LSE Forecast Adjustments 2021 Resource Adequacy

June 24, 2020

Lynn Marshall
Lynn.Marshall@energy.ca.gov
916-654-4767
Energy Assessments Division
California Energy Commission

Resource Adequacy Load Forecast Adjustment Process

1. Develop reference forecast for service areas and direct access
2. Estimate and apply coincidence factors to LSE forecasts.
3. Develop reference current peak demand estimate for LSEs based on available data.
4. Evaluate need for LSE-specific adjustments.
5. Apply adjustments for incremental effects of demand side programs.
6. Apply pro-rata adjustments to bring the total of the forecasts to within 1% of the CEC service area forecast.
7. Evaluate the reasonableness of pro-rata adjustments and total forecast for each LSE and service area.
8. If step 7 indicates pro rata adjustment is too large, review steps 2-7.

2021 Reference Forecast

- Reference forecast for CPUC-jurisdictional LSE forecasts begins with forecasted monthly TAC coincident peaks from the CED 2019 demand forecast, mid-demand, mid-AAEE case, prepared for the 2019 Integrated Energy Policy Report.
- SCE and PG&E TAC forecasts are disaggregated to CPUC and non-CPUC jurisdictional using CEC service area forecast, LSE forecasts, and hourly loads

Service Area Annual (noncoincident) Peak Demand

	2018 Update, Forecast for 2020	2019 IEPR, Forecast for 2021
PG&E	18,165	18,503
SCE	20,574	20,881

Source: CED 2019 Managed Forecast - LSE and BA Tables Mid Demand - Mid AAEE Case, Form 1.5b
https://efiling.energy.ca.gov/GetDocument.aspx?tn=231633&DocumentContentId=63453

Comparison of RA 2020 v. RA 2021 Monthly TAC Area Coincident Peak Forecast

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
PGE TAC TOTAL	RA 2020	14,505	14,171	13,257	14,266	16,429	19,194	20,178	19,459	18,521	15,452	13,786	14,885
	RA 2021	14,520	14,115	13,156	14,288	16,593	19,161	19,989	19,203	18,805	15,717	13,630	14,913
	MW dif	15	(55)	(101)	22	164	(33)	(189)	(256)	284	264	(155)	28
	pct dif.	0%	0%	-1%	0%	1%	0%	-1%	-1%	2%	2%	-1%	0%

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
SCE TAC TOTAL	RA 2020	13,953	13,483	13,687	15,060	16,515	18,624	20,840	21,505	22,604	17,891	14,573	14,410
	RA 2021	14,155	13,727	13,868	15,364	16,858	19,000	20,988	21,632	22,263	18,036	14,894	14,706
	MW dif	202	244	181	305	343	376	148	128	(341)	145	322	296
	pct dif.	1%	2%	1%	2%	2%	2%	1%	1%	-2%	1%	2%	2%

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
SDGE TAC TOTAL	RA 2020	3,110	3,080	2,947	2,961	3,108	3,214	3,412	3,792	3,956	3,517	3,185	3,217
	RA 2021	3,084	3,065	2,917	2,946	3,058	3,131	3,360	3,711	3,994	3,443	3,149	3,186
	MW dif	(26)	(14)	(31)	(14)	(50)	(82)	(52)	(80)	38	(75)	(36)	(31)
	pct dif.	-1%	0%	-1%	0%	-2%	-3%	-2%	-2%	1%	-2%	-1%	-1%

Not adjusted for LMDR, or MWD load in SCE TAC

Source: https://efiling.energy.ca.gov/GetDocument.aspx?tn=231551&DocumentContentId=63367

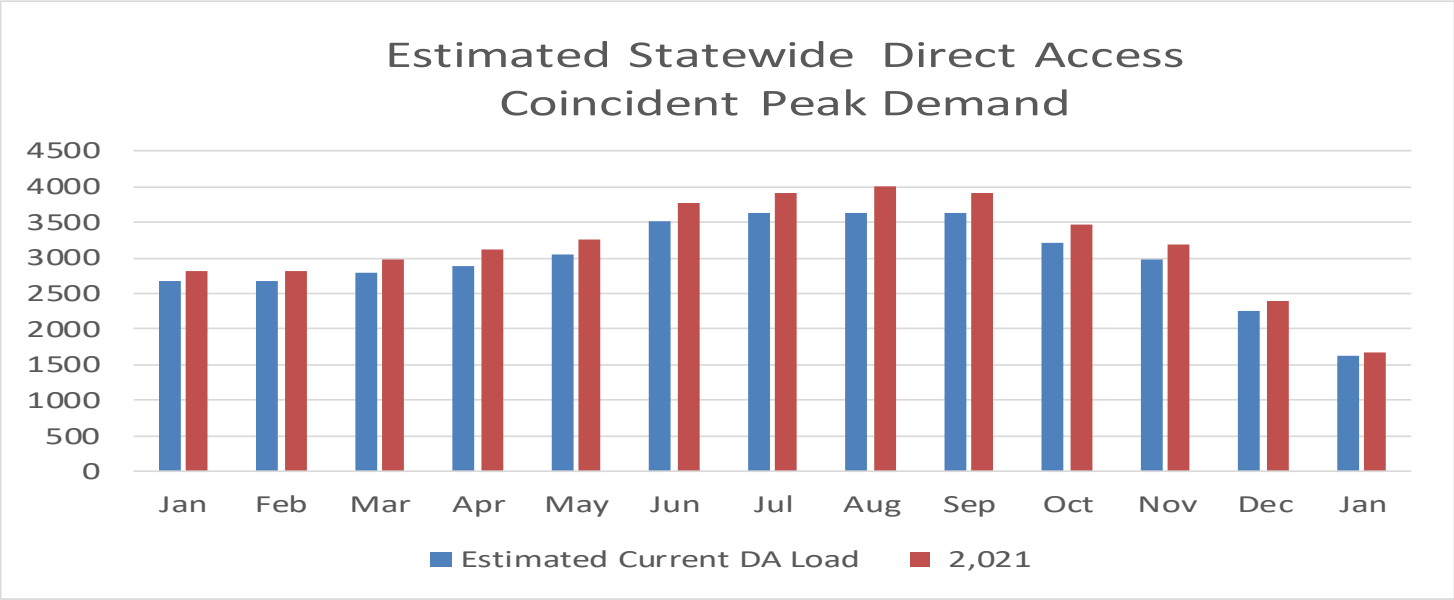
Comparison of CPUC-jurisdictional RA 2020 and 2021 RA Forecasts

PGE Service Area		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	RA 2020	13,031	12,647	11,779	12,581	14,738	17,349	18,165	17,510	16,605	13,808	12,179	13,258
	RA 2021	13,113	12,695	11,688	12,892	15,137	17,461	18,196	17,438	17,102	14,153	12,198	13,443
	MW dif	82	49	(91)	311	398	112	30	(72)	496	345	19	184
	pct dif.	1%	0%	-1%	2%	3%	1%	0%	0%	3%	2%	0%	1%
SCE Service Area													
	RA 2020	12,474	12,149	11,993	13,154	14,600	16,563	18,584	19,193	20,216	15,903	12,913	12,893
	RA 2021	12,666	12,294	12,451	13,671	15,136	16,963	18,720	19,333	19,981	16,096	13,334	13,248
	MW dif	192	145	458	516	536	400	136	140	(234)	193	421	355
	pct dif.	2%	1%	4%	4%	4%	2%	1%	1%	-1%	1%	3%	3%

- Differences parallel changes in the TAC and service area annual peak forecasts

Direct Access Reference Estimate

- Adjustments to ESP forecasts should be consistent with the cap on enrollment, as reflected in recent loads plus expected 2021 increase.
- For each TAC area, historic hourly ESP loads were summed to find the 3-year median of the top 5 coincident peaks,
- IOU provided hourly load and annual sales data on total customer load scheduled to switch to direct access service in January 2021



Coincidence Adjustments

- Coincidence adjustments should represent expected LSE demand at the time of a 1-in-2 system peak.
- Composite loads of LSEs were constructed by compiling 2019 loads of current and migrating load
- Median of peak demand of the top 5 peak days is used when sufficient number of high load days:
  - Load diversity declines as demand rises, so if sample doesn't include sufficient number of relatively high load days, diversity will be overestimated, leading to increased unallocated load.
  - Intra-month load migration can skew statistics
  - Alternatives used: median of top 3 peak days; peak hour; comparable month, or previous year
- CAISO posts load data used for this analysis annually at:

http://www.caiso.com/planning/Pages/ReliabilityRequirements/Default.aspx#Historical

Demand Modifier Adjustment

- LSE forecasts are credited with a share of AAEE and load modifying demand response (LMDR) to the extent that it is not accounted for in their forecasts
  - LSE share is netted against amounts reported in their forecasts

2021 Incremental Energy Efficiency by TAC, Coincident Peak (MW)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
PGE	113	111	114	107	141	168	200	189	174	138	117	111
SCE	122	124	129	115	165	189	250	250	228	154	141	121
SDGE	25	25	25	22	25	31	39	38	40	26	27	24

LSE-Specific Adjustments

- Staff uses historic loads and temperatures, month-ahead forecasts, and DASR activity to construct a reference estimate for each LSE by service area:
  - Reference estimates were adjusted to allow for economic trends given LSE sector mix
  - A 5% percent deviation is a flag for additional review.

- LSE forecasts are evaluated using historic loads and temperatures, evaluation of forecast assumptions, and comparison with CEC forecast assumptions
  - IOU departing load estimate are revised for consistency with CCA forecasts as adjusted by CEC, and CEC estimated direct access load.
  - Aggregate ESP forecasts are evaluated against the direct access reference estimate to identify need for further adjustments
  - IOU forecasts may also be revised for differences with CEC service area forecast

Pro-Rata Adjustment

- If the sum of the adjusted forecasts differs from the service area reference forecast by more than 1%, the exceedance is allocated on the share of an LSE's adjusted forecast of total service area adjusted forecasts.
- If sum of adjusted ESP forecasts after pro-rata differs DA reference estimate by more than 5 percent, individual ESP forecasts are further reviewed.

Preliminary Estimates of 2021 RA Forecast Adjustments

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Submitted LSE Forecasts	27,652	27,052	26,831	28,673	30,666	35,767	38,772	39,073	38,913	31,660	27,846	28,085
Coincidence Adjustment	(1,018)	(1,352)	(1,219)	(1,534)	(1,422)	(1,912)	(1,481)	(1,334)	(976)	(1,264)	(1,691)	(814)
Coincidence Adjustment %	-3.7%	-5.0%	-4.5%	-5.3%	-4.6%	-5.3%	-3.8%	-3.4%	-2.5%	-4.0%	-6.1%	-2.9%
LSE Specific Adjustments	895	1,119	735	988	1,946	2,082	1,608	1,560	1,959	1,594	904	1,431
LSE Specific Adjustment % of Coincident Forecast	3.4%	4.4%	2.9%	3.6%	6.7%	6.1%	4.3%	4.1%	5.2%	5.2%	3.5%	5.2%
EE/ LMDR Adjustment	(101)	(99)	(104)	(91)	(118)	(150)	(186)	(182)	(167)	(120)	(117)	(104)
Pro rata adjustment to match CEC forecast within 1%	1,146	1,055	543	1,177	1,926	1,394	1,208	961	937	1,484	1,452	1,011
Pro-Rata Adjustment %	4.2%	3.9%	2.1%	4.2%	6.2%	3.9%	3.1%	2.5%	2.4%	4.7%	5.4%	3.5%
Total Adjusted Forecasts	28,575	27,774	26,785	29,214	32,998	37,180	39,920	40,078	40,667	33,355	28,394	29,609
CEC Coincident Peak Reference Forecast	28,863	28,055	27,056	29,509	33,331	37,555	40,276	40,482	41,077	33,692	28,681	29,877
Adjusted Forecasts % of Reference	99.0%	99.0%	99.0%	99.0%	99.0%	99.0%	99.1%	99.0%	99.0%	99.0%	99.0%	99.1%

Next Steps

- Final review of individual forecasts is ongoing
  - For LSE-specific questions contact CEC staff
- September 2021 load shares to CAISO by July 1 for import and LRA local allocations
- Preliminary adjusted forecasts are expected to be sent to LSEs no later than July 31st.