Appendix A to Loss of Load Expectation Study for 2026: Revised Slice of Day Tool Analysis

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California Public
Utilities Commission

Executive Summary

This Appendix A presents a revised Slice of Day (SOD) tool, as well as revised Stress Test analysis based on comments and questions received at the recent July 25 and 26 RA workshops. Other parts of Energy Division's proposal, including the data updates, Loss of Load Expectation (LOLE) study, and Path 26 study remain unchanged. Staff here show a new translation of the 2026 LOLE study into the SOD tool and a revised estimate of the demand block levels used for the stress test. The new translation into the SOD tool results in a revised PRM recommendation. Staff present the revised and updated SOD tool, new monthly SOD stress test results, and a revised recommendation for PRM levels for the 2026 RA compliance year. Based on revised analysis using updated SOD tool and exceedance profiles, staff propose the CPUC adopt an RA obligation for LSEs that requires an 26.5% PRM on top of the CAISO coincident managed peak demand forecast in months January through May, and a 23.5% PRM in the other months of the year (June through December.

Introduction and Results Summary

In June 2024, the most recent RA decision, D.24-06-004, the Commission both decided to move forward with SOD in 2025, adopted a 17 percent PRM level for RA compliance in 2025, and extended the effective summer reliability excess PRM mechanism (originally adopted in the Extreme Weather Proceeding) through 2025, finding that this higher level of reliability is more appropriate for the 2025 RA compliance year but that the higher level could be met with a combination of the RA obligation at 17% and the effective PRM approach.

Translating the PRM from the current RA construct to the SOD Framework has proven a complex analytical task. To implement the SOD Framework, staff must perform a LOLE study and translate it into the SOD PRM tool, to produce a PRM for all 12 months that ensures meeting the 0.1 LOLE target. In 2023, staff produced a study for just the peak month, and did not provide a means to ensure that the same PRM in other months would likewise protect reliability. Staff and stakeholders discussed means to verify reliability with and without additional LOLE studies but failed to reach a satisfying consensus. Staff and stakeholders returned to the core contention that a LOLE study and monthly PRM calibration is needed to ensure the LOLE target is met, and not some other simpler method. As part of the current proceeding, Staff filed proposals to implement the SOD program, specifically by conducting an updated LOLE study for 2026 study year and using the SOD PRM tool to inform a new PRM requirement for the SOD Framework. These proposals also intended to produce a PRM requirement for each month of the year that would satisfy LOLE requirements by keeping total LOLE at 0.1 or below and use of the SOD tool to implement a monthly SOD PRM requirement.

In March 2024, as part of Track 2 of the RA proceeding, Energy Resource Modeling staff in Energy Division (Staff), in collaboration with CPUC consultants, performed multiple updates to the inputs and assumptions for the LOLE model and issued a proposed Inputs and Assumptions document to the RA proceeding. These updates included:

- Updating the CAISO baseline generating fleet from the current CAISO Master Generating Capability List

- Updating existing or under construction non-CAISO units from the 2032 WECC Anchor Data Set (ADS) and available LSE IRPs from balancing authority areas external to CAISO
- Incorporating the California Energy Commission (CEC) 2023 Integrated Energy Policy Report (IEPR) California Energy Demand Forecast
- Updating weather and hydroelectric data to include historical years 2021 and 2022
- Revising the weather normalization model for synthesizing hourly demand shapes
- Revising the hourly wind generation model
- Updating scheduled and unscheduled outage rates for several resource classes
- Incorporating ambient temperature output derating for thermal generating units.

Staff released a report detailing the process of implementing the Inputs and Assumptions updates listed above for 2026, performing a LOLE study, implementing LOLE results into a SOD tool and recommending a PRM level for 2026.[1] Staff held a workshop on July 25 and 26, which detailed these studies. Parties examined our work, in particular the SOD tools used for the translation and stress tests.

Staff identified errors in exceedance calculations and in accounting for storage charging in the SOD tool. To resolve these errors Staff changed the objective function in the SOD tool for storage dispatch, updated the exceedance values and recalculated PRM levels based on the LOLE study. Staff recalculated both the SOD equivalent of the initial LOLE study (which was not rerun) then based on those initial LOLE SOD results, staff redid the stress tests (including a revised SERVM LOLE run) to determine the required PRM values in each month.

Summary of 2026 LOLE Study Results

Staff completed an annual LOLE study, meeting demand with a static portfolio of resources and focusing on total LOLE across the 2026 year. On an annual basis, staff was able to achieve LOLE of 0.1 with a sizable surplus of capacity. Focusing on the peak month only, staff found that the baseline resource fleet was over reliable, allowing for a decrease in the evening CAISO simultaneous import constraint from 4,000 MW to 1,700 MW. Table 1 shows the PRM in each month, and the amount of additional load (24 hour static blocks) added to each month to levelize the PRM. These extra blocks of demand were then added to SERVM and the study was rerun to ensure that with these PRM levels (and demand blocks) CAISO still achieves a LOLE of 0.1 across the months of the year. When performing the monthly SOD stress tests, however, staff spread or levelized LOLE across the summer by raising the import constraint back up to 2,500 MW (raising the PRM in September) and adding blocks of demand to other months in order to raise LOLE. Thus, overall PRM levels of 26.5% for the months of January through May and 23.5% for June through December are appropriate, reflecting the large surplus of existing RA resources in off-peak months, and a small increase in PRM in September. On a monthly levelized basis, at 26.5% and 23.5% PRM, annual LOLE levels meet the 0.1 LOLE target with the exception of February. Staff will continue to investigate February's LOLE levels.

The final monthly results of staff's 2026 LOLE study and SOD translation are provided in Table 1 below.

[1] 2026_lole_final_report_07192024.pdf (ca.gov)

Table 1 Summary of Revised Results - Levelized Proposed SOD PRM level

Month	PRM	Constraining Hour Ending	Managed Load	Added Block of Load	Supply (MW)
1	26.49%	19	30,003	5,920	45,438
2	26.49%	19	29,419	8,120	47,485
3	26.49%	20	29,412	8,690	48,194
4	26.48%	19	31,688	10,400	53,234
5	26.50%	19	34,546	8,770	54,793
6	23.49%	19	41,906	5,390	58,408
7	23.51%	19	45,588	2,490	59,381
8	23.52%	19	44,125	2,540	57,641
9	23.50%	18	46,395	130	57,458
10	23.49%	18	37,720	5,170	52,964
11	23.47%	18	31,645	7,950	48,886
12	23.50%	19	30,392	6,970	46,142

Summary of Recommendation and Proposed PRM

Based on revised analysis using updated SOD tool and exceedance profiles, staff propose the CPUC adopt an RA obligation for LSEs that requires an 26.5% PRM on top of the CAISO coincident managed peak demand forecast in months January through May, and a 23.5% PRM in the other months of the year (June through December. Despite the higher SOD PRM requirement proposed here, the underlying LOLE study is unchanged and continues to show that with the baseline including existing resources and expected resource additions based on LSE contracting and development milestones, RA obligations can be met while allowing for some uncertainty or delay in resource development. Specifically, a 1,500 MW surplus/cushion[2] is implied by the decrease to the evening CAISO simultaneous import constraint from 4,000 MW to 2,500 MW in tuning the study to achieve a 0.1 LOLE target.

Revised SOD Translation

Changes to the SOD Tool

The Slice-of-Day PRM-setting tool consists of an Excel workbook which determines monthly maximum planning reserve margins for California's grid based on input monthly load forecasts and net qualifying capacities (NQC) for each unit category. The tool provides an interactive dashboard for inspecting a single month's profile. Changes are summarized below.

- Whereas the previous version of the SOD PRM-Setting Tool required separate Excel files for each month of data, the new version combines all months to allow the user to view a full year's inputs and results.
- The previous version solved for storage to minimize the variance among hourly margins for each month, while the new version published in this Appendix maximizes the PRM (i.e., the minimum

4 The CPUC jurisdictional LSEs subject to any CPUC adopted PRM only account for roughly 90% of the load in CAISO. Since non-CPUC jurisdictional LSEs are not subject to the CPUC's PRM (and historically have demonstrated less than 15% PRM), used non-RA eligible resources to meet their PRM, and not all use the IEPR load forecasts), any surplus/cushion identified herein may be lessened by the impact of the actions of the non-CPUC jurisdictional LSEs.

hourly margin for each month), allowing the storage allocations to equal exactly any negative excess between the system requirements (i.e., total load forecast with PRM) and capacities shown by all non-storage resources. These constraints ensure either the full energy capability (daily MWh) or the full instantaneous capacity (MW) are leveraged, or both.

- The excess vs. charging energy constraint on storage resources has been corrected for various errors which had resulted in over-counting charging requirements for storage resources.

Revised Translation of Annual LOLE Study into SOD PRM

This section details how the LOLE study results were translated to a SOD PRM. As documented in the background section, Energy Division staff revised the previous SOD PRM calibration tool, including updating the exceedance profiles. Staff then went through the same steps as before to translate and test the LOLE study results. Staff used the following inputs in the revised SOD PRM tool.

1. Managed Worst Day Load Forecast – Staff used the 2023 California Energy Commission IEPR Hourly Load Model to identify the managed peak worst day load profile for each month in 2026. This monthly managed peak worst day load profile was then entered into the SOD PRM tool as a table on the "Managed Load" tab.
2. The annual resource portfolio is extracted from SERVM and translated into monthly values using monthly QC before entering into the SOD PRM tool. Each technology category of resources is quantified according to either exceedance or QC calculation guidelines. The "Profiles" tab contains QC values by unit category and profiles for each resource type, with solar and wind profiles based on the exceedance values for each month determined in the exceedance workbook. The PSH and DR shapes follow RA rules, and the simultaneous import constraint is entered into the SOD PRM tool across all 24 hours of the day as a flat profile.
3. The "Dashboard" tab reflects the MW values of each unit category, as well as managed load and supply with and without storage.
4. The "PRM Setting" tab, includes two tables that organize data from the input worksheets to setup a root-finding problem for Excel's built-in Solver tool to determine the maximum PRM. The PRM is evaluated as the minimum reserve margin across all 24 slice-of-day hours for a given month, which is the hourly supply capacity divided by the total load minus 100%. This worksheet allocates storage capacity to meet hourly excess capacities, defined as total load multiplied by 1+PRM minus total supply without storage while ensuring that the overall capacity of storage is not exceeded in any given hour and that the available energy in the batteries is not exceeded in any given day while guaranteeing there is sufficient energy to charge the batteries.

Staff used the revised SOD workbook to translate the initial resulting annual portfolio of resources into the SOD tool and recalculated monthly required PRMs. As expected, off-peak PRM levels were excessive due to lower electric demand relative to the annual capacity portfolio (calculated for each month using hourly SOD NQC values). As expected, LOLE equaled zero outside of September presenting an opportunity for levelizing LOLE across the months to remove some of that excess. Table 2 illustrates the initial SOD PRM results showing that the required PRM in September is the minimum for the whole year and is equal to 21.98%. The other months show significant excess capacity relative to their much lower managed peak demand, which explains their minimal or zero LOLE.

Exceedance Values – Exceedance values are profiles for different technology types calculated for variable renewable energy resources based on six years of historical energy production. These values are based on exceedance levels, which provide the likelihood that a resource will produce more energy than the value given. In the previous values posted in July, it was identified that the exceedance profiles were

not adjusting CAISO settlement data to correct for Daylight Savings Time. Staff made corrections to the exceedance calculation to correct for this error. Staff also removed the year 2017 from the data set to accurately reflect the 6-year historical data set (as opposed to a 7 year historical data set). Staff reposted the revised exceedance profiles to correct for both errors. The new exceedance values are being used in the revised tool.

Exceedance levels indicate the output of a resource (% nameplate) on at least X% of observations (e.g. 70%) for each month-hour pair are the reverse of percentiles, with 70% exceedance meaning that the number given is the 30th percentile of production (i.e., a higher exceedance level is a more conservative number). Staff use historical CAISO settlement quality data and/or modeled data where historical data is insufficient to derive both exceedance levels and values. To derive exceedance levels Staff use historical production data during the top five CAISO load days, as well as days where a Flex Alert, EEA 1-3, or Emergency Alerts are called. Staff also uses a solver function to identify the exceedance level that minimizes LOLE in the worst days to identify unique exceedance levels for each month and for each technology type. The exceedance levels are then applied historical monthly production and a production profile for each technology type by region is produced and can then be applied hourly to the variable resource's nameplate MW.

Table 2: Initial Monthly SOD PRMs resulting from Annual LOLE Portfolio

Month	PRM	Constraining Hour Ending	Managed Load (MW)	Supply (MW)
1	50.68%	19	30,003	45,209
2	62.17%	19	29,419	47,708
3	65.09%	20	29,412	48,555
4	71.13%	19	31,688	54,227
5	60.25%	19	34,546	55,359
6	39.13%	19	41,906	58,304
7	28.97%	19	45,588	58,796
8	29.40%	19	44,125	57,100
9	21.98%	18	46,395	56,594
10	40.27%	18	37,720	52,911
11	55.53%	18	31,645	49,217
12	52.00%	19	30,392	46,195

The primary differences in inputs across the months are the managed load and resource values. The managed load forecast input is derived from the CEC's hourly managed system (1-in-2) demand forecast and uses the worst day hourly load shape for each month. The hourly resource values for each month are derived from the draft 2025 master resource database (which will be published later this month or early next). Wind and solar values are derived from monthly exceedance production shapes using the updated exceedance methodology adopted in D.24-06-004. Hydro and non-dispatchable resources also vary by month and have been derived using the most recent historical data. The resource values used in the SOD tool are reflective of the RA values that will be used for the 2025 RA compliance year.

The translation of the annual LOLE study resulting in monthly SOD PRMs shows September as having the lowest PRM due to having the highest peak demand and the lowest exceedance production levels for solar and wind. However, other summer months (June, July and August) are fairly similar in overall reliability despite higher PRM levels. The other summer months are supported by the same portfolio of resources, despite the differing exceedance production profiles, and have only slightly different managed demand levels.

As shown in Table 2, the PRM levels for the most stressed summer months (July-September) varied significantly. The PRM was approximately 21.98% in September, 29.40% in August and 28.97% in July. This variation is primarily driven by monthly fluctuations in resource NQC values and managed load. On the demand side, there is a load variation of about 2,270 MW between August and September, compared to only about 800 MW between July and September. On the supply side, however, we observe a difference of over 2,000 MW in resource values (excluding storage) between July and September during the most constrained hour, with almost no difference between August and September, as shown in Table 3.

Table 3 details the supply and load values used in the SOD PRM-Setting Tool by month and resource technology during the most constrained hour of each month, as indicated by the initial SOD PRM-Setting Tool results. In the most constrained hours—HE 19 in July and HE 18 in September—there is a significant change in production from variable renewable resources which moved the constrained hours earlier in the day. With the previous exceedance profiles and SOD tool, some summer months had a constrained hour as late as HE 20. Between July and September, wind and solar QC drops by over 1,980 MW, while managed load QC decreases by over 2,200 MW between August and September. These reductions in wind and solar between July and September and in managed load between August and September contribute to the lower PRM in September.

Table 3 Monthly Supply and Load during constraining hours used for SOD PRM Setting

Month	June	July	August	September	October
Constraining Hour Ending	19	19	19	18	18
Biogas	206	204	202	202	197
Biomass/Wood	426	420	410	411	396
CC	17,138	17,110	17,113	17,129	17,188
Cogen	1,878	1,875	1,913	1,886	1,908
CT	8,012	8,025	8,023	8,031	8,037
DR	2,377	2,377	2,377	2,498	2,498
ICE	255	255	255	255	255
Geothermal	1,276	1,302	1,297	1,297	1,247
Hydro	3,082	3,313	3,118	2,905	2,190
Interchange	1,700	1,700	1,700	1,700	1,700
Nuclear	2,280	2,280	2,280	2,280	2,280
PSH	1,459	1,458	1,458	1,457	1,458
Solar Fixed_Norcal	211	167	25	176	13
Solar Fixed_Socal	146	116	16	120	7
Solar Thermal_Norcal	-	-	-	-	-
Solar Thermal_Socal	144	115	43	100	21
Solar Tracking_Norcal	817	615	76	477	19
Solar Tracking_Socal	790	661	67	493	19
Wind_Norcal	843	968	776	570	210
Wind_Socal	2,427	2,684	2,277	1,457	661
Storage	12,839	13,153	13,677	13,148	12,606
Total Supply Without Storage	45,465	45,644	43,423	43,445	40,305
Managed Load	41,906	45,588	44,125	46,395	37,720

Table 4 provides a heat map of the exceedance production profile differences between July and September. Every red space is a decrease in production of greater than five percentage points. The most constrained hours in September and August consistently have significant decreases in production from

August to September. This means that all else being equal, the PRM level from the SOD PRM tool will be lower in September than in July, even if the capacity or nameplate margin of resources in excess of electric demand were the same. The decrease in exceedance production profiles contributes to significant variability in PRM during the summer months and explains the wide fluctuation in PRM across the summer months. It would be easier to use the SOD tool to set requirements for RA if exceedance production profiles were set for the whole summer, possibly taking an average of each monthly profile to make a comparison easier.

Table 4 Exceedance production profile differences between July and September

Hour Ending	Solar Fixed_Norcal	Solar Fixed_Socal	Solar Thermal_Norcal	Solar Thermal_Socal	Solar Tracking_Norcal	Solar Tracking_Socal	Wind_Norcal	Wind_Socal
1	0%	0%	0%	0%	0%	0%	12%	20%
2	0%	0%	0%	0%	0%	0%	14%	17%
3	0%	0%	0%	0%	0%	0%	17%	14%
4	0%	0%	0%	0%	0%	0%	19%	16%
5	0%	0%	0%	0%	0%	0%	18%	14%
6	4%	6%	0%	0%	7%	8%	19%	10%
7	18%	9%	0%	8%	30%	20%	13%	7%
8	10%	1%	0%	8%	15%	6%	8%	3%
9	4%	-1%	0%	1%	8%	4%	3%	1%
10	3%	-1%	0%	0%	7%	4%	3%	-1%
11	4%	0%	0%	4%	8%	5%	3%	-1%
12	4%	0%	0%	1%	8%	4%	5%	0%
13	4%	0%	0%	-1%	8%	4%	8%	1%
14	4%	1%	0%	-7%	6%	4%	14%	4%
15	4%	2%	0%	-7%	5%	4%	20%	6%
16	8%	8%	0%	-2%	7%	7%	19%	12%
17	20%	23%	0%	8%	25%	29%	18%	16%
18	28%	20%	0%	29%	42%	34%	17%	18%
19	8%	3%	0%	11%	12%	6%	14%	17%
20	0%	0%	0%	0%	0%	0%	12%	17%
21	0%	0%	0%	0%	0%	0%	13%	19%
22	0%	0%	0%	0%	0%	0%	15%	21%
23	0%	0%	0%	0%	0%	0%	15%	22%
24	0%	0%	0%	0%	0%	0%	16%	21%

Due to the expectation that the LOLE will be uneven across the summer, even with an annual portfolio, Staff proposes to levelize LOLE across the summer months as part of evaluating the overall monthly SOD calculated PRM needed to meet 0.1 LOLE. To do this, Staff first raised the import constraint from 1,700 MW to 2,500 MW to raise the PRM in September from 21.98% to 23.5% across summer months. Less LOLE occurred in September as a result, while greater LOLE occurred in July and August. Staff then added blocks of demand to the other months (outside of summer) to increase their LOLE and lower their PRM levels until LOLE across the entire year again totaled 0.1. Staff added blocks of demand to avoid the confusion of having to select resources to remove and is an optimal way to balance LOLE risk across CAISO. It is very important to calculate needed demand blocks using the SOD tool and record the PRM levels and what hour becomes the constrained hour. This is necessary since as batteries are optimized, energy is shifted around the day and what was a constraint on one hour can become a constraint on a different hour as optimization is refreshed. PRM levels are confirmed by running the SOD PRM tool for that month using that month's specific managed demand day profile and exceedance values. Staff repeated this calibration until annual aggregate monthly LOLE equaled 0.1.[3]

Revised Monthly Stress Test Results

Staff is posting the updated monthly calibrated PRM workbook on the CPUC website. That workbook shows the monthly PRM SOD results, including total resources, demand, added blocks of load, and the

[3] RA proposals from January 2024 are discussed in this slide deck. SOD Stress Test proposals begin on slide 81. ra-oir-track-1-workshop-022924.pdf (ca.gov)

resulting SOD PRM. Updated monthly SOD PRM levels as well as blocks of demand added in each month are shown below in Table 5.

Staff arrived at a levelized PRM that resulted in LOLE at 0.1 with a PRM of about 23.5% for the months of June to December and 26.5% for the months of January to May. Only February was unable to reach acceptable LOLE at that level and staff will continue to investigate February results further. The other months showed acceptable LOLE, and across the whole year totaled 0.117 (excluding February).

In previous results with the previous SOD tool that double counted battery charging levels, staff reached a LOLE of around 0.12 (excluding February) with a levelized PRM of 18.5. This revised PRM level, though higher, resulted in minor changes to the monthly demand block levels needed to achieve a 0.1 LOLE level across the year.

Table 5 Levelized Proposed SOD PRM levels

Month	PRM	Constraining Hour Ending	Managed Load	Added Block of Load	Supply (MW)
1	26.49%	19	30,003	5,920	45,438
2	26.49%	19	29,419	8,120	47,485
3	26.49%	20	29,412	8,690	48,194
4	26.48%	19	31,688	10,400	53,234
5	26.50%	19	34,546	8,770	54,793
6	23.49%	19	41,906	5,390	58,408
7	23.51%	19	45,588	2,490	59,381
8	23.52%	19	44,125	2,540	57,641
9	23.50%	18	46,395	130	57,458
10	23.49%	18	37,720	5,170	52,964
11	23.47%	18	31,645	7,950	48,886
12	23.50%	19	30,392	6,970	46,142

Table 6 compares the demand blocks used for the results released on July 19 and the results in this revised August 30 SOD stress test results. Most months saw changes in the new SOD tool of less than 500 MW, and the biggest differences in MW and percentage changes are generally to the winter months of January, November and December. Recall in the previous July 19 results, those months had nearly 0 LOLE and still continue to have very limited LOLE so the larger change in these four months does not have significant impact on LOLE. December for example goes from 0 LOLE in July's results to 0.000867 LOLE now. March, May and June saw decreased demand added relative to July results after changing the SOD Calibration Tool thus LOLE in those months decreased.

Table 6 Comparison of Demand Blocks 7/19 to 8/30 results

Month	7/19 Demand Block level	8/30 Demand Block level	Change (MW)	Change (%)
1	4,750	5,920	1,170	24.63%
2	8,000	8,120	120	1.50%
3	9,000	8,690	-310	-3.44%
4	8,900	10,400	1,500	16.85%
5	9,400	8,770	-630	-6.70%
6	5,842	5,390	-452	-7.74%
7	2,200	2,490	290	13.18%
8	2,425	2,540	115	4.74%

9	400	130	-270	-67.50%
10	4,800	5,170	370	7.71%
11	6,950	7,950	1,000	14.39%
12	4,650	6,970	2,320	49.89%

LOLE results Summary

Table 7 illustrates the LOLE, EUE and LOLH levels by month from the revised stress test runs. The results show that all months except for February have minimal or zero LOLE at the new proposed PRM levels of 23.5% for the months of June to December and 26.5% for the months of January to May. This confirms that this is the correct PRM level, and though this is higher than the bare minimum annual PRM, this level is sufficient to impose on each month as the SOD PRM for the RA obligations in 2026. As noted above, LOLE results in February continue to be elevated even at a 26.5% PRM (.03 LOLE for February), and staff will continue to investigate why that is the case. Excluding February's LOLE value, the total LOLE for the year equals 0.117 and is close to the 0.1 target. In this updated stress test, staff were more precisely targeting demand blocks that result in exactly the desired PRM levels, whereas in July staff was comfortable with some differences.

Table 7 Monthly LOLE and EUE 26.5% PRM offpeak and 23.5% PRM in peak plus Oct-Dec

Month	LOLE	EUE	LOLH
1	0.005027	28.153870	0.009110
2	0.030438	174.635091	0.045991
3	0.000488	3.992331	0.000850
4	0.005987	5.273563	0.006634
5	0.005935	7.249768	0.009522
6	0.017638	18.421433	0.018000
7	0.006476	6.219706	0.008738
8	0.010591	11.842536	0.013618
9	0.063045	68.823261	0.072501
10	0.000292	0.194873	0.000292
11	0.001111	0.708746	0.001111
12	0.000867	5.030042	0.001246
Total	0.147894	330.545220	0.187611

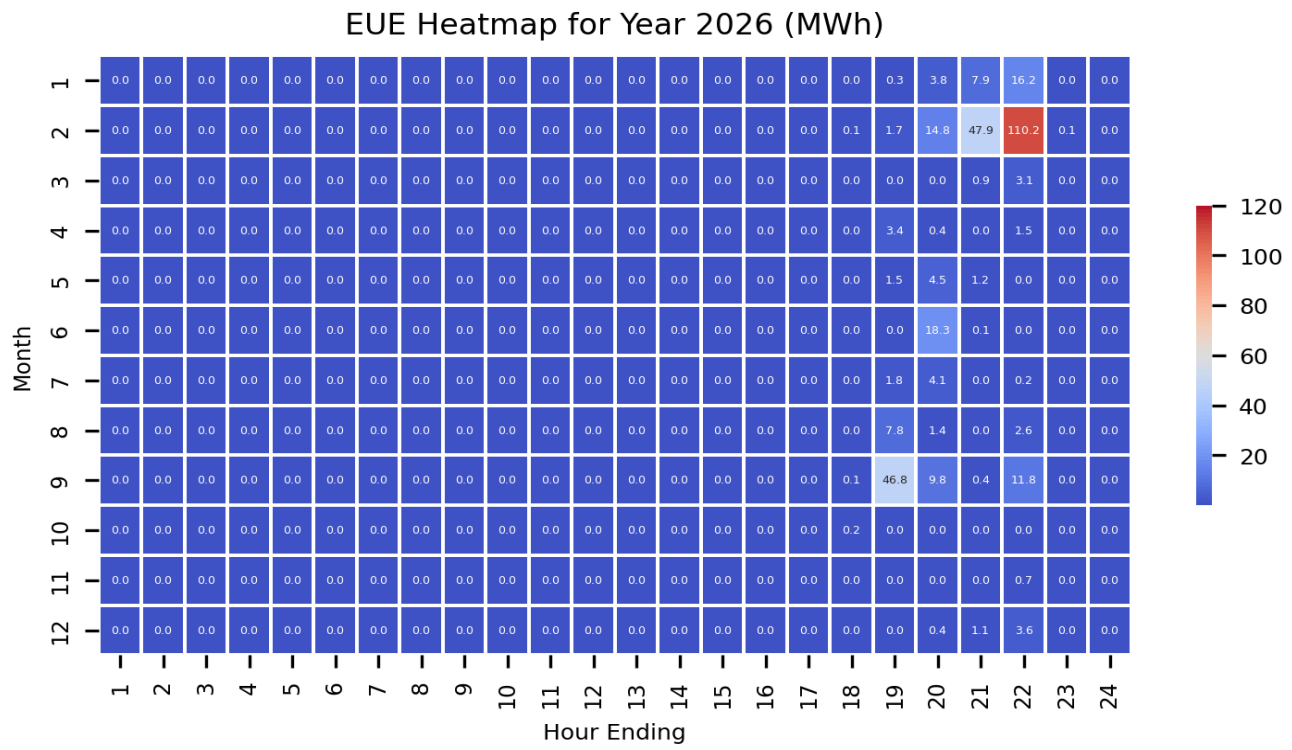
Table 8 shows the amount of energy (in GWh) generated by each unit type. Battery storage and PSH are net negatives, as they require more energy to charge than they discharge. Larger negative numbers illustrate heavier use. See that the BTMPV GWh of energy generated is substantial, more than 15% of total CAISO energy to meet load (255,878 GWh). See that total generation equals total demand and that total demand modifiers net out to a positive number (meaning more demand reducing modifiers than demand increasing). In future years, that number becomes negative as EV load begins to grow substantially.

Table 8 Annual Energy Generated by Unit Type in 2026

Annual Energy Balance		
	SERVM	
Category	2026	Units
Battery Storage	(2,802)	GWh
Biomass	5,229	GWh
BTMPV	34,940	GWh
CC	82,053	GWh
Coal	-	GWh
Cogen	16,255	GWh
CT	11,680	GWh
DR	13	GWh
Geothermal	12,410	GWh
Hydro	16,744	GWh
Hydro_NW_CAISO	10,152	GWh
ICE	374	GWh
Nuclear	25,708	GWh
OffshoreWind	-	GWh
OOSWind	-	GWh
PSH	(904)	GWh
Solar	65,026	GWh
Steam	-	GWh
Wind	19,189	GWh
Curtailed Energy	(563)	GWh
Net Imports	13,183	GWh
Total Demand Modifiers	5,924	GWh
Load	255,878	GWh
Total Generation	255,879	GWh

Figure 1 illustrates what hours and what times of year LOLE occurs. The figure reflects that when PRM is levelized across the year, additional LOLE events occur outside of the summer and outside of September. A levelized PRM would potentially reduce risk in September relative to the lower September PRM in the Annual LOLE Base case, but the exchange is increased LOLE risk in other summer months. It is unlikely that off-peak months will be binding in reality though a levelized PRM would theoretically be the minimum level needed to prevent LOLE events. Levelizing the PRM in off-peak months create increased LOLE risk in off-peak months relative to the much higher PRM levels in the Annual LOLE base case.

Figure 1 LOLE events Throughout the year - SOD Monthly Stress Test



Revised PRM Recommendation

Based on studies performed both for an annual LOLE study and for Monthly PRM results, staff propose a PRM of 23.5% for the summer and fall months (June through December) and a PRM of 26.5% for the other months (January through May). Existing and in development resources plus a Simultaneous Import Constraint of 2,500 MW satisfies reliability needs for the 2026 RA compliance year. For purposes of CPUC jurisdictional RA PRM requirements, we recommend implementing the monthly SOD PRM resulting from this revised stress test and adopting this new updated SOD tool as the official PRM calibration tool that satisfies the requirements of D.23-04-010.

The CPUC jurisdictional LSEs subject to any CPUC adopted PRM only account for roughly 90% of the load in CAISO. Since non-CPUC jurisdictional LSEs are not subject to the CPUC's PRM (and historically have demonstrated less than 15% PRM for their own loads), used non-RA eligible resources to meet their PRM, and not all use the IEPR load forecasts), it is possible that reliability could be eroded due the uneven application of a PRM. For example, this study provides that there is surplus/cushion identified if a 23.5% - 26.5% PRM is applied to the CAISO, such that the resource portfolio plus 2,500 MW of resources can maintain a 0.1 LOLE. (If imports are a bit higher or built resources are a bit lower – LOLE can be maintained, thus there is a cushion.) However, if non-CPUC jurisdictional LSEs do not provide an adequate PRM alongside CPUC jurisdictional LSEs, the effect is also to lower the reliability cushion of the entire system. Furthermore, some resources in the baseline fleet may be resources dedicated to non-CPUC jurisdictional entities and not performed as modeled.