LSE Forecast Adjustments 2020 Resource Adequacy

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Demand Analysis Working Group

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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.
   - Compare IOU departing load versus CCA & ESP forecasts
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, repeat step 2-7 as needed.

2020 Resource Adequacy Reference Forecast Derivation

The CED 2018 Update **(2018 IEPR)** adopted TAC-area monthly coincident peaks were disaggregated to CPUC and non-CPUC jurisdictional using the following steps:

1. Estimate expected coincident peak load of nonconforming non-jurisdictional LSEs (such as DWR, WAPA, BART), using historic loads and LSE-submitted forecasts.
2. Subtracting nonconforming load from the TAC monthly peaks produces a forecast of conforming load. This monthly profile is applied to the IOU distribution service area forecasted annual peak published in the CED 2018 Update "LSE and Balancing Area" tables. This is the jurisdictional load forecast.
3. The difference between the total conforming load peak calculated in Step 2, and the service area monthly peaks is the remaining non-jurisdictional load.

- Results were then compared to historic coincident peaks, and to forecasted coincident peak of the individual LSE forecasts.
- Final results may change slightly based on final forecast adjustments.

Comparison of RA 2019 Final v. CED 2018 Update Mid-Mid Case Forecasts

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
PGE TAC TOTAL	RA 2019	13,478	13,378	12,140	14,102	16,539	19,684	19,762	18,838	19,591	15,287	13,873	14,314
	RA 2020	14,494	14,160	13,256	14,266	16,427	19,189	20,178	19,457	18,520	15,450	13,790	14,888
	MW dif	1,015	782	1,116	164	(112)	(495)	416	619	(1,072)	163	(83)	574
	pct dif.	8%	6%	9%	1%	-1%	-3%	2%	3%	-5%	1%	-1%	4%
SCE TAC TOTAL	RA 2019	13,212	12,674	13,786	14,487	15,476	19,600	20,657	21,700	21,883	18,290	13,606	13,387
	RA 2020	13,834	13,423	13,572	14,834	16,284	18,349	20,553	21,215	22,314	17,615	14,305	14,210
	MW dif	622	749	(214)	347	808	(1,251)	(105)	(485)	431	(675)	699	823
	pct dif.	5%	6%	-2%	2%	5%	-6%	-1%	-2%	2%	-4%	5%	6%
SDGE TAC TOTAL	RA 2019	2,875	2,721	2,712	2,759	3,172	3,086	3,535	3,986	3,743	3,710	2,947	2,967
	RA 2020	3,110	3,080	2,947	2,959	3,107	3,210	3,405	3,784	3,947	3,511	3,185	3,217
	MW dif	236	359	235	200	(65)	124	(130)	(202)	205	(198)	238	250
	pct dif.	8%	13%	9%	7%	-2%	4%	-4%	-5%	5%	-5%	8%	8%
2020 adopted coincident peaks are adjusted for LMDR and MWD TAC													

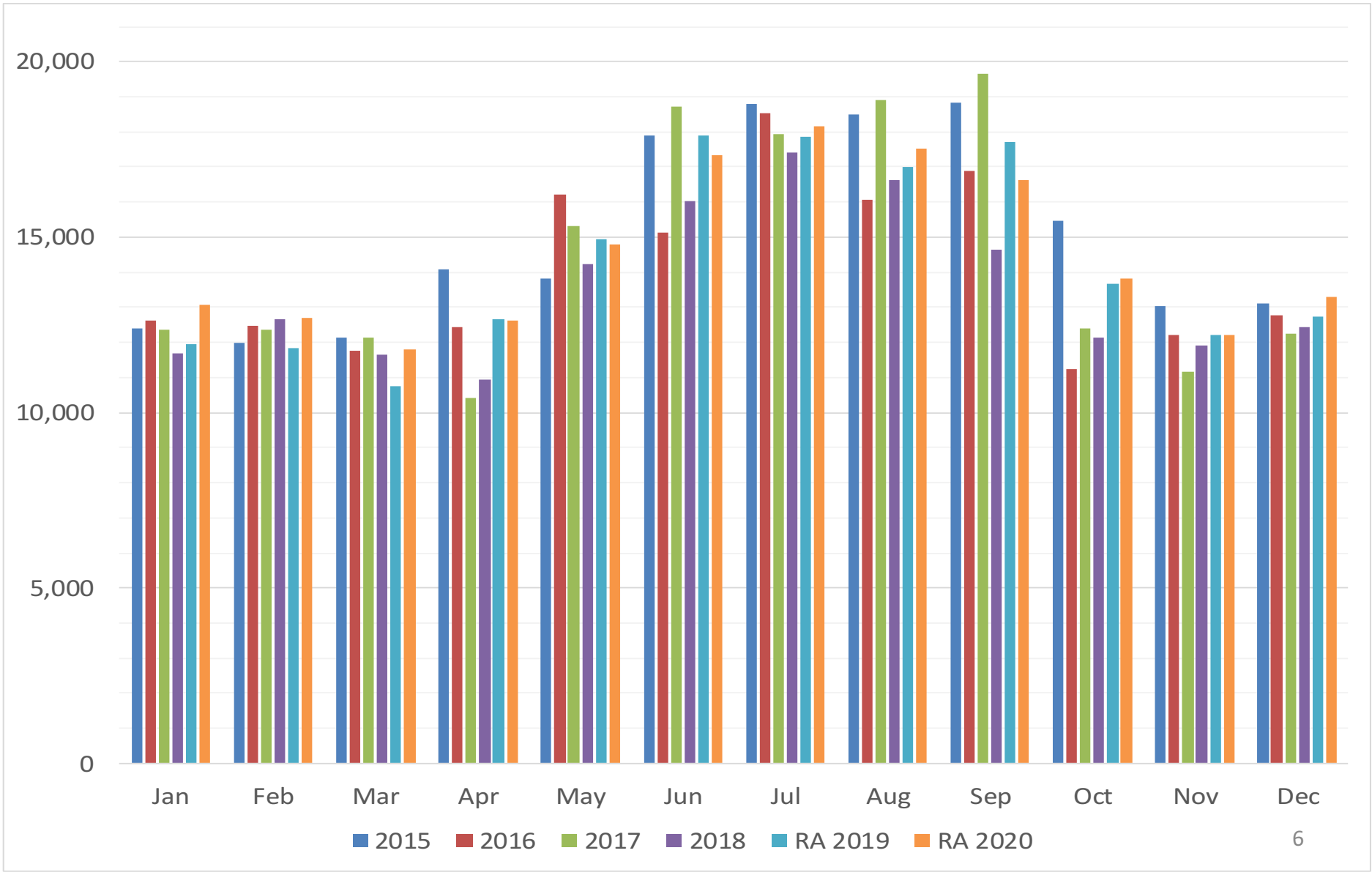
- Compared to RA 2019 final year-ahead forecasts, coincident peaks in the adopted forecast are generally higher in non-summer months and comparable or lower in summer months.

Comparison of CPUC-jurisdictional RA 2020 and Final RA 2019 forecasts

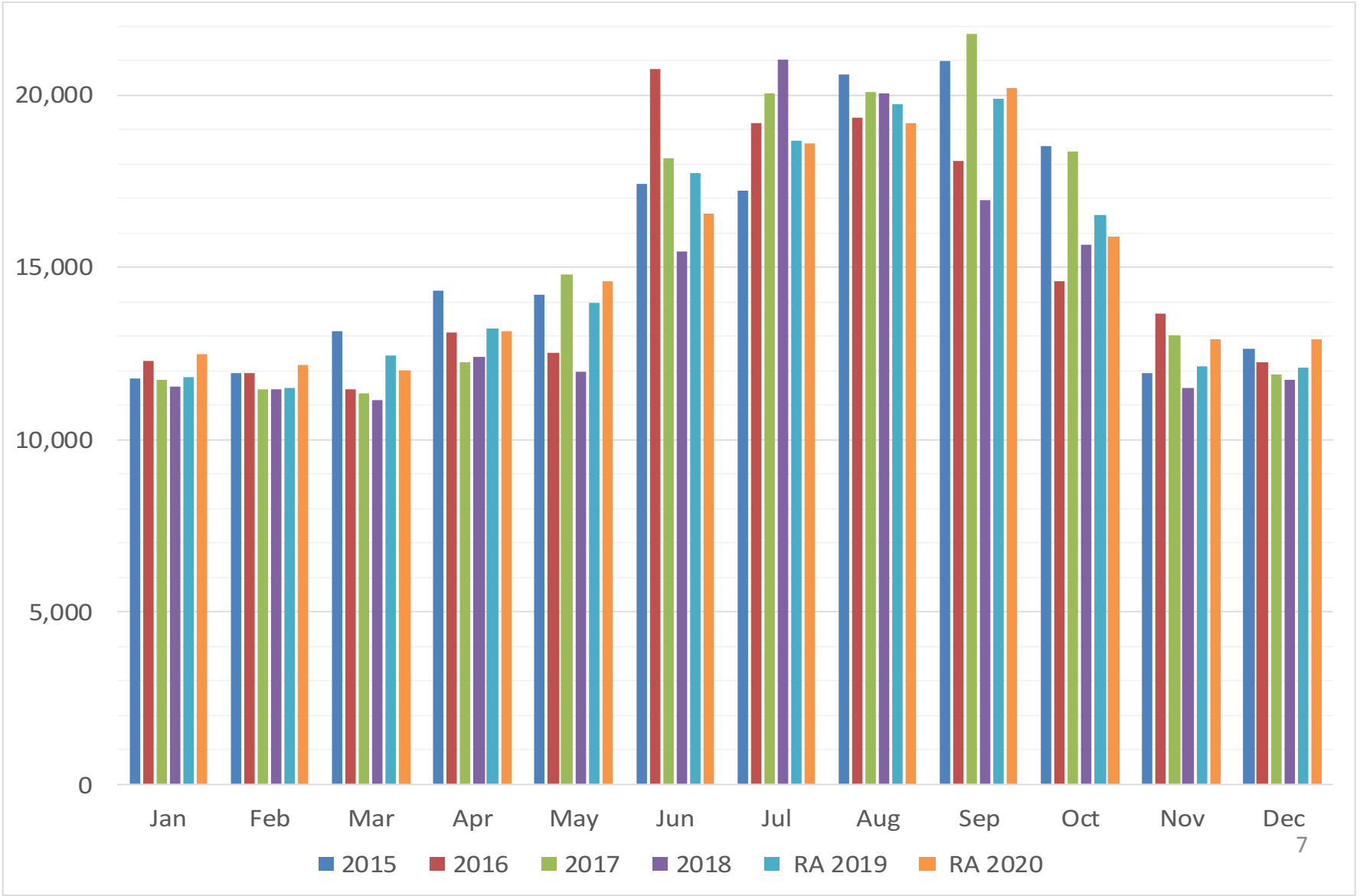
PGE Service Area		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	RA 2019	11,961	11,834	10,740	12,659	14,938	17,884	17,852	17,002	17,719	13,667	12,196	12,721
	RA 2020	13,065	12,686	11,813	12,624	14,776	17,350	18,165	17,517	16,619	13,836	12,216	13,282
	MW dif	1,104	852	1,072	(35)	(161)	(534)	314	515	(1,100)	170	20	562
	pct dif.	9%	7%	10%	0%	-1%	-3%	2%	3%	-6%	1%	0%	4%
SCE Service Area													
	RA 2019	11,819	11,516	12,431	13,232	13,950	17,724	18,668	19,726	19,874	16,502	12,130	12,081
	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
	MW dif	655	633	(438)	(78)	650	(1,161)	(84)	(533)	341	(600)	783	812
	pct dif.	6%	5%	-4%	-1%	5%	-7%	0%	-3%	2%	-4%	6%	7%

- Differences largely parallel changes in the TAC area forecasts

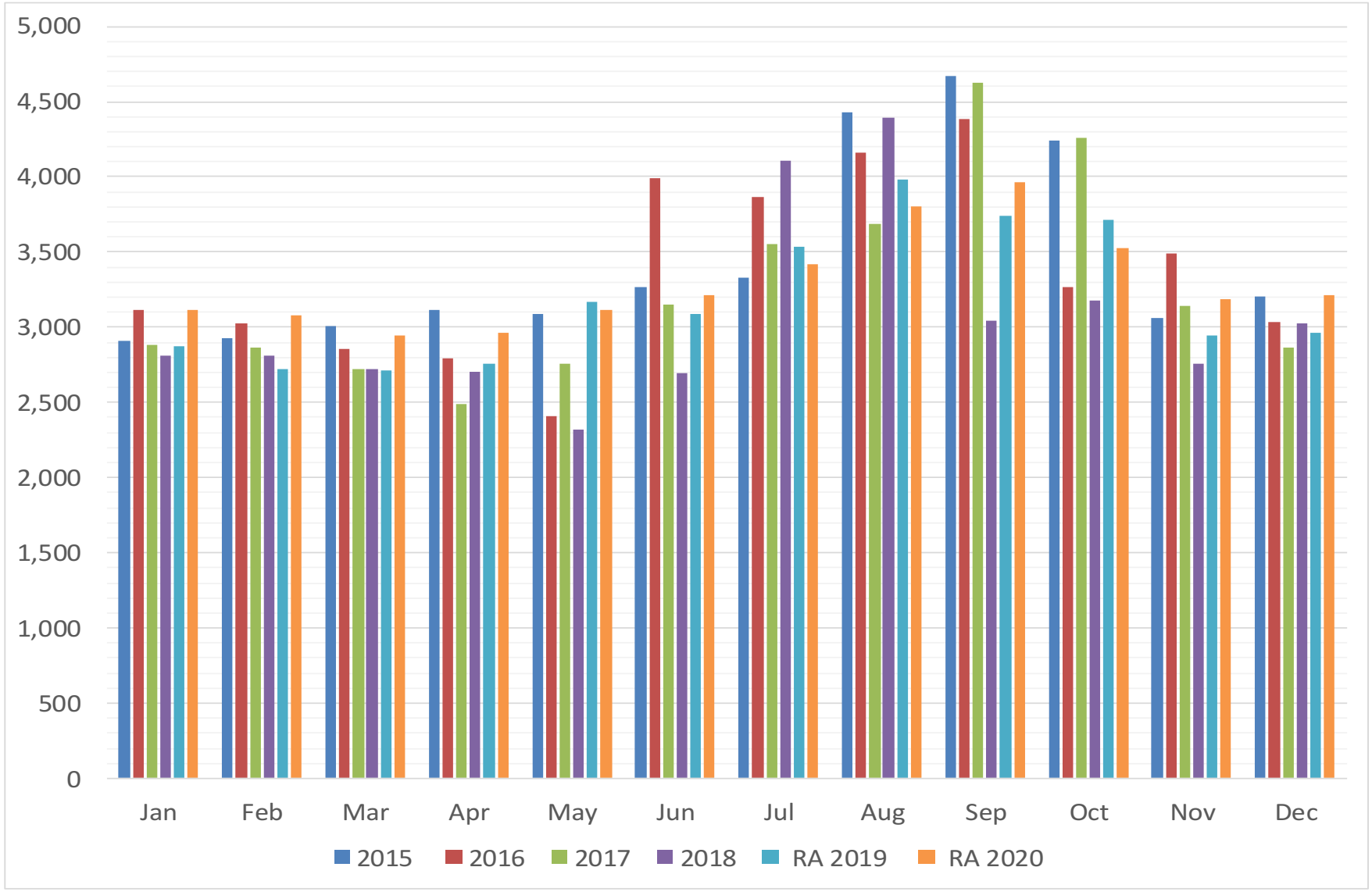
PG&E Service Area RA Forecasts (2019 – 2020) and Actual Coincident Peaks (2015 – 2018)



SCE Service Area RA Forecasts (2019 – 2020) and Actual Coincident Peaks (2015 – 2018)

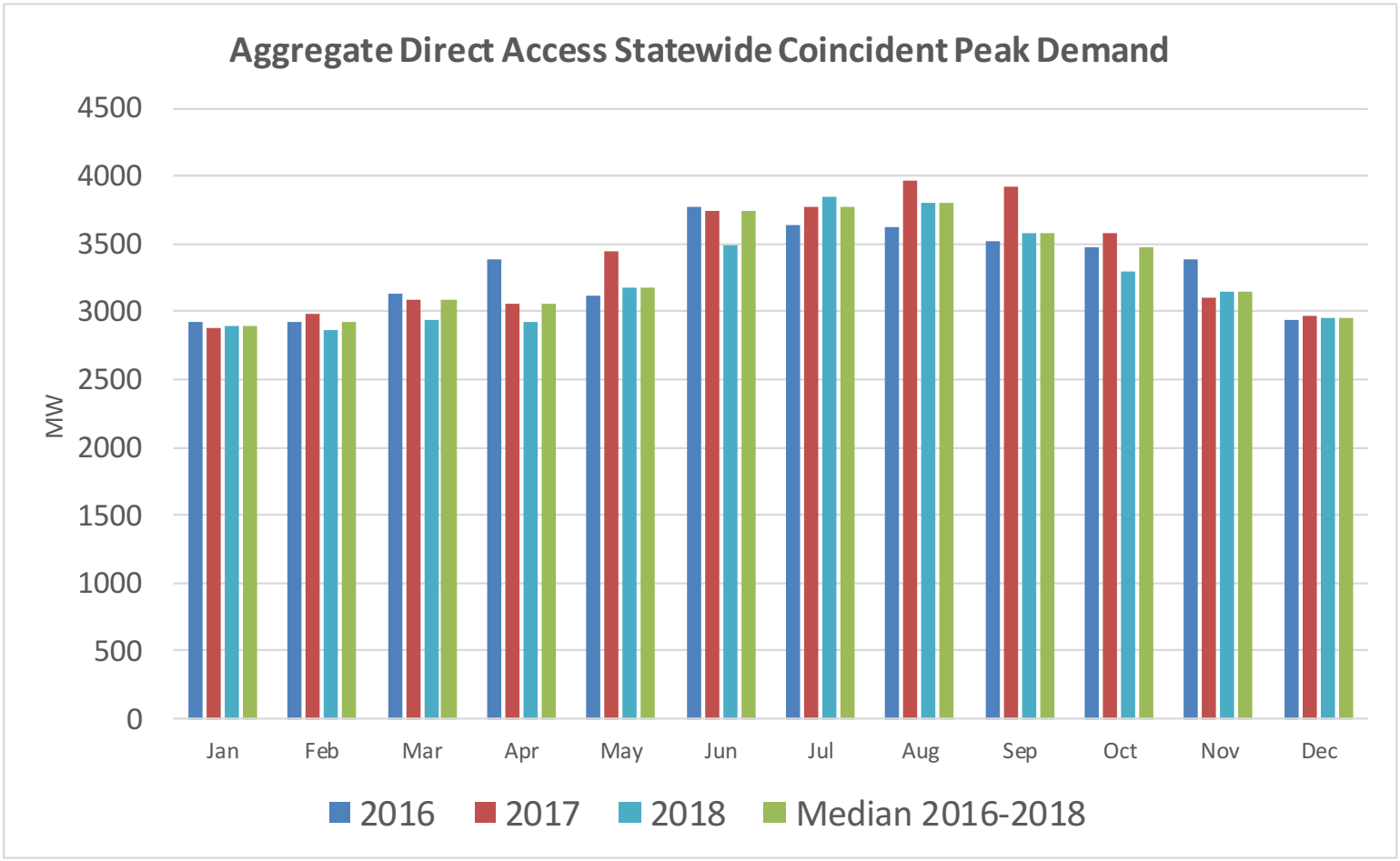


SDG&E Service Area RA Forecasts (2019 – 2020) and Actual Coincident Peaks (2015 – 2018)



Direct Access Reference Estimate

- Adjustments to ESP forecasts should be consistent with the cap on enrollment, as reflected in recent loads.
- For each TAC area, historic hourly ESP loads were summed to find the 3-year median of the top 5 coincident peaks.



Coincidence Adjustments

- Coincidence adjustments should represent expected LSE demand at the time of a 1-in-2 system peak. Staff evaluated 2017-2018 loads, temperatures, and timing of peak, for consistency with 1-in-2 forecasted conditions.
- Composite loads of existing and future customers were compiled for expanding CCAs
- 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. (i.e., Sept. & Oct. 2018)
  - Intra-month load migration can skew statistics
  - Alternatives used: median of top 3 peak days; peak hour; comparable month (August for September), or previous year

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
  - IOU share is netted against the amount reported in their forecasts
- 2020 total adjustments are lower because 2019 LMDR incorrectly included cumulative TOU impacts

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Incremental Energy Efficiency	PGE	257	253	245	253	310	303	339	321	325	256	259	255
	SCE	231	234	234	230	268	285	348	335	326	243	255	234
	SDGE	56	56	56	53	57	63	74	75	74	54	61	57
Load-Modifying Demand Response	PGE	14	14	22	24	26	28	34	31	30	24	27	28
	SCE	20	20	20	52	54	60	67	80	83	58	36	20
	SDGE	0	0	1	2	3	3	8	9	12	7	1	0

LSE-Specific Adjustments

- Staff uses historic loads, month-ahead forecasts, and DASR reports to construct a reference estimate (of current loads for ESPs, or forecast for CCAs) for each LSE by service area:
  - A 5% percent deviation is a flag for additional review.
- Differences between CCA forecast and IOU departing load
  - Additional documentation may be requested to support evaluation
  - CCA forecasts are evaluated against historic loads and temperatures, and implementation plans
  - IOU departing load estimate will be revised for consistency with CCA forecasts as adjusted by CEC
- Most of the current LSE-specific adjustments are due to discrepancies in departing load v. CCA load in PG&E.

Pro-Rata Adjustment

- Unallocated load is allocated on the share of an LSE's adjusted forecast of total service area adjusted forecasts.
- If sum of adjusted ESP forecasts exceed DA reference estimate by more than 1 percent, review causes:
  - ESP do have headroom under the nominal cap for load growth, but pro-rata adjustments should not cause an exceedance
  - Under current estimates, DA reference estimate is only exceeded in a few months, primarily those with large pro-rata adjustments
- Additional LSE-specific forecast review will likely lead to adjustments that reduce the pro-rata allocations further.

Current Draft Estimates of 2020 RA Forecast Adjustments

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Submitted LSE Forecasts	28,213	27,524	26,801	27,671	30,121	35,203	38,964	39,392	39,198	32,795	28,068	28,362
Coincident Peak Demand	27,426	26,551	25,958	26,263	28,788	33,677	37,581	38,340	38,419	31,646	26,875	27,280
Coincidence Percent	2.8%	3.5%	3.1%	5.1%	4.4%	4.3%	3.6%	2.7%	2.0%	3.5%	4.3%	3.8%
LSE-Specific Adjustments	289	546	552	1,034	1,048	1,273	1,227	720	799	622	785	674
LSE-Specific Percent of Coincident Forecasts	1.1%	2.1%	2.1%	3.9%	3.6%	3.8%	3.3%	1.9%	2.1%	2.0%	2.9%	2.5%
EE/DG/DR Adjustment	(331)	(324)	(315)	(317)	(385)	(388)	(449)	(419)	(409)	(303)	(317)	(297)
Pro-Rata Adjustment	1,018	899	290	1,473	2,747	2,232	1,484	1,699	1,664	1,271	689	1,496
Pro-Rata Percent	4%	3%	1%	5%	9%	6%	4%	4%	4%	4%	2%	5%
Total Adjusted Forecasts	28,402	27,672	26,486	28,453	32,197	36,795	39,843	40,340	40,473	33,237	28,032	29,153
Reference Forecast	28,650	27,915	26,753	28,741	32,488	37,129	40,168	40,509	40,802	33,261	28,315	29,393
% Difference Adjusted Forecast v. Reference	0.9%	0.9%	1.0%	1.0%	0.9%	0.9%	0.8%	0.4%	0.8%	0.1%	1.0%	0.8%

Next Steps

- Final review of individual forecasts and adjustments is ongoing
  - For LSE-specific questions contact CEC staff
- September 2020 load shares to CAISO by July 1 for import allocations
- Preliminary adjusted forecasts to LSEs no later than July 31st.