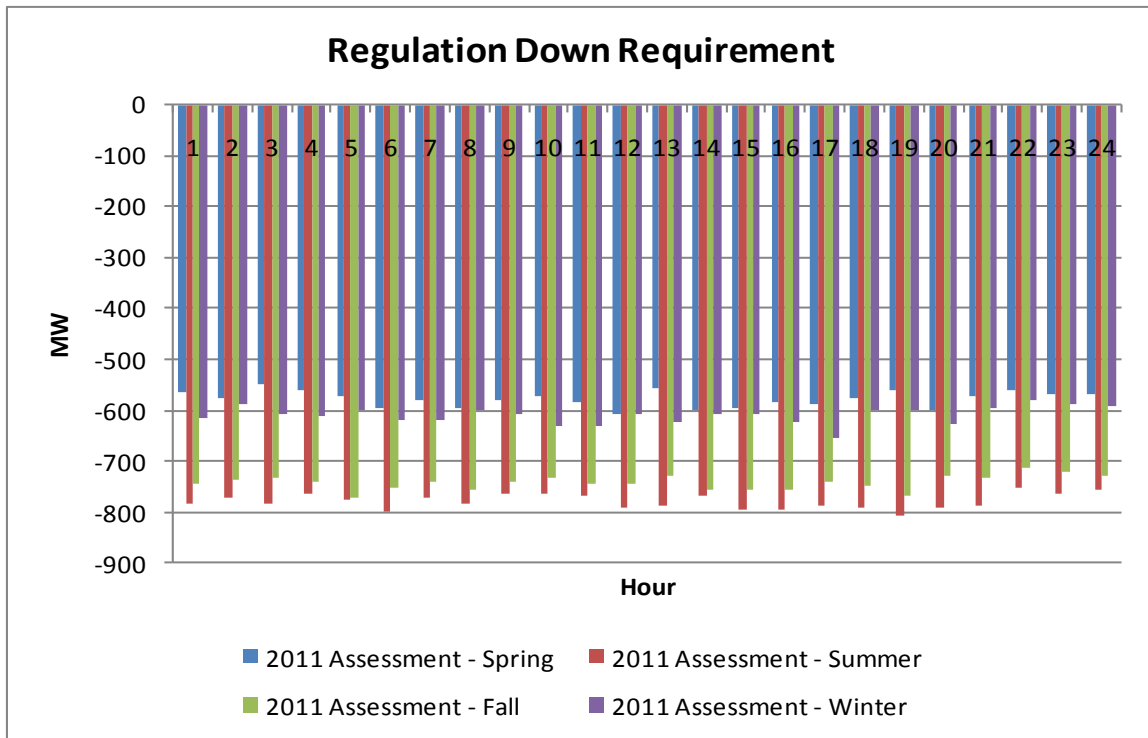
supplemental 20% RPS assessment from the prior 20% RPS study work. The ISO also observed that the 33% load-following requirements using the lower forecast error rates result in load-following requirements at 33% RPS that are lower than the original 20% RPS study results which used higher forecast error rates but higher than the supplemental 20% RPS load-following requirements using the lower forecast error rates. The ISO will continue to evaluate the forecast error as more empirical data becomes available. However, the 5-minute ahead load forecast errors increased from the prior study, which affected the regulation requirements slightly. Figures 6 through 9 illustrate the amount of seasonal regulation and load-following requirements by season for 2010 updated for 2011.

Accounting for only load, wind and solar variability and uncertainty, regulation-up requirements range from 564 MW to 811 MW. Regulation-down requirements range from 547 MW to 606 MW. The load following-up requirements range from 1100 MW to 2259MW. The load-following down requirements range from 1156 MW to 2150 MW.

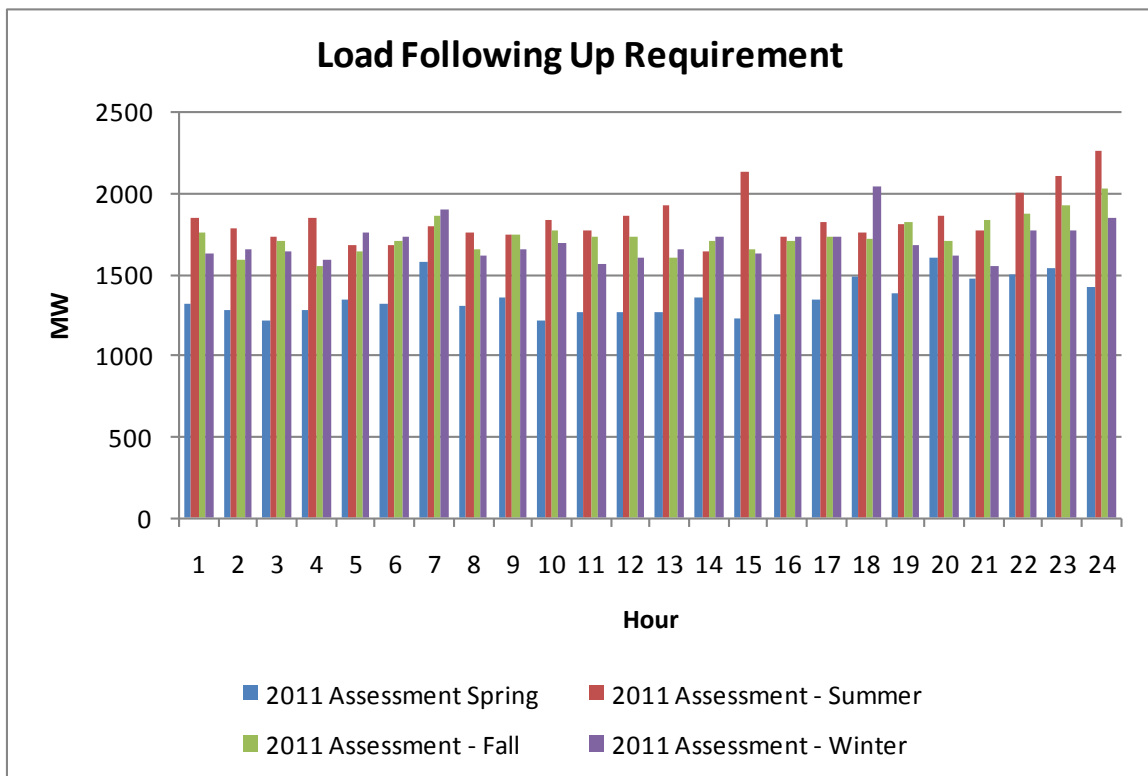
**Figure 6: Regulation Up Requirements**



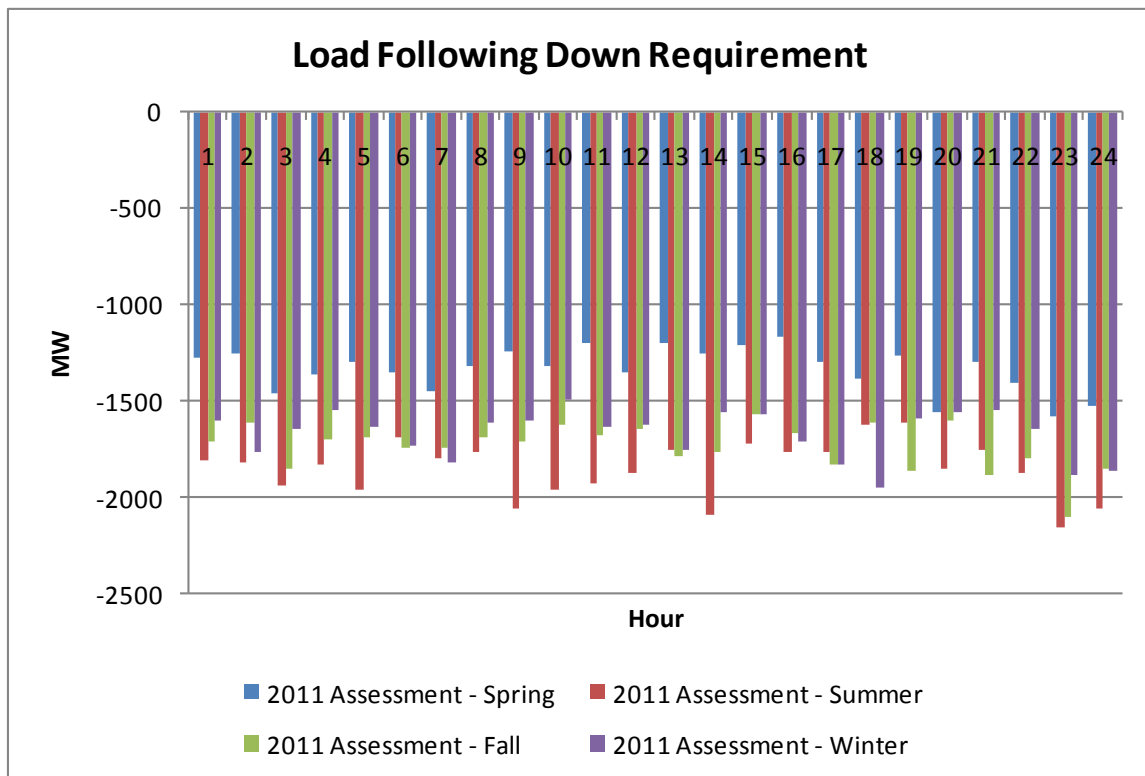
**Figure 7: Regulation Down Requirements**



**Figure 8: Load Following Up Requirements**



**Figure 9: Load Following Down Requirements**



**CONCLUSION**

The 2011 RA fleet is maintaining its flexibility compared to the 2009 fleet. Assuming 2012 RA procurement is similar, the ISO expects the fleet to have sufficient flexibility in the form of regulation capable capacity and load-following capability that could be ramped in 20 minutes. However, the flexibility of the fleet is expected to increase in future years as more variable energy resources are added to the generation fleet. The conclusions for 2012 assume that other resource capacity meeting the general planning reserve margins is maintained such that the simultaneous maximum load, regulation, operating reserve and load following requirements can be satisfied. While some additional shortfalls of ancillary services were observed in studies limited to RA resources, the ISO will continue to monitor the megawatt amounts of actual regulation and spinning reserves are procured in comparison to the amount of regulation and spinning reserve bid in by non-RA resources. The updated load, wind and solar forecast errors result in a reduction in load-following requirements from previous studies, while regulation requirements increased compared to prior assessments. The ISO will continue to closely monitor forecast errors and perform assessments to determine if actual forecast error levels require regulation and load-following requirements to be re-evaluated.

## Appendix

<b>Appendix A: Ramp Capability Inventory .....</b>	<b>12</b>
<b>Appendix B: Regulation Inventory .....</b>	<b>24</b>
<b>Appendix C: Startup Time Inventory .....</b>	<b>31</b>

Note: Capacity values reflected in this supplemental report are Pmax values that may equal or exceed Net Qualifying Capacity (NQC) resource capacity values. Import RA capacity is not reflected in these value except for resources dynamically scheduled into the ISO.

### Appendix A: Ramp Capability Inventory

COMMODITY_TYPE	En												
Sum of MAX_MW_MF	edr_trade_dt	ra_unit	GEN_TECH	ramp_category	<0.5	[0.5, 1)	[1, 5)	[5, 10)	[10, 20)	>=20	Grand Total		
7/1/2009	RA	Steam Turbine		314	703	9,977	6,361	801	1,510	19,665			
		Gas Turbine		1		932	3,639	865	329	5,766			
		Combined Cycle				2,778	4,288	3,736	552	11,354			
		Hydro		73	120	319	905	1,404	3,618	6,438			
		Pump Storage							1,418	1,418			
		Dynamic						57		1,410	1,467		
		Pump					71				71		
		Recovery		29	12	115		13			169		
		Wind						1,143			699	1,842	
		Other		3	1	29		1,931			1,963		
		Unknown				6	23	1,560			525	2,114	
		RA Total				419	841	14,243	19,897	6,805	10,060	52,266	
		non-RA	Steam Turbine			32	6	258	43	775		1,114	
			Gas Turbine			11	68	95	941	593	75	1,782	
			Combined Cycle					156	1,073			1,229	
			Hydro			23	37	113	127	272	405	977	
			Pump Storage						440		374	814	
			Dynamic						1,708	510	678	2,896	
			Pump					310	726	840		1,876	
			Recovery			31	5	3				38	
Wind						17	46			289	352		
Solar				2						2			
Other				1		3	15			19			
Unknown			5		19	31		20	75				
non-RA Total				104	115	974	5,150	3,010	1,821	11,173			
7/1/2009 Total				523	957	15,216	25,047	9,815	11,881	63,439			
7/1/2010	RA	Steam Turbine		349	709	8,806	6,314	1,576	1,510	19,264			
		Gas Turbine		6		857	3,630	1,408	378	6,279			
		Combined Cycle				4,569	4,033	3,251		11,853			
		Hydro		73	106	314	971	1,668	3,266	6,397			
		Pump Storage							1,792	1,792			
		Dynamic						57		1,410	1,467		
		Pump					151	726	840		1,717		
		Recovery		30	15	113		13			171		
		Wind						1,143			663	1,807	
		Other		3	1	11		1,619			1,633		
		Unknown				6	23	1,497			525	2,050	
		RA Total				461	836	14,844	20,004	8,742	9,545	54,431	
		non-RA	Steam Turbine			8		1,064	84			1,156	
			Gas Turbine			27	68	198	1,004	194	174	1,665	
			Combined Cycle					916	597	366		1,879	
			Hydro			26	51	113	164	259	405	1,019	
			Pump Storage						440		440		
			Dynamic						495	1,746	969	3,209	
			Pump					230				230	
			Recovery			31	2	3				35	
Wind						17	46		426	489			
Solar				6		39	5			50			
Other				2	3	3	15		4	27			
Unknown			5		19	71		20	115				
non-RA Total				104	124	2,602	2,920	2,585	1,978	10,313			
7/1/2010 Total				564	960	17,446	22,924	11,327	11,523	64,744			
Grand Total				1,087	1,917	32,663	47,970	21,142	23,404	128,183			

COMMODITY_TYPE	En											
Sum of MAX_MW_MF	ramp_category											
edr_trade_dt	ra_unit	GEN_TECH	<0.5	(0.5, 1)	(1, 5)	(5, 10)	(10, 20)	>=20			Grand Total	
8/1/2009	RA	Steam Turbine	314	703	9,978	6,361	1,576	1,510			20,441	
		Gas Turbine	1		932	3,576	1,313	329			6,151	
		Combined Cycle			2,778	4,288	3,736	552			11,354	
		Hydro	73	148	307	905	1,392	3,618			6,443	
		Pump Storage						1,418			1,418	
		Dynamic					57	1,410			1,467	
		Pump				71	726	840			1,637	
		Recovery	29	12	115	13					169	
		Wind					1,143		699			1,842
		Other	3	1	29		1,926					1,958
		Unknown			6	23	1,560		525			2,113
	RA Total			419	870	14,232	20,555	8,856	10,060			54,992
	non-RA	Steam Turbine	32	6	265	43					346	
		Gas Turbine	11	68	95	956	193	75			1,397	
		Combined Cycle			156	1,688					1,844	
		Hydro	23	9	125	127	284	405			973	
		Pump Storage				440		374			814	
		Dynamic				1,708	500	678			2,886	
		Pump			310						310	
		Recovery	31	5	3						38	
		Wind			17	46			289			352
Solar		2									2	
Other	3	3	3	25						34		
Unknown	5		19	31		20				75		
non-RA Total			106	90	992	5,064	997	1,821			9,070	
8/1/2009 Total			525	960	15,224	25,618	9,853	11,881			64,061	
8/1/2010	RA	Steam Turbine	349	709	8,806	6,314	1,576	1,510			19,264	
		Gas Turbine	6		857	3,630	1,456	478			6,427	
		Combined Cycle			5,194	4,033	3,617				12,844	
		Hydro	73	119	287	978	1,643	3,266			6,366	
		Pump Storage						1,418			1,418	
		Dynamic					57	1,410			1,467	
		Pump					726	840			1,566	
		Recovery	30	15	113	13					171	
		Wind					1,143		663			1,807
		Other	3	1	11	1,619						1,633
		Unknown			6	23	1,497		525			2,050
	RA Total			461	849	15,291	20,011	9,131	9,271			55,013
	non-RA	Steam Turbine	8		1,064	84					1,156	
		Gas Turbine	27	68	198	1,004	145	75			1,516	
		Combined Cycle			788	100					888	
		Hydro	26	38	140	157	284	405			1,051	
		Pump Storage				440		374			814	
		Dynamic				1,708	532	969			3,209	
		Pump			381						381	
		Recovery	31	2	100						132	
		Wind			17	46			426			489
Solar		6		39	5					50		
Other	2	3	3	15			4			27		
Unknown	5		19	71		20				115		
non-RA Total			104	111	2,750	3,630	961	2,253			9,827	
8/1/2010 Total			564	960	18,041	23,641	10,112	11,523			64,841	
Grand Total			1,089	1,920	33,265	49,259	19,965	23,404			128,902	

COMMODITY_TYPE		En									
Sum of MAX_MW_MF		ramp_category									
edr_trade_dt	ra_unit	GEN_TECH	<0.5	(0.5, 1)	(1, 5)	(5, 10)	(10, 20)	>=20	Grand Total		
9/1/2009	RA	Steam Turbine	314	709	9,948	6,361	801	1,510	19,642		
		Gas Turbine	6		932	3,591	1,313	329	6,170		
		Combined Cycle			3,330	4,288	3,226		10,844		
		Hydro	73	89	336	969	1,241	3,266	5,975		
		Pump Storage							1,418		
		Dynamic					57		775		
		Pump			71	270	840		1,181		
		Recovery	30	12	115	13			170		
		Wind				1,143			699	1,842	
		Other	3	1	29	1,931				1,963	
	Unknown		6	23	1,560			525	2,113		
	RA Total			425	817	14,782	20,183	7,420	8,521	52,149	
	non-RA	Steam Turbine	32		295	43	775		1,145		
		Gas Turbine	6	68	95	989	145	75	1,377		
		Combined Cycle			156	1,688	510		2,354		
		Hydro	23	68	96	164	686	405	1,441		
		Pump Storage				440			374	814	
		Dynamic				1,708	532	1,313	3,553		
		Pump			310	456			766		
		Recovery	29	5	3				36		
Wind				17	46			289	352		
Solar		2							2		
Other	3	3	3	20				28			
Unknown	5		19	31		20		75			
non-RA Total			99	143	993	5,585	2,668	2,456	11,944		
9/1/2009 Total			525	960	15,776	25,768	10,088	10,977	64,093		
9/1/2010	RA	Steam Turbine	349	709	9,258	5,947	1,576	1,510	19,349		
		Gas Turbine	6		945	3,834	1,456	478	6,719		
		Combined Cycle			4,948	4,033	2,741		11,722		
		Hydro	73	117	311	844	1,508	3,266	6,120		
		Pump Storage							1,011		
		Dynamic					57		1,410	1,467	
		Pump					726	840		1,566	
		Recovery	30	15	113	13			171		
		Wind				1,143			663	1,807	
		Other	3	1	11	1,619				1,633	
	Unknown		6	23	1,560			525	2,113		
	RA Total			461	848	15,610	19,776	8,120	8,864	53,677	
	non-RA	Steam Turbine	8		612	451			1,071		
		Gas Turbine	28	68	110	800	145	75	1,225		
		Combined Cycle			537	1,253	876		2,666		
		Hydro	26	40	116	292	419	405	1,297		
		Pump Storage				440			781	1,221	
		Dynamic				1,708	532	969	3,209		
		Pump			381				381		
		Recovery	32	2	100	65			199		
Wind				17	46			426	489		
Solar		6		39	5				50		
Other	2	3	3	15			4	27			
Unknown	5		19	8		20		52			
non-RA Total			106	112	1,934	5,083	1,992	2,660	11,887		
9/1/2010 Total			567	960	17,544	24,859	10,112	11,523	65,564		
Grand Total			1,092	1,920	33,319	50,626	20,200	22,500	129,658		

COMMODITY_TYPE		En									
Sum of MAX_MW_MF		ramp_category									
edr_trade_dt	ra_unit	GEN_TECH	<0.5	(0.5, 1)	(1, 5)	(5, 10)	(10, 20)	>=20	Grand Total		
10/1/2009	RA	Steam Turbine	314	709	9,938	5,211	801	1,510	18,482		
		Gas Turbine	6		932	3,560	1,313	329	6,139		
		Combined Cycle			3,195	4,029	2,701		9,924		
		Hydro	73	128	322	930	1,105	3,048	5,606		
		Pump Storage							1,418		
		Dynamic					57		1,410		
		Pump					726	840	1,566		
		Recovery	30	12	115		13		170		
		Wind					1,143		699		
		Other	3	1	29		1,931		1,842		
	Unknown		6	23	1,560			525			
	RA Total		425	855	14,552	19,159	6,760	8,938	50,689		
	non-RA	Steam Turbine	37		305	1,193	775		2,309		
		Gas Turbine	6	68	95	1,020	145	75	1,408		
		Combined Cycle			291	1,235	1,748		3,273		
		Hydro	23	29	110	203	822	623	1,810		
		Pump Storage				440			374		
		Dynamic				1,708	532	678	2,918		
		Pump			381				381		
		Recovery	29	5	3				36		
Wind				17	46			289			
Solar		2						2			
Other	3	3	3	20			29				
Unknown	5		19	31	20		75				
non-RA Total		104	104	1,224	5,896	4,041	2,039	13,408			
10/1/2009 Total		529	960	15,776	25,055	10,801	10,977	64,098			
10/1/2010	RA	Steam Turbine	349	709	8,804	5,203	1,576	1,510	18,151		
		Gas Turbine	6		945	3,823	1,056	878	6,709		
		Combined Cycle			4,948	3,773	3,234		11,955		
		Hydro	73	143	311	884	1,387	2,262	5,061		
		Pump Storage							1,418		
		Dynamic					57		635		
		Pump					270	840	1,110		
		Recovery	30	15	113		13		171		
		Wind					1,143		663		
		Other	3	1	11	1,619			1,633		
	Unknown		6	23	1,560			525			
	RA Total		461	874	15,156	18,345	8,092	7,892	50,819		
	non-RA	Steam Turbine	8		1,073	1,195			2,276		
		Gas Turbine	28	68	110	808	145	75	1,233		
		Combined Cycle			537	1,020	876		2,433		
		Hydro	26	14	116	251	540	1,409	2,355		
		Pump Storage				440			374		
		Dynamic				1,708	532	1,744	3,984		
		Pump			381	456			837		
		Recovery	32	2	165				199		
Wind				17	46			639			
Solar		7		49	10			65			
Other	3	3	3	15			28				
Unknown	5		19	8	20		52				
non-RA Total		108	86	2,470	5,957	2,113	4,181	14,915			
10/1/2010 Total		568	960	17,626	24,302	10,206	12,073	65,734			
Grand Total		1,098	1,920	33,401	49,356	21,007	23,050	129,832			



COMMODITY_TYPE	En										
Sum of MAX_MW_MF	ramp_category										
edr_trade_dt	ra_unit	GEN_TECH	<0.5	[0.5, 1)	[1, 5)	[5, 10)	[10, 20)	>=20	Grand Total		
11/1/2009	RA	Steam Turbine	314	703	9,548	6,363	801	1,510	19,239		
		Gas Turbine	1		884	3,852	1,313	329	6,379		
		Combined Cycle			4,628	3,199	2,701		10,528		
		Hydro	63	128	284	798	1,182	2,261	4,716		
		Pump Storage							1,218		
		Dynamic						57	57		
		Pump						726	840	1,566	
		Recovery	29	15	115			13		172	
		Wind						1,143		699	1,842
		Other	2	1	29			1,915		1,947	
	Unknown			6	23	1,560			525	2,113	
	RA Total			409	853	15,510	19,627	6,837	6,541	49,776	
	non-RA	Steam Turbine	37	6	695	43	775		1,555		
		Gas Turbine	11	68	143	728	145	75	1,169		
		Combined Cycle			291	620	1,748		2,658		
		Hydro	33	29	148	337	745	1,411	2,702		
		Pump Storage						440	574	1,014	
		Dynamic					1,708	532	2,088	4,328	
		Pump			381				381		
		Recovery	32	2	3				36		
Wind				17		46		289	352		
Solar		2							2		
Other	3	3	3		35			44			
Unknown	5		19	31		20		75			
non-RA Total			122	107	1,699	3,988	3,965	4,436	14,317		
11/1/2009 Total			531	960	17,209	23,615	10,801	10,977	64,092		
11/1/2010	RA	Steam Turbine	349	709	8,555	5,914	1,576	1,510	18,612		
		Gas Turbine	6		945	4,149	1,152	878	7,130		
		Combined Cycle			4,948	3,257	3,234		11,439		
		Hydro	63	152	309	613	967	2,761	4,866		
		Pump Storage							1,418		
		Dynamic						57	57		
		Pump						270	840	1,110	
		Recovery	30	15	275			13		334	
		Wind						1,143		663	1,807
		Other	3	1	11		1,619			1,633	
	Unknown			6	23	1,541			1,569		
	RA Total			451	882	15,067	18,575	7,768	7,231	49,974	
	non-RA	Steam Turbine	8		1,323	484			1,814		
		Gas Turbine	21	68	110	482	50	75	805		
		Combined Cycle			537	1,536	876		2,949		
		Hydro	36	5	118	523	980	910	2,571		
		Pump Storage						440	374	814	
		Dynamic					1,708	532	2,379	4,619	
		Pump			381	456			837		
		Recovery	32	2	3				36		
Wind				17		46		576	639		
Solar		7		59		10			75		
Other	3	3	3		15			28			
Unknown	5		19	27		20	525	596			
non-RA Total			111	77	2,569	5,726	2,458	4,842	15,783		
11/1/2010 Total			562	960	17,636	24,302	10,226	12,073	65,757		
Grand Total			1,092	1,920	34,845	47,916	21,027	23,050	129,850		

COMMODITY_TYPE		En									
Sum of MAX_MW_MF		ramp_category									
edr_trade_dt	ra_unit	GEN_TECH	<0.5	(0.5, 1)	(1, 5)	(5, 10)	(10, 20)	>=20	Grand Total		
12/1/2009	RA	Steam Turbine	314	709	9,288	6,363	801	1,510	18,984		
		Gas Turbine	6		884	3,581	1,313	329	6,113		
		Combined Cycle			3,798	4,029	2,701		10,528		
		Hydro	65	128	297	862	1,222	3,172	5,746		
		Pump Storage							1,418		
		Dynamic					57		57		
		Pump					726	840	1,566		
		Recovery	30	15	115	13			173		
		Wind				1,143			699	1,842	
		Other	3	1	29	1,925				1,957	
	Unknown			6	23	1,541		525	2,094		
	RA Total			417	858	14,433	20,241	6,877	7,652	50,478	
	non-RA	Steam Turbine	37		955	43	775		1,809		
		Gas Turbine	6	68	143	998	145	75	1,435		
		Combined Cycle			291	620	1,748		2,658		
		Hydro	31	29	135	273	705	500	1,672		
		Pump Storage				440			374		
		Dynamic				495	1,746	2,088	4,328		
		Pump			381				381		
		Recovery	31	2	3				35		
Wind				17	46			289	352		
Solar		6		21				27			
Other	2	3	3	25			33				
Unknown	5		19	50	20		94				
non-RA Total			117	101	1,967	2,989	5,138	3,325	13,639		
12/1/2009 Total			534	960	16,400	23,231	12,015	10,977	64,117		
12/1/2010	RA	Steam Turbine	349	709	8,627	5,947	1,576	1,510	18,717		
		Gas Turbine	6		945	4,119	1,152	878	7,100		
		Combined Cycle			4,948	3,257	3,234		11,439		
		Hydro	71	139	313	552	1,034	2,856	4,965		
		Pump Storage							1,011		
		Dynamic					57		57		
		Pump					270	840	1,110		
		Recovery	30	15	275	13			334		
		Wind				862			663	1,525	
		Other	3	1	11	1,609			1,624		
	Unknown			6	23	1,541		1,569			
	RA Total			459	870	15,143	18,226	7,835	6,918	49,450	
	non-RA	Steam Turbine	8		1,146	451			1,604		
		Gas Turbine	21	68	110	432	147	75	852		
		Combined Cycle			537	1,536	876		2,949		
		Hydro	28	18	114	584	893	815	2,451		
		Pump Storage				480			781		
		Dynamic				1,708	532	2,379	4,619		
		Pump			381	456			837		
		Recovery	32	2	3				36		
Wind				54	329			726	1,108		
Solar		7		69	10			85			
Other	3	3	3	24			4	38			
Unknown	5		19	27	20		525	596			
non-RA Total			103	90	2,434	6,036	2,468	5,305	16,436		
12/1/2010 Total			562	960	17,577	24,262	10,303	12,223	65,887		
Grand Total			1,096	1,920	33,978	47,493	22,318	23,200	130,003		

COMMODITY_TYPE		En									
Sum of MAX_MW_MF		ramp_category									
edr_trade_dt	ra_unit	GEN_TECH	<0.5	(0.5, 1)	(1, 5)	(5, 10)	(10, 20)	>=20	Grand Total		
1/1/2010	RA	Steam Turbine	343	709	8,056	4,878	834	1,510	16,331		
		Gas Turbine	6		814	3,972	1,313	330	6,435		
		Combined Cycle			2,928	3,769	3,602		10,299		
		Hydro	62	127	312	532	1,071	2,978	5,082		
		Pump Storage						1,011	1,011		
		Dynamic					57		57		
		Pump					726	840	1,566		
		Recovery	30	15	115	13			173		
		Wind					1,143		663	1,807	
		Other	3	1	11		1,619			1,633	
	Unknown			6	7	1,560			1,573		
	RA Total			443	858	12,243	18,269	7,661	6,492	45,965	
	non-RA	Steam Turbine	8		2,187	1,528	741		4,463		
		Gas Turbine	13	68	213	948	145	75	1,461		
		Combined Cycle			1,161	880	847		2,887		
		Hydro	36	30	120	603	856	693	2,338		
		Pump Storage				440		781	1,221		
		Dynamic				495	1,746	2,088	4,328		
		Pump			381				381		
		Recovery	31	2	3				35		
Wind				17	46			324	387		
Solar		6		21				27			
Other	2	3	21	15			40				
Unknown	5		35	31	20		525	615			
non-RA Total			100	102	4,157	4,985	4,354	4,486	18,184		
1/1/2010 Total			542	960	16,400	23,254	12,015	10,979	64,150		
1/1/2011	RA	Steam Turbine	320	709	8,170	6,329	834	1,510	17,872		
		Gas Turbine	6		842	4,154	1,152	878	7,032		
		Combined Cycle			4,254	3,253	3,234		10,741		
		Hydro	76	138	330	1,002	1,307	2,238	5,092		
		Pump Storage						1,011	1,011		
		Dynamic					57	1,410	1,467		
		Pump					270	840	1,110		
		Recovery	31	15	275	13			335		
		Wind					1,144		825	1,970	
		Solar	4		21				25		
	Other	3	1	10	1,607			1,620			
	Unknown			6	23	1,560		525	2,113		
	RA Total			440	869	13,924	19,390	7,367	8,398	50,388	
	non-RA	Steam Turbine	37		1,307	69	741		2,154		
		Gas Turbine	21	68	195	396	147	75	901		
		Combined Cycle			1,231	1,540	876		3,647		
		Hydro	23	19	96	132	619	1,433	2,322		
		Pump Storage				480		781	1,261		
		Dynamic				1,708	532	969	3,209		
		Pump			381	456			837		
Recovery		31	2	3				35			
Wind				54	46			714	814		
Solar		11		48	10			68			
Other	3	3	5	26			4	41			
Unknown	5		19	8	20		52				
non-RA Total			129	91	3,339	4,871	2,935	3,975	15,341		
1/1/2011 Total			570	960	17,263	24,261	10,303	12,373	65,729		

COMMODITY_TYPE		En									
Sum of MAX_MW_MF		ramp_category									
edr_trade_dt	ra_unit	GEN_TECH	<0.5	(0.5, 1)	(1, 5)	(5, 10)	(10, 20)	>=20	Grand Total		
2/1/2010	RA	Steam Turbine	343	709	8,056	5,213	801	1,510	16,632		
		Gas Turbine	6		768	3,891	1,313	330	6,308		
		Combined Cycle			2,928	4,393	2,741		10,062		
		Hydro	74	114	290	831	1,169	2,965	5,445		
		Pump Storage						1,011	1,011		
		Dynamic					57		57		
		Pump					726	840	1,566		
		Recovery	30	15	115	13			173		
		Wind					1,143		663	1,807	
		Other	3	1	11		1,619			1,633	
		Unknown			6	7	1,560			1,573	
	RA Total			455	845	12,176	19,446	6,864	6,480	46,265	
	non-RA	Steam Turbine	8		2,187	1,193	775		4,162		
		Gas Turbine	13	68	259	1,029	241	75	1,684		
		Combined Cycle			1,161	1,136	847		3,143		
		Hydro	24	43	137	304	757	706	1,970		
		Pump Storage				440		781	1,221		
		Dynamic				495	1,746	2,088	4,328		
		Pump			381				381		
		Recovery	31	2	3				35		
		Wind			17	46			324	387	
		Solar	6		21				27		
Other		2	3	21	15			40			
Unknown	5		35	31	20		525	615			
non-RA Total			88	115	4,220	4,687	4,386	4,498	17,995		
2/1/2010 Total			543	960	16,396	24,134	11,250	10,979	64,260		
2/1/2011	RA	Steam Turbine	349	709	8,407	6,114	1,576	754	17,909		
		Gas Turbine	6		842	4,106	1,152	878	6,983		
		Combined Cycle			4,254	3,921	3,245		11,420		
		Hydro	79	114	317	952	1,510	2,278	5,250		
		Pump Storage						1,011	1,011		
		Dynamic					57		57		
		Pump					270	840	1,110		
		Recovery	31	15	275	13			335		
		Wind					1,144		825	1,970	
		Solar	7		21				28		
		Other	3	1	10	1,607			1,620		
	Unknown			6	23	1,560			1,588		
	RA Total			474	845	14,149	19,743	8,322	5,747	49,280	
	non-RA	Steam Turbine	8		1,069	284	756		2,117		
		Gas Turbine	21	68	195	445	147	75	950		
		Combined Cycle			1,231	880	876		2,987		
		Hydro	20	43	109	183	417	1,393	2,165		
		Pump Storage				480		781	1,261		
		Dynamic				1,708	532	2,379	4,619		
		Pump			381	456			837		
		Recovery	31	2	3				35		
		Wind			54	46			714	814	
Solar		8		48	10			66			
Other		3	3	5	26			4	41		
Unknown	5		19	8	20		525	577			
non-RA Total			95	115	3,114	4,526	1,992	6,626	16,468		
2/1/2011 Total			570	960	17,263	24,269	10,314	12,373	65,748		

COMMODITY_TYPE		En									
Sum of MAX_MW_MF		ramp_category									
edr_trade_dt	ra_unit	GEN_TECH	<0.5	(0.5, 1)	(1, 5)	(5, 10)	(10, 20)	>=20	Grand Total		
3/1/2010	RA	Steam Turbine	103	709	8,725	5,190	1,576	1,510	17,812		
		Gas Turbine	6		917	3,802	1,313	330	6,368		
		Combined Cycle			2,748	4,393	2,216		9,357		
		Hydro	80	114	326	709	1,149	2,803	5,182		
		Pump Storage						1,011	1,011		
		Dynamic					57	635	692		
		Pump					726	840	1,566		
		Recovery	30	15	115	13			173		
		Wind					1,143		663	1,807	
		Other	3	1	11				1,614	1,628	
		Unknown		6	7		1,560		525	2,098	
		RA Total			221	845	12,848	19,208	7,093	7,478	47,693
		non-RA	Steam Turbine	248		1,531	1,216			2,994	
	Gas Turbine		13	68	150	1,093	241	75	1,640		
	Combined Cycle				1,341	1,136	1,372		3,848		
	Hydro		17	43	101	426	778	868	2,233		
	Pump Storage					440		781	1,221		
	Dynamic					495	1,746	1,453	3,693		
	Pump				381				381		
	Recovery		31	2	3				35		
	Wind				17	46			324	387	
Solar	6			21				27			
Other	2	3	3	20			4	32			
Unknown	5		35	8		20		68			
non-RA Total			321	115	3,583	4,879	4,156	3,505	16,559		
3/1/2010 Total			543	960	16,431	24,087	11,250	10,983	64,253		
3/1/2011	RA	Steam Turbine	349	709	8,169	5,826	1,576	1,510	18,139		
		Gas Turbine	6		904	3,755	1,152	878	6,695		
		Combined Cycle			4,226	4,181	3,245		11,652		
		Hydro	90	114	295	951	1,549	3,211	6,211		
		Pump Storage						1,011	1,011		
		Dynamic					57	635	692		
		Pump					270	840	1,110		
		Recovery	31	15	275	13			335		
		Wind					1,144		825	1,970	
		Solar	7		21				28		
		Other	3	1	10	1,607			1,620		
		Unknown		6	23	1,541			525	2,094	
		RA Total			486	845	13,923	19,345	8,361	8,596	51,555
	non-RA	Steam Turbine	8		1,307	572			1,887		
		Gas Turbine	21	68	133	796	147	75	1,239		
		Combined Cycle			1,259	620	876		2,755		
		Hydro	9	43	131	183	378	460	1,204		
		Pump Storage				480		781	1,261		
		Dynamic				1,708	532	1,744	3,984		
		Pump			381	456			837		
		Recovery	31	2	3				35		
Wind				61	46			816	923		
Solar		8		48	10			66			
Other	3	3	5	26			4	41			
Unknown	5		19	27		20		71			
non-RA Total			84	115	3,347	4,924	1,953	3,879	14,302		
3/1/2011 Total			570	960	17,270	24,269	10,314	12,475	65,857		

COMMODITY_TYPE		En									
Sum of MAX_MW_MF		ramp_category									
edr_trade_dt	ra_unit	GEN_TECH	<0.5	(0.5, 1)	(1, 5)	(5, 10)	(10, 20)	>=20	Grand Total		
4/1/2010	RA	Steam Turbine	349	709	8,400	5,524	1,576	1,510	18,068		
		Gas Turbine	6		905	3,505	1,115	330	5,861		
		Combined Cycle			3,373	4,330	2,741		10,444		
		Hydro	88	114	301	815	1,668	3,141	6,127		
		Pump Storage						1,418	1,418		
		Dynamic					57		57		
		Pump					726	840	1,566		
		Recovery	30	15	115	13			173		
		Wind				1,143			663	1,807	
		Other	3	1	11	1,619				1,633	
	Unknown		6	7	1,560				1,573		
	RA Total			475	845	13,112	19,293	7,939	7,063	48,726	
	non-RA	Steam Turbine	8		1,868	873			2,749		
		Gas Turbine	13	68	150	1,315	439	75	2,060		
		Combined Cycle			716	1,198	847		2,761		
		Hydro	10	43	126	320	259	530	1,288		
		Pump Storage				440		374	814		
		Dynamic				495	1,746	2,088	4,328		
		Pump			381				381		
		Recovery	31	2	3				35		
Wind				17	46			324	387		
Solar		6		21	5			32			
Other	2	3	3	15			4	27			
Unknown	5		35	8		20	525	593			
non-RA Total			74	115	3,320	4,715	3,310	3,920	15,454		
4/1/2010 Total			549	960	16,431	24,008	11,250	10,983	64,180		
4/1/2011	RA	Steam Turbine	320	709	8,521	6,107	1,576	1,510	18,743		
		Gas Turbine	13		899	3,356	1,052	878	6,198		
		Combined Cycle			4,676	4,181	2,655		11,512		
		Hydro	90	114	336	1,032	1,549	3,214	6,334		
		Pump Storage						1,014	1,014		
		Dynamic					57		635		
		Pump			151	726	840		1,717		
		Recovery	31	15	275	13			335		
		Wind				1,144			825	1,970	
		Solar	7		21				28		
	Other	3	1	12	1,617			1,633			
	Unknown		6	23	1,560			525	2,113		
	RA Total			464	845	14,915	19,792	7,671	8,601	52,288	
	non-RA	Steam Turbine	37		749	291			1,076		
		Gas Turbine	14	68	138	1,023	247	75	1,565		
		Combined Cycle			809	620	1,466		2,895		
		Hydro	9	43	90	103	378	458	1,080		
		Pump Storage				480		778	1,258		
		Dynamic				1,708	532	1,744	3,984		
		Pump			230				230		
Recovery		31	2	3				35			
Wind				61	46			966	1,073		
Solar		8		48	10			66			
Other	3	3	2	17			4	29			
Unknown	5		19	8		20	52				
non-RA Total			106	115	2,149	4,305	2,644	4,024	13,343		
4/1/2011 Total			570	960	17,064	24,097	10,315	12,625	65,631		

COMMODITY_TYPE		En									
Sum of MAX_MW_MF		ramp_category									
edr_trade_dt	ra_unit	GEN_TECH	<0.5	(0.5, 1)	(1, 5)	(5, 10)	(10, 20)	>=20	Grand Total		
5/1/2010	RA	Steam Turbine	349	709	8,806	5,777	1,545	1,510	18,696		
		Gas Turbine	6		848	3,459	1,210	378	5,901		
		Combined Cycle			3,553	4,846	2,741		11,140		
		Hydro	90	114	280	974	1,547	3,211	6,217		
		Pump Storage						1,418	1,418		
		Dynamic					57		57		
		Pump					726	840	1,566		
		Recovery	30	15	115	13			173		
		Wind				1,143			663	1,807	
		Other	3	1	11	1,619			1,633		
		Unknown		6	23	1,560			525	2,113	
	RA Total			478	845	13,636	20,174	7,882	7,706	50,721	
	non-RA	Steam Turbine	8		1,461	621	31		2,120		
		Gas Turbine	27	68	207	1,218	488	75	2,082		
		Combined Cycle			536	682	847		2,065		
		Hydro	9	43	147	162	380	460	1,200		
		Pump Storage				440		374	814		
		Dynamic				495	1,746	2,088	4,328		
		Pump			381				381		
		Recovery	31	2	3				35		
		Wind			17	46			324	387	
		Solar	6		21	5			32		
Other		2	3	3	15			4	27		
Unknown	5		19	8		20	52				
non-RA Total			87	115	2,795	3,691	3,511	3,324	13,524		
5/1/2010 Total			564	960	16,431	23,865	11,393	11,031	64,244		
5/1/2011	RA	Steam Turbine	320	709	8,581	5,013	1,545	1,510	17,679		
		Gas Turbine	21		885	3,869	1,052	878	6,705		
		Combined Cycle			4,499	4,701	3,235		12,435		
		Hydro	90	114	317	991	1,461	3,129	6,103		
		Pump Storage						1,011	1,011		
		Dynamic					57		692		
		Pump			151	726	840		1,717		
		Recovery	31	15	275	13			335		
		Wind				1,144			825	1,970	
		Solar	7		21				28		
		Other	3	1	11	1,617			1,632		
	Unknown		6	23	1,560			525	2,113		
	RA Total			472	845	14,764	19,692	8,133	8,514	52,419	
	non-RA	Steam Turbine	37		689	1,384	31		2,141		
		Gas Turbine	6	68	152	510	247	75	1,057		
		Combined Cycle			986	100	886		1,972		
		Hydro	9	43	109	143	466	542	1,312		
		Pump Storage				480		781	1,261		
		Dynamic				1,708	532	1,744	3,984		
		Pump			230				230		
		Recovery	31	2	3				35		
		Wind			61	46			966	1,073	
Solar		8		48	10			66			
Other		4	3	3	17			4	31		
Unknown	5		19	8		20	52				
non-RA Total			99	115	2,300	4,406	2,182	4,111	13,213		
5/1/2011 Total			571	960	17,064	24,097	10,315	12,625	65,632		

COMMODITY_TYPE	En										
Sum of MAX_MW_MF	ramp_category										
edr_trade_dt	ra_unit	GEN_TECH	<0.5	(0.5, 1)	(1, 5)	(5, 10)	(10, 20)	>=20	Grand Total		
6/1/2010	RA	Steam Turbine	349	709	8,481	5,884	1,576	1,510	18,509		
		Gas Turbine	6		857	3,595	1,408	378	6,244		
		Combined Cycle			3,553	5,169	2,741		11,463		
		Hydro	73	114	312	1,023	1,606	3,144	6,272		
		Pump Storage							1,418	1,418	
		Dynamic					57		775	832	
		Pump					726	840		1,566	
		Recovery	30	15	115	13				173	
		Wind					1,143		663	1,807	
		Other	3	1	11		1,619			1,633	
		Unknown		6	23	1,560			525	2,113	
	RA Total			461	845	13,352	20,788	8,170	8,414	52,029	
	non-RA	Steam Turbine	8			1,786	514			2,308	
		Gas Turbine	27	68	198	1,040	290	75	1,697		
		Combined Cycle			536	857	876		2,269		
		Hydro	26	43	115	113	321	527	1,144		
		Pump Storage					440		374	814	
		Dynamic					495	1,746	1,613	3,853	
		Pump				381				381	
		Recovery	31	2		3				35	
		Wind				17	46		324	387	
		Solar	6			29	5			40	
Other		2	3	3	15			4	27		
Unknown	5			19		20		52			
non-RA Total			104	115	3,087	3,531	3,253	2,917	13,007		
6/1/2010 Total			564	960	16,439	24,319	11,423	11,331	65,036		
6/1/2011	RA	Steam Turbine	320	709	8,584	6,351	1,576	1,510	19,049		
		Gas Turbine	21		885	4,178	1,250	878	7,212		
		Combined Cycle			5,191	4,339	2,655		12,185		
		Hydro	87	114	316	987	1,580	3,266	6,350		
		Pump Storage							1,418	1,418	
		Dynamic					57		1,410	1,467	
		Pump						840		840	
		Recovery	31	15	275	13				335	
		Wind					1,144		927	2,072	
		Solar	7			21				28	
		Other	3	1	11		1,617			1,632	
	Unknown		6	23	1,560			525	2,113		
	RA Total			469	845	15,306	20,246	7,900	9,935	54,701	
	non-RA	Steam Turbine	37			689	47			773	
		Gas Turbine	8	68	152	379	50	75	731		
		Combined Cycle			986	360	876		2,222		
		Hydro	12	43	110	147	347	405	1,064		
		Pump Storage					480		374	854	
		Dynamic					1,708	532	969	3,209	
		Pump				381	726			1,107	
		Recovery	32	2		3				36	
		Wind				61	46		864	971	
Solar		8			67	10			85		
Other		4	3	3	17			4	31		
Unknown	5			19		20		52			
non-RA Total			105	115	2,471	3,927	1,825	2,691	11,134		
6/1/2011 Total			574	960	17,778	24,173	9,725	12,625	65,835		



### Appendix B: Regulation Inventory

COMMODITY_TYPE		Ru							
Sum of MAX_MW_MF									
edr_trade_dt	ra_unit	GEN_TECH	ramp_category						Grand Total
			[1, 5)	[5, 10)	[10, 20)	>=20			
7/1/2009	RA	Steam Turbine	3,626	3,984	500	1,060	9,170		
		Gas Turbine		20	159	179			
		Combined Cycle	719	1,989	1,876	337	4,921		
		Hydro	485	1,090	405	1,840	3,820		
		Pump Storage				969	969		
		Other	85				85		
		Unknown					525	525	
	RA Total		4,915	7,083	2,940	4,731	19,669		
	non-RA	Steam Turbine			450		450		
		Combined Cycle			120		120		
Hydro					243	243			
Dynamic					90	390			
non-RA Total			570	333	300	1,203			
7/1/2009 Total		4,915	7,653	3,273	5,031	20,872			
7/1/2010	RA	Steam Turbine	2,280	3,699	500	1,060	7,539		
		Gas Turbine	20	20	159	199			
		Combined Cycle	719	2,063	2,171	347	5,300		
		Hydro	319	1,020	648	1,880	3,867		
		Pump Storage				969	969		
		Unknown				525	525		
	RA Total		3,338	6,802	3,478	4,781	18,399		
	non-RA	Steam Turbine	478				478		
		Hydro			243		243		
		Dynamic				775	775		
Other					4	4			
non-RA Total		478		243	779	1,500			
7/1/2010 Total		3,816	6,802	3,721	5,560	19,899			

COMMODITY_TYPE		Ru							
Sum of MAX_MW_MF									
edr_trade_dt	ra_unit	GEN_TECH	ramp_category						Grand Total
			[1, 5)	[5, 10)	[10, 20)	>=20			
8/1/2009	RA	Steam Turbine	3,626	4,434	500	1,060	9,620		
		Gas Turbine		20	159	179			
		Combined Cycle	719	1,989	1,876	337	4,921		
		Hydro	485	1,090	405	1,840	3,820		
		Pump Storage				969	969		
		Other	85				85		
		Unknown					525	525	
	RA Total		4,915	7,533	2,940	4,731	20,119		
	non-RA	Combined Cycle			120		120		
		Hydro				243	243		
Dynamic					90	390			
non-RA Total			120	333	300	753			
8/1/2009 Total		4,915	7,653	3,273	5,031	20,872			
8/1/2010	RA	Steam Turbine	2,280	3,699	500	1,060	7,539		
		Gas Turbine	20	20	159	199			
		Combined Cycle	719	2,057	2,171	347	5,294		
		Hydro	319	1,020	656	1,880	3,875		
		Pump Storage				969	969		
		Unknown				525	525		
	RA Total		3,338	6,796	3,487	4,781	18,401		
	non-RA	Steam Turbine	478				478		
		Hydro			243		243		
		Dynamic				775	775		
Other					4	4			
non-RA Total		478		243	779	1,500			
8/1/2010 Total		3,816	6,796	3,730	5,560	19,901			

COMMODITY_TYPE		Ru						
Sum of MAX_MW_MF				ramp_category				
edr_trade_dt	ra_unit	GEN_TECH	[1, 5)	[5, 10)	[10, 20)	>=20	Grand Total	
9/1/2009	RA	Steam Turbine	3,626	3,984	500	1,060	9,170	
		Gas Turbine		20	159		179	
		Combined Cycle	719	1,989	1,876		4,584	
		Hydro	354	1,020	567	1,840	3,781	
		Pump Storage				969	969	
		Other	85				85	
		Unknown				525	525	
	RA Total		4,784	7,013	3,102	4,394	19,293	
	non-RA	Steam Turbine			450		450	
		Combined Cycle			120		457	
Hydro		51			243	294		
Dynamic						575		
non-RA Total		51	570	243	912	1,776		
9/1/2009 Total			4,835	7,583	3,345	5,306	21,069	
9/1/2010	RA	Steam Turbine	2,528	3,369	500	1,060	7,457	
		Gas Turbine		20	159		199	
		Combined Cycle	719	1,857	2,171		4,747	
		Hydro	319	1,020	656	1,880	3,875	
		Pump Storage				645	645	
		Other					525	
		Unknown				525	525	
	RA Total		3,586	6,266	3,487	4,110	17,448	
	non-RA	Steam Turbine		230	330		560	
		Combined Cycle			200		867	
Hydro					320	243		
Pump Storage						324		
Dynamic						775		
Other						4		
non-RA Total		230	530	563	1,450	2,773		
9/1/2010 Total			3,816	6,796	4,050	5,560	20,221	

COMMODITY_TYPE		Ru						
Sum of MAX_MW_MF				ramp_category				
edr_trade_dt	ra_unit	GEN_TECH	[1, 5)	[5, 10)	[10, 20)	>=20	Grand Total	
10/1/2009	RA	Steam Turbine	3,638	3,984	500	1,060	9,182	
		Gas Turbine		20	159		179	
		Combined Cycle	719	1,526	1,876		4,121	
		Hydro	354	1,020	232	1,840	3,446	
		Pump Storage				969	969	
		Other	85				85	
		Unknown				525	525	
	RA Total		4,796	6,550	2,767	4,394	18,507	
	non-RA	Steam Turbine			450		450	
		Combined Cycle			583		930	
Hydro					578	578		
Dynamic						575		
non-RA Total			1,033	578	922	2,533		
10/1/2009 Total			4,796	7,583	3,345	5,316	21,040	
10/1/2010	RA	Steam Turbine	2,280	3,699	500	1,060	7,539	
		Gas Turbine		20	159		199	
		Combined Cycle	719	1,737	2,294		4,750	
		Hydro	268	954	493	957	2,672	
		Pump Storage				969	969	
		Other					525	
		Unknown				525	525	
	RA Total		3,287	6,410	3,446	3,511	16,654	
	non-RA	Steam Turbine		478			478	
		Combined Cycle			320		667	
Hydro		51	66		406	1,446		
Dynamic						775		
Other						4		
non-RA Total		529	386	406	2,049	3,370		
10/1/2010 Total			3,816	6,796	3,853	5,560	20,024	

COMMODITY_TYPE		Ru						
Sum of MAX_MW_MF				ramp_category				
edr_trade_dt	ra_unit	GEN_TECH	[1, 5)	[5, 10)	[10, 20)	>=20	Grand Total	
11/1/2009	RA	Steam Turbine	3,591	3,736	500	1,060	8,887	
		Gas Turbine		20	159		179	
		Combined Cycle	719	1,426	1,821	347	4,313	
		Hydro	319	904	321	1,095	2,639	
		Pump Storage				969	969	
		Other	85				85	
		Unknown					525	525
	RA Total		4,714	6,086	2,801	3,996	17,597	
	non-RA	Steam Turbine	47	698			745	
		Combined Cycle		583	350		933	
Hydro		86	116	489	745	1,436		
Dynamic					575	575		
non-RA Total		133	1,397	839	1,320	3,689		
11/1/2009 Total			4,847	7,483	3,640	5,316	21,286	
11/1/2010	RA	Steam Turbine	2,240	3,369	500	1,060	7,169	
		Gas Turbine		20	159		199	
		Combined Cycle	719	1,498	2,294		4,511	
		Hydro	143	562	338	1,880	2,924	
		Pump Storage				969	969	
	RA Total		3,122	5,449	3,292	3,909	15,771	
	non-RA	Steam Turbine	518	330			848	
		Combined Cycle		571		347	918	
		Hydro	176	458	561		1,195	
		Dynamic				775	775	
Other					4	4		
Unknown				525	525			
non-RA Total		694	1,359	561	1,651	4,265		
11/1/2010 Total			3,816	6,808	3,853	5,560	20,036	

COMMODITY_TYPE		Ru						
Sum of MAX_MW_MF				ramp_category				
edr_trade_dt	ra_unit	GEN_TECH	[1, 5)	[5, 10)	[10, 20)	>=20	Grand Total	
12/1/2009	RA	Steam Turbine	3,638	3,488	500	1,060	8,686	
		Gas Turbine		20	159		179	
		Combined Cycle	719	1,534	1,821	347	4,421	
		Hydro	405	904	321	1,840	3,470	
		Pump Storage				969	969	
		Other	85				85	
		Unknown					525	525
	RA Total		4,847	5,946	2,801	4,741	18,335	
	non-RA	Steam Turbine		946			946	
		Combined Cycle		583	350		933	
Hydro			116	489		605		
Dynamic					575	575		
non-RA Total			1,645	839	575	3,059		
12/1/2009 Total			4,847	7,591	3,640	5,316	21,394	
12/1/2010	RA	Steam Turbine	2,240	3,369	500	1,060	7,169	
		Gas Turbine		20	159		199	
		Combined Cycle	719	1,498	2,294		4,511	
		Hydro	51	395	656	1,880	2,982	
		Pump Storage				645	645	
	RA Total		3,030	5,282	3,610	3,585	15,506	
	non-RA	Steam Turbine	518	330			848	
		Combined Cycle		571		347	918	
		Hydro	268	625	243		1,136	
		Pump Storage				324	324	
Dynamic					775	775		
Other				4	4			
Unknown				525	525			
non-RA Total		786	1,526	243	1,975	4,530		
12/1/2010 Total			3,816	6,808	3,853	5,560	20,036	

COMMODITY_TYPE		Ru						
Sum of MAX_MW_MF			ramp_category					
edr_trade_dt	ra_unit	GEN_TECH	[1, 5)	[5, 10)	[10, 20)	>=20	Grand Total	
1/1/2010	RA	Steam Turbine	2,860	3,644		1,060	7,564	
		Gas Turbine		20	159		179	
		Combined Cycle	719	1,610	2,171		4,500	
		Hydro	160	505	653	1,840	3,158	
		Pump Storage				645	645	
	RA Total			3,739	5,778	2,983	3,545	16,046
	non-RA	Steam Turbine	778	791	500		2,069	
		Combined Cycle		517		347	864	
		Hydro	159	515	243		917	
		Pump Storage				324	324	
		Dynamic				575	575	
	non-RA Total			937	1,823	743	1,771	5,273
	1/1/2010 Total			4,676	7,601	3,726	5,316	21,319
	1/1/2011	RA	Steam Turbine	2,130	3,449		1,060	6,639
Gas Turbine			20	20	159	350	549	
Combined Cycle			719	1,396	1,944	347	4,406	
Hydro			319	962	570	957	2,808	
Pump Storage						645	645	
RA Total			3,188	5,827	2,674	3,884	15,572	
non-RA		Steam Turbine	398	250	500		1,148	
		Combined Cycle		673	350		1,023	
		Hydro		58	329	923	1,310	
		Pump Storage				324	324	
		Dynamic				775	775	
non-RA Total			398	981	1,179	2,026	4,584	
1/1/2011 Total			3,586	6,808	3,853	5,910	20,156	

COMMODITY_TYPE		Ru						
Sum of MAX_MW_MF			ramp_category					
edr_trade_dt	ra_unit	GEN_TECH	[1, 5)	[5, 10)	[10, 20)	>=20	Grand Total	
2/1/2010	RA	Steam Turbine	2,280	2,523	500	1,060	6,363	
		Gas Turbine		20	159		179	
		Combined Cycle	719	1,458	2,171		4,348	
		Hydro	120	861	387	1,840	3,208	
		Pump Storage				645	645	
	RA Total			3,119	4,862	3,217	3,545	14,743
	non-RA	Steam Turbine	778	946			1,724	
		Combined Cycle		659		347	1,006	
		Hydro	199	159	504		862	
		Pump Storage				324	324	
		Dynamic				575	575	
	non-RA Total			977	1,764	504	1,771	5,016
	2/1/2010 Total			4,096	6,626	3,721	5,316	19,759
	2/1/2011	RA	Steam Turbine	2,280	3,259	500	530	6,569
Gas Turbine			20	20	159	350	549	
Combined Cycle			719	1,396	1,944	347	4,406	
Hydro			319	906	656	957	2,838	
Pump Storage						645	645	
RA Total			3,338	5,581	3,260	2,829	15,007	
non-RA		Steam Turbine	248	440		530	1,218	
		Combined Cycle		673	350		1,023	
		Hydro		114	243	923	1,280	
		Pump Storage				324	324	
		Dynamic				775	775	
non-RA Total			248	1,227	593	3,081	5,149	
2/1/2011 Total			3,586	6,808	3,853	5,910	20,156	

COMMODITY_TYPE		Ru						
Sum of MAX_MW_MF		ramp_category						
edr_trade_dt	ra_unit	GEN_TECH	(1, 5)	(5, 10)	(10, 20)	>=20	Grand Total	
3/1/2010	RA	Steam Turbine	2,280	2,450	500	1,060	6,290	
		Gas Turbine	20	20	159		199	
		Combined Cycle	719	1,103	2,171		3,993	
		Hydro	51	493	648	1,840	3,032	
		Pump Storage				645	645	
	Unknown				525	525		
	RA Total			3,070	4,066	3,478	4,070	14,684
	non-RA	Steam Turbine	778		1,019			1,797
		Combined Cycle			1,004		347	1,351
		Hydro	268		527	243		1,038
Pump Storage						324	324	
Dynamic						575	575	
Other					4	4		
Unknown								
non-RA Total			1,046	2,550	243	1,250	5,089	
3/1/2010 Total			4,116	6,616	3,721	5,320	19,773	
3/1/2011	RA	Steam Turbine	2,280	3,094	500	1,060	6,934	
		Gas Turbine	20	20	159	350	549	
		Combined Cycle	719	1,505	1,944	347	4,515	
		Hydro	319	906	656	1,880	3,761	
		Pump Storage				645	645	
	Unknown				525	525		
	RA Total			3,338	5,525	3,260	4,807	16,929
	non-RA	Steam Turbine	248		605			853
		Combined Cycle			564	350		914
		Hydro			114	243		357
Pump Storage						324	324	
Dynamic						775	775	
Other					4	4		
Unknown								
non-RA Total			248	1,283	593	1,103	3,227	
3/1/2011 Total			3,586	6,808	3,853	5,910	20,156	

COMMODITY_TYPE		Ru						
Sum of MAX_MW_MF		ramp_category						
edr_trade_dt	ra_unit	GEN_TECH	(1, 5)	(5, 10)	(10, 20)	>=20	Grand Total	
4/1/2010	RA	Steam Turbine	2,280	2,827	500	1,060	6,667	
		Gas Turbine	20	20	159		199	
		Combined Cycle	719	1,555	2,171		4,445	
		Hydro	319	866	648	1,840	3,674	
		Pump Storage				969	969	
	Unknown				525	525		
	RA Total			3,338	5,268	3,478	3,869	15,953
	non-RA	Steam Turbine	778		873			1,651
		Combined Cycle			541		347	888
		Hydro			154	243		397
Dynamic						575	575	
Other						4	4	
Unknown					525	525		
non-RA Total			778	1,567	243	1,451	4,039	
4/1/2010 Total			4,116	6,835	3,721	5,320	19,992	
4/1/2011	RA	Steam Turbine	2,280	3,294	500	1,060	7,134	
		Gas Turbine	20	20	159	350	549	
		Combined Cycle	719	1,831	1,979		4,529	
		Hydro	319	906	656	1,880	3,761	
		Pump Storage				648	648	
	Unknown				525	525		
	RA Total			3,338	6,050	3,295	4,463	17,146
	non-RA	Steam Turbine	248		165			413
		Combined Cycle			238	347		900
		Hydro			114	243		357
Pump Storage						321	321	
Dynamic						775	775	
Other					4	4		
Unknown								
non-RA Total			248	517	558	1,447	2,770	
4/1/2011 Total			3,586	6,567	3,853	5,910	19,916	

COMMODITY_TYPE		Ru							
Sum of MAX_MW_MF				ramp_category					
edr_trade_dt	ra_unit	GEN_TECH	[1, 5)	[5, 10)	[10, 20)	>=20	Grand Total		
5/1/2010	RA	Steam Turbine	2,280	3,369	500	1,060	7,209		
		Gas Turbine	20	20	159		199		
		Combined Cycle	719	1,806	2,171		4,696		
		Hydro	319	966	648	1,840	3,773		
		Pump Storage				969	969		
		Unknown				525	525		
	RA Total			3,338	6,161	3,478	4,394	17,371	
	non-RA	Steam Turbine		778	330			1,108	
		Combined Cycle			290		347	637	
		Hydro			54	243		297	
		Dynamic					575	575	
		Other					4	4	
		Unknown							
	non-RA Total			778	674	243	926	2,621	
5/1/2010 Total			4,116	6,835	3,721	5,320	19,992		
5/1/2011	RA	Steam Turbine	2,280	3,724	500	1,060	7,564		
		Gas Turbine	20	20	159	350	549		
		Combined Cycle	719	1,913	1,944	347	4,923		
		Hydro	319	827	656	1,880	3,682		
		Pump Storage				645	645		
		Unknown				525	525		
	RA Total			3,338	6,483	3,260	4,807	17,888	
	non-RA	Steam Turbine		248				248	
		Combined Cycle			156	350		506	
		Hydro			193	243		436	
		Pump Storage					324	324	
		Dynamic					775	775	
		Other					4	4	
	Unknown								
non-RA Total			248	349	593	1,103	2,293		
5/1/2011 Total			3,586	6,832	3,853	5,910	20,181		

COMMODITY_TYPE		Ru							
Sum of MAX_MW_MF				ramp_category					
edr_trade_dt	ra_unit	GEN_TECH	[1, 5)	[5, 10)	[10, 20)	>=20	Grand Total		
6/1/2010	RA	Steam Turbine	2,280	3,121	500	1,060	6,961		
		Gas Turbine	20	20	159		199		
		Combined Cycle	719	1,808	2,171		4,698		
		Hydro	210	1,020	648	1,880	3,758		
		Pump Storage				969	969		
		Unknown				525	525		
	RA Total			3,229	5,969	3,478	4,434	17,110	
	non-RA	Steam Turbine		778	578			1,356	
		Combined Cycle			288		347	635	
		Hydro		109		243		352	
		Dynamic					575	575	
		Other					4	4	
		Unknown							
	non-RA Total			887	866	243	926	2,922	
6/1/2010 Total			4,116	6,835	3,721	5,360	20,032		
6/1/2011	RA	Steam Turbine	2,280	3,724	500	1,060	7,564		
		Gas Turbine	20	20	159	350	549		
		Combined Cycle	719	1,795	1,944	347	4,805		
		Hydro	319	1,020	656	1,880	3,875		
		Pump Storage				969	969		
		Unknown				525	525		
	RA Total			3,338	6,558	3,260	5,131	18,287	
	non-RA	Steam Turbine		248				248	
		Combined Cycle			281	350		631	
		Hydro				243		243	
		Dynamic					775	775	
		Other					4	4	
		Unknown							
	non-RA Total			248	281	593	779	1,901	
6/1/2011 Total			3,586	6,839	3,853	5,910	20,188		

### Appendix C: Startup Time Inventory

Sum of MAX_MW_MF		startup_category						Grand Total	
edr_trade_dt	RA Unit	GEN_TECH	<10	[10, 120)	[120, 300)	[300, 10800)	unknown	Grand Total	
7/1/2009	RA	Steam Turbine	248	161	228	16,377	2,651	19,665	
		Gas Turbine	820	2,906	133		1,906	5,766	
		Combined Cycle		26	3,944	7,384		11,354	
		Hydro	1,322	1,287	56		3,774	6,438	
		Pump-Storage	1,418					1,418	
		Dynamic				775	692	1,467	
		Pump					71	71	
		Recovery	13	34	102		20	169	
		Wind	369	386	238		850	1,842	
		Other	366	606	374		616	1,963	
		Unknown	885	96	19		1,114	2,114	
	RA Total			5,440	5,501	5,095	24,536	11,693	52,266
	non-RA	Steam Turbine	22		161	875	55	1,114	
		Gas Turbine	449	1,096	57		179	1,782	
		Combined Cycle	713	148	268	100		1,229	
		Hydro	334	106	430		108	977	
		Pump-Storage	814					814	
		Dynamic				1,708	1,188	2,896	
		Pump					1,876	1,876	
		Recovery		3	13		21	38	
Wind				2		350	352		
Solar						2	2		
Other				3		16	19		
Unknown	23	19			33	75			
non-RA Total			2,354	1,372	935	2,683	3,828	11,173	
7/1/2009 Total			7,795	6,873	6,030	27,219	15,522	63,439	
7/1/2010	RA	Steam Turbine	199	161	206	16,003	2,695	19,264	
		Gas Turbine	1,667	2,646	401		1,565	6,279	
		Combined Cycle		26	4,743	7,084		11,853	
		Hydro	1,322	1,264	55		3,756	6,397	
		Pump-Storage	1,792				1,792	1,792	
		Dynamic				775	692	1,467	
		Pump					1,717	1,717	
		Recovery	13	32	105		21	171	
		Wind	350	386	238		834	1,807	
		Other	349	294	374		616	1,633	
		Unknown	360	95	19		1,577	2,050	
	RA Total			6,051	4,904	6,142	23,863	13,472	54,431
	non-RA	Steam Turbine	63		183	869	40	1,156	
		Gas Turbine	362	752	105		446	1,665	
		Combined Cycle		148	8	1,723		1,879	
		Hydro	334	124	431		131	1,019	
		Pump-Storage	440					440	
		Dynamic				2,240	969	3,209	
		Pump					230	230	
		Recovery		3	9		23	35	
Wind		19		2		468	489		
Solar						50	50		
Other			0	3		24	27		
Unknown		19			96	115			
non-RA Total			1,217	1,046	741	4,833	2,475	10,313	
7/1/2010 Total			7,268	5,950	6,883	28,695	15,948	64,744	

Sum of MAX_MW_MF		startup_category							Grand Total
edr_trade_dt	RA Unit	GEN_TECH	<10	[10, 120)	[120, 300)	[300, 10800)	unknown		
8/1/2009	RA	Steam Turbine	248	161	228	17,153	2,651	20,441	
		Gas Turbine	917	3,148	133		1,952	6,151	
		Combined Cycle		26	3,944	7,384		11,354	
		Hydro	1,322	1,316	57		3,749	6,443	
		Pump-Storage	1,418					1,418	
		Dynamic				775	692	1,467	
		Pump					1,637	1,637	
		Recovery	13	34	102		20	169	
		Wind	369	386	238		850	1,842	
		Other	366	606	374		611	1,958	
	Unknown	885	95	19		1,114	2,113		
	RA Total			5,537	5,772	5,096	25,312	13,275	54,992
	non-RA	Steam Turbine	22		161		99	63	346
		Gas Turbine	449	711	57		179	1,397	
		Combined Cycle	337	148	644	100	615	1,844	
		Hydro	334	77	430		133	973	
		Pump-Storage	814					814	
		Dynamic				1,708	1,178	2,886	
		Pump					310	310	
		Recovery		3	13		21	38	
Wind				2		350	352		
Solar						2	2		
Other		0	3		30	34			
Unknown	23	19			33	75			
non-RA Total			1,978	958	1,311	1,907	2,915	9,070	
8/1/2009 Total			7,516	6,730	6,407	27,219	16,190	64,061	
8/1/2010	RA	Steam Turbine	199	161	206	16,003	2,695	19,264	
		Gas Turbine	1,815	2,600	401		1,611	6,427	
		Combined Cycle		26	3,707	9,111		12,844	
		Hydro	1,322	1,260	55		3,728	6,366	
		Pump-Storage	1,418					1,418	
		Dynamic				775	692	1,467	
		Pump					1,566	1,566	
		Recovery	13	32	105		21	171	
		Wind	350	386	238		834	1,807	
		Other	349	294	374		616	1,633	
	Unknown	360	95	19		1,577	2,050		
	RA Total			5,825	4,854	5,106	25,890	13,339	55,013
	non-RA	Steam Turbine	63		183		869	40	1,156
		Gas Turbine	262	703	105		446	1,516	
		Combined Cycle		148	8	732		888	
		Hydro	334	127	431		159	1,051	
		Pump-Storage	814					814	
		Dynamic				2,240	969	3,209	
		Pump					381	381	
		Recovery		3	9		120	132	
Wind		19		2		468	489		
Solar						50	50		
Other		0	3		24	27			
Unknown		19			96	115			
non-RA Total			1,492	1,001	741	3,841	2,752	9,827	
8/1/2010 Total			7,316	5,855	5,847	29,731	16,091	64,841	



Sum of MAX_MW_MF		startup_category							Grand Total
edr_trade_dt	RA Unit	GEN_TECH	<10	[10, 120)	[120, 300)	[300, 10800)	unknown		
9/1/2009	RA	Steam Turbine	248	161	228	16,348	2,656	19,642	
		Gas Turbine	917	3,209	133		1,910	6,170	
		Combined Cycle		26	2,883	7,935		10,844	
		Hydro	1,322	1,077	57		3,519	5,975	
		Pump-Storage	1,418					1,418	
		Dynamic				775	57	832	
		Pump					1,181	1,181	
		Recovery	13	34	102		21	170	
		Wind	369	386	238		850	1,842	
		Other	366	606	374		616	1,963	
	Unknown	885	95	19		1,114	2,113		
	RA Total			5,537	5,594	4,034	25,058	11,926	52,149
	non-RA	Steam Turbine	22		161		904	57	1,145
		Gas Turbine	496	696	57		127	1,377	
		Combined Cycle	337	148	1,154	100	615	2,354	
		Hydro	334	316	430		362	1,441	
		Pump-Storage	814					814	
		Dynamic				2,240	1,313	3,553	
		Pump					766	766	
		Recovery		3	13		20	36	
Wind				2		350	352		
Solar						2	2		
Other	4		3		22	28			
Unknown	23	19			33	75			
non-RA Total			2,030	1,182	1,821	3,244	3,667	11,944	
9/1/2009 Total			7,567	6,776	5,855	28,303	15,592	64,093	
9/1/2010	RA	Steam Turbine	262	161	206	16,025	2,695	19,349	
		Gas Turbine	1,763	2,646	449		1,861	6,719	
		Combined Cycle		26	3,197	8,499		11,722	
		Hydro	1,246	1,290	55		3,529	6,120	
		Pump-Storage	1,011					1,011	
		Dynamic				775	692	1,467	
		Pump					1,566	1,566	
		Recovery	13	32	105		21	171	
		Wind	350	386	238		834	1,807	
		Other	349	294	374		616	1,633	
	Unknown	360	95	19		1,639	2,113		
	RA Total			5,353	4,929	4,644	25,299	13,453	53,677
	non-RA	Steam Turbine				183	847	40	1,071
		Gas Turbine	265	703	57		199	1,225	
		Combined Cycle		148	518	1,340	660	2,666	
		Hydro	410	98	431		358	1,297	
		Pump-Storage	1,221					1,221	
		Dynamic				1,708	1,501	3,209	
		Pump					381	381	
		Recovery		3	9		187	199	
Wind		19		2		468	489		
Solar						50	50		
Other		0	3		24	27			
Unknown		19			33	52			
non-RA Total			1,915	972	1,203	3,896	3,901	11,887	
9/1/2010 Total			7,268	5,901	5,847	29,195	17,353	65,564	

Sum of MAX_MW_MF		startup_category							Grand Total
edr_trade_dt	RA Unit	GEN_TECH	<10	[10, 120)	[120, 300)	[300, 10800)	unknown		
10/1/2009	RA	Steam Turbine	248	161	136	16,430	1,506	18,482	
		Gas Turbine	1,083	2,968	133		1,954	6,139	
		Combined Cycle		26	2,098	7,800		9,924	
		Hydro	1,246	1,077	57		3,227	5,606	
		Pump-Storage	1,418					1,418	
		Dynamic				775	692	1,467	
		Pump					1,566	1,566	
		Recovery	13	34	102		21	170	
		Wind	369	386	238		850	1,842	
		Other	366	606	374		616	1,963	
	Unknown	885	95	19		1,114	2,113		
	RA Total			5,627	5,352	3,157	25,005	11,547	50,689
	non-RA	Steam Turbine	22		253		827	1,207	2,309
		Gas Turbine	460	711	57		180	1,408	
		Combined Cycle	337	148	1,939	235	615	3,273	
		Hydro	410	316	430		655	1,810	
		Pump-Storage	814					814	
		Dynamic				1,746	1,173	2,918	
		Pump					381	381	
		Recovery		3	12		21	36	
Wind				2		350	352		
Solar						2	2		
Other	4	0	3		22	29			
Unknown	23	19			33	75			
non-RA Total			2,070	1,197	2,696	2,807	4,638	13,408	
10/1/2009 Total			7,697	6,550	5,854	27,813	16,185	64,098	
10/1/2010	RA	Steam Turbine	237	161	206	16,001	1,545	18,151	
		Gas Turbine	1,703	2,647	449		1,910	6,709	
		Combined Cycle		26	3,197	8,732		11,955	
		Hydro	313	1,304	55		3,389	5,061	
		Pump-Storage	1,418					1,418	
		Dynamic					692	692	
		Pump					1,110	1,110	
		Recovery	13	32	105		21	171	
		Wind	350	386	238		834	1,807	
		Other	349	294	374		616	1,633	
	Unknown	360	95	19		1,639	2,113		
	RA Total			4,742	4,944	4,644	24,733	11,756	50,819
	non-RA	Steam Turbine	24		190		871	1,190	2,276
		Gas Turbine	273	703	57		199	1,233	
		Combined Cycle		148	518	1,107	660	2,433	
		Hydro	1,343	84	431		497	2,355	
		Pump-Storage	814					814	
		Dynamic				1,989	1,995	3,984	
		Pump					837	837	
		Recovery		166	9		24	199	
Wind		19		2		618	639		
Solar						65	65		
Other		0	3		24	28			
Unknown		19			33	52			
non-RA Total			2,473	1,120	1,210	3,967	6,144	14,915	
10/1/2010 Total			7,216	6,064	5,854	28,700	17,900	65,734	

Sum of MAX_MW_MF		startup_category							Grand Total
edr_trade_dt	RA Unit	GEN_TECH	<10	[10, 120)	[120, 300)	[300, 10800)	unknown		
11/1/2009	RA	Steam Turbine	248	161	136	16,040	2,653	19,239	
		Gas Turbine	1,083	3,162	85		2,049	6,379	
		Combined Cycle		26	2,048	8,455		10,528	
		Hydro	1,242	231	57		3,186	4,716	
		Pump-Storage	1,218					1,218	
		Dynamic						57	
		Pump					1,566	1,566	
		Recovery	13	34	105		20	172	
		Wind	369	386	238		850	1,842	
		Other	366	606	374		601	1,947	
		Unknown	885	95	19		1,114	2,113	
		RA Total		5,423	4,699	3,062	24,495	12,096	49,776
		non-RA	Steam Turbine	22		253	1,217	63	1,555
	Gas Turbine		460	472	105		131	1,169	
	Combined Cycle		337	407	1,303	235	376	2,658	
	Hydro		414	1,155	430		704	2,702	
	Pump-Storage		1,014					1,014	
	Dynamic					1,989	2,339	4,328	
	Pump						381	381	
	Recovery			3	9		24	36	
Wind				2		350	352		
Other			1	3		2	2		
Unknown	23	19			33	75			
non-RA Total		2,270	2,057	2,106	3,440	4,444	14,317		
11/1/2009 Total			7,693	6,757	5,167	27,935	16,540	64,092	
11/1/2010	RA	Steam Turbine	262	161	206	15,322	2,662	18,612	
		Gas Turbine	1,659	3,165	449		1,857	7,130	
		Combined Cycle		26	3,197	8,216		11,439	
		Hydro	1,246	1,107	55		2,458	4,866	
		Pump-Storage	1,418					1,418	
		Dynamic						57	
		Pump					1,110	1,110	
		Recovery	13	194	105		21	334	
		Wind	350	386	238		834	1,807	
		Other	349	294	374		616	1,633	
		Unknown	360	95			1,114	1,569	
		RA Total		5,656	5,428	4,625	23,537	10,728	49,974
		non-RA	Steam Turbine			190	1,551	73	1,814
	Gas Turbine		317	192	57		239	805	
	Combined Cycle			148	518	1,623	660	2,949	
	Hydro		410	275	431		1,455	2,571	
	Pump-Storage		814					814	
	Dynamic					2,483	2,136	4,619	
	Pump						837	837	
	Recovery			3	9		24	36	
Wind	19			2		618	639		
Other			0	3		75	75		
Unknown		19	19		558	596			
non-RA Total		1,560	637	1,229	5,658	6,700	15,783		
11/1/2010 Total			7,216	6,065	5,854	29,195	17,427	65,757	

Sum of MAX_MW_MF		startup_category							Grand Total
edr_trade_dt	RA Unit	GEN_TECH	<10	[10, 120)	[120, 300)	[300, 10800)	unknown		
12/1/2009	RA	Steam Turbine	248	161	136	15,780	2,659	18,984	
		Gas Turbine	1,134	2,983	85		1,910	6,113	
		Combined Cycle		26	2,098	8,404		10,528	
		Hydro	1,246	1,051	57		3,392	5,746	
		Pump-Storage	1,418					1,418	
		Dynamic						57	
		Pump					1,566	1,566	
		Recovery	13	34	105			21	
		Wind	369	386	238			850	
		Other	366	606	374			611	
		Unknown	885	95				1,114	
		RA Total		5,678	5,341	3,094	24,184	12,181	50,478
		non-RA	Steam Turbine	22		253	1,477		57
	Gas Turbine		506	696	105		127	1,435	
	Combined Cycle		337	148	1,563	235	376	2,658	
	Hydro		410	342	430		491	1,672	
	Pump-Storage		814					814	
	Dynamic					3,015	1,313	4,328	
	Pump						381	381	
	Recovery			3	9		23	35	
Wind				2		350	352		
Solar						27	27		
Other	3	1	3		27	33			
Unknown	23	19	19		33	94			
non-RA Total		2,115	1,208	2,384	4,727	3,205	13,639		
12/1/2009 Total		7,793	6,550	5,477	28,911	15,386	64,117		
12/1/2010	RA	Steam Turbine	262	161	206	15,394	2,695	18,717	
		Gas Turbine	1,659	3,135	449		1,857	7,100	
		Combined Cycle		26	3,197	8,216		11,439	
		Hydro	1,327	1,107	53		2,478	4,965	
		Pump-Storage	1,011					1,011	
		Dynamic						57	
		Pump					1,110	1,110	
		Recovery	13	194	105		21	334	
		Wind	350	386	55		735	1,525	
		Other	349	294	374		606	1,624	
		Unknown	360	95			1,114	1,569	
		RA Total		5,330	5,398	4,440	23,609	10,673	49,450
		non-RA	Steam Turbine			190	1,374	40	1,604
	Gas Turbine		317	192	57		285	852	
	Combined Cycle			148	518	1,623	660	2,949	
	Hydro		329	281	433		1,408	2,451	
	Pump-Storage		1,221				40	1,261	
	Dynamic					2,483	2,136	4,619	
	Pump						837	837	
	Recovery			4	9		23	36	
Wind	19			185		905	1,108		
Solar	5					81	85		
Other		0	3		34	38			
Unknown		19	19		558	596			
non-RA Total		1,890	645	1,414	5,481	7,007	16,436		
12/1/2010 Total		7,220	6,043	5,854	29,090	17,680	65,887		

Sum of MAX_MW_MF		startup_category							Grand Total
edr_trade_dt	RA Unit	GEN_TECH	<10	[10, 120)	[120, 300)	[300, 10800)	unknown		
1/1/2010	RA	Steam Turbine	242	161	206	14,183	1,538	16,331	
		Gas Turbine	1,287	2,861	425		1,861	6,435	
		Combined Cycle		26	3,301	6,972		10,299	
		Hydro	1,251	1,074	53			2,704	
		Pump-Storage	1,011					1,011	
		Dynamic						57	
		Pump						1,566	
		Recovery	13	34	105			21	
		Wind	350	386	238			834	
		Other	349	294	374			616	
		Unknown	360	95	19			1,099	
		RA Total		4,862	4,931	4,721	21,155	10,296	45,965
		non-RA	Steam Turbine	28		183	2,381		1,871
	Gas Turbine		353	759	105			244	
	Combined Cycle		337	148	1,298	1,105		2,887	
	Hydro		405	319	433			1,181	
	Pump-Storage		1,221					1,221	
	Dynamic					2,483		1,845	
	Pump							381	
	Recovery			3	9			23	
Wind	19			2			366		
Solar							27		
Other	18	0	3			20			
Unknown	23	19				574			
non-RA Total		2,403	1,248	2,033	5,970	6,531	18,184		
1/1/2010 Total		7,265	6,178	6,755	27,125	16,827	64,150		
1/1/2011	RA	Steam Turbine	234	161	228	14,609	2,639	17,872	
		Gas Turbine	1,700	2,634	401		2,297	7,032	
		Combined Cycle		26	3,498	6,638	579	10,741	
		Hydro	394	1,097	54			3,548	
		Pump-Storage	1,011					1,011	
		Dynamic				775		692	
		Pump						1,110	
		Recovery	13	33	105			184	
		Wind	350	386	238			997	
		Solar						25	
		Other	349	294	370			606	
		Unknown	360	95	19			1,639	
		RA Total		4,409	4,725	4,914	22,022	14,317	50,388
	non-RA	Steam Turbine	28		168	1,863	95	2,154	
		Gas Turbine	358	295	57		190	901	
		Combined Cycle		148	1,178	2,321		3,647	
		Hydro	1,262	291	432			337	
		Pump-Storage	1,221					40	
		Dynamic				1,708		1,501	
		Pump						837	
Recovery			4	9			21		
Wind		19		2			793		
Solar		5					64		
Other			7			34			
Unknown		19				33			
non-RA Total		2,893	758	1,853	5,892	3,945	15,341		
1/1/2011 Total		7,302	5,483	6,767	27,914	18,262	65,729		

Sum of MAX_MW_MF		startup_category							Grand Total
edr_trade_dt	RA Unit	GEN_TECH	<10	(10, 120)	(120, 300)	(300, 10800)	unknown		
3/1/2010	RA	Steam Turbine	207	129	206	14,265	3,005	17,812	
		Gas Turbine	1,271	2,822	449		1,826	6,368	
		Combined Cycle		26	2,520	6,811		9,357	
		Hydro	1,251	1,095	55			2,780	
		Pump-Storage	1,011					1,011	
		Dynamic						692	
		Pump						1,566	
		Recovery	13	34	105			21	
		Wind	350	386	238			834	
		Other	349	294	369			616	
		Unknown	360	95	19			1,624	
		RA Total		4,811	4,880	3,962	21,076	12,964	47,693
	non-RA	Steam Turbine	63	32	183	2,291	425	2,994	
		Gas Turbine	341	838	57		403	1,640	
		Combined Cycle	337	148	2,704	660		3,848	
		Hydro	405	293	431		1,105	2,233	
		Pump-Storage	1,221					1,221	
		Dynamic				3,015	678	3,693	
		Pump					381	381	
		Recovery		3	9		23	35	
Wind		19		2		366	387		
Solar						27	27		
Other		0	8		24	32			
Unknown		19			49	68			
non-RA Total		2,386	1,333	3,394	5,967	3,480	16,559		
3/1/2010 Total			7,197	6,214	7,356	27,042	16,444	64,253	
3/1/2011	RA	Steam Turbine	193	129	136	15,012	2,668	18,139	
		Gas Turbine	1,495	2,398	449		2,352	6,695	
		Combined Cycle		26	3,470	6,898	1,258	11,652	
		Hydro	1,251	1,300	57		3,603	6,211	
		Pump-Storage	1,011					1,011	
		Dynamic						692	
		Pump						1,110	
		Recovery	13	33	105		184	335	
		Wind	350	386	238		997	1,970	
		Solar					28	28	
		Other	349	294	370		606	1,620	
		Unknown	360	95			1,639	2,094	
	RA Total		5,021	4,661	4,826	21,910	15,138	51,555	
	non-RA	Steam Turbine	69	32	260	1,460	66	1,887	
		Gas Turbine	463	483	57		235	1,239	
		Combined Cycle		148	546	2,061		2,755	
		Hydro	405	88	430		282	1,204	
		Pump-Storage	1,221				40	1,261	
		Dynamic				2,483	1,501	3,984	
		Pump					837	837	
Recovery			4	9		21	35		
Wind		19		2		903	923		
Solar		5				61	66		
Other			7		34	41			
Unknown		19	19		33	71			
non-RA Total		2,181	774	1,330	6,005	4,013	14,302		
3/1/2011 Total			7,202	5,435	6,155	27,914	19,150	65,857	

Sum of MAX_MW_MF		startup_category							Grand Total
edr_trade_dt	RA Unit	GEN_TECH	<10	(10, 120)	(120, 300)	(300, 10800)	unknown		
4/1/2010	RA	Steam Turbine	174	161	206	14,515	3,012	18,068	
		Gas Turbine	1,385	2,457	449		1,570	5,861	
		Combined Cycle		26	3,304	7,114		10,444	
		Hydro	1,251	1,309	53		3,514	6,127	
		Pump-Storage	1,418					1,418	
		Dynamic						57	
		Pump					1,566	1,566	
		Recovery	13	34	105		21	173	
		Wind	350	386	238		834	1,807	
		Other	349	294	374		616	1,633	
		Unknown	360	95	19		1,099	1,573	
		RA Total		5,299	4,761	4,749	21,629	12,288	48,726
		non-RA	Steam Turbine	87		183	2,041	437	2,749
	Gas Turbine		341	1,089	57		572	2,060	
	Combined Cycle		337	148	1,294	982		2,761	
	Hydro		405	79	433		371	1,288	
	Pump-Storage		814					814	
	Dynamic					1,801	2,527	4,328	
	Pump						381	381	
	Recovery			3	9		23	35	
Wind	19			2		366	387		
Solar						32	32		
Other		0	3		24	27			
Unknown		19			574	593			
non-RA Total		2,003	1,338	1,982	4,825	5,306	15,454		
4/1/2010 Total			7,302	6,100	6,731	26,453	17,594	64,180	
4/1/2011	RA	Steam Turbine	256	161	228	15,487	2,611	18,743	
		Gas Turbine	1,648	1,981	449		2,120	6,198	
		Combined Cycle		26	3,470	7,348	668	11,512	
		Hydro	1,327	1,315	57		3,635	6,334	
		Pump-Storage	1,014					1,014	
		Dynamic						692	
		Pump					1,717	1,717	
		Recovery	13	32	105		185	335	
		Wind	350	386	238		997	1,970	
		Solar					28	28	
		Other	349	294	373		616	1,633	
		Unknown	360	95	19		1,639	2,113	
		RA Total		5,316	4,290	4,939	22,835	14,907	52,288
	non-RA	Steam Turbine	6		168	779	124	1,076	
		Gas Turbine	295	744	57		469	1,565	
		Combined Cycle	366	148	546	1,245	590	2,895	
		Hydro	329	73	430		250	1,080	
		Pump-Storage	1,218				40	1,258	
		Dynamic				2,483	1,501	3,984	
		Pump					230	230	
Recovery			4	9		21	35		
Wind		19		2		1,053	1,073		
Solar		5				61	66		
Other			4		25	29			
Unknown		19			33	52			
non-RA Total		2,237	987	1,216	4,507	4,395	13,343		
4/1/2011 Total			7,553	5,278	6,155	27,342	19,303	65,631	

Sum of MAX_MW_MF		startup_category							Grand Total
edr_trade_dt	RA Unit	GEN_TECH	<10	[10, 120)	[120, 300)	[300, 10800)	unknown		
5/1/2010	RA	Steam Turbine	177	76	176	15,573	2,695	18,696	
		Gas Turbine	1,631	2,266	449		1,554	5,901	
		Combined Cycle		26	3,770	7,345		11,140	
		Hydro	1,322	1,322	55		3,518	6,217	
		Pump-Storage	1,418					1,418	
		Dynamic						57	
		Pump					1,566	1,566	
		Recovery	13	34	105			21	
		Wind	350	386	238			834	
		Other	349	294	374			616	
	Unknown	360	95	19			1,639		
	RA Total		5,619	4,498	5,186	22,918	12,500	50,721	
	non-RA	Steam Turbine	85	85	214	1,299	437	2,120	
		Gas Turbine	297	1,080	57		648	2,082	
		Combined Cycle	337	148	778	802		2,065	
		Hydro	334	66	431		369	1,200	
		Pump-Storage	814					814	
		Dynamic				3,015	1,313	4,328	
		Pump					381	381	
		Recovery		3	9		23	35	
Wind		19		2		366	387		
Solar						32	32		
Other		0	3		24	27			
Unknown		19			33	52			
non-RA Total		1,886	1,401	1,494	5,117	3,625	13,524		
5/1/2010 Total		7,505	5,900	6,680	28,035	16,125	64,244		
5/1/2011	RA	Steam Turbine	164	98	198	15,762	1,456	17,679	
		Gas Turbine	1,696	2,097	449		2,463	6,705	
		Combined Cycle		26	3,498	7,653	1,258	12,435	
		Hydro	1,327	1,315	55		3,405	6,103	
		Pump-Storage	1,011					1,011	
		Dynamic					692	692	
		Pump					1,717	1,717	
		Recovery	13	32	105		185	335	
		Wind	350	386	238		997	1,970	
		Solar					28	28	
	Other	349	294	372		616	1,632		
	Unknown	360	95	19		1,639	2,113		
	RA Total		5,269	4,343	4,934	23,415	14,457	52,419	
	non-RA	Steam Turbine	97	63	199	504	1,278	2,141	
		Gas Turbine	247	628	57		125	1,057	
		Combined Cycle		148	518	930	376	1,972	
		Hydro	329	73	431		480	1,312	
		Pump-Storage	1,221				40	1,261	
		Dynamic				1,270	2,715	3,984	
		Pump					230	230	
Recovery			3	9		23	35		
Wind		19		2		1,053	1,073		
Solar		5				61	66		
Other			5		26	31			
Unknown		19			33	52			
non-RA Total		1,917	933	1,221	2,703	6,438	13,213		
5/1/2011 Total		7,187	5,276	6,155	26,118	20,895	65,632		



Sum of MAX_MW_MF			startup_category					Grand Total
edr_trade_dt	RA Unit	GEN_TECH	<10	[10, 120)	[120, 300)	[300, 10800)	unknown	Grand Total
6/1/2010	RA	Steam Turbine	199	161	206	15,248	2,695	18,509
		Gas Turbine	1,631	2,646	401		1,565	6,244
		Combined Cycle		26	3,770	7,667		11,463
		Hydro	1,322	1,318	55		3,577	6,272
		Pump-Storage	1,418					1,418
		Dynamic					775	832
		Pump					1,566	1,566
		Recovery	13	34	105			21
		Wind	350	386	238			834
		Other	349	294	374			616
	Unknown	360	95	19			1,639	
	RA Total		5,641	4,959	5,169	23,690	12,570	52,029
	non-RA	Steam Turbine	63		183	1,624	437	2,308
		Gas Turbine	297	703	105		591	1,697
		Combined Cycle	366	148	778	480	497	2,269
		Hydro	334	70	431		310	1,144
		Pump-Storage	814					814
		Dynamic				2,240	1,613	3,853
		Pump					381	381
		Recovery		3	9		23	35
Wind		19		2		366	387	
Solar						40	40	
Other		0	3		24	27		
Unknown		19			33	52		
non-RA Total		1,893	943	1,511	4,345	4,314	13,007	
6/1/2010 Total		7,535	5,903	6,680	28,035	16,884	65,036	
6/1/2011	RA	Steam Turbine	256	161	60	12,249	6,324	19,049
		Gas Turbine	877	1,847	85		4,403	7,212
		Combined Cycle	566	542	3,805	3,361	3,911	12,185
		Hydro	1,322	1,313	55		3,660	6,350
		Pump-Storage	1,418					1,418
		Dynamic					1,467	1,467
		Pump					840	840
		Recovery	13	32	105		185	335
		Wind	350	386	238		1,099	2,072
		Solar					28	28
	Other	349	294	372		616	1,632	
	Unknown	360	95	19		1,639	2,113	
	RA Total		5,510	4,670	4,739	15,610	24,171	54,701
	non-RA	Steam Turbine	6		168	504	95	773
		Gas Turbine	247	157	57		269	731
		Combined Cycle	366	407	518	100	830	2,222
		Hydro	334	69	431		231	1,064
		Pump-Storage	814				40	854
		Dynamic					3,209	3,209
		Pump					1,107	1,107
Recovery			3	9		24	36	
Wind		19		2		951	971	
Solar						85	85	
Other			5		26	31		
Unknown		19			33	52		
non-RA Total		1,786	655	1,190	604	6,899	11,134	
6/1/2011 Total		7,295	5,325	5,929	16,214	31,071	65,835	