2026 LOCAL CAPACITY TECHNICAL STUDY

DRAFT REPORT

AND STUDY RESULTS

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Executive Summary

This Report documents the results and recommendations of the 2026 Local Capacity Technical (LCT) Study. The LCT Study assumptions, processes, and criteria were discussed and recommended through the 2026 Local Capacity Technical Study Criteria, Methodology and Assumptions Stakeholder Meeting held on October 31, 2024. On balance, the assumptions, and processes used for the 2026 LCT Study mirror those used in the 2007-2025 LCT Studies.

Overall, the capacity needed for LCR has increased by about 234 MW or about 1.0% from 2025 to 2026.

The LCR needs have decreased in the following areas: Humboldt, Bay Area, Sierra, Stockton, Fresno and Big Creek/Ventura, due to load forecast decrease,North Coast/North Bay due to load forecast decrease and higher requirements in the Ames/Pittsburg/Oakland sub-area of the Bay Area, San Diego/Imperial Valley due to higher requirements in the LA Basin.

The LCR needs have increased in the following areas: Kern and LA Basin due to load forecast increase.

The 2026 LCT study results are provided to the CPUC for consideration in its 2026 resource adequacy requirements program. These results will also be used by the CAISO as “Local Capacity Requirements” or “LCR” (minimum quantity of local capacity necessary to meet the LCR criteria) and for assisting in the allocation of costs of any CAISO procurement of capacity needed to achieve the Reliability Standards notwithstanding the resource adequacy procurement of Load Serving Entities (LSEs).[1]

The load forecast used in this study is based on the final adopted California Energy Demand 2024-2040 Forecast developed by the CEC; namely the CED 2024 Reliability Scenario LSE and BAA Tables.

To aide procurement, this LCT study provides load profiles and transmission capacity information that shows the effectiveness of local resources in meeting temporal local reliability needs.

[1] For information regarding the conditions under which the CAISO may engage in procurement of local capacity and the allocation of the costs of such procurement, please see Sections 41 and 43 of the current CAISO Tariff, at: http://www.caiso.com/238a/238acd24167f0.html.

The studied results for 2026 are provided below and 2030 LCR needs are provided for comparison:

2026 Local Capacity Needs

	August Qualifying Capacity				Capacity Available at Peak	2026 LCR Need
Local Area Name	QF/ Muni (MW)	Non-Solar (MW)	Solar (MW)	Total (MW)	Total (MW)	Capacity Needed
Humboldt	0	174	0	**174**	**174**	**136**
North Coast/ North Bay	135	893	0	**1028**	**1028**	**848**
Sierra	1236	707	0	**1943**	**1943**	**1354***
Stockton	130	613	15	**758**	**743**	**756***
Greater Bay	596	7902	8	**8506**	**8501**	**7558***
Greater Fresno	205	3194	440	**3839**	**3399**	**2100***
Kern	12	377	71	**460**	**389**	**452***
Big Creek/ Ventura	448	4258	400	**5106**	**5106**	**1369**
LA Basin	1266	9481	29	**10776**	**10776**	**5812**
San Diego/ Imperial Valley	3	5893	243	**6139**	**6139**	**2631**
Total	**4031**	**33491**	**1206**	**38729**	**38198**	**23016**

2030 Local Capacity Needs

	August Qualifying Capacity				Capacity Available at Peak	2030 LCR Need
Local Area Name	QF/ Muni (MW)	Non-Solar (MW)	Solar (MW)	Total (MW)	Total (MW)	Capacity Needed
Humboldt	0	174	0	**174**	**174**	**174***
North Coast/ North Bay	135	893	0	**1028**	**1028**	**606**
Sierra	1236	707	0	**1943**	**1943**	**1911***
Stockton	107	659	14	**780**	**766**	**780***
Greater Bay	596	7902	8	**8506**	**8499**	**8308***
Greater Fresno	205	3194	440	**3839**	**3399**	**2603***
Kern	12	377	71	**460**	**389**	**346***
Big Creek/ Ventura	448	4258	400	**5106**	**5106**	**1381**
LA Basin	1266	9481	29	**10776**	**10776**	**7269**
San Diego/ Imperial Valley	3	6616	243	**6862**	**6862**	**3305**
Total	**4008**	**34261**	**1205**	**39474**	**38942**	**26683**

* Details about magnitude of deficiencies can be found in the applicable section below. Resource deficient areas and sub-area implies that in order to comply with the criteria, at summer peak, load may be shed immediately after the first contingency.

The estimated results for years 2027 and 2028 LCR needs are provided below:

2027 Estimated Local Capacity Needs (No technical studies conducted)

	August Qualifying Capacity				Capacity Available at Peak	2027 LCR Need
Local Area Name	QF/ Muni (MW)	Non-Solar (MW)	Solar (MW)	Total (MW)	Total (MW)	Capacity Needed
Humboldt	0	174	0	**174**	**174**	**150**
North Coast/ North Bay	135	893	0	**1028**	**1028**	**732**
Sierra	1236	707	0	**1943**	**1943**	**1493***
Stockton	107	659	14	**780**	**766**	**760***
Greater Bay	596	7902	8	**8506**	**8500**	**7558***
Greater Fresno	205	3194	440	**3839**	**3399**	**2226***
Kern	12	377	71	**460**	**389**	**460***
Big Creek/ Ventura	448	4258	400	**5106**	**5106**	**1536**
LA Basin	1266	9481	29	**10776**	**10776**	**6176**
San Diego/ Imperial Valley	3	6016	243	**6262**	**6262**	**2800**
Total	**4008**	**33661**	**1205**	**38874**	**38343**	**23891**

2028 Estimated Local Capacity Needs (No technical studies conducted)

	August Qualifying Capacity				Capacity Available at Peak	2028 LCR Need
Local Area Name	QF/ Muni (MW)	Non-Solar (MW)	Solar (MW)	Total (MW)	Total (MW)	Capacity Needed
Humboldt	0	174	0	**174**	**174**	**167**
North Coast/ North Bay	135	893	0	**1028**	**1028**	**558**
Sierra	1236	707	0	**1943**	**1943**	**1633***
Stockton	107	659	14	**780**	**766**	**774***
Greater Bay	596	7902	8	**8506**	**8500**	**7558***
Greater Fresno	205	3194	440	**3839**	**3399**	**2352***
Kern	12	377	71	**460**	**389**	**324***
Big Creek/ Ventura	448	4258	400	**5106**	**5106**	**1621**
LA Basin	1266	9481	29	**10776**	**10776**	**6541**
San Diego/ Imperial Valley	3	6316	243	**6562**	**6562**	**2968**
Total	**4008**	**33961**	**1205**	**39174**	**38643**	**24496**

* Details about magnitude of deficiencies can be found in the applicable section below. Resource deficient areas and sub-area implies that in order to comply with the criteria, at summer peak, load may be shed immediately after the first contingency.

The studied results for year 2025 LCR needs are provided below for comparison:

2025 Local Capacity Needs

	August Qualifying Capacity				Capacity Available at Peak	2025 LCR Need
Local Area Name	QF/ Muni (MW)	Non-Solar (MW)	Solar (MW)	Total (MW)	Total (MW)	Capacity Needed
Humboldt	0	175	0	**175**	**175**	**164**
North Coast/ North Bay	136	849	0	**985**	**985**	**967**
Sierra	1221	704	0	**1925**	**1925**	**1532***
Stockton	125	608	7	**740**	**733**	**735***
Greater Bay	604	7781	4	**8389**	**8385**	**7441***
Greater Fresno	229	2839	199	**3267**	**3068**	**2532***
Kern	9	397	43	**449**	**406**	**434**
Big Creek/ Ventura	399	3702	249	**4350**	**4350**	**2145**
LA Basin	1157	9129	10	**10296**	**10296**	**4123**
San Diego/ Imperial Valley	3	5297	169	**5469**	**5469**	**2709**
Total	**3883**	**31481**	**681**	**36045**	**35792**	**22782**

* Details about magnitude of deficiencies can be found in the applicable section below. Resource deficient areas and sub-area implies that in order to comply with the criteria, at summer peak, load may be shed immediately after the first contingency.

The narrative for each Local Capacity Area lists important new projects included in the base cases as well as a description of the reason for changes between the 2025 and 2026 LCT study results.

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1. Overview of the Study: Inputs, Outputs and Options

1.1 Objectives

The intent of the 2026 LCT Study is to identify specific areas within the CAISO Balancing Authority Area that have limited import capability and determine the minimum generation capacity (MW) necessary to mitigate the local reliability problems in those areas, as was the objective of all previous Local Capacity Technical Studies.

To aid procurement, this LCT study provides load profiles and transmission capacity information that shows the effectiveness of local resources in meeting temporal local reliability needs.

1.2 Key Study Assumptions

1.2.1 Inputs, Assumptions and Methodology

The inputs, assumptions and methodology were discussed and agreed to by stakeholders at the 2026 LCT Study Criteria, Methodology and Assumptions Stakeholder Meeting held on October 31, 2024. Except for Study Criteria all other Methodology and Assumptions are similar to those used and incorporated in previous LCT studies. The following table sets forth a summary of the approved inputs and methodology that have been used in this 2026 LCT Study:

Table 1.2-1 Summary Table of Inputs and Methodology Used in this LCT Study:

Issue	How Incorporated into this LCT Study:
Input Assumptions:	
Transmission System Configuration	The existing transmission system has been modeled, including all projects operational on or before June 1, of the study year and all other feasible operational solutions brought forth by the PTOs and as agreed to by the CAISO.
Generation Modeled	The existing generation resources has been modeled and also includes all projects that will be on-line and commercial on or before June 1, of the study year
Load Forecast	Uses a 1-in-10 year summer peak load forecast
Methodology:	

Maximize Import Capability	Import capability into the load pocket has been maximized, thus minimizing the generation required in the load pocket to meet applicable reliability requirements.
QF/Nuclear/State/Federal Units	Regulatory Must-take and similarly situated units like QF/Nuclear/State/Federal resources have been modeled on-line at qualifying capacity output values for purposes of this LCT Study.
Maintaining Path Flows	Path flows have been maintained below all established path ratings into the load pockets, including the 500 kV. For clarification, given the existing transmission system configuration, the only 500 kV path that flows directly into a load pocket and will, therefore, be considered in this LCT Study is the South of Lugo transfer path flowing into the LA Basin.
Performance Criteria:	
All Performance Levels, including incorporation of PTO operational solutions	This LCT Study is being published based on the most stringent of all mandatory reliability standards. In addition, the CAISO will incorporate all new projects and other feasible and CAISO-approved operational solutions brought forth by the PTOs that can be operational on or before June 1, of the study year. Any such solutions that can reduce the need for procurement to meet the mandatory standards will be incorporated into the LCT Study.
Load Pocket:	
Fixed Boundary, including limited reference to published effectiveness factors	This LCT Study has been produced based on load pockets defined by a fixed boundary. The CAISO only publishes effectiveness factors where they are useful in facilitating procurement where excess capacity exists within a load pocket.

Further details regarding the 2026 LCT Study methodology and assumptions are provided in Section III, below.

1.3 Grid Reliability

Service reliability builds from grid reliability because grid reliability is reflected in the Reliability Standards of the North American Electric Reliability Council (NERC) and the Western Electricity Coordinating Council ("WECC") Regional Criteria (collectively "Reliability Standards"). The Reliability Standards apply to the interconnected electric system in the United States and are intended to address the reality that within an integrated network, whatever one Balancing Authority Area does can affect the reliability of other Balancing Authority Areas. Consistent with the mandatory nature of the Reliability Standards, the CAISO is under a statutory obligation to ensure efficient use and reliable operation of the transmission grid consistent with achievement of the Reliability Standards.[2] The CAISO is further under an obligation, pursuant to its FERC-approved Transmission Control Agreement, to secure compliance with all "Applicable Reliability Criteria." Applicable Reliability Criteria consists of the Reliability Standards as well as reliability criteria adopted by the CAISO (Grid Planning Standards).

The Reliability Standards define reliability on interconnected electric systems using the terms "adequacy" and "security." "Adequacy" is the ability of the electric systems to supply the aggregate electrical demand and energy requirements of their customers at all times, taking into account physical characteristics of the transmission system such as transmission ratings and scheduled and reasonably expected unscheduled outages of system elements. "Security" is the ability of the electric systems to withstand sudden disturbances such as electric short circuits or unanticipated loss of system elements. The Reliability Standards are organized by Performance Categories. Certain categories require that the grid operator not only ensure that grid integrity is maintained under certain adverse system conditions (e.g., security), but also that all customers continue to receive electric supply to meet demand (e.g., adequacy). In that case, grid reliability and service reliability would overlap. But there are other levels of performance where security can be maintained without ensuring adequacy.

1.4 Application of N-1, N-1-1, and N-2 Criteria

The CAISO will maintain the system in a safe operating mode at all times. This obligation translates into respecting the Reliability Criteria at all times, for example during normal operating conditions (N-0) the CAISO must protect for all single contingencies (N-1) and common mode (N-2) double line outages. Also, after a single contingency, the CAISO must re-adjust the system to support the loss of the next most stringent contingency. This is referred to as the N-1-1 condition.

The N-1-1 vs N-2 terminology was introduced only as a temporal differentiation between two existing NERC Category P6 and P7 events. N-1-1 represents NERC Category C6 ("category P1 contingency, manual system adjustment, followed by another category P1 contingency"). The N-2 represents NERC Category P7 ("any two circuits of a multiple circuit tower line") as well as WECC-S2 (for 500 kV only) ("any two circuits in the same right-of-way") with no manual system adjustment between the two contingencies.

[2] Pub. Utilities Code § 345

1.5 Performance Criteria

As set forth on the Summary Table of Inputs and Methodology, this LCR Report is based on the most stringent mandatory standard (NERC, WECC or CAISO). The CAISO tests the electric system in regards to thermal overloads as well as dynamic and reactive margin compliance with the existing standards.

1.5.1 Performance Criteria

Category P0, P1 & P3 system performance requires that all thermal and voltage limits must be within their "Applicable Rating," which, in this case, are the emergency ratings as generally determined by the PTO or facility owner. Applicable Rating includes a temporal element such that emergency ratings can only be maintained for certain duration. Under this category, load cannot be shed in order to assure the Applicable Ratings are met however there is no guarantee that facilities are returned to within normal ratings or to a state where it is safe to continue to operate the system in a reliable manner such that the next element out will not cause a violation of the Applicable Ratings.

The NERC Planning Standards require system operators to "look forward" to make sure they safely prepare for the "next" N-1 following the loss of the "first" N-1 (stay within Applicable Ratings after the "next" N-1). This is commonly referred to as N-1-1. Because it is assumed that some time exists between the "first" and "next" element losses, operating personnel may make any reasonable and feasible adjustments to the system to prepare for the loss of the second element, including, operating procedures, dispatching generation, moving load from one substation to another to reduce equipment loading, dispatching operating personnel to specific station locations to manually adjust load from the substation site, or installing a "Special Protection Scheme" that would remove pre-identified load from service upon the loss of the "next " element.[3] All Category P2, P4, P5, P6, P7 and extreme event requirements in this report refer to situations when in real time (N-0) or after the first contingency (N-1) the system requires additional readjustment in order to prepare for the next worst contingency. In this time frame, load drop is not allowed per existing planning criteria.

Generally, Category P2, P4, P5, P6, P7 and extreme event describes system performance that is expected following the loss of two or more system elements. This loss of two elements is generally expected to happen simultaneously, referred to as N-2. It should be noted that once the "next" element is lost after the first contingency, as discussed above under the Performance Criteria P1, the event is effectively a Category P6 or N-1-1 scenario. As noted above, depending on system design and expected system impacts, the **planned and controlled** interruption of

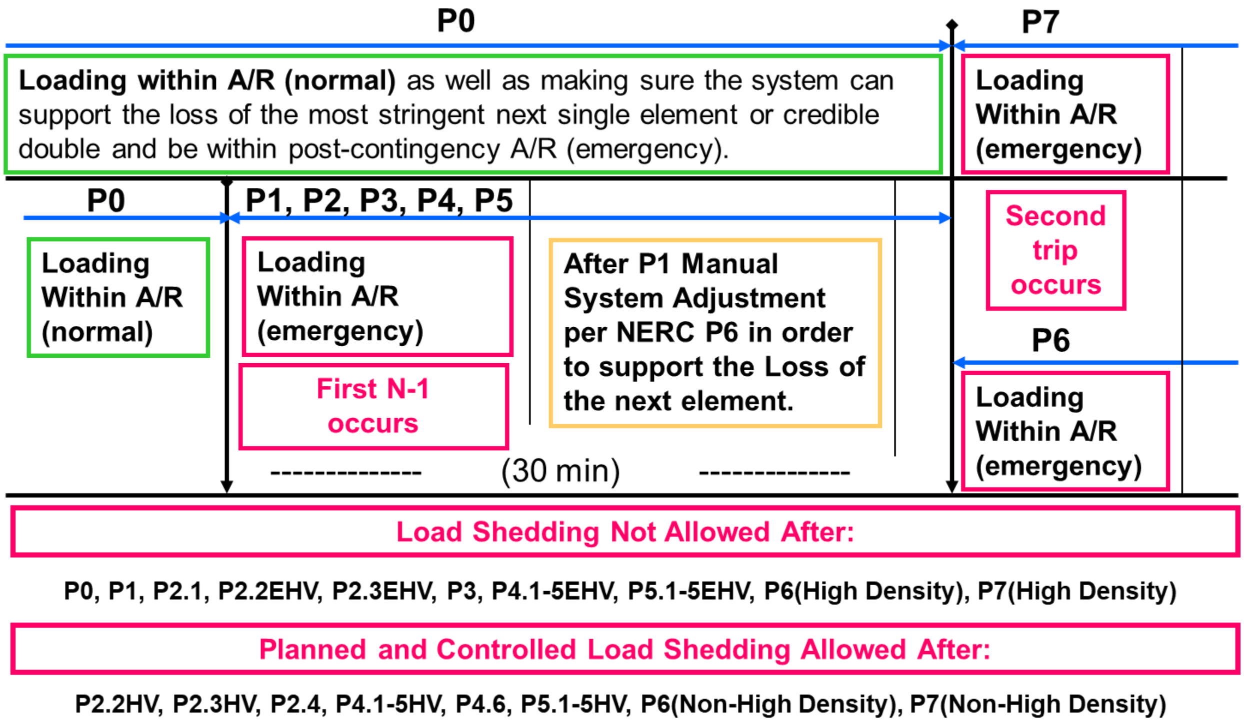
[3] A Special Protection Scheme is typically proposed as an operational solution that does not require additional generation and permits operators to effectively prepare for the next event as well as ensure security should the next event occur. However, these systems have their own risks, which limit the extent to which they could be deployed as a solution for grid reliability augmentation. While they provide the value of protecting against the next event without the need for pre-contingency load shedding, they add points of potential failure to the transmission network. This increases the potential for load interruptions because sometimes these systems will operate when not required and other times they will not operate when needed.

supply to customers (load shedding), the removal from service of certain generators and curtailment of exports may be utilized to maintain grid "security."

1.5.2 CAISO Statutory Obligation Regarding Safe Operation

The ISO must maintain the system in a safe operating mode at all times. This obligation translates into respecting the Reliability Criteria at all times. For example, during normal operating conditions (8760 hours per year), the ISO must protect for all single contingencies (P1, P2) and multiple contingencies (P4, P5) as well as common mode double line outages (P7). As a further example, after a single contingency, the ISO must readjust the system in order to be able to support the loss of the next most stringent contingency (P3 , P6 and P1+P7 resulting in potential voltage collapse or dynamic instability).

Figure 1.5-1 Temporal graph of LCR Category P0-P7



The following definitions guide the CAISO's interpretation of the Reliability Criteria governing safe mode operation and are used in this LCT Study:

Applicable Rating:

This represents the equipment rating that will be used under certain contingency conditions.

Normal rating is to be used under normal conditions.

Long-term emergency ratings, if available, will be used in all emergency conditions as long as "system readjustment" is provided in the amount of time given (specific to each element) to reduce the flow to within the normal ratings. If not available, the normal rating is to be used.

Short-term emergency ratings, if available, can be used as long as "system readjustment" is provided in the "short-time" available in order to reduce the flow to within the long-term emergency ratings where the element can be kept for another length of time (specific to each element) before the flow needs to be reduced the below the normal ratings. If not available long-term emergency rating should be used.

Temperature-adjusted ratings shall not be used because this is a year-ahead study, not a real-time tool, and as such the worst-case scenario must be covered. In case temperature-adjusted ratings are the only ratings available then the minimum rating (highest temperature) given the study conditions shall be used.

CAISO Transmission Register is the only official keeper of all existing ratings mentioned above.

Ratings for future projects provided by PTO and agreed upon by the CAISO shall be used.

Other short-term ratings not included in the CAISO Transmission Register may be used as long as they are engineered, studied and enforced through clear operating procedures that can be followed by real-time operators.

Path Ratings need to be maintained within their limits in order to assure that proper capacity is available in order to operate the system in real-time in a safe operating zone.

Controlled load drop:

This is achieved with the use of a Special Protection Scheme.

Planned load drop:

This is achieved when the most limiting equipment has short-term emergency ratings AND the operators have an operating procedure that clearly describes the actions that need to be taken in order to shed load.

Special Protection Scheme:

All known SPS shall be assumed. New SPS must be verified and approved by the CAISO and must comply with the new SPS guideline described in the CAISO Planning Standards.

System Readjustment:

This represents the actions taken by operators in order to bring the system within a safe operating zone after any given contingency in the system.

Actions that can be taken as system readjustment after a Category P1, P2.1, P2.2(EHV), P2.3(EHV), P3, P4.1-5(EHV), P5.1-5(EHV), P6(high density area)&P7(high density area) contingency:

1. System configuration change – based on validated and approved operating procedures

2. Generation re-dispatch

a. Decrease generation (up to 1150 MW) – limit given by single contingency SPS as part of the ISO Grid Planning standards (ISO SPS3)

b. Increase generation – this generation will become part of the LCR need

Actions, which shall not be taken as system readjustment after a Category P1, P2.1, P2.2(EHV), P2.3(EHV), P3, P4.1-5(EHV), P5.1-5(EHV), P6(high density area)&P7(high density area) contingency:

1. Load drop – based on the intent of the ISO/WECC and NERC criteria for category P1 contingencies.

An objective of the planning process is to minimize the likelihood and magnitude of Non-Consequential Load Loss following Contingency events. NERC and ISO Planning standards mandate that no load shedding should be done immediately after a Category P1, P2.1, P2.2(EHV), P2.3(EHV), P3, P4.1-5(EHV), P5.1-5(EHV), P6(high density area)&P7(high density area) contingency. The system should be planned with no load shedding regardless of when it may occur (immediately or within 15-30 minutes after the first contingency). It follows that load shedding may not be utilized as part of the system readjustment period – in order to protect for the next most limiting contingency. Therefore, if there are available resources in the local area, such resources should be used during the manual adjustment period (and included in the LCR need) before resorting to shedding firm load.

Firm load shedding is allowed in a planned and controlled manner after the first contingency in P2.2(HV), P2.3(HV), P2.4, P4.1-5(HV), P4.6, P5.1-5(HV) and after the second contingency in P6(non-high density area), P7(non-high density area) & P1 system adjusted followed by P7 category events.

This interpretation tends to guarantee that firm load shedding is used to address Category P1, P2.1, P2.2(EHV), P2.3(EHV), P3, P4.1-5(EHV), P5.1-5(EHV), P6(high density area)&P7(high density area) conditions only under the limited circumstances where no other resource or validated operational measure is available. A contrary interpretation would constitute a departure from existing practice and degrade current service expectations by increasing load's exposure to service interruptions.

Time allowed for manual readjustment:

Tariff Section 40.3.1.1, requires the CAISO, in performing the Local Capacity Technical Study, to apply the following reliability criterion:

Time Allowed for Manual Adjustment: This is the amount of time required for the Operator to take all actions necessary to prepare the system for the next Contingency. The time should not be more than thirty (30) minutes.

The CAISO Planning Standards also impose this manual readjustment requirement. As a parameter of the Local Capacity Technical Study, the CAISO must assume that as the system operator the CAISO will have sufficient time to:

(1) make an informed assessment of system conditions after a contingency has occurred;

(2) identify available resources and make prudent decisions about the most effective system redispatch;

(3) manually readjust the system within safe operating limits after a first contingency to be prepared for the next contingency; and

(4) allow sufficient time for resources to ramp and respond according to the operator's redispatch instructions. This all must be accomplished within 30 minutes.

Local capacity resources can meet this requirement by either (1) responding with sufficient speed, allowing the operator the necessary time to assess and redispatch resources to effectively reposition the system within 30 minutes after the first contingency, or (2) having sufficient energy available for frequent dispatch on a pre-contingency basis to ensure the operator can meet minimum online commitment constraints or reposition the system within 30 minutes after the first contingency occurs. Accordingly, when evaluating resources that satisfy the requirements of the CAISO Local Capacity Technical Study, the CAISO assumes that local capacity resources need to be available in no longer than 20 minutes so the CAISO and demand response providers have a reasonable opportunity to perform their respective and necessary tasks and enable the CAISO to reposition the system within the 30 minutes in accordance with applicable reliability criteria.

2. Assumption Details: How the Study was Conducted

2.1 System Planning Criteria

The following table provides a comparison of system planning criteria, based on the NERC performance standards, used in the study:

Table 2.1-1: Criteria Comparison for Bulk Electric System contingencies

Contingency Component(s)	Mandatory Reliability Standards	Old Local Capacity Criteria	Local Capacity Criteria
P0 – No Contingencies	X	X	X
P1 – Single Contingency			
1. Generator (G-1)	X	X[1]	X[1]
2. Transmission Circuit (L-1)	X	X[1]	X[1]
3. Transformer (T-1)	X	X[1,2]	X[1]
4. Shunt Device	X		X[1]
5. Single Pole (dc) Line	X	X[1]	X[1]
P2 – Single contingency			
1. Opening a line section w/o a fault	X		X
2. Bus Section fault	X		X
3. Internal Breaker fault (non-Bus-tie Breaker)	X		X
4. Internal Breaker fault (Bus-tie Breaker)	X		X
P3 – Multiple Contingency – G-1 + system adjustment and:			
1. Generator (G-1)	X	X	X
2. Transmission Circuit (L-1)	X	X	X
3. Transformer (T-1)	X	X[2]	X
4. Shunt Device	X		X
5. Single Pole (dc) Line	X	X	X
P4 – Multiple Contingency - Fault plus stuck breaker			
1. Generator (G-1)	X		X
2. Transmission Circuit (L-1)	X		X
3. Transformer (T-1)	X		X
4. Shunt Device	X		X
5. Bus section	X		X
6. Bus-tie breaker	X		X
P5 – Multiple Contingency – Relay failure (delayed clearing)			
1. Generator (G-1)	X		X
2. Transmission Circuit (L-1)	X		X
3. Transformer (T-1)	X		X
4. Shunt Device	X		X
5. Bus section	X		X

<u>P6 – Multiple Contingency – P1.2-P1.5 system adjustment and:</u>			
1. Transmission Circuit (L-1)	X	x	X
2. Transformer (T-1)	X	x	X
3. Shunt Device	X		X
4. Bus section	X		X
<u>P7 – Multiple Contingency - Fault plus stuck breaker</u>			
1. Two circuits on common structure (L-2)	X	X	X
2. Bipolar DC line	X	X	X
<u>Extreme event – loss of two or more elements</u>			
Two generators (Common Mode) G-2	X[4]	X	X[4]
Any P1.1-P1.3 & P1.5 system readjusted (Common Mode) L-2	X[4]	X[3]	X[5]
All other extreme combinations.	X[4]		X[4]

[1] System must be able to readjust to a safe operating zone in order to be able to support the loss of the next contingency.
[2] A thermal or voltage criterion violation resulting from a transformer outage may not be cause for a local area reliability requirement if the violation is considered marginal (e.g. acceptable loss of facility life or low voltage), otherwise, such a violation will necessitate creation of a requirement.
[3] Evaluate for risks and consequence, per NERC standards. No voltage collapse or dynamic instability allowed.
[4] Evaluate for risks and consequence, per NERC standards.
[5] Expanded to include any P1 system readjustment followed by any P7 without stuck breaker. For voltage collapse or dynamic instability situations mitigation is required "if there is a risk of cascading" beyond a relatively small predetermined area – less than 250 MW - directly affected by the outage.

Table 2.1-2: Criteria Comparison for non-Bulk Electric System contingencies

Contingency Component(s)	**Mandatory Reliability Standards**	**Old Local Capacity Criteria**	**Local Capacity Criteria**
<u>P0 – No Contingencies</u>	X	X	X
<u>P1 – Single Contingency</u>			
1. Generator (G-1)	X	X[1]	X
2. Transmission Circuit (L-1)	X	X[1]	X
3. Transformer (T-1)	X	X[1,2]	X
4. Shunt Device	X		X
5. Single Pole (dc) Line	X	X[1]	X
<u>P2 – Single contingency</u>			
1. Opening a line section w/o a fault			
2. Bus Section fault			
3. Internal Breaker fault (non-Bus-tie Breaker)			
4. Internal Breaker fault (Bus-tie Breaker)			

P3 – Multiple Contingency – G-1 + system adjustment and:			
1. Generator (G-1)	X	X	X
2. Transmission Circuit (L-1)	X	X	X
3. Transformer (T-1)	X	X[2]	X
4. Shunt Device	X		X
5. Single Pole (dc) Line	X	X	X
P4 – Multiple Contingency - Fault plus stuck breaker			
1. Generator (G-1)			
2. Transmission Circuit (L-1)			
3. Transformer (T-1)			
4. Shunt Device			
5. Bus section			
6. Bus-tie breaker			
P5 – Multiple Contingency – Relay failure (delayed clearing)			
1. Generator (G-1)			
2. Transmission Circuit (L-1)			
3. Transformer (T-1)			
4. Shunt Device			
5. Bus section			
P6 – Multiple Contingency – P1.2-P1.5 system adjustment and:			
1. Transmission Circuit (L-1)		x	
2. Transformer (T-1)		x	
3. Shunt Device			
4. Bus section			
P7 – Multiple Contingency - Fault plus stuck breaker			
1. Two circuits on common structure (L-2)		X	
2. Bipolar DC line		X	
Extreme event – loss of two or more elements			
Two generators (Common Mode) G-2		X	
Any P1.1-P1.3 & P1.5 system readjusted (Common Mode) L-2		X[3]	
All other extreme combinations.			

1 System must be able to readjust to a safe operating zone in order to be able to support the loss of the next contingency.
2 A thermal or voltage criterion violation resulting from a transformer outage may not be cause for a local area reliability requirement if the violation is considered marginal (e.g. acceptable loss of facility life or low voltage), otherwise, such a violation will necessitate creation of a requirement.
3 Evaluate for risks and consequence, per NERC standards. No voltage collapse or dynamic instability allowed.

A significant number of simulations were run to determine the most critical contingencies within each local area. Using power flow, post-transient load flow, and stability assessment tools, the system performance results of all tested contingencies were measured against the system performance requirements defined by the criteria shown in Tables 1 and 2. Where the specific system performance requirements were not met, generation was adjusted until performance requirements were met for the local area. The adjusted generation constitutes the minimum generation needed in the local area. The following describes how the criteria were tested for the specific type of analysis performed.

2.1.1 Power Flow Assessment:

Table 2.1-3 Power flow criteria

Contingencies	Thermal Criteria[1]	Voltage Criteria[2]
P0	Applicable Rating	Applicable Rating
P1 [3]	Applicable Rating	Applicable Rating
P2	Applicable Rating	Applicable Rating
P3	Applicable Rating	Applicable Rating
P4	Applicable Rating	Applicable Rating
P5	Applicable Rating	Applicable Rating
P6 [4]	Applicable Rating	Applicable Rating
P7	Applicable Rating	Applicable Rating
P1 + P7 [4]	-	No Voltage Collapse

1 Applicable Rating – Based on CAISO Transmission Register or facility upgrade plans including established Path ratings.

2 Applicable Rating – CAISO Grid Planning Criteria or facility owner criteria as appropriate.

3 Following the first contingency (N-1), the generation must be sufficient to allow the operators to bring the system back to within acceptable operating range (voltage and loading) and/or appropriate OTC following the studied outage conditions and be able to safely prepare for the loss of the next most stringent element and be within Applicable Rating after the loss of the second element.

4 During normal operation or following the first contingency (N-1), the generation must be sufficient to allow the operators to prepare for the next worst N-1 or common mode N-2 without pre-contingency interruptible or firm load shedding. SPS/RAS/Safety Nets may be utilized to satisfy the criteria after the second N-1 or common mode N-2 except if the problem is of a thermal nature such that short-term ratings could be utilized to provide the operators time to shed either interruptible or firm load.

2.1.2 Post Transient Load Flow Assessment:

Table 2.1-4 Post transient load flow criteria

Contingencies	Reactive Margin Criteria [2]
Selected [1]	Applicable Rating

[1] If power flow results indicate significant low voltages for a given power flow contingency, simulate that outage using the post transient load flow program. The post-transient assessment will develop appropriate Q/V and/or P/V curves.

[2] Applicable Rating – positive margin based on the higher of imports or load increase by 5% for N-1 contingencies, and 2.5% for N-2 contingencies.

2.1.3 Stability Assessment:

Table 2.1-5 Stability criteria

Contingencies	Stability Criteria [2]
Selected[1]	Applicable Rating

[1] Base on historical information, engineering judgment and/or if power flow or post transient study results indicate significant low voltages or marginal reactive margin for a given contingency.

[2] Applicable Rating – CAISO Grid Planning Criteria or facility owner criteria as appropriate.

2.1.4 Engineering Estimate for Intermediate Years:

Due to combined CEC/CPUC/CAISO timelines required by the RA process, the ISO must estimate LCR requirement for intermediate years, between the technical studies run for years one and five.

ISO will be using an engineering estimate for intermediate years. Elements of the engineering judgement estimates are described below:

2.1.4.1 *Net Peak Load Growth driven estimate*

Assuming nothing else changes, no transmission or resource mix changes, including no changes to long-term contractual arrangements, the increase (or decrease) in LCR, assuming a linear function, will be estimated based on ratio of load growth to ratio of LCR needs to be multiplied by the number of years using the following formula:

LCR for Year of Need = Year 1 LCR + [(Year 5 LCR-Year 1 LCR)/4] X (Year of Need-Year 1)

For non-linear functions, like voltage collapse or dynamic instability, ISO will use engineering judgment in order to provide estimated LCR requirement.

2.1.4.2 *Single New Transmission driven estimate*

Assuming nothing else changes, no load growth, no other new transmission projects or resource mix changes, including no changes to long-term contractual arrangements, the increase (or decrease in LCR) will be estimated based on a step function (usually decreasing the LCR needs) in the year when the transmission project is supposed to be first operational (if in-service before June 1-st of estimated year for summer peaking areas).

2.1.4.3 *Single New Resource driven estimate*

Assuming nothing else changes, no load growth, no new transmission projects or any other resource mix changes, including no changes to long-term contractual arrangements, the increase (or decrease in LCR) will be estimated based on a step function if:

a) The new resource is catalogued with a higher dispatch priority or the same priority as the marginal resource used for establishment of LCR need AND

b) The new resource has a significantly different (10% or more) effectiveness factor difference vs. the marginal resource used for the establishment of the LCR need.

Priority dispatch order (from LCR study manual):

1. QF/MUNI/State/Federal
2. RA resources under long-term contracts
3. Unknown contractual status

2.1.4.4 *Single Change in Resource contractual status driven estimate*

Assuming nothing else changes, no load growth, no new transmission projects or resource mix changes, including no changes to other long-term contractual arrangements, the increase (or decrease in LCR) will be estimated based on a step function if:

a) The resource is moving to a higher dispatch priority or the same priority as the marginal resource used for establishment of LCR need AND

b) The resource has a significantly different (10% or more) effectiveness factor difference vs. the marginal resource used for the establishment of the LCR need.

2.1.4.5 *Single Known Resource Retirement driven estimate*

Assuming nothing else changes, no load growth, no new transmission projects or other resource mix changes, including no changes to long-term contractual arrangements, the increase (or decrease in LCR) will be estimated based on a step function if:

a) The retired resource was included in a higher dispatch priority or the same priority as the marginal resource used for establishment of LCR need AND

b) The resource has a significantly different (10% or more) effectiveness factor difference vs. the marginal resource used for the establishment of the LCR need.

2.1.4.6 *Multi Reason Change driven estimate*

From multi-year available LCR studies the ISO will use engineering judgement, guided by the above explain single change principles, in order to estimate intermediate year LCR needs any time more than one factor is influencing the LCR results:

a) Net peak load growth

b) New transmission project(s)

c) New resource(s)

d) Change in resource contractual status

e) Known resource retirement(s)

2.2 Load Forecast

2.2.1 System Forecast

The California Energy Commission (CEC) derives the load forecast at the system and Participating Transmission Owner (PTO) levels. This relevant CEC forecast is then distributed across the entire system, down to the local area, division and substation level. The PTOs use an econometric equation to forecast the system load. The predominant parameters affecting the system load are (1) number of households, (2) economic activity (gross metropolitan products, GMP), (3) temperature and (4) increased energy efficiency and distributed generation programs.

2.2.2 Base Case Load Development Method

The method used to develop the load in the base case is a melding process that extracts, adjusts and modifies the information from the system, distribution and municipal utility forecasts. The melding process consists of two parts: Part 1 deals with the PTO load and Part 2 deals with the municipal utility load. There may be small differences between the methodologies used by each PTO to disaggregate the CEC load forecast to their level of local area as well as bar-bus model.

2.2.2.1 *PTO Loads in Base Case*

The methods used to determine the PTO loads are, for the most part, similar. One part of the method deals with the determination of the division[4] loads that would meet the requirements of 1-in-5 or 1-in-10 system or area base cases and the other part deals with the allocation of the division load to the transmission buses.

a. Determination of division loads

The annual division load is determined by summing the previous year division load and the current division load growth. Thus, the key steps are the determination of the initial year division load and

[4] Each PTO divides its territory in a number of smaller area named divisions. These are usually smaller and compact areas that have the same temperature profile.

the annual load growth. The initial year for the base case development method is based heavily on recorded data. The division load growth in the system base case is determined in two steps. First, the total PTO load growth for the year is determined, as the product of the PTO load and the load growth rate from the system load forecast. Then this total PTO load growth is allocated to the division, based on the relative magnitude of the load growth projected for the divisions by the distribution planners. For example, for the 1-in-10 area base case, the division load growth determined for the system base case is adjusted to the 1-in-10 temperature using the load temperature relation determined from the latest peak load and temperature data of the division.

b. Allocation of division load to transmission bus level

Since the loads in the base case are modeled at the various transmission buses, the division loads developed must be allocated to those buses. The allocation process is different depending on the load types. For the most part, each PTO classifies its loads into four types: conforming, non-conforming, self-generation and generation-plant loads. Since the non-conforming and self-generation loads are assumed to not vary with temperature, their magnitude would be the same in the system or area base cases of the same year. The remaining load (the total division load developed above, less the quantity of non-conforming and self-generation load) is the conforming load. The remaining load is allocated to the transmission buses based on the relative magnitude of the distribution forecast. The summation of all base case loads is generally higher than the load forecast because some load, i.e., self-generation and generation-plant, are behind the meter and must be modeled in the base cases. However, for the most part, metered or aggregated data with telemetry is used to come up with the load forecast.

2.2.2.2 ***Municipal Loads in Base Case***

The municipal utility forecasts that have been provided to the CEC and PTOs for the purposes of their base cases were also used for this study.

2.3 Power Flow Program Used in the LCR analysis

The technical studies were conducted using General Electric's Power System Load Flow (GE PSLF) program version 23.2.8.1 and PowerGem's Transmission Adequacy and Reliability Assessment (TARA) program version 2302.2. This GE PSLF program is available directly from GE or through the Western System Electricity Council (WECC) to any member and TARA program is commercially available.

To evaluate Local Capacity Areas, the starting base case was adjusted to reflect the latest generation and transmission projects as well as the one-in-ten-year peak load forecast for each Local Capacity Area as provided to the CAISO by the PTOs.

Electronic contingency files provided by the PTOs were utilized to perform the numerous contingencies required to identify the LCR. These contingency files include remedial action and special protection schemes that are expected to be in operation during the year of study. A CAISO created EPCL (a GE programming language contained within the GE PSLF package) routine and/or TARA software were used to run the combination of contingencies; however, other routines are available from WECC with the GE PSLF package or can be developed by third parties to identify the most limiting combination of contingencies requiring the highest amount of generation within the local area to maintain power flows within applicable ratings.

2.4 Estimate of Battery Storage Needs due to Charging Constraints

Local areas and sub-areas have limited transmission capability and therefore rely on internal resources to be available in order to reliably serve internal load. Battery storage will help serve local load during the discharge cycle, however it will also increase local load during the charging cycle.

Due to recent procurement activities geared toward the acquisition of this type of technology, the CAISO is herein estimating the characteristics (MW, MWh, discharge duration) required from battery storage technology in order to seamlessly integrate in each local area and sub-area.

The CAISO expects that for batteries that displace other local resource adequacy resources, the transmission capability under the most limiting contingency and the other local capacity resources must be sufficient to recharge the batteries in anticipation of the outage continuing through the night and into the next day's peak load period.

For each local area and sub-area, the CAISO has estimated the battery storage characteristics, given their unique load shape, constraints and requirements as well as the energy characteristics of other resources required to meet standards. Due to this fact, the strict addition of the sub-area battery storage characteristics (MW, MWh and duration) may not closely align with the overall local area battery storage characteristic requirements (MW, MWh and duration).

Assumptions

1) Total load serving capability includes capability from transmission system and local generation needed for LCR under the worst contingency.
2) Storage added replaces existing generation MW for MW. First the batteries will replace as much as possible of existing gas resources, Second if the area and/or sub-area has run out of gas resources to displace then other technologies may be reduced in order to determine the maximum battery charging limit.
3) Effectiveness factors are assumed not to be a factor. Battery storage is assumed to be installed at the same sites where resources are displaced or assumed to have the same effectiveness factors.
4) Deliverability of incremental storage capacity is not evaluated. It is assumed battery storage will take over deliverability from old resources through repower. Any new battery storage resource needs to go through the generation interconnection process in order to receive deliverability and it is not evaluated in this study. CAISO cannot guaranty that there is enough deliverability available for new resources. New transmission upgrades may be required in order to make such new resources deliverable to the aggregate of load.
5) Includes battery storage charging/discharging efficiency of 85%.

6) Daily charging required is distributed to all non-discharging hours proportionally using delta between net load and the total load serving capability.
7) Energy required for charging, beyond the transmission capability under contingency condition, is produced by other LCR required resources within the local area and sub-area that are available for production during off-peak hours.
8) Hydro resources are considered to be available for production during off-peak hours, however these resources are energy limited themselves and based on past availability data they can have severely limited output during off-peak hours especially during late summer peaks under either normal or dry hydro years.
9) The study assumes the ability to provide perfect dispatch and the ability to enforce charging requirements for multiple contingency conditions (like N-1-1) in the day ahead time frame while the system is under normal (no contingency) conditions. CAISO software improvements and/or augmentations are required in order to achieve this goal.

Installing battery storage with insufficient characteristics (MW, MWh and duration) will not result in a one for one reduction of the local area or sub-area need for other types of resources. The CAISO expects that the overall RA portfolio provided by all LSEs to account for the uplift, beyond the minimum LCR need, in MWs required from other type of resources for all areas and sub-areas where LSEs have procured battery storage beyond the charging capability or with incorrect characteristics (MW, MWh and duration). If uplift is not provided the CAISO may use its back stop authority to assure that reliability standards are met throughout the day, including off-peak hours.

3. Locational Capacity Requirement Study Results

3.1 Summary of Study Results

LCR is defined as the amount of resource capacity that is needed within a Local Capacity Area to reliably serve the load located within this area. The results of the CAISO's analysis are summarized in the Executive Summary Tables.

Table 3.1-1 2026 Local Capacity Needs vs. Peak Load and Local Area Resources

	2026 Total LCR (MW)	Peak Load (1 in10) (MW)	2026 LCR as % of Peak Load	Total NQC Local Area Resources (MW)	2026 LCR as % of Total NQC
Humboldt	136	160	85%	174	78%
North Coast/North Bay	848	1465	58%	1028	82%
Sierra	1354	1853	73%	1943	70% **
Stockton	756	1027	74%	758	100% **
Greater Bay	7558	11607	65%	8506	89% **
Greater Fresno	2100	3592	58%	3839	55% **
Kern	452	971	47%	460	98% **
Big Creek/Ventura	1369	4799	29%	5106	27%
LA Basin	5812	19726	29%	10776	54%
San Diego/Imperial Valley	2631	4782	55%	6139	43%
Total*	**23016**	**49982**	**46%**	**38729**	**59%**

Table 3.1-2 2025 Local Capacity Needs vs. Peak Load and Local Area Resources

	2025 Total LCR (MW)	Peak Load (1 in10) (MW)	2025 LCR as % of Peak Load	Total Dependable Local Area Resources (MW)	2025 LCR as % of Total Area Resources
Humboldt	164	214	77%	175	94%
North Coast/North Bay	967	1483	65%	985	98%
Sierra	1532	2000	77%	1925	80% **
Stockton	735	1129	65%	740	99% **
Greater Bay	7441	11992	62%	8389	89% **
Greater Fresno	2532	3888	65%	3267	78% **
Kern	434	950	46%	449	97% **
LA Basin	2145	5075	42%	4350	49%
Big Creek/Ventura	4123	19297	21%	10296	40%
San Diego/Imperial Valley	2709	4780	57%	5469	50%
Total*	**22782**	**50808**	**45%**	**36045**	**63%**

* Value shown only illustrative, since each local area peaks at a different time.

** Resource deficient LCA (or with sub-area that are deficient). Resource deficient area implies that in order to comply with the criteria, at summer peak, load must be shed immediately after the first contingency.

Table 3.1-1 and Table 3.1-2 shows how much of the Local Capacity Area load is dependent on local resources and how many local resources must be available in order to serve the load in those Local Capacity Areas in a manner consistent with the Reliability Criteria. These tables also indicate where new transmission projects, new resource additions or demand side management programs would be most useful in order to reduce the dependency on existing, generally older and less efficient local area resources.

The term "Qualifying Capacity" used in this report is the "Net Qualifying Capacity" ("NQC") posted on the CAISO web site at:

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

The NQC list includes the area (if applicable) where each resource is located for units already operational. Neither the NQC list nor this report incorporates Demand Side Management programs and their related NQC. Units scheduled to become operational before June 1 of 2026 have been included in this 2026 LCT Study Report and added to the total NQC values for those respective areas (see detail write-up for each area).

Regarding the main tables up front (page 2), the first column, "August Qualifying Capacity," reflects three sets of resources. The first set is comprised of resources that would normally be expected to be on-line such as Municipal and Regulatory Must-take resources (state, federal, municipal and QFs). The second set is "market" based resources (market, net seller, wind and battery). The third set are solar resources, since they may or may not be available during the actual peak hour for the respective local area. The second column, "Capacity at Peak" identifies how much of the August Qualifying Capacity is expected to be available during the peak time for each particular local area. The third column, "YEAR LCR Need", sets forth the local capacity requirements, without the deficiencies that must be addressed, necessary to attain a service reliability level required to comply with NERC/WECC/CAISO mandatory reliability standards.

Table 3.1-3 includes estimated characteristics (MW, MWh, discharge duration) required from battery storage technology in order to seamlessly integrate in each local area and sub-area. The CAISO expects that for batteries that displace other local resource adequacy resources, the transmission capability under the most limiting contingency and the other local capacity resources must be sufficient to recharge the batteries in anticipation of the outage continuing through the night and into the next day's peak load period.

Table 3.1-3 2026 Battery Storage Characteristics Limited by Charging Capability

Area/Sub-area	Pmax MW	Energy MWh	Max. # of discharge hours	1 for 1 Replacement with 4-hour battery	Replacing mostly	Comment
Humboldt	26	145	8	23	gas	
North Coast/North Bay Overall	487	3703	10	66	geothermal	
Eagle Rock	87	570	11	30	geothermal	
Fulton	489	1405	10	150	geothermal	

Area/Sub-area	Pmax MW	Energy MWh	Max. # of discharge hours	1 for 1 Replacement with 4-hour battery	Replacing mostly	Comment
Sierra	-	-	-	-	-	Flow through
Placer	37	202	11	26	hydro	
Pease	52	337	9	30	gas	Need to be eliminated
Gold Hill-Drum	124	236	6	0	hydro	
Stockton	-	-	-	-	-	Sum of sub-areas
Lockeford	8	64	10	0	gas	Need to be eliminated
Tesla-Bellota	278	1122	10	70	gas	
Greater Bay Overall	1338	5329	7	1338	gas	
Llagas	46	181	7	45	gas	
San Jose	220	880	9	220	gas	
South Bay-Moss Landing	1063	4250	10	1063	gas	
Oakland	30	120	5	30	distillate	N/A
Greater Fresno Overall	980	6032	10	510	hydro	
Panoche	65	554	12	22	gas	
Herndon	435	2538	10	210	hydro	
Hanford	29	115	12	29	gas	
Coalinga	23	138	7	5	solar	
Borden	46	178	7	44	gas	
Reedley	40	317	10	10	hydro	
Kern Overall	-	-	-	-	-	N/A
Westpark	40	133	8	13	gas	
Kern Power-Tevis	-	-	-	-	solar	N/A
Kern Oil	90	547	9	37	gas	
South Kern PP	450	1721	9	120	gas	
Big Creek/Ventura Overall	617	4499	13	241	gas	
Vestal	175	1296	13	60	gas	
Santa Clara	216	1239	11	130	gas	
LA Basin Overall	3575	26542	11	1120	gas	
Eastern	1845	12657	11	650	gas	
Western	1730	13885	11	470	gas	
El Nido	208	1562	11	49	gas	
San Diego/Imperial Valley Overall	956	5699	9	490	gas	
San Diego	956	5699	9	490	gas	
El Cajon	65	351	10	50	gas	
Border	25	171	9	12	gas	

3.2 Summary of Zonal Needs

Based on the existing import allocation methodology, the only major 500 kV constraint not accounted for is path 26 (Midway-Vincent). Table 3.2-1 shows the total resources needed (based on the latest CEC load forecast) in each the two relevant zones, SP26 and NP26.

Table 3.2-1 Total Zonal Resource Needs

Zone	Load Forecast (MW)	15% reserves (MW)	(-) Allocated imports (MW)	(-) Maximum Path 26 Flow (MW)	Total Zonal Resource Need (MW)
SP26	28088	4213	-7482	-3750	**21069**
NP26=NP15+ZP26	20784	3118	-3651	-3000	**17251**

Where:

Load Forecast is the most recent 1 in 2 load forecast for year 2026 - based on the final adopted California Energy Demand 2024-2040 Forecast developed by the CEC; namely the CED 2024 Planning Forecast LSE and BAA Tables.

Reserve Margin is 15% the minimum CPUC approved planning reserve margin.

Allocated Imports are the actual 2025 Available Import Capability for loads in the CAISO control area numbers that are not expected to change much by 2026.

Maximum Path 26 flow The CAISO determines the maximum amount of Path 26 transfer capacity available after accounting for (1) Existing Transmission Contracts (ETCs) that serve load outside the CAISO Balancing Area[5] and (2) loop flow[6] from the maximum path 26 rating of 4000 MW (North-to-South) and 3000 MW (South-to-North).

Both NP 26 and SP 26 load forecast, import allocation and zonal results refer to the CAISO Balancing Area only, in order to be consistent with the import allocation methodology.

All resources that are counted as part of the Local Area Capacity Requirements fully count toward the Zonal Need. The local areas of San Diego, LA Basin and Big Creek/Ventura are all situated in SP26 and the remaining local areas are in NP26.

Changes compared to last year's results:

The load forecast went down in NP 26 by about 350 MW and up in SP 26 by about 350 MW. The Import Allocations have decreased by about 410 MW in SP 26 and increased by about 100 MW in NP 26. The Path 26 maximum transfer capability has not changed and is not envisioned to change in the near future.

[5] The transfer capability on Path 26 must be de-rated to accommodate ETCs on Path 26 that are used to serve load outside of the CAISO Balancing Area. These particular ETCs represent physical transmission capacity that cannot be allocated to LSEs within the CAISO Balancing Area.

[6] "Loop flow" is a phenomenon common to large electric power systems like the Western Electricity Coordinating Council. Power is scheduled to flow point-to-point on a Day-ahead and Hour-ahead basis through the CAISO. However, electric grid physics prevails and the actual power flow in real-time will differ from the pre-arranged scheduled flows. Loop flow is real, physical energy and it uses part of the available transfer capability on a path. If not accommodated, loop flow will cause overloading of lines, which can jeopardize the security and reliability of the grid.

3.3 Summary of Results by Local Area

Each Local Capacity Area's overall requirement is determined by also achieving each sub-area requirement. Because these areas are a part of the interconnected electric system, the total for each Local Capacity Area is not simply a summation of the sub-area needs. For example, some sub-areas may overlap and therefore the same units may count for meeting the needs in both sub-areas.

3.3.1 Humboldt Area

3.3.1.1 *Area Definition*

The transmission tie lines into the area include:

Bridgeville-Cottonwood 115 kV line #1

Humboldt-Trinity 115 kV line #1

Laytonville-Garberville 60 kV line #1

Trinity-Maple Creek 60 kV line #1

The substations that delineate the Humboldt Area are:

Bridgeville is in, Low Gap, Wildwood and Cottonwood are out

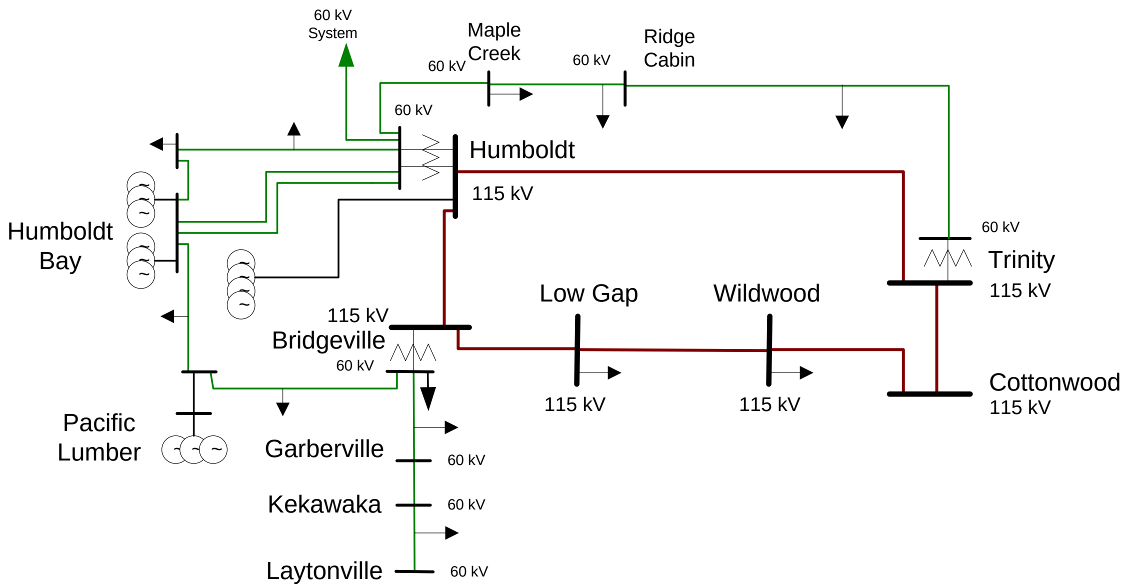
Humboldt is in, Trinity is out

Kekawaka and Garberville are in, Laytonville is out

Maple Creek is in, Trinity and Ridge Cabin are out

Humboldt LCR Area Diagram

Figure 3.3-1 Humboldt LCR Area



Humboldt LCR Area Load and Resources

Table 3.3-1 provides the forecasted load and resources. The list of generators within the LCR area are provided in Attachment A.

In year 2026 the estimated time of local area peak is 19:00 PM.

This area does not contain models of solar resources capable of providing resource adequacy.

If required, all non-solar technology type resources are dispatched at NQC.

Table 3.3-1 Humboldt LCR Area 2026 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	150	Market/Net Seller	174	174
AAEE	-1	Battery	0	0
Behind the meter DG	0	MUNI/QF	0	0
Net Load	**149**	Solar	0	0
Transmission Losses	11	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**160**	**Total**	**174**	**174**

Humboldt LCR Area Hourly Profiles

Figure 3.3-2 illustrates the forecast 2026 profile for the peak day for the Humboldt LCR area with the Category P6 transmission capability without resources. Figure 3.3-3 illustrates the forecast 2026 hourly profile for Humboldt LCR area with the Category P6 transmission capability without resources.

Figure 3.3-2 Humboldt area 2026 Peak Day Forecast Profiles

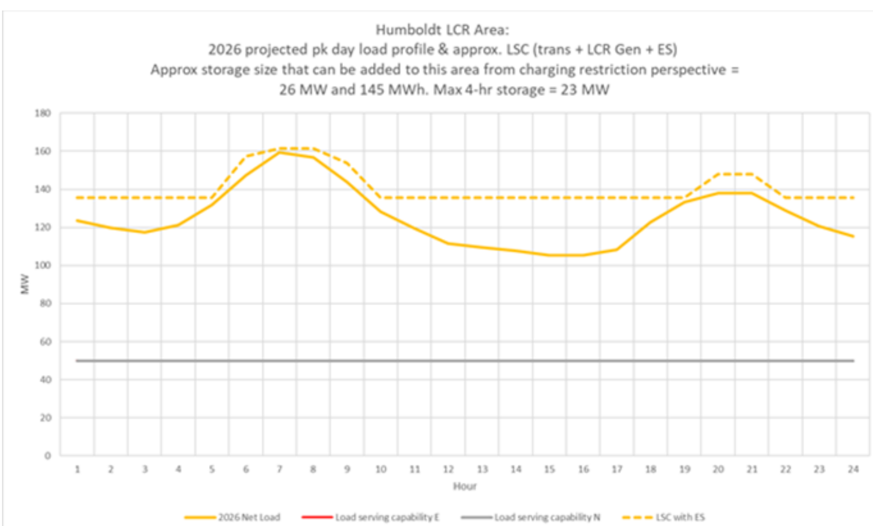
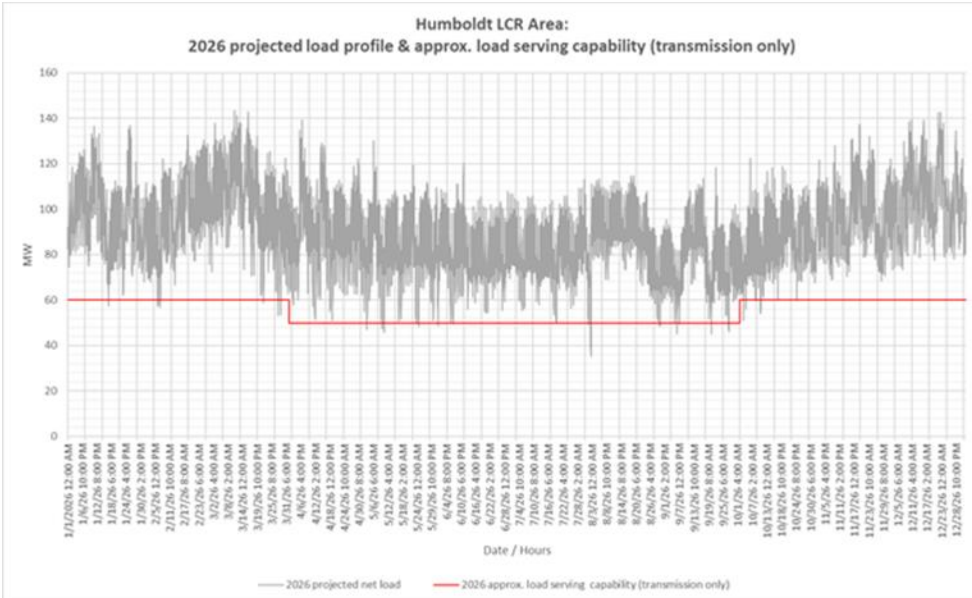


Figure 3.3-3 Humboldt area 2026 Forecast Hourly Profiles



Approved transmission projects included in base cases

None

3.3.1.2 *Humboldt Overall LCR Requirement*

Table 3.3-2 identifies the area LCR requirements. The LCR requirement for Category P6 contingency is 136 MW.

Table 3.3-2 Humboldt LCR Area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First Limit	P6	Humboldt-Trinity 115 kV	Cottonwood-Bridgeville 115 kV & Humboldt - Humboldt Bay 115 kV	136

Effectiveness factors

For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7110 posted at: http://www.caiso.com/Documents/2210Z.pdf

Changes compared to last year's results

Compared with 2025, the load forecast has decreased by 54 MW and the total LCR has decreased by 28 MW mostly due to load forecast decrease.

3.3.2 North Coast / North Bay Area

3.3.2.1 *Area Definition*

The transmission tie facilities coming into the North Coast/North Bay area are:

Cortina-Mendocino 115 kV Line

Cortina-Eagle Rock 115 kV Line

Willits-Garberville 60 kV line #1

Vaca Dixon-Lakeville 230 kV line #1

Tulucay-Vaca Dixon 230 kV line #1

Lakeville-Sobrante 230 kV line #1

Ignacio-Sobrante 230 kV line #1

The substations that delineate the North Coast/North Bay area are:

Cortina is out, Mendocino and Indian Valley are in

Cortina is out, Eagle Rock, Highlands and Homestake are in

Willits and Lytonville are in, Kekawaka and Garberville are out

Vaca Dixon is out, Lakeville is in

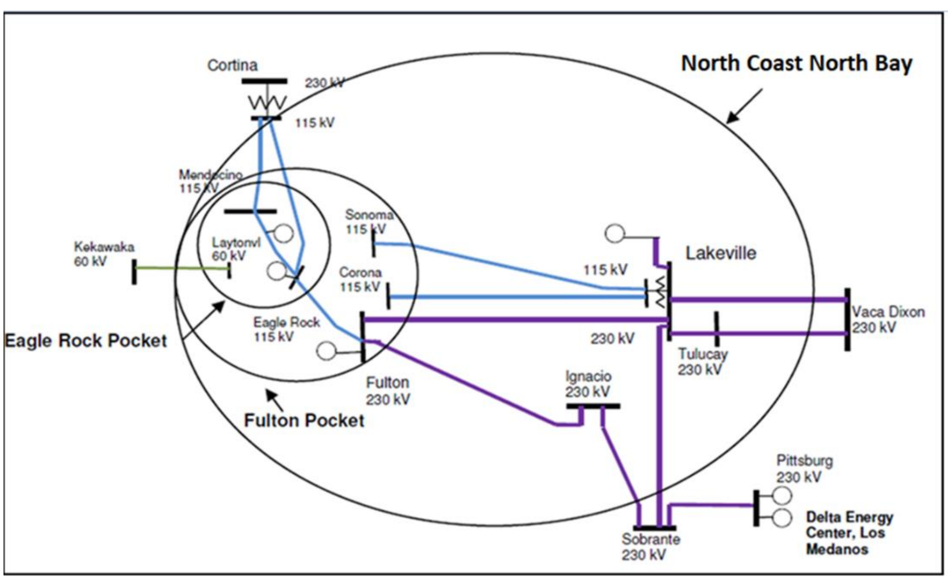
Tulucay is in, Vaca Dixon is out

Lakeville is in, Sobrante is out

Ignacio is in, Sobrante and Crocket are out

North Coast and North Bay LCR Area Diagram

Figure 3.3-4 North Coast and North Bay LCR Area



North Coast and North Bay LCR Area Load and Resources

Table 3.3-3 provides the forecasted load and resources. The list of generators within the LCR area are provided in Attachment A.

In year 2026 the estimated time of local area peak is 17:50 PM.

This area does not contain models of solar resources capable of providing resource adequacy.

If required, all non-solar technology type resources are dispatched at NQC.

Table 3.3-3 North Coast and North Bay LCR Area 2026 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	1466	Market/Net Seller	843	843
AAEE	-18	Battery	38	38
Behind the meter DG	-27	MUNI/QF	135	135
Net Load	**1421**	Solar	0	0
Transmission Losses	44	Existing 20-minute Demand Response	12	12
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**1465**	**Total**	**1028**	**1028**

North Coast and North Bay LCR Area Hourly Profiles

Figure 3.3-5 illustrates the forecast 2026 profile for the peak day for the North Coast North Bay LCR sub-area with the Category P3 normal and emergengy load serving capabilities without local resources. The chart also includes an estimated amount of energy storage that can be added to this local area from charging restriction perspective. Figure 3.3-6 illustrates the forecast 2026 hourly profile for North Coast North Bay LCR sub-area with the Category P3 emergency load serving capability without local resources.

Figure 3.3-5 North Coast and North Bay area 2026 Peak Day Forecast Profiles

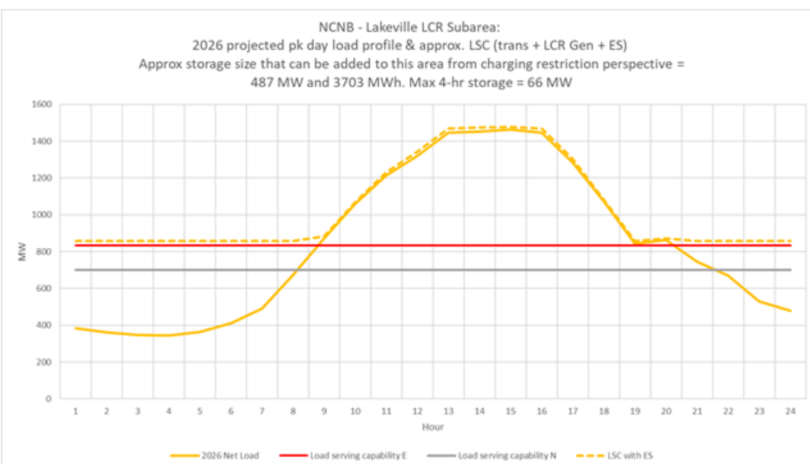
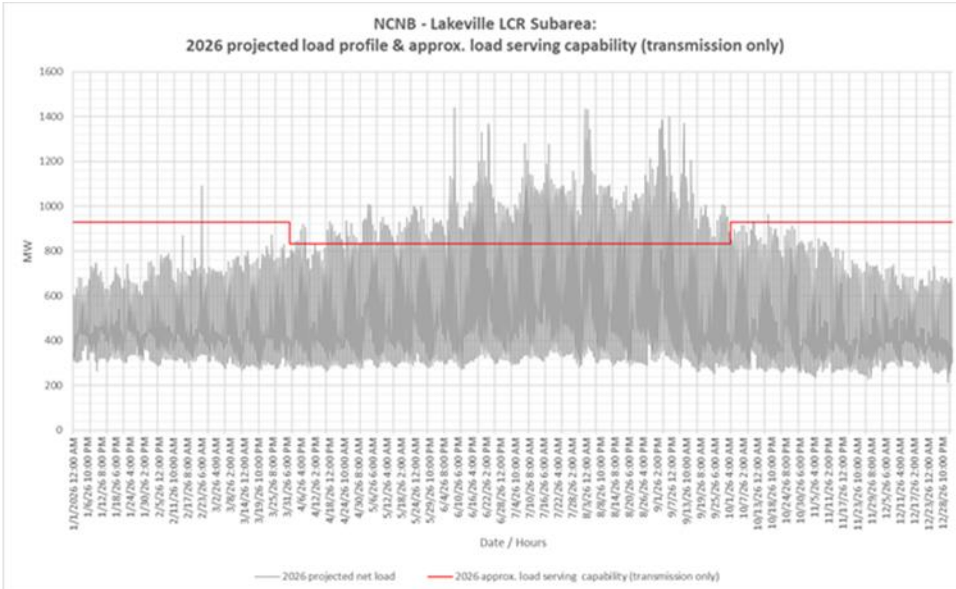


Figure 3.3-6 North Coast and North Bay area 2026 Forecast Hourly Profiles



Approved transmission projects modeled in base cases

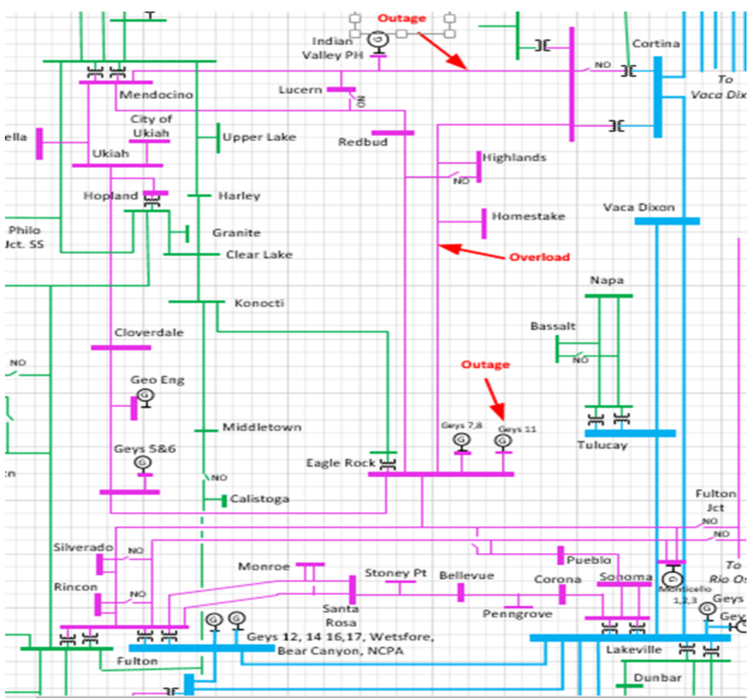
None.

3.3.2.2 *Eagle Rock LCR Sub-area*

Eagle Rock is a Sub-area of the North Coast and North Bay LCR Area.

Eagle Rock LCR Sub-area Diagram

Figure 3.3-7 Eagle Rock LCR Sub-area



Eagle Rock LCR sub-area Load and Resources

Table 3.3-4 provides the forecasted load and resources. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-4 Eagle Rock LCR Sub-area 2026 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	279	Market/Net Seller	279	279
AAEE	-3	Battery	0	0
Behind the meter DG	-4	MUNI/QF	2	2
Net Load	**272**	Solar	0	0
Transmission Losses	15	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**287**	**Total**	**281**	**281**

Eagle Rock LCR Sub-area Hourly Profiles

Figure 3.3-8 illustrates the forecast 2026 profile for the peak day for the Eagle Rock LCR sub-area with the Category P3 normal and emergengy load serving capabilities without local resources. The chart also includes an estimated amount of energy storage that can be added to this local area from charging restriction perspective. Figure 3.3-9 illustrates the forecast 2026 hourly profile for Eagle Rock LCR sub-area with the Category P3 emergency load serving capability without local resources.

Figure 3.3-8 Eagle Rock LCR Sub-area 2026 Peak Day Forecast Profiles

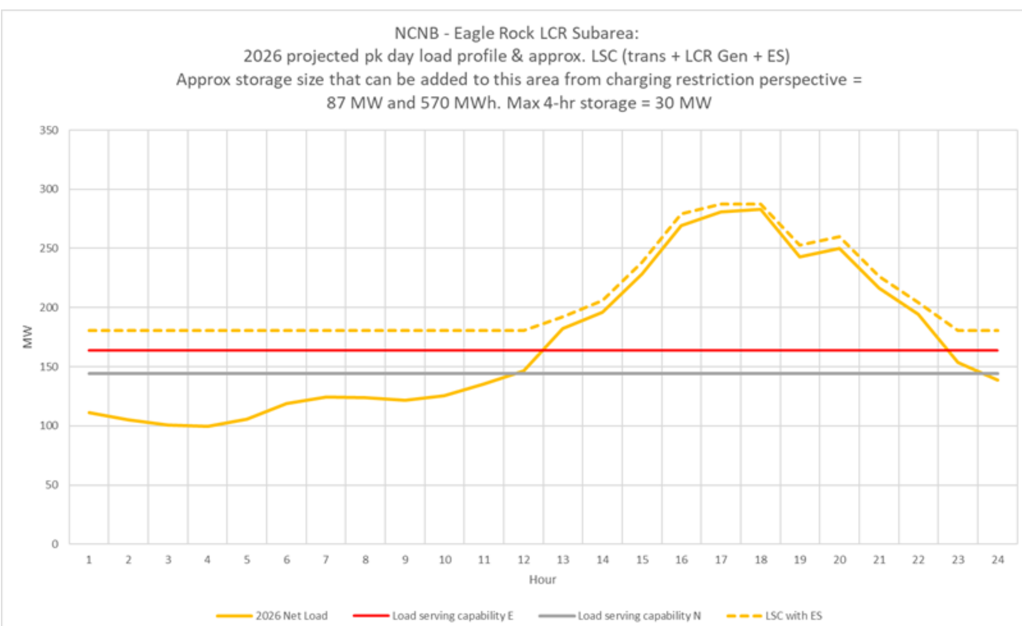
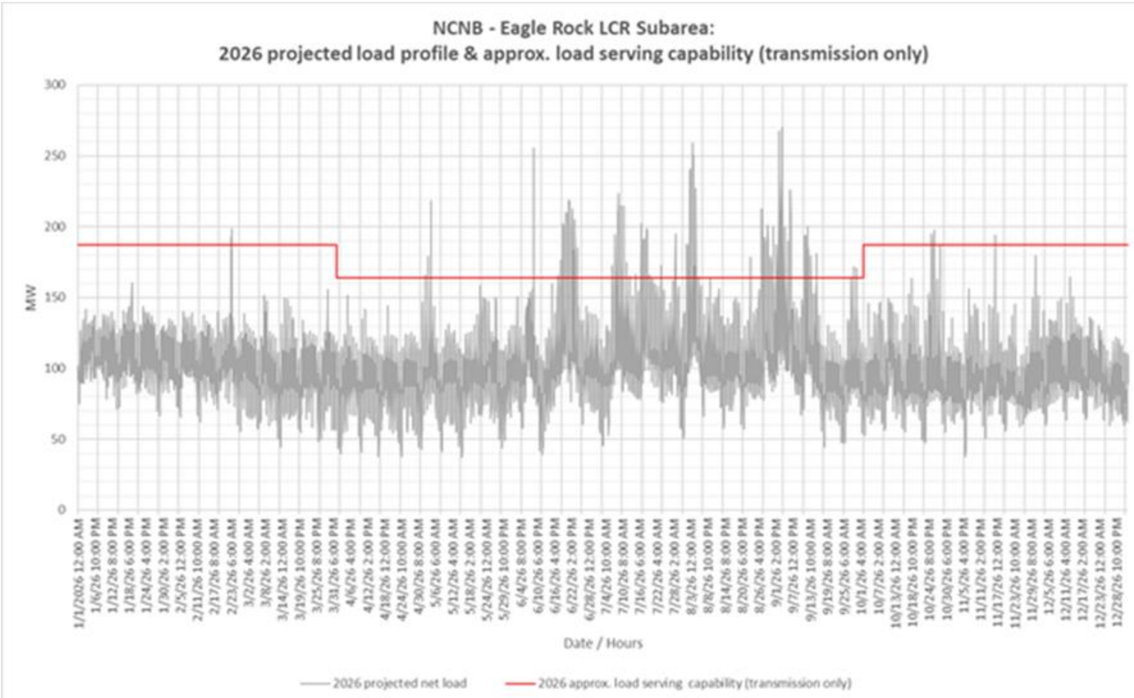


Figure 3.3-9 Eagle Rock LCR Sub-area 2026 Forecast Hourly Profiles



Eagle Rock LCR Sub-area Requirement

Table 3.3-5 identifies the sub-area LCR requirements. The LCR requirement for Category P3 contingency is 247 MW.

Table 3.3-5 Eagle Rock LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First Limit	P3	Eagle Rock-Cortina 115 kV line	Cortina-Mendocino 115 kV with Geyser #11 unit out	247

Effectiveness factors

Effective factors for generators in the Eagle Rock LCR sub-area are in Attachment B table titled Eagle Rock.

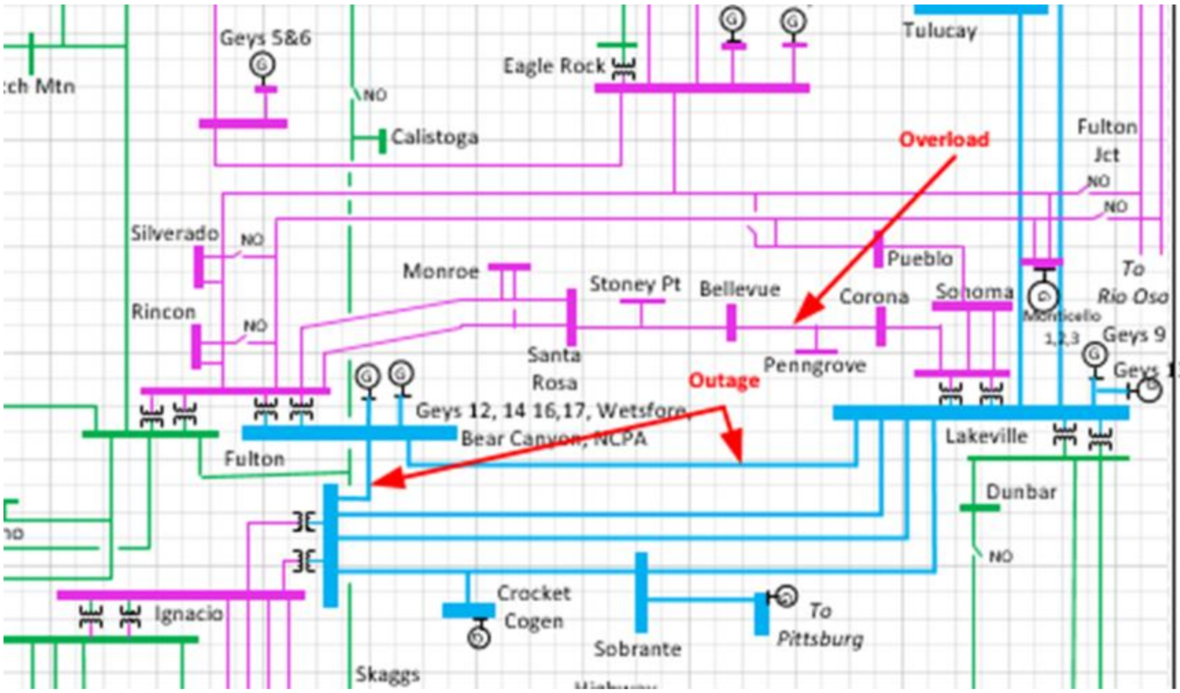
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7120 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.2.3 *Fulton Sub-area*

Fulton is a sub-area of the North Coast and North Bay LCR area.

Fulton LCR Sub-area Diagram

Figure 3.3-10 Fulton LCR Sub-area



Fulton LCR Sub-area Load and Resources

Table 3.3-6 provides the forecasted load and resources. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-6 Fulton LCR Area 2026 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	892	Market/Net Seller	544	544
AAEE	-10	Battery	38	38
Behind the meter DG	-16	MUNI/QF	56	56
Net Load	**866**	Solar	0	0
Transmission Losses	27	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**893**	**Total**	**638**	**638**

Fulton LCR Sub-area Hourly Profiles

Figure 3.3-11 illustrates the forecast 2026 profile for the peak day for the Fulton LCR sub-area with the Category P6 normal and emergengy load serving capabilities without local resources. The chart also includes an estimated amount of energy storage that can be added to this local area from charging restriction perspective. Figure 3.3-12 illustrates the forecast 2026 hourly profile for Fulton LCR sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-11 Fulton LCR Sub-area 2026 Peak Day Forecast Profiles

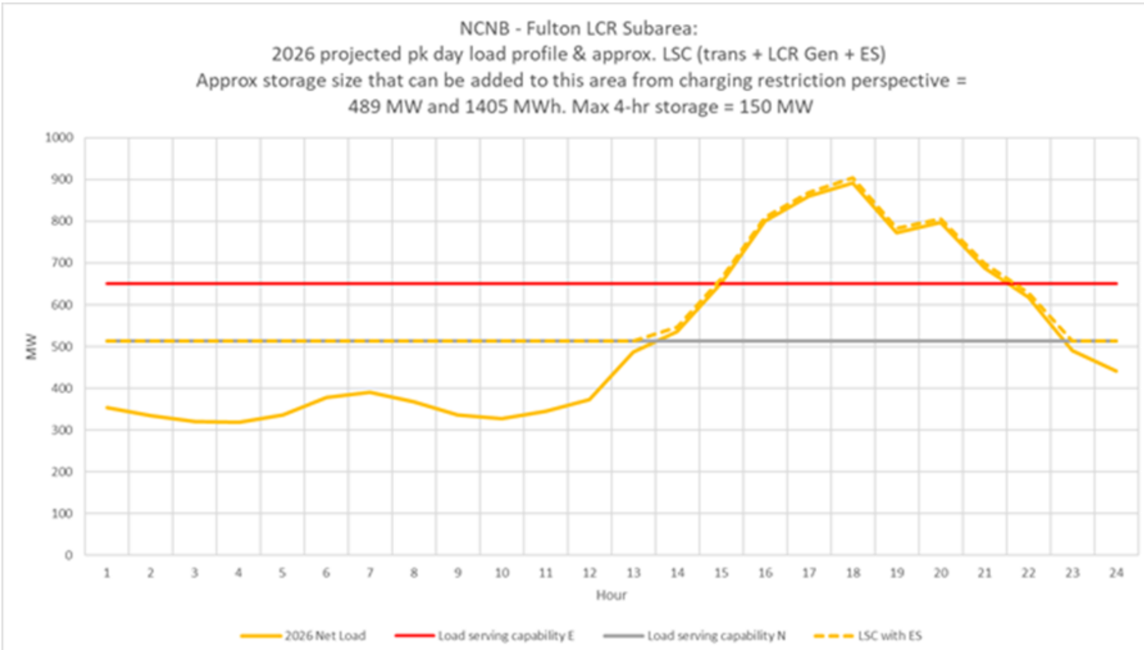
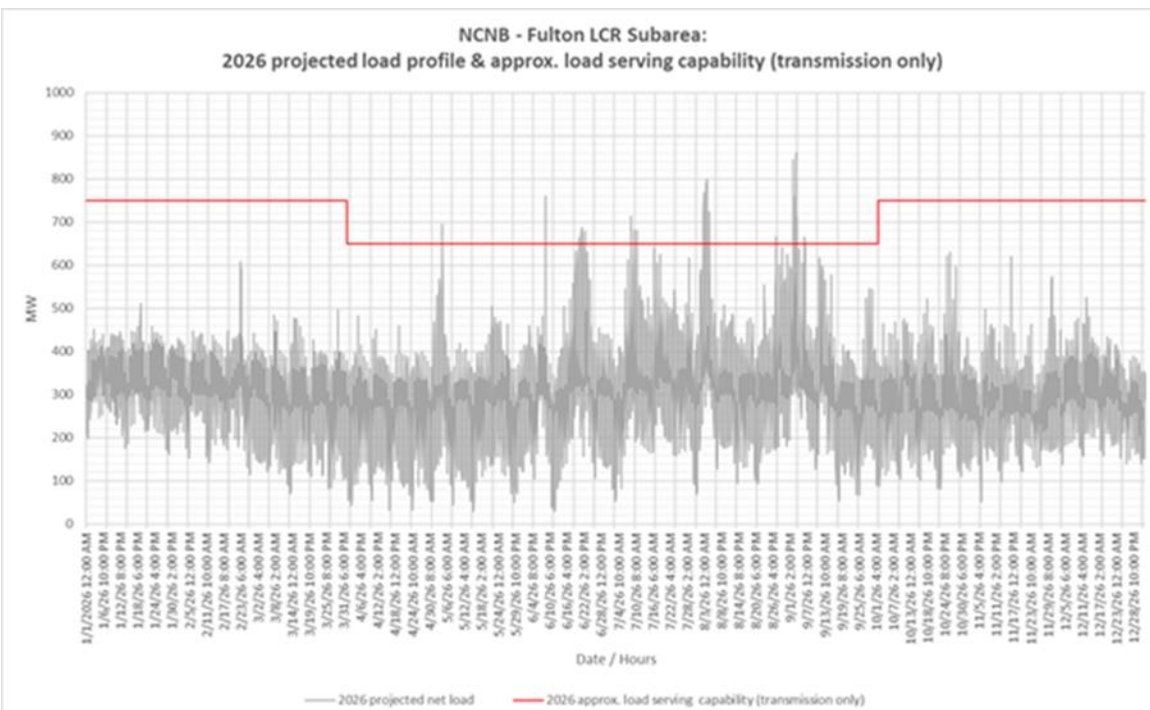


Figure 3.3-12 Fulton LCR Sub-area 2026 Forecast Hourly Profiles



Fulton LCR Sub-area Requirement

Table 3.3-7 identifies the sub-area LCR requirements. The LCR requirement for Category P6 contingency is 489 MW.

Table 3.3-7 Fulton LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First Limit	P6	Thermal overload on Lakeville-Corona 115 kV Line	Fulton-Lakeville #1 230 kV & Fulton-Ignacio #1 230 kV	489

Effectiveness factors

For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7120 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.2.4 *North Coast and North Bay Overall*

North Coast and North Bay Overall Requirement

Table 3.3-8 identifies the sub-area LCR requirements. The LCR requirement for Category P3 contingency is 848 MW.

Table 3.3-8 North Coast and North Bay LCR area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First Limit	P3	Vaca Dixon-Tulucay 230 kV line	Vaca Dixon-Lakeville 230 kV line with Delta Energy Center power plant out of service	848

Effectiveness factors

Effective factors for generators in the North Coast and North Bay LCR area are in Attachment B table titled North Coast and North Bay.

Changes compared to last year's results

Compared to 2025 load forecast decreased up by 18 MW and the total LCR need decreased by 119 MW due to load forecast decrease and higher requirements in the Ames/Pittsburg/Oakland sub-area of the Bay Area.

3.3.3 Sierra Area

3.3.3.1 *Area Definition*

The transmission tie lines into the Sierra Area are:

Table Mountain-Rio Oso 230 kV line

Table Mountain-Palermo 230 kV line

Table Mt-Pease 60 kV line

Caribou-Palermo 115 kV line

Drum-Summit 115 kV line #1

Drum-Summit 115 kV line #2

Spaulding-Summit 60 kV line

Brighton-Bellota 230 kV line

Rio Oso-Lockeford 230 kV line

Gold Hill-Eight Mile Road 230 kV line

Lodi-Eight Mile Road 230 kV line

Gold Hill-Lake 230 kV line

The substations that delineate the Sierra Area are:

Table Mountain is out Rio Oso is in

Table Mountain is out Palermo is in

Table Mt is out Pease is in

Caribou is out Palermo is in

Drum is in Summit Metering Station is out

Drum is in Summit Metering Station is out

Spaulding, Tamarak and Summit (PG&E) are in Summit Metering Station is out

Brighton is in Bellota is out

Rio Oso is in Lockeford is out

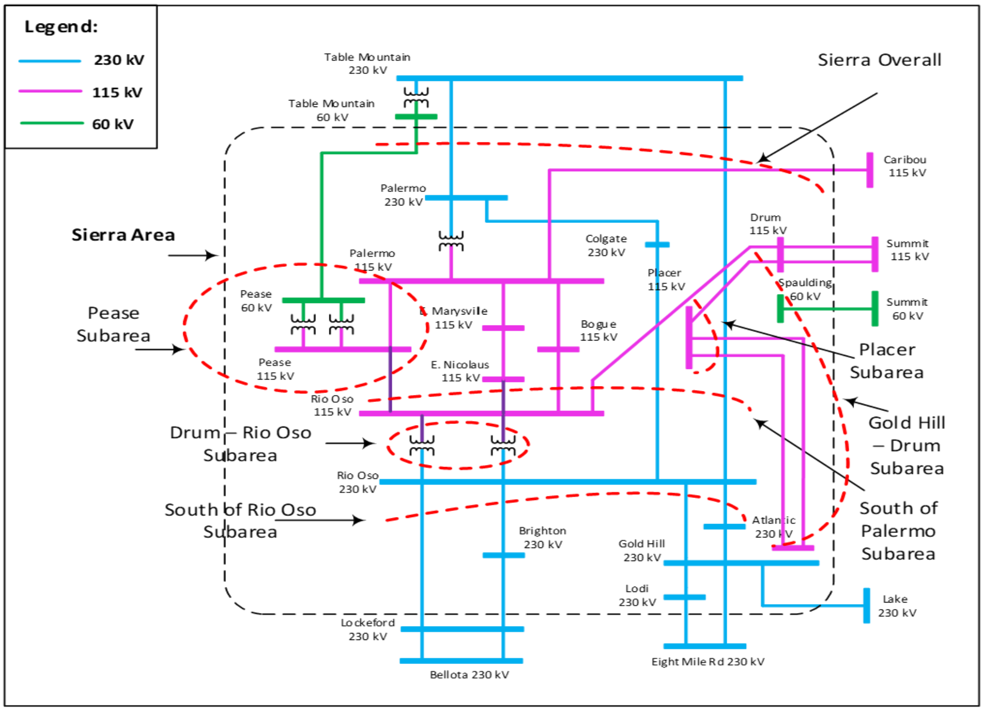
Gold Hill is in Eight Mile is out

Lodi is in Eight Mile is out

Gold Hill is in Lake is out

Sierra LCR Area Diagram

Figure 3.3-13 Sierra LCR Area



Sierra LCR Area Load and Resources

Table 3.3-9 provides the forecasted load and resources. The list of generators within the LCR area are provided in Attachment A.

In year 2026 the estimated time of local area peak is 19:10 PM.

At the local area peak time the estimated, ISO metered, solar output is 2.00%.

If required, all non-solar technology type resources are dispatched at NQC.

Table 3.3-9 Sierra LCR Area 2026 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	1844	Market/Net Seller	702	702
AAEE	-25	Battery	5	5
Behind the meter DG	-40	MUNI/QF	1236	1236
Net Load	**1779**	Solar	0	0
Transmission Losses	74	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**1853**	**Total**	**1943**	**1943**

Approved transmission projects modeled:

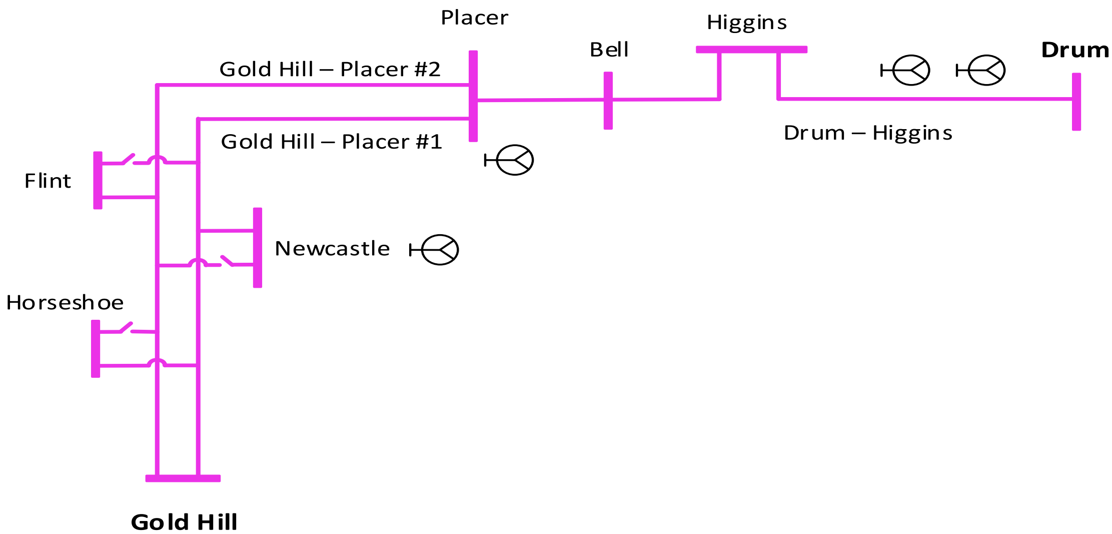
Rio Oso 230/115 kV transformer upgrade

3.3.3.2 *Placer Sub-area*

Placer is sub-area of the Sierra LCR area.

Placer LCR Sub-area Diagram

Figure 3.3-14 Placer LCR Sub-area



Placer LCR Sub-area Load and Resources

Table 3.3-10 provides the forecasted load and resources. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-10 Placer LCR Sub-area 2026 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	210	Market/Net Seller	34	34
AAEE	-3	Battery	0	0
Behind the meter DG	-5	MUNI/QF	28	28
Net Load	**202**	Solar	0	0
Transmission Losses	4	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**206**	**Total**	62	62

Placer LCR Sub-area Hourly Profiles

Figure 3.3-15 illustrates the forecast 2026 profile for the peak day for the Placer sub-area with the Category P6 normal and emergency load serving capabilities without local resources. The chart also includes an estimated amount of energy storage that can be added to this local area. Figure 3.3-16 illustrates the forecast 2026 hourly profile for Placer sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-15 Placer LCR Sub-area 2026 Peak Day Forecast Profiles

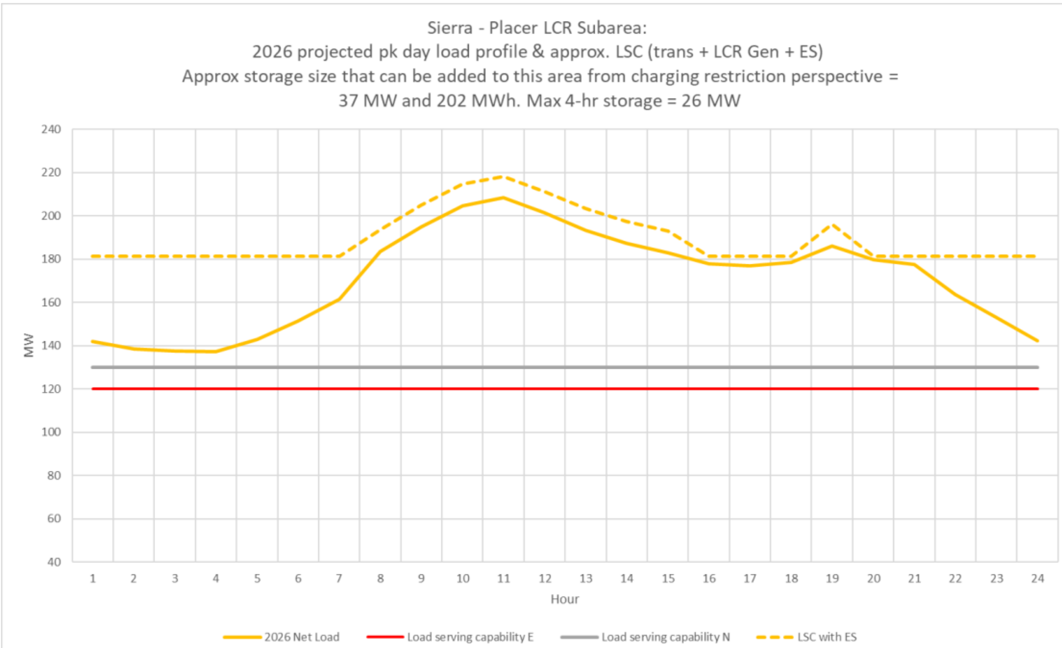
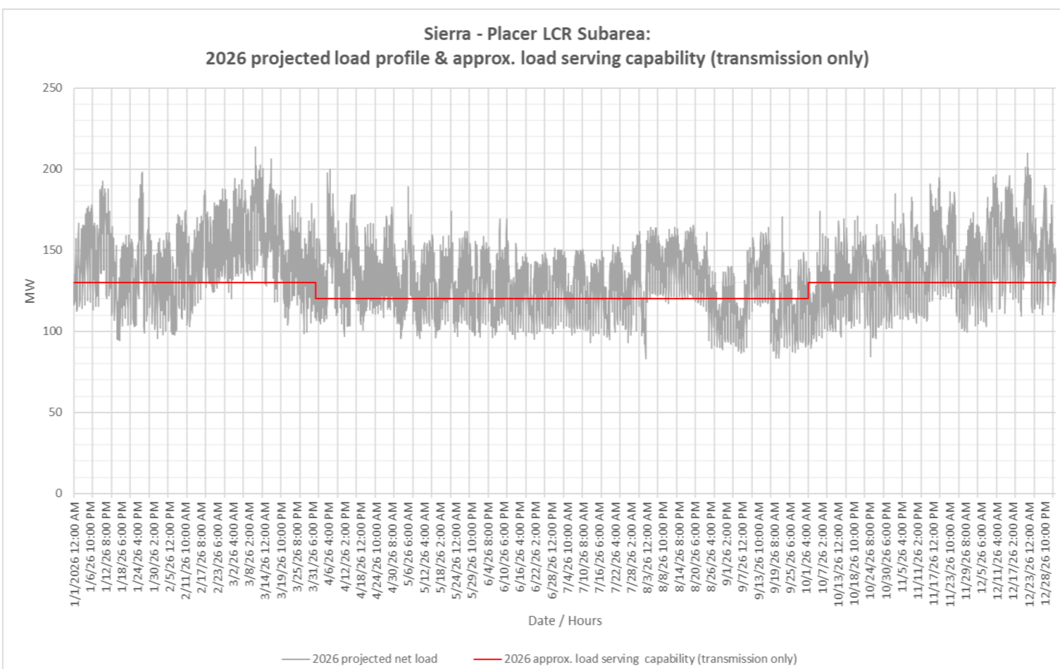


Figure 3.3-16 Placer LCR Sub-area 2026 Forecast Hourly Profiles



Placer LCR Sub-area Requirement

Table 3.3-11 identifies the sub-area requirements. The Category P6 and P7 LCR requirement is 144 MW including 82 MW of NQC and peak deficiencies.

Table 3.3-11 Placer LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First Limit	P6, P7	Drum–Higgins 115 kV	Gold Hill-Placer #1 115 kV & Gold Hill-Placer #2 115 kV	144 (82)

Effectiveness factors

All units within the Placer Sub-area have the same effectiveness factor.

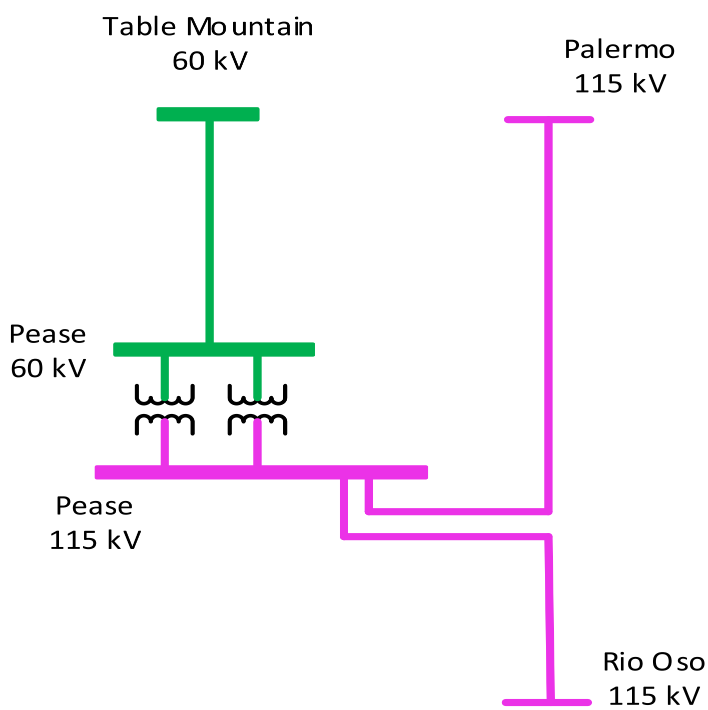
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7240 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.3.3 *Pease Sub-area*

Pease is sub-area of the Sierra LCR area.

Pease LCR Sub-area Diagram

Figure 3.3-17 Pease LCR Sub-area



Pease LCR Sub-area Load and Resources

Table 3.3-12 provides the forecasted load and resources. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-12 Pease LCR Sub-area 2026 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	160	Market/Net Seller	97	97
AAEE	-2	Battery	5	5
Behind the meter DG	-3	MUNI/QF	49	49
Net Load	**155**	Solar	0	0
Transmission Losses	3	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**158**	**Total**	151	151

Pease LCR Sub-area Hourly Profiles

Figure 3.3-18 illustrates the forecast 2026 profile for the peak day for the Pease sub-area with the Category P6 normal and emergency load serving capabilities without local resources. The chart also includes an estimated amount of energy storage that can be added to this local area from charging restriction perspective. Figure 3.3-19 illustrates the forecast 2026 hourly profile for Pease sub-area with the Category P6 load serving capability without local resources.

Figure 3.3-18 Pease LCR Sub-area 2026 Peak Day Forecast Profiles

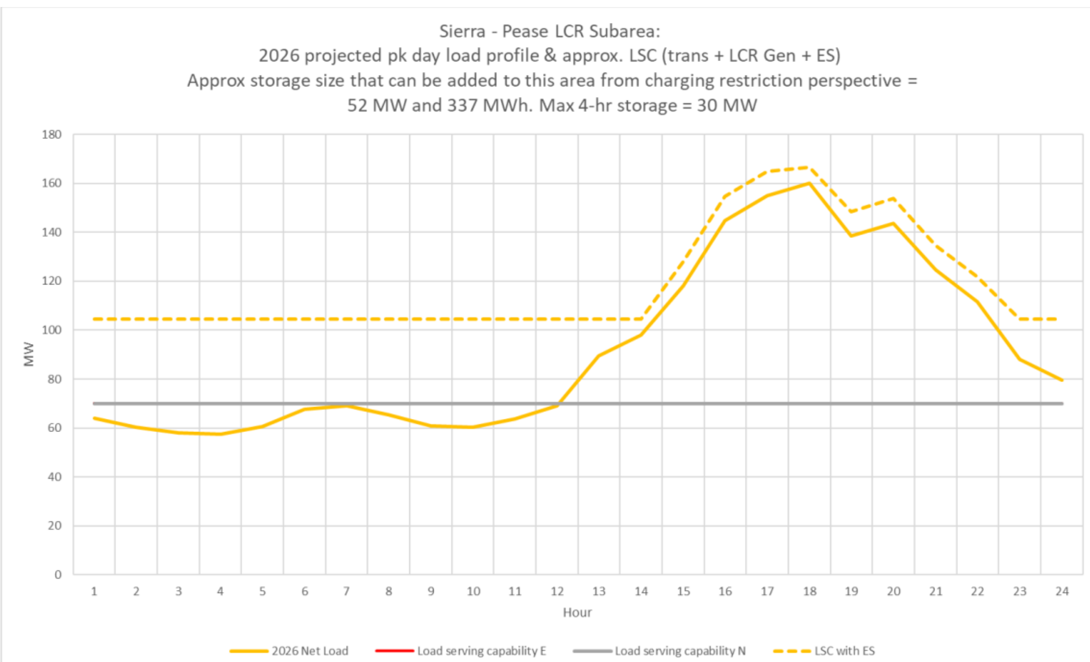
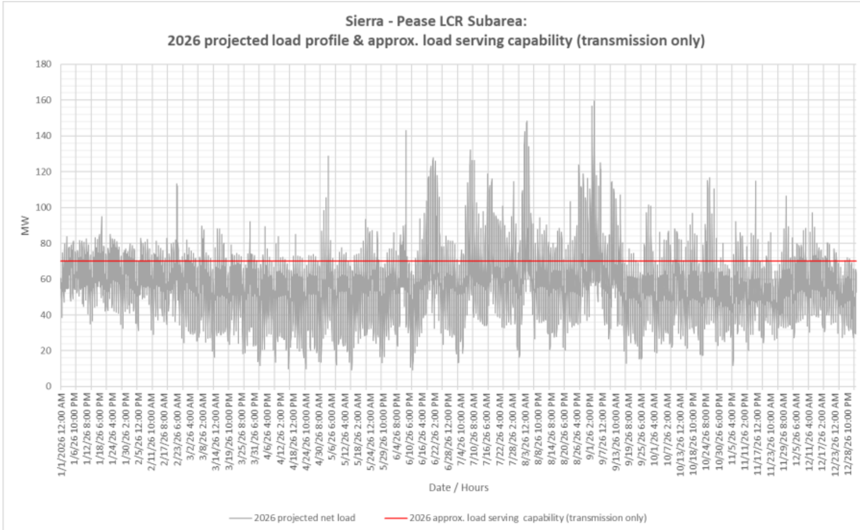


Figure 3.3-19 Pease LCR Sub-area 2026 Forecast Hourly Profiles



Pease LCR Sub-area Requirement

Table 3.3-13 identifies the sub-area LCR requirements. The Category P6, P7 LCR requirement is 53 MW.

Table 3.3-13 Pease LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First Limit	P6, P7	Table Mountain – Pease 60 kV	Palermo – Pease 115 kV and Pease – Rio Oso 115 kV lines	53

Effectiveness factors:

All units within the Pease sub-area have the same effectiveness factor.

For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7230 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.3.4 *Drum-Rio Oso Sub-area*

Drum-Rio Oso is a sub-area of the Sierra LCR area

Drum-Rio Oso sub-area will be eliminated due to the Rio Oso 230/115 kV Transformers Upgrade project.

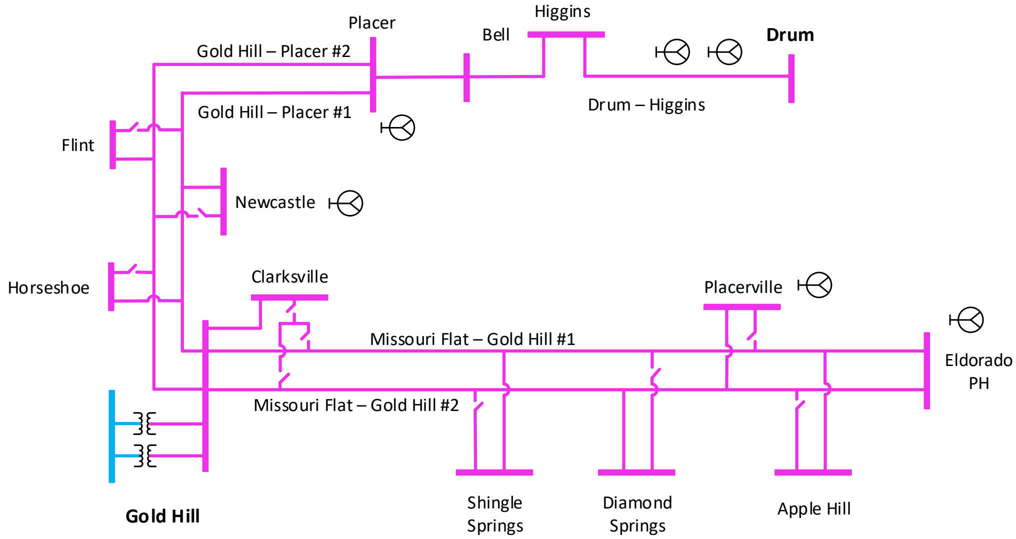
If the project is delayed all resources in the Drum-Rio Oso sub-area (570 MWs) are required in order to meet the LCR needs, else the sub-area is deficient as previous years.

3.3.3.5 *Gold Hill-Drum Sub-area*

Gold Hill-Drum is sub-area of the Sierra LCR area.

Gold Hill-Drum LCR Sub-area Diagram

Figure 3.3-20 Gold Hill-Drum LCR Sub-area



Gold Hill-Drum LCR Sub-area Load and Resources

Table 3.3-14 provides the forecasted load and resources. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-14 Gold Hill-Drum LCR Sub-area 2026 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	549	Market/Net Seller	49	49
AAEE	-8	Battery	0	0
Behind the meter DG	-13	MUNI/QF	28	28
Net Load	**528**	Solar	0	0
Transmission Losses	10	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**538**	**Total**	**77**	**77**

Gold Hill-Drum LCR Sub-area Hourly Profiles

Figure 3.3-21 illustrates the forecast 2026 profile for the peak day for the Gold Hill-Drum sub-area with the Category P6 normal and emergency load serving capabilities without local resources. The chart also includes an estimated amount of energy storage that can be added to this local area from charging restriction perspective. Figure 3.3-22 illustrates the forecast 2026 hourly profile for Gold Hill-Drum sub-area with the Category P6 load serving capability without local resources.

Figure 3.3-21 Gold Hill-Drum LCR Sub-area 2026 Peak Day Forecast Profiles

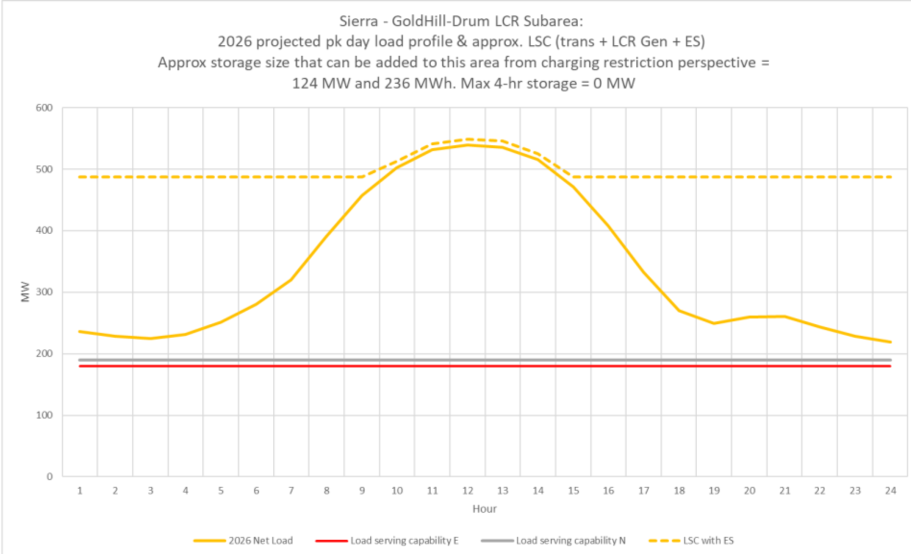
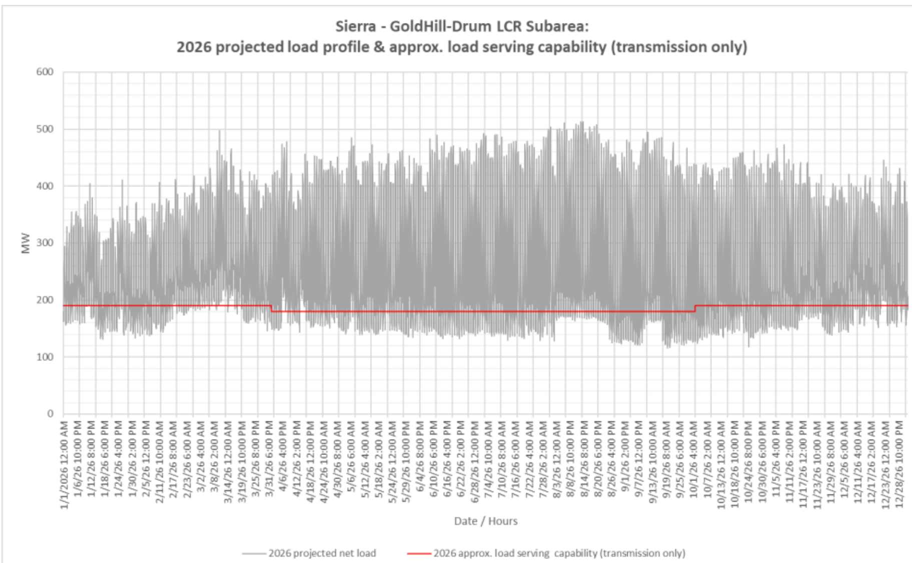


Figure 3.3-22 Gold Hill-Drum LCR Sub-area 2026 Forecast Hourly Profiles



Gold Hill-Drum LCR Sub-area Requirement

Table 3.3-15 identifies the sub-area LCR requirements. The Category P6 LCR requirement is 428 MW including 351 MW of NQC and peak deficiency.

Table 3.3-15 Gold Hill-Drum LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First Limit	P6	Drum – Higgins 115 kV	Gold Hill 230/115 kV #1 and Gold Hill 230/115 kV #2 Txrs	428 (351)

Effectiveness factors:

All units within the Gold Hill-Drum Sub-area have the same effectiveness factor.

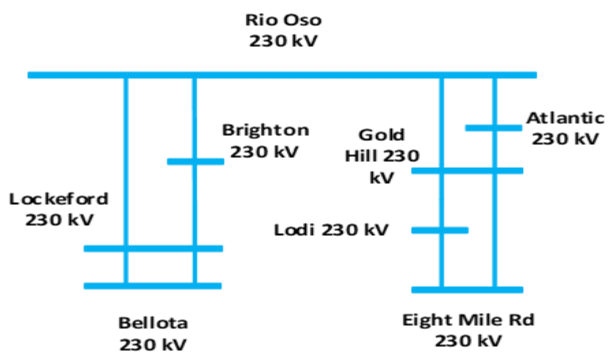
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7230 and 7240 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.3.6 *South of Rio Oso Sub-area*

South of Rio Oso is sub-area of the Sierra LCR area.

South of Rio Oso LCR Sub-area Diagram

Figure 3.3-23 South of Rio Oso LCR Sub-area



South of Rio Oso LCR Sub-area Load and Resources

The South of Rio Oso sub-area does not have a defined load pocket with the limits based upon power flow through the area. Table 3.3-16 provides the forecasted resources in the sub-area. The list of generators within the LCR area are provided in Attachment A.

Table 3.3-16 South of Rio Oso LCR Sub-area 2026 Forecast Load and Resources

Load (MW)	Generation (MW)	Aug NQC	At Peak
The South of Rio Oso Sub-area does not have a defined load pocket with the limits based upon power flow through the area.	Market/Net Seller	85	85
	Battery	0	0
	MUNI/QF	607	607
	Solar	0	0
	Existing 20-minute Demand Response	0	0
	Mothballed	0	0
	Total	**692**	**692**

South of Rio Oso LCR Sub-area Hourly Profiles

The South of Rio Oso sub-area does not have a defined load pocket with the limits based upon power flow through the area. As such, no load profile is provided for this sub-area.

South of Rio Oso LCR Sub-area Requirement

Table 3.3-17 identifies the sub-area LCR requirements. The LCR requirement for Category P6 is 502 MW.

Table 3.3-17 South of Rio Oso LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2026	First limit	P6	Rio Oso – Atlantic 230 kV	Rio Oso – Gold Hill 230 kV Rio Oso – Brighton 230 kV	502

Effectiveness factors:

Effective factors for generators in the South of Rio Oso LCR sub-area are in Attachment B table titled Rio Oso.

For other helpful procurement information please read procedure 2210Z Effectiveness Factors under 7230 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.3.7 *Sierra Area Overall*

Sierra LCR Area Hourly Profiles

The Sierra LCR Area limits are based upon power flow through the area. As such, no load profile is provided for the area.

Sierra LCR Area Requirement

Table 3.3-18 identifies the area requirements. The LCR requirement for Category P6 is 1354 MW.

Table 3.3-18 Sierra LCR Area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2026	First limit	P6	Table Mountain – Pease 60 kV	Table Mountain – Palermo 230 kV Table Mountain – Rio Oso 230 kV	1354

Effectiveness factors:

Effective factors for generators in the Sierra Overall LCR area are in Attachment B table titled Sierra Overall.

For other helpful procurement information please read procedure 2210Z Effectiveness Factors under 7230 and 7240 posted at: http://www.caiso.com/Documents/2210Z.pdf

Changes compared to last year's results:

The load forecast has decreased by 147 MW. The total LCR requirement decreased by 178 MW mostly due to load forecast decrease.

3.3.4 Stockton Area

The LCR requirement for the Stockton Area is driven by the sum of the requirements for the Tesla-Bellota and Lockeford sub-areas.

3.3.4.1 *Area Definition*

Tesla-Bellota Sub-Area Definition

The transmission facilities that establish the boundary of the Tesla-Bellota sub-area are:

Bellota 230/115 kV Transformer #1

Bellota 230/115 kV Transformer #2

Tesla-Tracy 115 kV Line

Tesla-Salado 115 kV Line

Tesla-Salado-Manteca 115 kV line

Tesla-Schulte #1 115 kV Line

Tesla-Schulte #2 115kV line

The substations that delineate the Tesla-Bellota Sub-area are:

Bellota 230 kV is out Bellota 115 kV is in

Bellota 230 kV is out Bellota 115 kV is in

Tesla is out Tracy is in

Tesla is out Salado is in

Tesla is out Salado and Manteca are in

Tesla is out Schulte is in

Tesla is out Schulte is in

Lockeford Sub-Area Definition

The transmission facilities that establish the boundary of the Lockeford Sub-area are:

Lockeford-Industrial 60 kV line

Lockeford-Lodi #1 60 kV line

Lockeford-Lodi #2 60 kV line

Lockeford-Lodi #3 60 kV line

The substations that delineate the Lockeford Sub-area are:

Lockeford is out Industrial is in

Lockeford is out Lodi is in

Lockeford is out Lodi is in

Lockeford is out Lodi is in

Stockton LCR Area Diagram

The Stockton LCR area is comprised of the individual noncontiguous sub-areas with diagrams provided for each of the sub-areas below.

Stockton LCR Area Load and Resources

Table 3.3-19 provides the forecast load and resources in the area. The list of generators within the LCR area are provided in Attachment A.

In year 2026 the estimated time of local area peak is 19:10 PM.

At the local area peak time the estimated, ISO metered, solar output is 2.00%.

If required, all non-solar technology type resources are dispatched at NQC.

Table 3.3-19 Stockton LCR Area 2026 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	1038	Market/Net Seller	450	450
AAEE	-12	Battery	157	157
Behind the meter DG	-17	MUNI/QF	130	130
Net Load	**1009**	Solar	15	0
Transmission Losses	18	Existing 20-minute Demand Response	6	6
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**1027**	**Total**	**758**	**743**

Stockton LCR Area Hourly Profiles

The Stockton LCR area is comprised of the individual noncontiguous sub-areas with profiles provided for each of the sub-areas below.

Approved transmission projects modeled

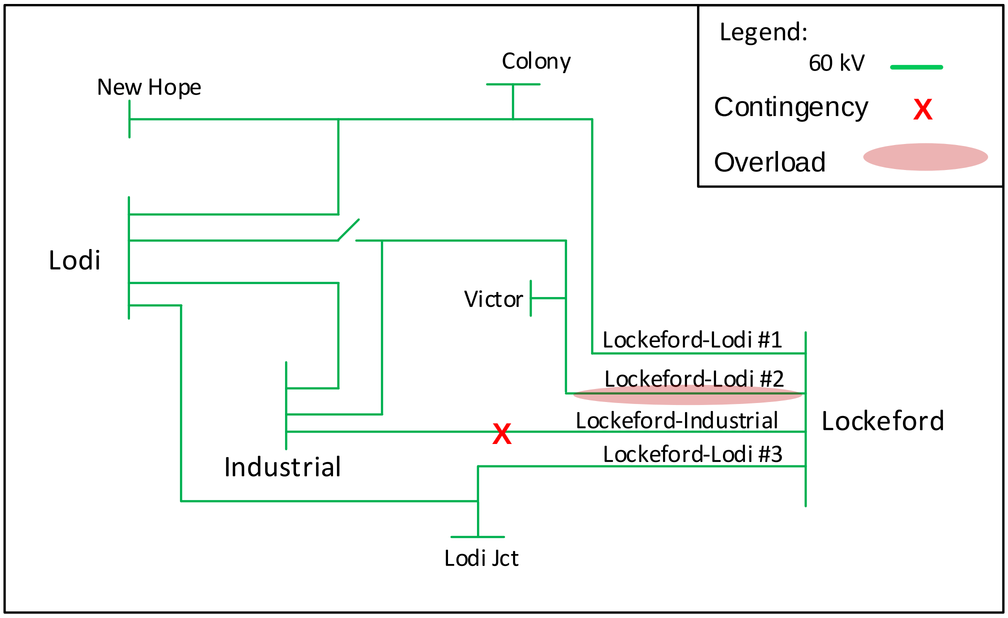
Banta 60 kV Bus Voltage Conversion

3.3.4.2 *Lockeford Sub-area*

Lockeford is a sub-area of the Stockton LCR area.

Lockeford LCR Sub-area Diagram

Figure 3.3-24 Lockeford LCR Sub-area



Lockeford LCR Sub-area Load and Resources

Table 3.3-20 provides the forecasted load and resources. The list of generators within the LCR Sub-area are provided in Attachment A.

Table 3.3-20 Lockeford LCR Sub-area 2026 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	189	Market	0	0
AAEE	-1	MUNI	0	0
Behind the meter DG	-1	QF	24	24
Net Load	**187**	Solar	0	0
Transmission Losses	1	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**188**	**Total**	**24**	**24**

Lockeford LCR Sub-area Hourly Profiles

Figure 3.3-25 illustrates the forecast 2026 profile for the peak day for the Lockeford sub-area with the Category P3 normal and emergency load serving capabilities without local resources. Figure 3.3-26 illustrates the forecast 2026 hourly profile for Lockeford sub-area with the Category P3 load serving capability without local resources.

Figure 3.3-25 Lockeford LCR Sub-area 2026 Peak Day Forecast Profiles

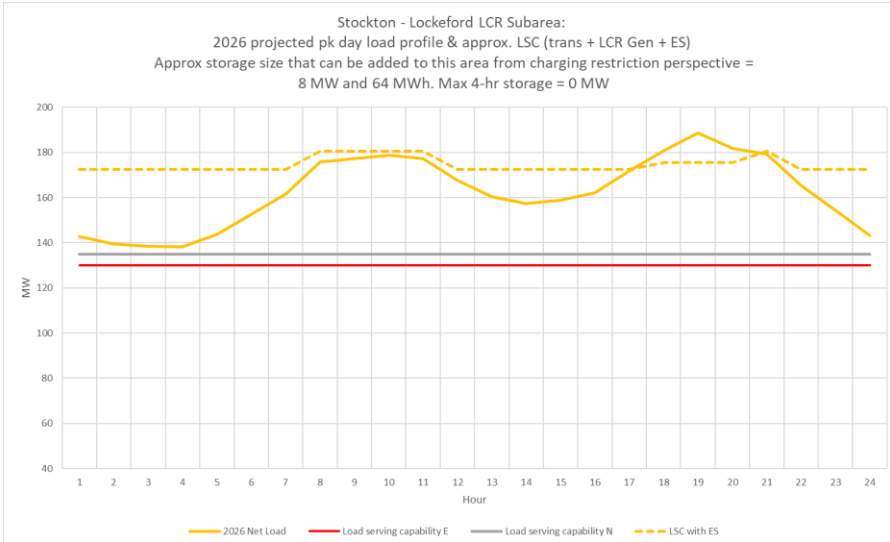
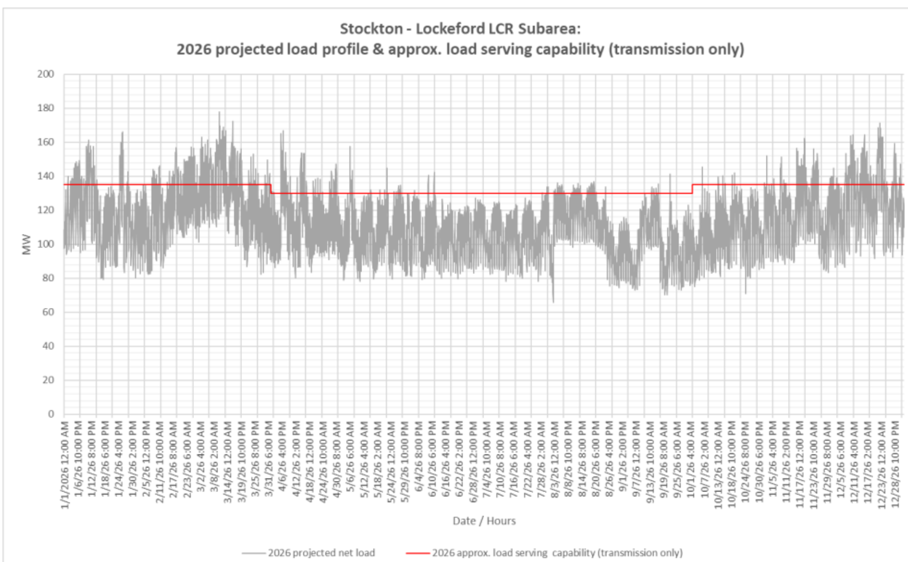


Figure 3.3-26 Lockeford LCR Sub-area 2026 Forecast Hourly Profiles



Lockeford LCR Sub-area Requirement

Table 3.3-21 identifies the sub-area requirements. The LCR requirement for for this sub-area is based on the Category P3 contingency at 47 MW including 23 MW deficiencies.

Table 3.3-21 Lockeford LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First Limit	P3	Lockeford-Lodi #2 60 kV	Lockeford-Industrial 60 kV & Lodi CT	47 (23)

Effectiveness factors:

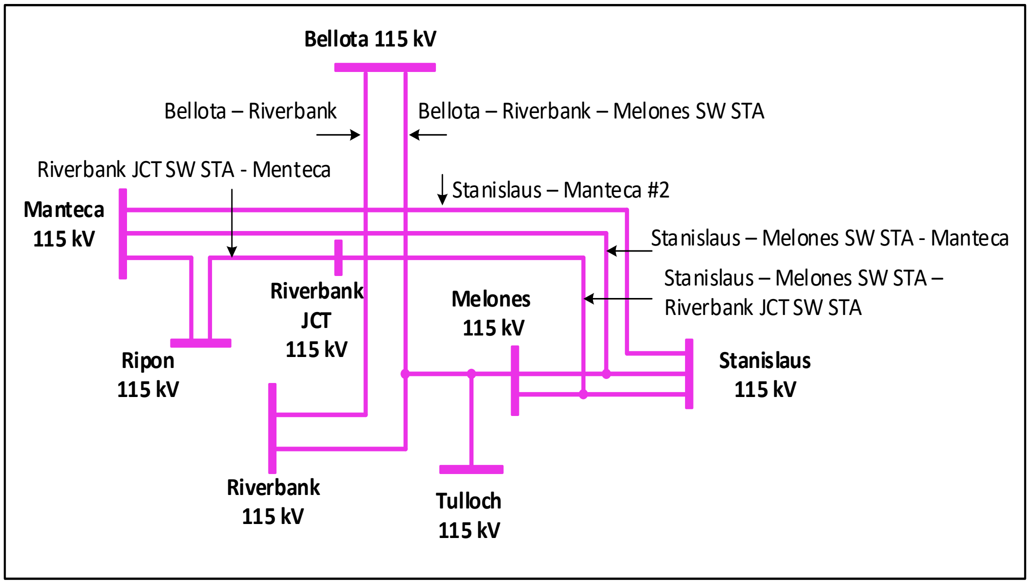
All units are needed therefore no effectiveness factor is required.

3.3.4.3 *Stanislaus Sub-area*

Stanislaus is a sub-area within the Tesla – Bellota sub-area of the Stockton LCR area.

Stanislaus LCR Sub-area Diagram

Figure 3.3-27 Stanislaus LCR Sub-area



Stanislaus LCR Sub-area Load and Resources

The Stanislaus sub-area does not has a defined load pocket with the limits based upon power flow through the area. Table 3.3-22 provides the forecasted resources in the sub-area. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-22 Stanislaus LCR Sub-area 2026 Forecast Load and Resources

Load (MW)	Generation (MW)	Aug NQC	At Peak
The Stanislaus Sub-area does not has a defined load pocket with the limits based upon power flow through the area.	Market/Net Seller	95	95
	Battery	0	0
	MUNI/QF	84	84
	Solar	0	0
	Existing 20-minute Demand Response	0	0
	Mothballed	0	0
	Total	**179**	**179**

Stanislaus LCR Sub-area Hourly Profiles

The Stanislaus sub-area does not has a defined load pocket with the limits based upon power flow through the area. As such, no load profile is provided for this sub-area.

Stanislaus LCR Sub-area Requirement

Table 3.3-23 identifies the sub-area requirements. The LCR requirement for Category P3 contingency is 244 MW including 65 MW of deficiency.

Table 3.3-23 Stanislaus LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First limit	P3	Vierra 115 kV – Manteca 115 kV	Bellota-Riverbank-Melones 115 kV and Stanislaus PH	244 (65)

Effectiveness factors:

All units within this sub-area have the same effectiveness factor.

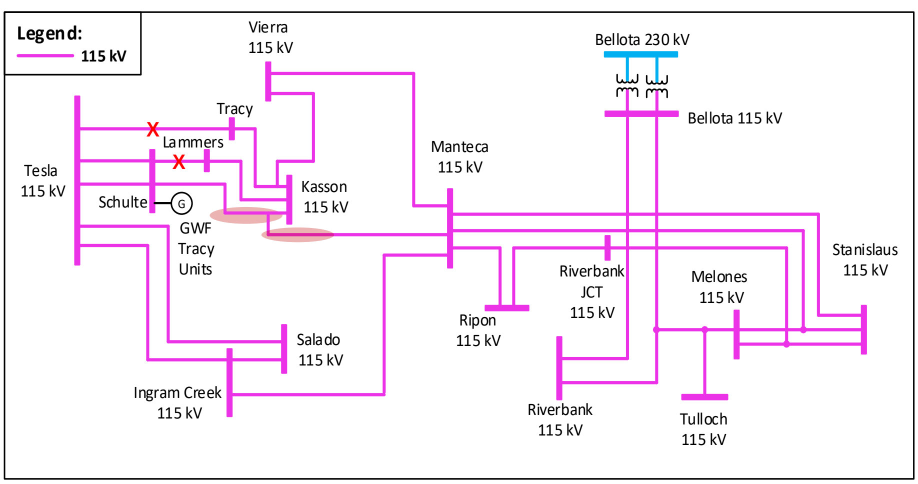
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7410 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.4.4 *Tesla-Bellota Sub-area*

Tesla-Bellota is a sub-area of the Stockton LCR area.

Tesla-Bellota LCR Sub-area Diagram

Figure 3.3-28 Tesla-Bellota LCR Sub-area



Tesla Bellota LCR Sub-area Load and Resources

Table 3.3-24 provides the forecasted load and resources. The list of generators within the LCR Sub-area are provided in Attachment A.

Table 3.3-24 Tesla-Bellota LCR Sub-area 2026 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	849	Market/Net Seller	450	450
AAEE	-11	Battery	157	157
Behind the meter DG	-16	MUNI/QF	107	107
Net Load	**822**	Solar	14	0
Transmission Losses	17	Existing 20-minute Demand Response	6	6
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**839**	**Total**	**734**	**720**

All of the resources needed to meet the Stanislaus sub-area count towards the Tesla-Bellota sub-area LCR need.

Tesla-Bellota LCR Sub-area Hourly Profiles

Figure 3.3-29 illustrates the forecast 2026 profile for the peak day for the Tesla-Bellota sub-area with the Category P6 normal and emergency load serving capabilities without local resources. The chart also includes an estimated amount of energy storage that can be added to this local area from charging restriction perspective. Figure 3.3-30 illustrates the forecast 2026 hourly profile for Tesla-Bellota sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-29 Tesla-Bellota LCR Sub-area 2026 Peak Day Forecast Profiles

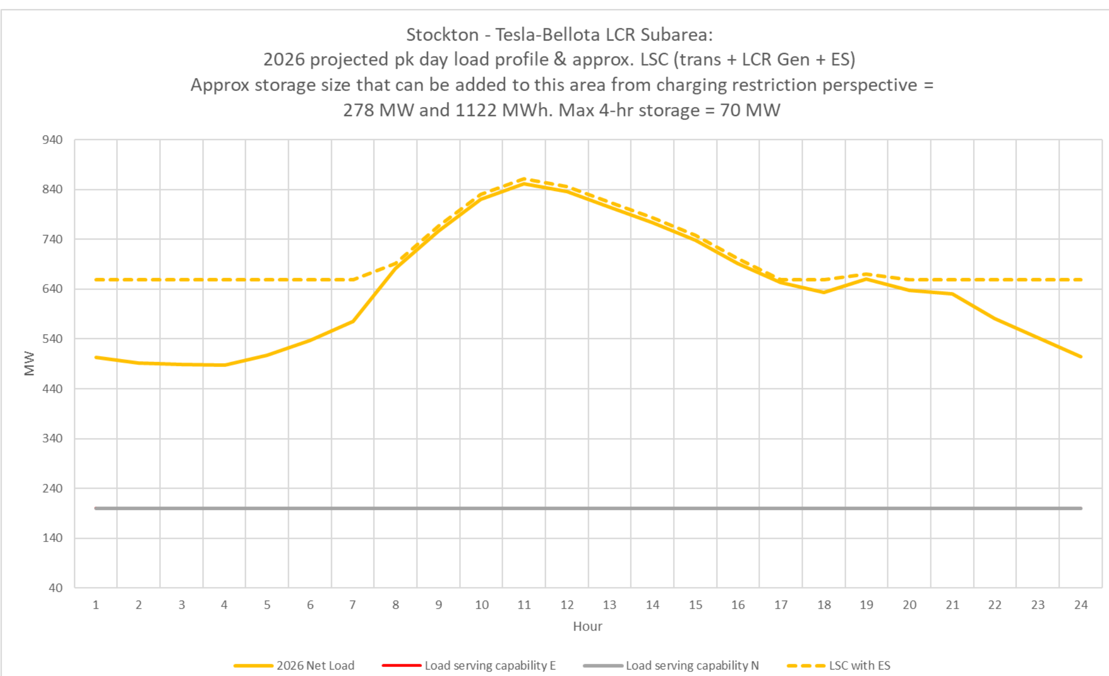
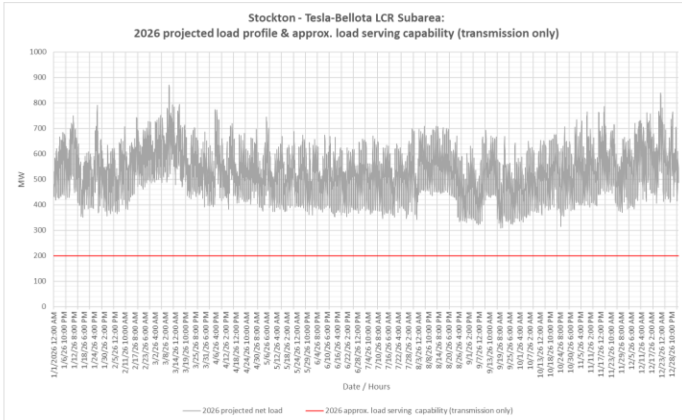


Figure 3.3-30 Tesla-Bellota LCR Sub-area 2026 Forecast Hourly Profiles



Tesla-Bellota LCR Sub-area Requirement

Table 3.3-25 identifies the sub-area requirements. The LCR requirement for Category P6 contingency is 1219 MW including a 487 MW NQC and 501 MW at peak deficiency.

Table 3.3-25 Tesla-Bellota LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First limit	P2-4	Melones–Riverbank-Bellota 115 kV	Tesla 115 KV - Section 2D & 1D	600 (12 Peak)
2026	First limit	P6	Tesla – Tracy 115 kV	Schulte - Lammers 115 kV Line and Schulte - Kasson - Manteca 115 kV Line	885 (487 NQC, 501 Peak)
Total LCR Need for Tesla – Bellota Sub-area in 2026					1,219 (487 NQC, 501 Peak)

Effectiveness factors:

All units within this sub-area are needed therefore no effectiveness factor is required.

For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7410 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.4.5 *Stockton Overall*

Stockton LCR Area Overall Requirement

The requirement for this area is driven by the sum of requirements for the Tesla-Bellota and Lockeford sub-areas. Table 3.3-26 identifies the area requirements. The LCR requirement is 1266 MW with a 510 MW NQC deficiency or 524 MW at peak deficiency.

Table 3.3-26 Stockton LCR Area Overall Requirements

Year	LCR (MW) (Deficiency)
2026	1266 (510 NQC/ 524 Peak)

Changes compared to last year's results

The load forecast has decreased by 102 MW, resulting in a total LCR requirement drop of 73 MW and a total deficiency decrease of 95 MW. These changes are primarily attributed to the decreased in load forecast.

3.3.5 Greater Bay Area

3.3.5.1 *Area Definition:*

The transmission tie lines into the Greater Bay Area are:

Lakeville-Sobrante 230 kV

Ignacio-Sobrante 230 kV

Parkway-Moraga 230 kV

Bahia-Moraga 230 kV

Lambie SW Sta-Vaca Dixon 230 kV

Peabody-Contra Costa P.P. 230 kV

Tesla-Kelso 230 kV

Tesla-Delta Switching Yard 230 kV

Tesla-Pittsburg #1 230 kV

Tesla-Pittsburg #2 230 kV

Tesla-Newark #1 230 kV

Tesla-Newark #2 230 kV

Tesla-Ravenswood 230 kV

Tesla-Metcalf 500 kV

Moss Landing-Los Banos 500 kV

Moss Landing-Coburn #1 230 kV

Moss Landing-Las Aguilas #2 230 kV

Oakdale TID-Newark #1 115 kV

Oakdale TID-Newark #2 115 kV

The substations that delineate the Greater Bay Area are:

Lakeville is out Sobrante is in

Ignacio is out Sobrante is in

Parkway is out Moraga is in

Bahia is out Moraga is in

Lambie SW Sta is in Vaca Dixon is out

Peabody is out Contra Costa P.P. is in

Tesla is out Kelso is in

Tesla is out Delta Switching Yard is in

Tesla is out Pittsburg is in

Tesla is out Pittsburg is in

Tesla is out Newark is in

Tesla is out Newark is in

Tesla is out Ravenswood is in

Tesla is out Metcalf is in

Los Banos is out Moss Landing is in

Coburn is out Moss Landing is in

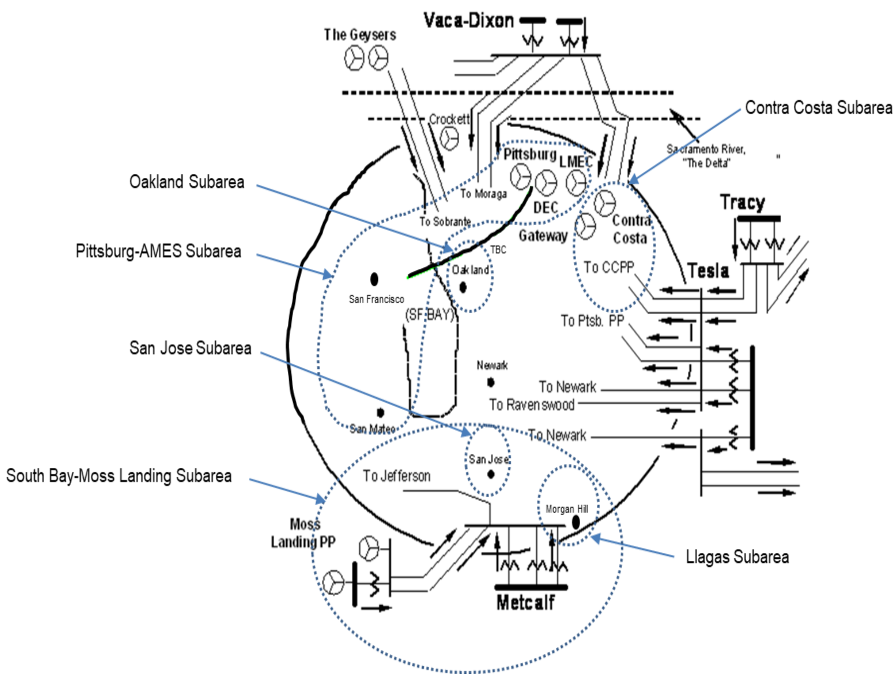
Las Aguilas is out Moss Landing is in

Oakdale TID is out Newark is in

Oakdale TID is out Newark is in

Greater Bay LCR Area Diagram

Figure 3.3-31 Greater Bay LCR Area



Greater Bay LCR Area Load and Resources

Table 3.3-27 provides the forecasted load and resources. The list of generators within the LCR area are provided in Attachment A.

In year 2026 the estimated time of local area peak is 18:40 PM.

At the local area peak time the estimated, ISO metered, solar output is 8.7%.

If required, all technology type resources, including solar, are dispatched at NQC.

Table 3.3-27 Greater Bay Area LCR Area 2026 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	11429	Market/Net Seller	6117	6117
AAEE	-110	Wind	373	373
Behind the meter DG	-267	Battery	1347	1347
Net Load	**11052**	MUNI/QF	596	596
Transmission Losses	291	Existing 20-minute Demand Response	65	65
Pumps	264	Solar	8	3
Load + Losses + Pumps	**11607**	**Total**	**8506**	**8501**

Approved transmission projects modeled

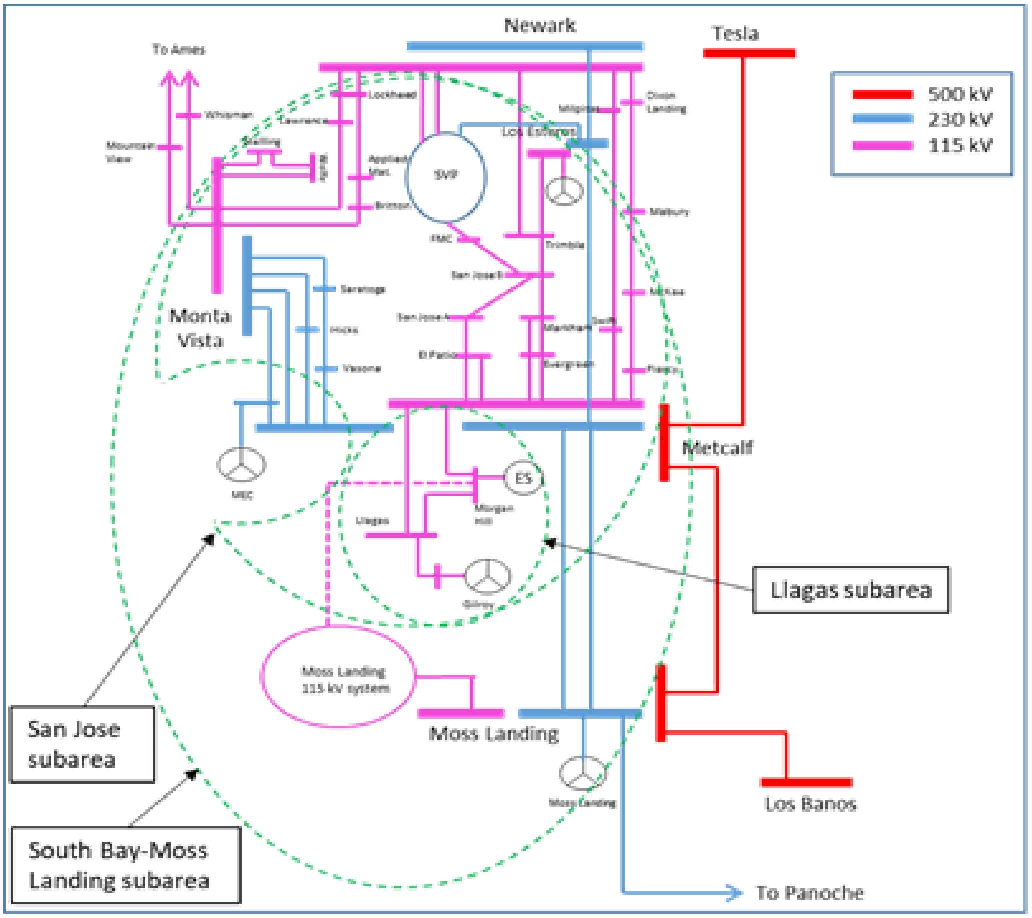
- Moraga – Castro Valley 230 kV Line capacity increase
- Vasona – Metcalf 230 kV Line limiting elements removal
- Oakland Clean Energy Initiative Project
- Ravenswood 230/115 kV Transformer #1 Limiting Facility Upgrade
- Newark – Milpitas #1 115 kV Line Limiting Facility Upgrade
- Series Compensation on Los Esteros – Nortech 115 kV Line
- South Bay Area Limiting Elements Upgrade

3.3.5.2 *Llagas Sub-area*

Llagas is a sub-area of the Greater Bay LCR area.

Llagas LCR Sub-area Diagram

Figure 3.3-32 Llagas LCR Sub-area



Llagas LCR Sub-area Load and Resources

Table 3.3-28 provides the forecasted load and resources. The list of generators within the LCR Sub-area are provided in Attachment A.

Table 3.3-28 Llagas LCR Sub-area 2026 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	275	Market/Net Seller	256	256
AAEE	-3	Battery	20	20
Behind the meter DG	-12	MUNI/QF	0	0
Net Load	260	Solar	0	0
Transmission Losses	2	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**262**	**Total**	**276**	**276**

Llagas LCR Sub-area Hourly Profiles

Figure 3.3-33 illustrates the forecast 2026 profile for the peak day for the Llagas LCR sub-area with the Category P3 normal and emergengy load serving capabilities without local resources. The chart also includes an estimated amount of energy storage that can be added to this local area from charging restriction perspective. Figure 3.3-34 illustrates the forecast 2026 hourly profile for Llagas LCR sub-area with the Category P3 emergency load serving capability without local resources.

Figure 3.3-33 Llagas LCR Sub-area 2026 Peak Day Forecast Profiles

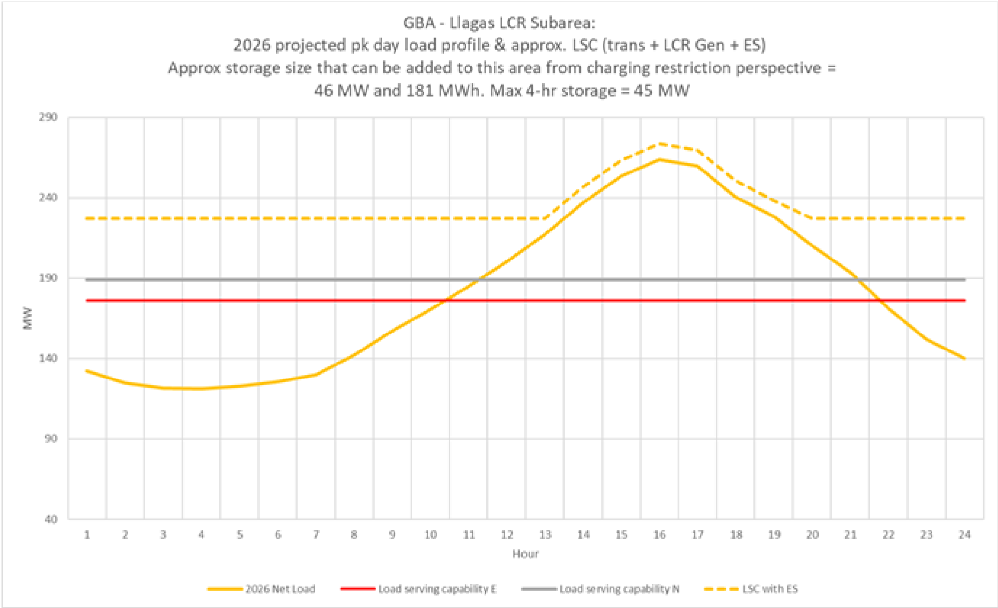
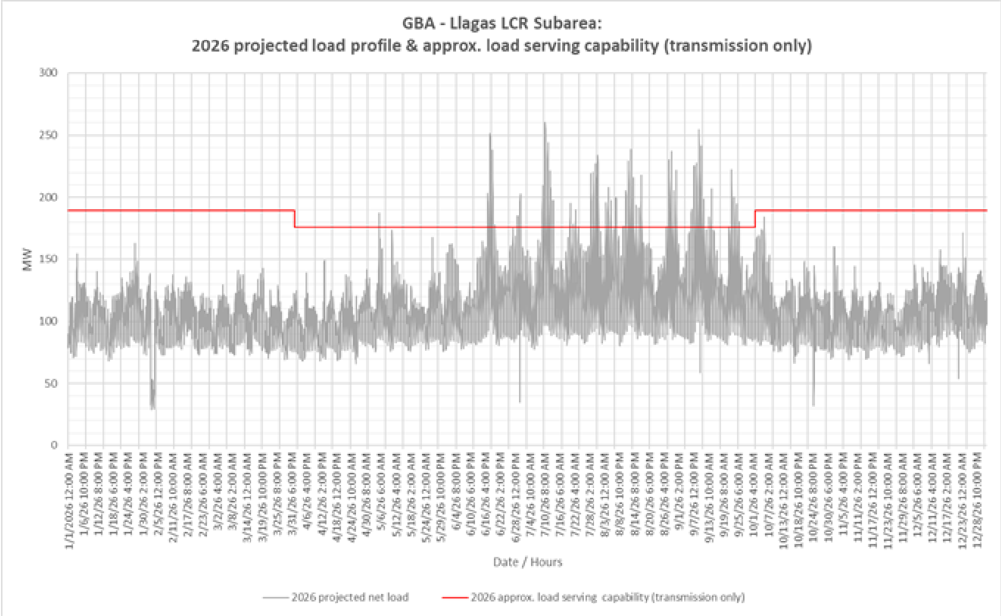


Figure 3.3-34 Llagas LCR Sub-area 2026 Forecast Hourly Profiles



Llagas LCR Sub-area Requirement

Table 3.3-29 identifies the sub-area requirements. The LCR requirement for the worst contingency is 95 MW.

Table 3.3-29 Llagas LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2026	First limit	P3	Metcalf-Llagas 115 kV	Metcalf-Morgan Hill 115 kV with Gilroy Cogen Unit 1 out of service	95

Effectiveness factors:

All units within this sub-area have the same effectiveness factor.

For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7320 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.5.3 *San Jose Sub-area*

San Jose is a Sub-area of the Greater Bay LCR Area.

San Jose LCR Sub-area Diagram

The San Jose LCR Sub-area is identified in Figure 3.3-32.

San Jose LCR Sub-area Load and Resources

Table 3.3-30 provides the forecast load and resources in San Jose LCR sub-area in 2026. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-30 San Jose LCR Sub-area 2026 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	2887	Market/Net Seller	584	584
AAEE	-25	Battery	95	95
Behind the meter DG	-54	MUNI/QF	191	191
Net Load	**2808**	Solar	0	0
Transmission Losses	100	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**2908**	**Total**	**870**	**870**

San Jose LCR Sub-area Hourly Profiles

Figure 3.3-35 illustrates the forecast 2026 profile for the peak day for the San Jose LCR sub-area with the Category P6 normal and emergengy load serving capabilities without local resources. The chart also includes an estimated amount of energy storage that can be added to this local area from charging restriction perspective. Figure 3.3-36 illustrates the forecast 2026 hourly profile for San Jose LCR sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-35 San Jose LCR Sub-area 2026 Peak Day Forecast Profiles

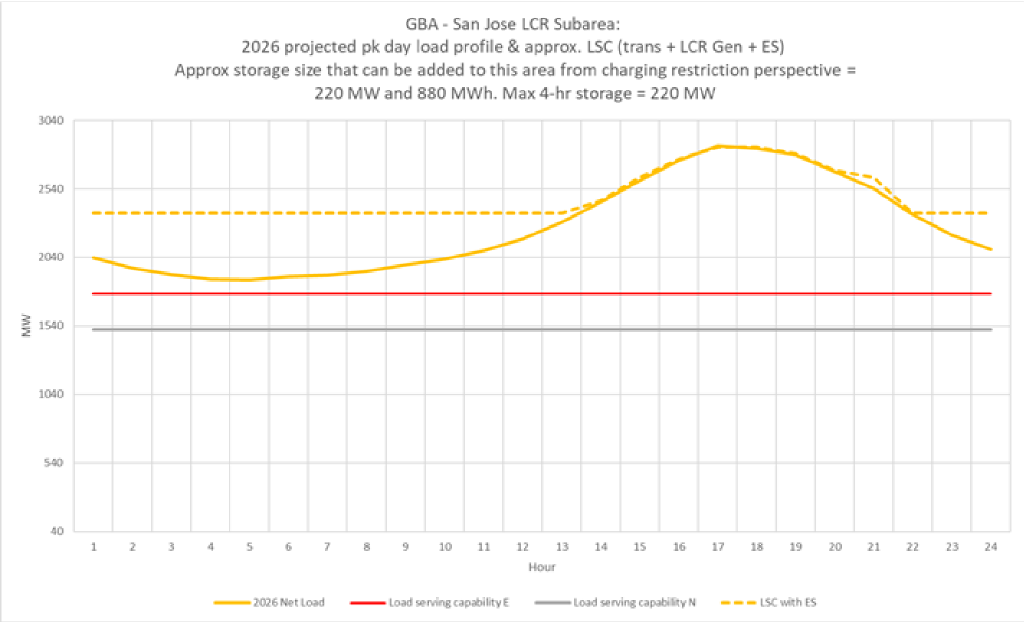
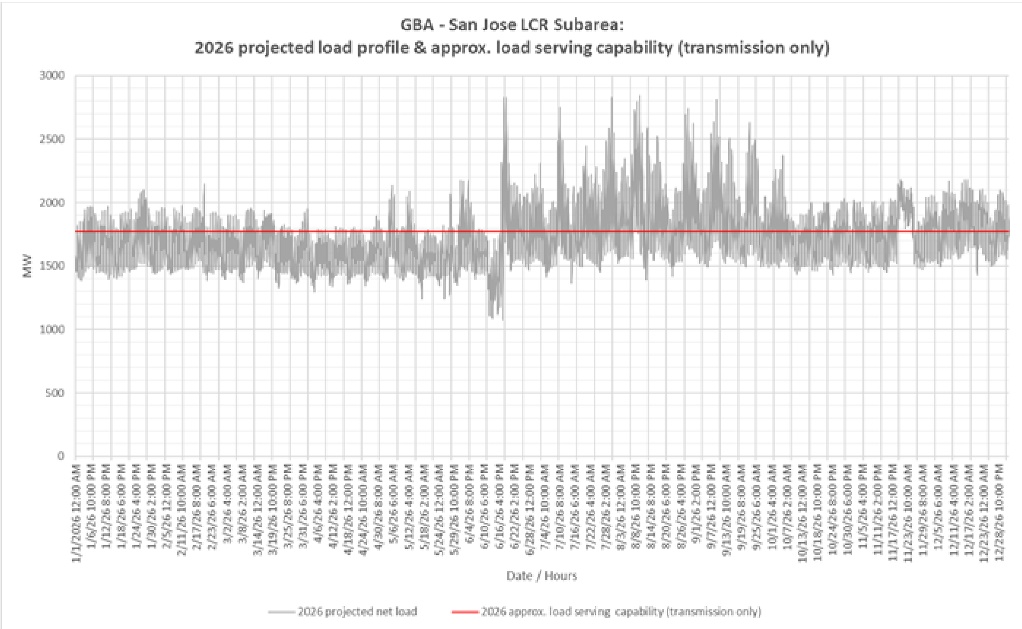


Figure 3.3-36 San Jose LCR Sub-area 2026 Forecast Hourly Profiles



San Jose LCR Sub-area Requirement

Table 3.3-31 identifies the sub-area LCR requirements. The LCR requirement for the worst contingency is 1813 MW including a deficiency of 943 MW.

Table 3.3-31 San Jose LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First limit	P6	Metcalf #3 230/115 kV	Metcalf #2 & #4 230/115 kV	1813 (942)

Effectiveness factors:

Effective factors for generators in the San Jose LCR sub-area are in Attachment B table titled San Jose.

For other helpful procurement information please read procedure 2210Z Effectiveness Factors under 7320 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.5.4 *South Bay-Moss Landing Sub-area*

South Bay-Moss Landing is a Sub-area of the Greater Bay LCR Area.

South Bay-Moss Landing LCR Sub-area Diagram

The South Bay-Moss Landing LCR sub-area is identified in Figure 3.3-32.

South Bay-Moss Landing LCR Sub-area Load and Resources

Table 3.3-32 provides the forecast load and resources in South Bay-Moss Landing LCR sub-area in 2026. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-32 South Bay-Moss Landing LCR Sub-area 2026 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	4514	Market/Net Seller	2201	2201
AAEE	-44	Battery	1048	1048
Behind the meter DG	-108	MUNI/QF	191	191
Net Load	**4362**	Solar	0	0
Transmission Losses	126	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**4488**	**Total**	**3440**	**3440**

South Bay-Moss Landing LCR Sub-area Hourly Profiles

Figure 3.3-37 illustrates the forecasted 2026 profile for the peak day for the South Bay-Moss Landing LCR sub-area with the Category P6 normal and emergengy load serving capabilities without local resources. The chart also includes an estimated amount of energy storage that can be added to this local area from charging restriction perspective. Figure 3.3-38 illustrates the forecast 2026 hourly profile for South Bay-Moss Landing LCR sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-37 South Bay-Moss Landing LCR Sub-area 2026 Peak Day Forecast Profiles

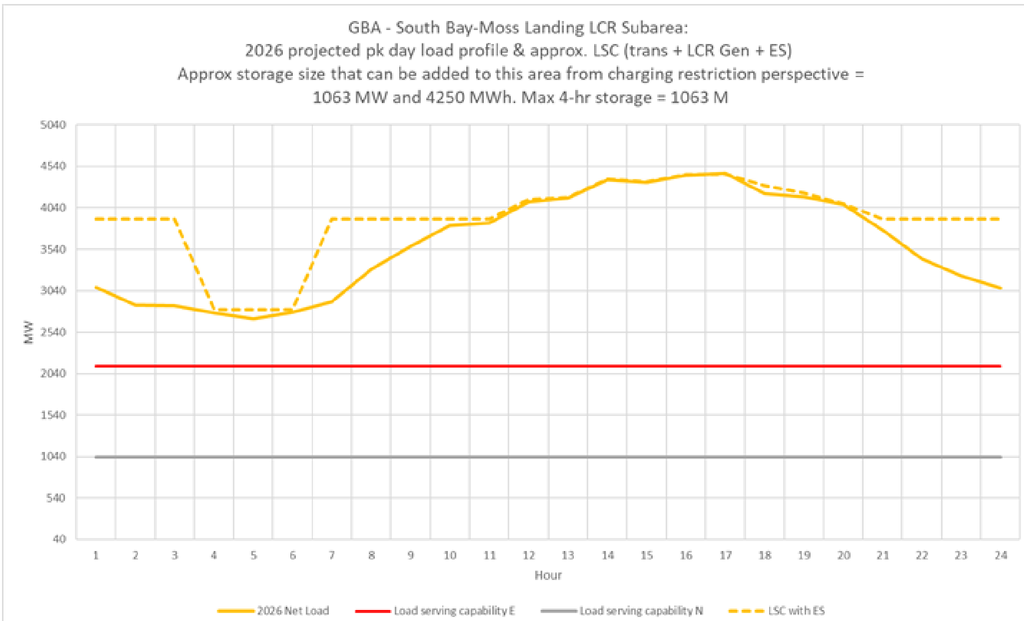
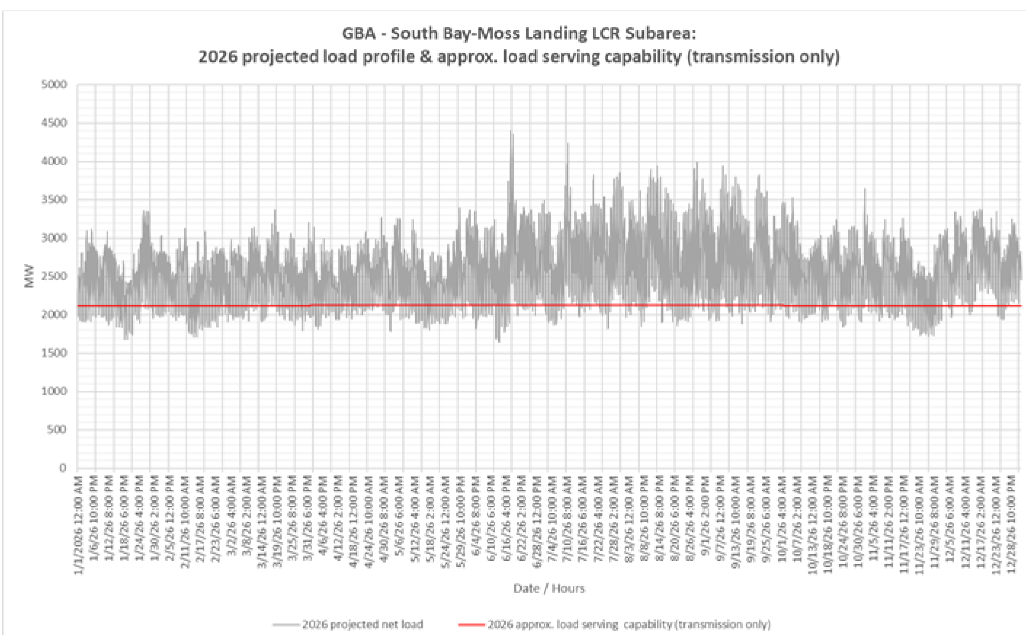


Figure 3.3-38 South Bay-Moss Landing LCR Sub-area 2026 Forecast Hourly Profiles



South Bay-Moss Landing LCR Sub- Requirement

Table 3.3-33 identifies the sub-area LCR requirements. The LCR Requirement for the worst contingency is 2497 MW.

Table 3.3-33 South Bay-Moss Landing LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2026	First Limit	P6	Moss Landing-Las Aguilas 230 kV	Tesla-Metcalf 500 kV and Moss Landing-Los Banos 500 kV	2497

Effectiveness factors:

Effective factors for generators in the South Bay-Moss Landing LCR sub-area are in Attachment B table titled South Bay-Moss Landing.

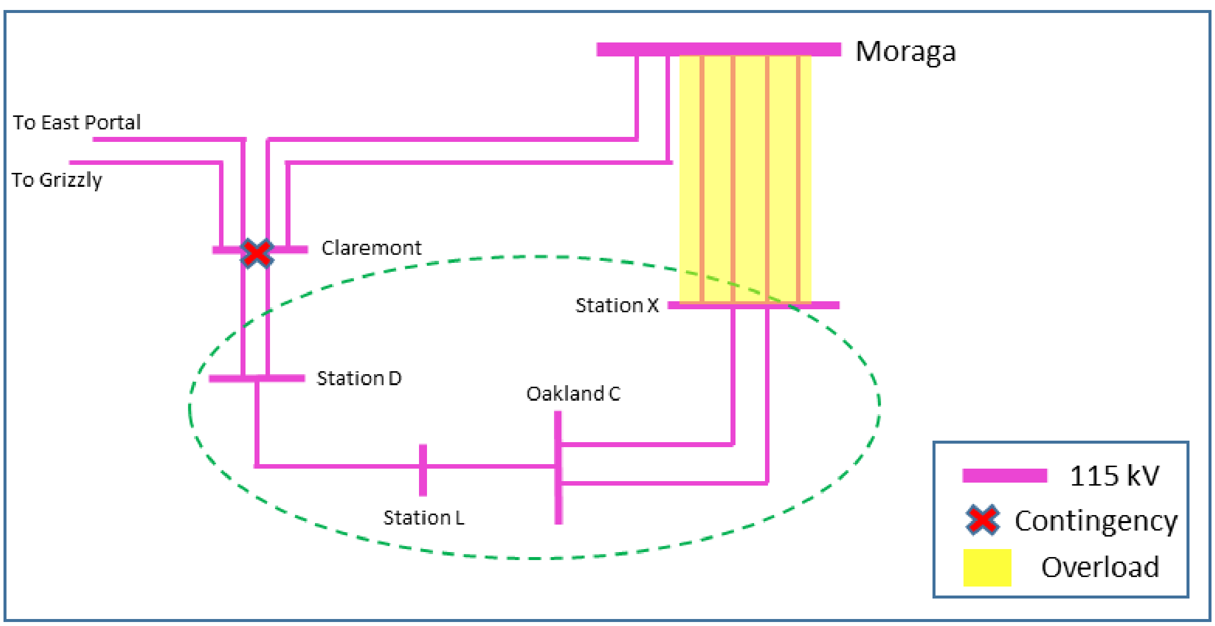
For other helpful procurement information please read procedure 2210Z Effectiveness Factors under 7320 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.5.5 *Oakland Sub-area*

Oakland is a sub-area of the Greater Bay LCR area.

Oakland LCR Sub-area Diagram

Figure 3.3-39 Oakland LCR Sub-area



Oakland LCR Sub-area Load and Resources

Table 3.3-34 provides the forecast load and resources in Oakland LCR sub-area in 2026. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-34 Oakland LCR Sub-area 2026 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	376	Market/Net Seller	110	110
AAEE	-3	Battery	0	0
Behind the meter DG	-7	MUNI/QF	48	48
Net Load	**366**	Solar	0	0
Transmission Losses	1	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**367**	**Total**	**158**	**158**

Oakland LCR Sub-area Hourly Profiles

Figure 3.3-37 illustrates the forecasted 2026 profile for the peak day for the Oakland LCR sub-area with the Category P2 normal and emergengy load serving capabilities without local resources. The chart also includes an estimated amount of energy storage that can be added to this local area from charging restriction perspective. Figure 3.3-38 illustrates the forecast 2026 hourly profile for Oakland LCR sub-area with the Category P2 emergency load serving capability without local resources.

Figure 3.3-40 Oakland LCR Sub-area 2026 Peak Day Forecast Profiles

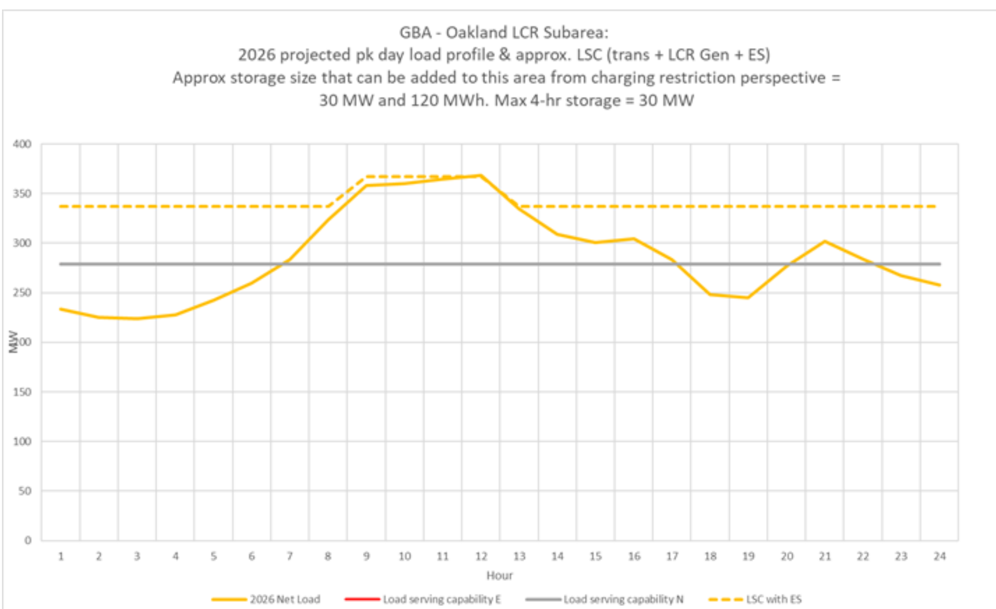
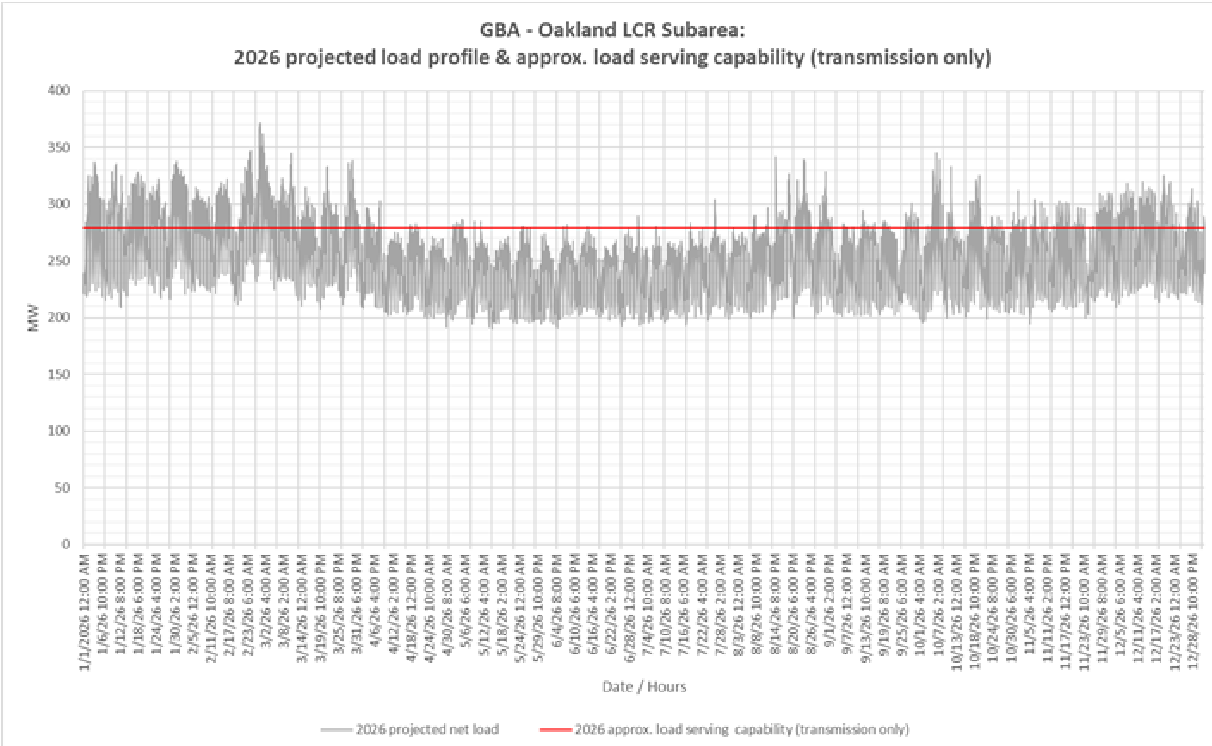


Figure 3.3-41 Oakland LCR Sub-area 2026 Forecast Hourly Profiles



Oakland LCR Sub-area Requirement

Table 3.3-35 identifies the sub-area requirements. The LCR Requirement for the worst contingency is 55 MW.

Table 3.3-35 Oakland LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2026	First limit	P2	Moraga – Oakland X #1-4 115 kV lines	Claremont 115 kV – Section 1D & 2D	55

Effectiveness factors:

All units within the Oakland sub-area have the same effectiveness factor.

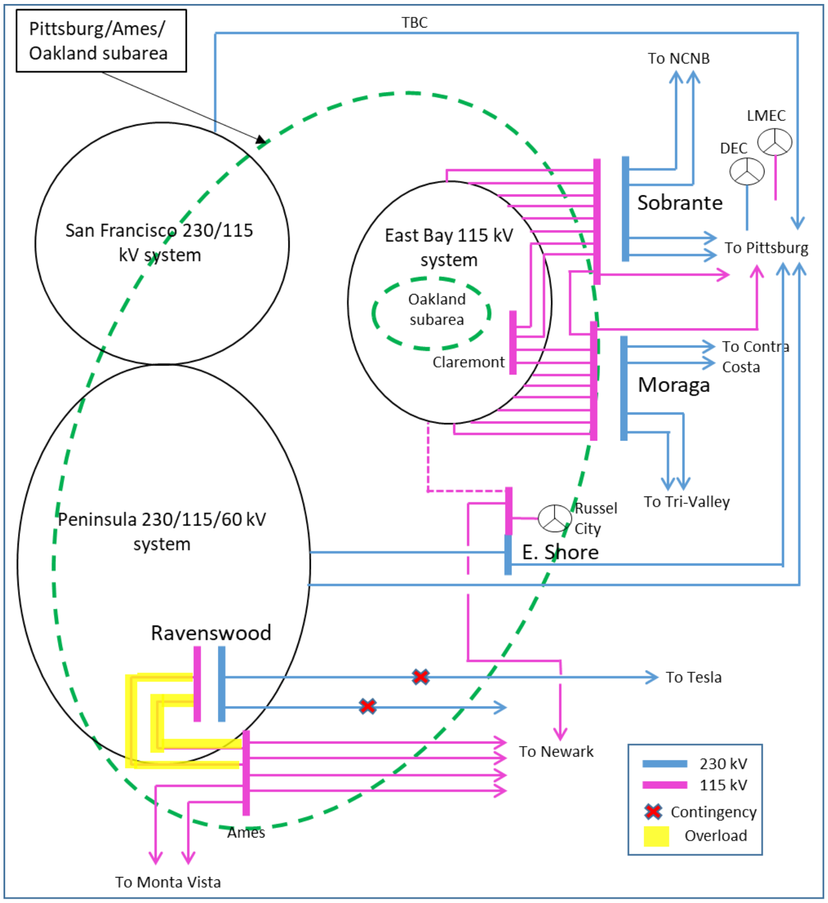
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7320 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.5.6 *Ames-Pittsburg-Oakland Sub-areas Combined*

Ames-Pittsburg-Oakland is a sub-area of the Greater Bay LCR area.

Ames-Pittsburg-Oakland LCR Sub-area Diagram

Figure 3.3-42 Ames-Pittsburg-Oakland LCR Sub-area



Ames-Pittsburg-Oakland LCR Sub-area Load and Resources

Table 3.3-36 provides the forecast load and resources in Ames-Pittsburg-Oakland LCR sub-area in 2026. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-36 Ames-Pittsburg-Oakland LCR Sub-area 2026 Forecast Load and Resources

Load (MW)	Generation (MW)	Aug NQC	At Peak
The Ames-Pittsburg-Oakland Sub-area does not has a defined load pocket with the limits based upon power flow through the area.	Market/Net Seller	2292	2292
	Battery	200	200
	MUNI/QF	276	276
	Solar	5	2
	Existing 20-minute Demand Response	0	0
	Mothballed	0	0
	Total	**2773**	**2770**

Ames-Pittsburg-Oakland LCR Sub-area Hourly Profiles

The Ames-Pittsburg-Oakland sub-area does not have a defined load pocket with the limits based upon power flow through the area. As such, no load profile is provided for this sub-area.

Ames-Pittsburg-Oakland LCR Sub-area Requirement

Table 3.3-37 identifies the sub-area LCR requirements. The LCR Requirement for the worst contingency is 2960 MW with a NQC deficiency of 187 MW as well as a 190 Mw of peak deficiency.

Table 3.3-37 Ames-Pittsburg-Oakland LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First limit	P6	Ames-Ravenswood #1 & #2 115 kV lines	Newark-Ravenswood 230 kV & Tesla-Ravenswood 230 kV lines	2960 (187 NQC; 190 Peak))

Effectiveness factors:

Effective factors for generators in the Ames-Pittsburg-Oakland LCR sub-area are in Attachment B table titled Ames/Pittsburg/Oakland.

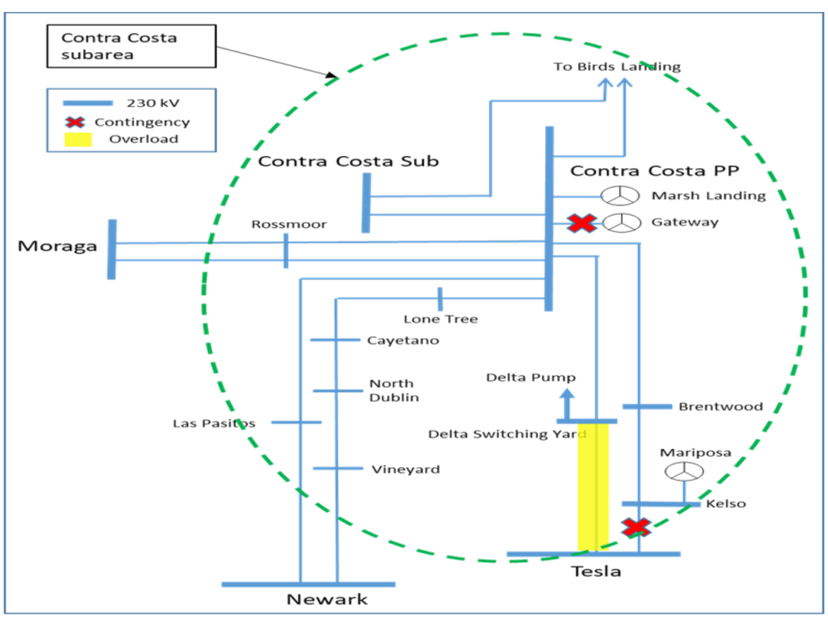
For other helpful procurement information please read procedure 2210Z Effectiveness Factors under 7320 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.5.7 *Contra Costa Sub-area*

Contra Costa is a sub-area of the Greater Bay LCR area.

Contra Costa LCR Sub-area Diagram

Figure 3.3-43 Contra Costa LCR Sub-area



Contra Costa LCR Sub-area Load and Resources

Table 3.3-38 provides the forecast load and resources in Contra Costa LCR sub-area. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-38 Contra Costa LCR Sub-area 2026 Forecast Load and Resources

Load (MW)	Generation (MW)	Aug NQC	At Peak
The Contra Costa Sub-area does not has a defined load pocket with the limits based upon power flow through the area.	Market/Net Seller	1662	1662
	Wind	373	373
	Battery	100	100
	MUNI/QF	127	127
	Existing 20-minute Demand Response	0	0
	Solar	0	0
	Total	**2222**	**2222**

Contra Costa LCR Sub-area Hourly Profiles

The Contra Costa sub-area does not have a defined load pocket with the limits based upon power flow through the area. As such, no load profile is provided for this sub-area.

Contra Costa LCR Sub-area Requirement

Table 3.3-39 identifies the sub-area LCR requirements. The LCR requirement for the worst contingency is 921 MW.

Table 3.3-39 Contra Costa LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2026	First limit	P2	Delta Switching Yard-Tesla 230 kV Line	Tesla E 230 kV -Sections 2E & 1E	921

Effectiveness factors:

For other helpful procurement information please read procedure 2210Z Effectiveness Factors under 7230 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.5.8 *Bay Area overall*

Bay Area LCR Area Hourly Profiles

Figure 3.3-44 illustrates the forecast 2026 profile for the peak day for the Bay Area LCR area with the Category P6 normal and emergengy load serving capabilities without local resources. The chart also includes an estimated amount of energy storage that can be added to this local area from charging restriction perspective. Figure 3.3-45 illustrates the forecast 2026 hourly profile for Bay Area LCR area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-44 Bay Area LCR Area 2026 Peak Day Forecast Profiles

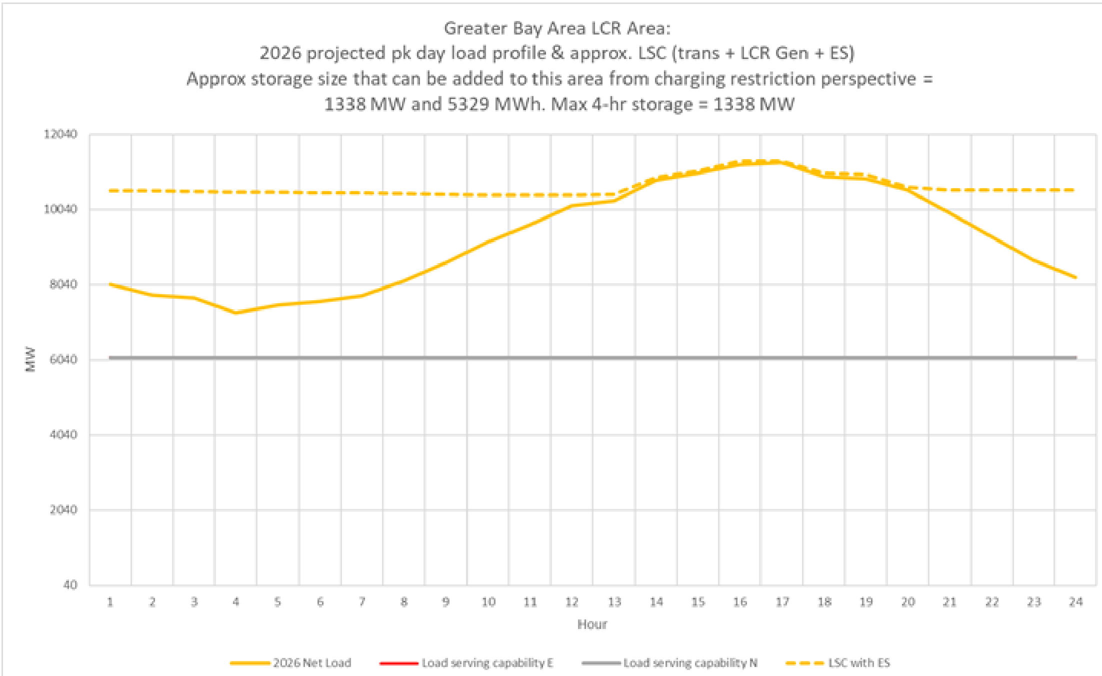
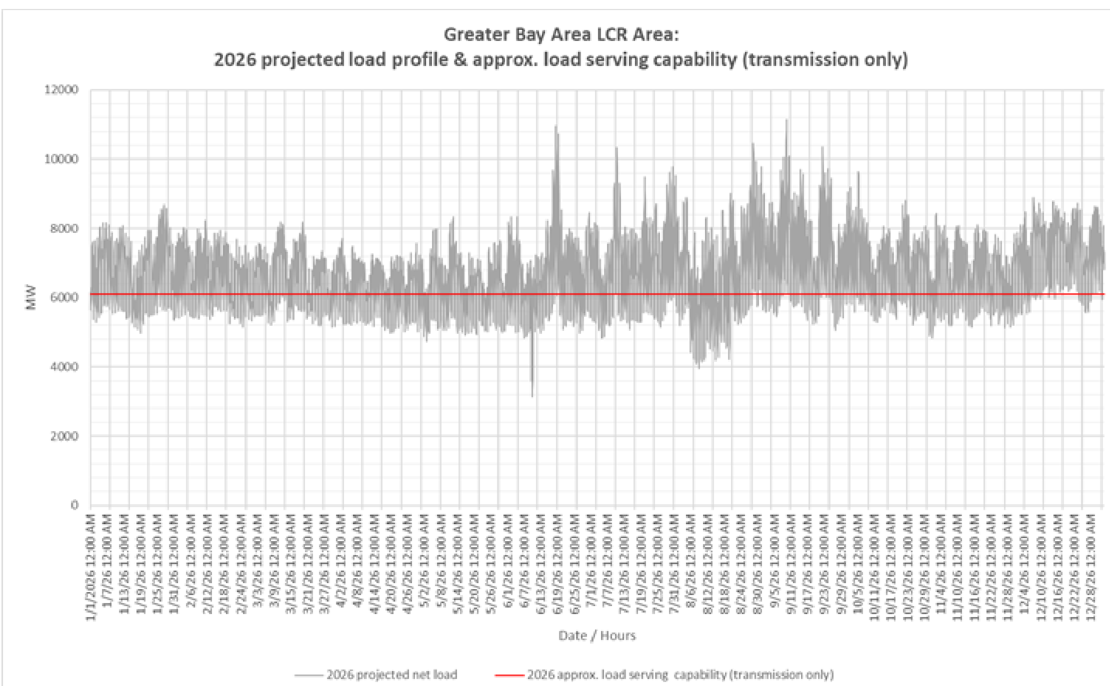


Figure 3.3-45 Bay Area LCR Area 2026 Forecast Hourly Profiles



Greater Bay LCR Area Overall Requirement

Table 3.3-40 identifies the area LCR requirements. The LCR requirement for the worst contingency is 7852 MW including 294 MW of NQC deficiency as wll as 299 MW of peak deficiency.

Table 3.3-40 Bay Area LCR Overall area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First limit	P6	Metcalf #13 500/230 kV	Metcalf #11 & #12 500/230 kV	7852 (294 NQC: 299 Peak))

Effectiveness factors:

Effective factors for generators in the Greater Bay Area LCR sub-area are in Attachment B table titled Greater Bay Area.

For other helpful procurement information please read procedure 2210Z Effectiveness Factors under 7320 posted at: http://www.caiso.com/Documents/2210Z.pdf

Changes compared to last year's results

The load forecast decrease by 385 MW compared to 2025, and consequently, the total LCR need decreased by 124 MW. The resource capacity needed has increased by 117 MW due to additional available resources (in lieu of deficiencies)

3.3.6 Greater Fresno Area

3.3.6.1 *Area Definition:*

The transmission facilities coming into the Greater Fresno area are:

Gates-Mustang #1 230 kV

Gates-Mustang #2 230 kV

Gates #5 230/70 kV Transformer Bank

Mercy Spring 230 /70 Bank # 1

Los Banos #3 230/70 Transformer Bank

Los Banos #4 230/70 Transformer Bank

Warnerville-Wilson 230kV

Melones-North Merced 230 kV line

Panoche-Tranquility #1 230 kV

Panoche-Tranquility #2 230 kV

Panoche #1 230/115 kV Transformer Bank

Panoche #2 230/115 kV Transformer Bank

Corcoran-Smyrna 115kV

Coalinga #1-San Miguel 70 kVThe substations that delineate the Greater Fresno area are:

Gates is out Mustang is in

Gates is out Mustang is in

Gates 230 is out Gates 70 is in

Mercy Springs 230 is out Mercy Springs 70 is in

Los Banos 230 is out Los Banos 70 is in

Los Banos 230 is out Los Banos 70 is in

Warnerville is out Wilson is in

Melones is out North Merced is in

Panoche is out Tranquility #1 is in

Panoche is out Tranquility #2 is in

Panoche 230 is out Panoche 115 is in

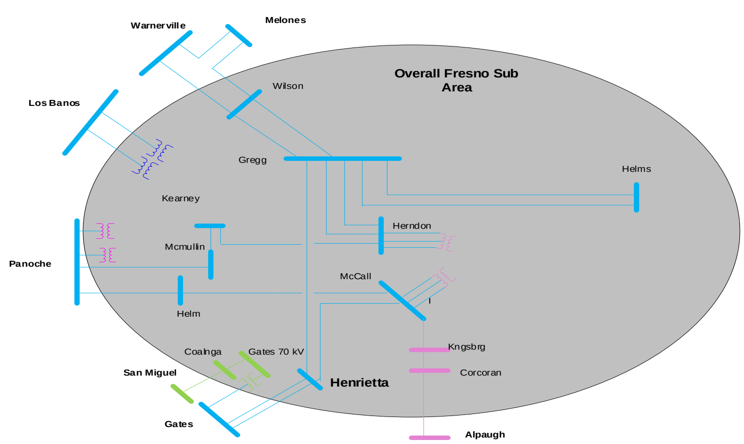
Panoche 230 is out Panoche 115 is in

Corcoran is in Smyrna is out

Coalinga is in San Miguel is out

Fresno LCR Area Diagram

Figure 3.3-46 Fresno LCR Area



Fresno LCR Area Load and Resources

Table 3.3-41 provides the forecast load and resources in Fresno LCR Area in 2026. The list of generators within the LCR sub-area are provided in Attachment A.

In year 2026 the estimated time of local area peak is 19:20 PM.

At the local area peak time the estimated, ISO metered, solar output is 0%.

If required, all non-solar technology type resources are dispatched at NQC.

Table 3.3-41 Fresno LCR Area 2026 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	3566	Market/Net Seller	2379	2379
AAEE	-44	Battery/Hybrid	800	800
Behind the meter DG	-72	MUNI/QF	205	205
Net Load	**3450**	Solar	440	0
Transmission Losses	142	Existing 20-minute Demand Response	0	0
Pumps	0	Wind	15	15
Load + Losses + Pumps	**3592**	**Total**	**3839**	**3399**

Approved transmission projects modeled

Giffen Line Reconductoring (Completed)

Bellota-Warnerville 230 kV Reconductoring (Completed)

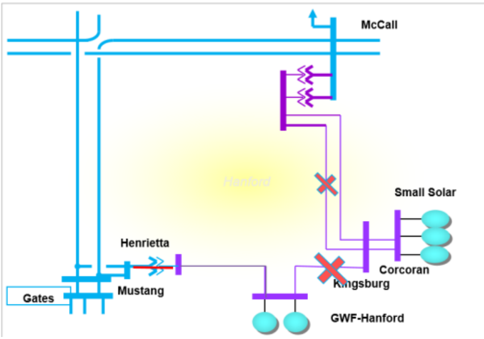
Panoche – Oro Loma 115 kV Line Reconductoring (Completed)

3.3.6.2 *Hanford Sub-area*

Hanford is a sub-area of the Fresno LCR area.

Hanford LCR Sub-area Diagram

Figure 3.3-47 Hanford LCR Sub-area



Hanford LCR Sub-area Load and Resources

Table 3.3-42 provides the forecast load and resources in Hanford LCR sub-area in 2026. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-42 Hanford LCR Sub-area 2026 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	206	Market/Net Seller	133	133
AAEE	-2	Battery	32	32
Behind the meter DG	-4	MUNI/QF	0	0
Net Load	**200**	Solar	83	0
Transmission Losses	5	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**205**	**Total**	**248**	**165**

Hanford LCR Sub-area Hourly Profiles

Figure 3.3-48 illustrates the forecast 2026 profile for the peak day for the Hanford sub-area with the Category P6 normal and emergency load serving capabilities without local resources. The chart also includes an estimated amount of energy storage that can be added to this local area from charging restriction perspective. Figure 3.3-49 illustrates the forecast 2026 hourly profile for Hanford sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-48 Hanford LCR Sub-area 2026 Peak Day Forecast Profiles

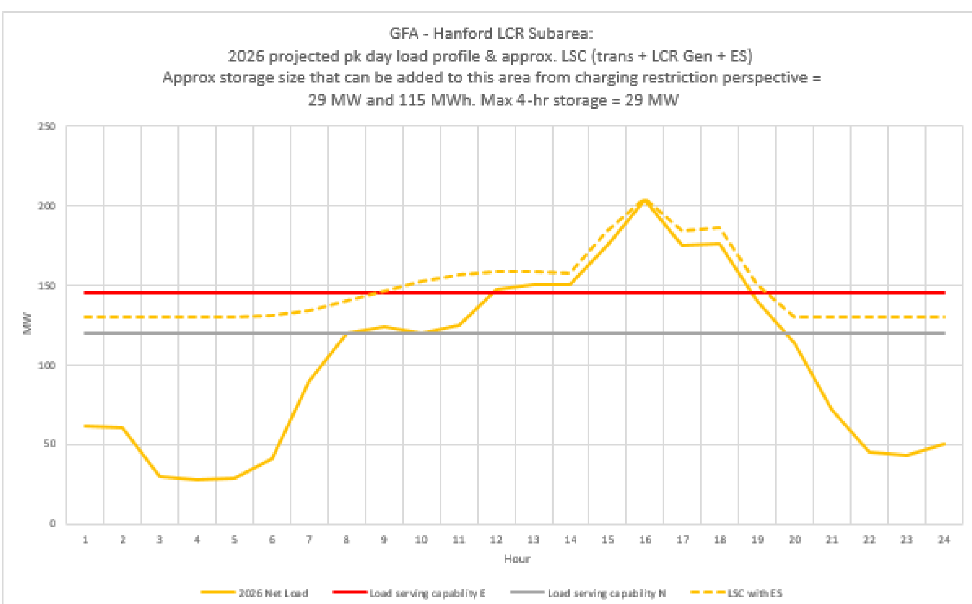
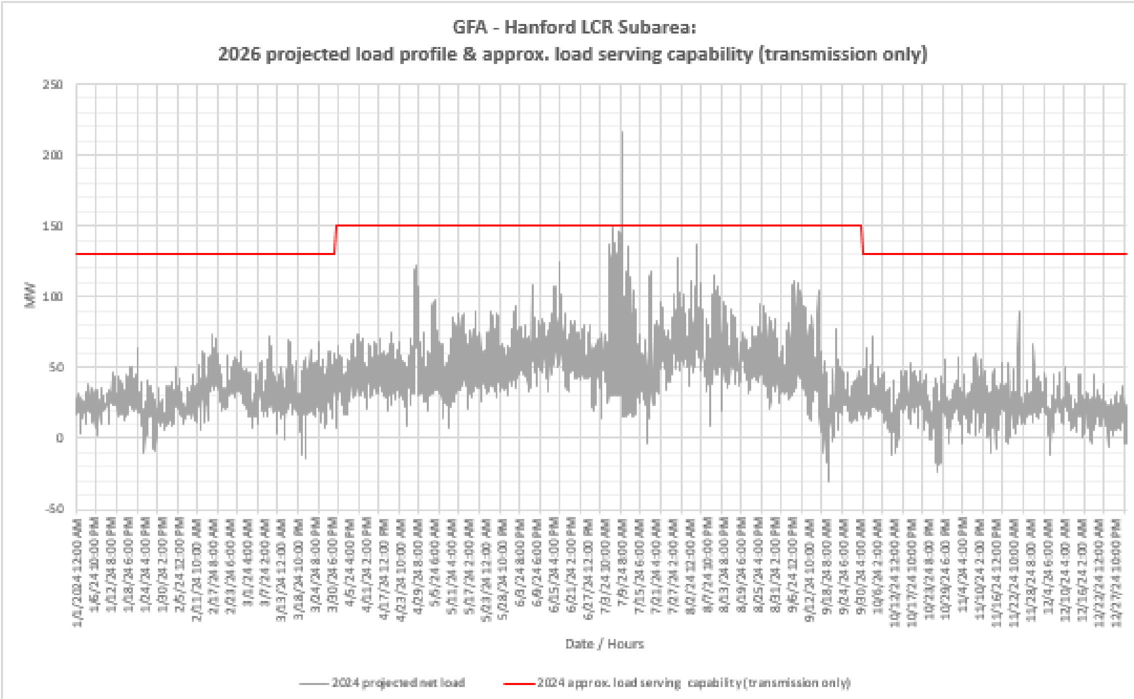


Figure 3.3-49 Hanford LCR Sub-area 2026 Forecast Hourly Profiles



Hanford LCR Sub-area Requirement

Table 3.3-43 identifies the sub-area requirements. The LCR Requirement for a Category P6 contingency is 29 MW.

Table 3.3-43 Hanford LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First Limit	P6	Henrietta 230/115 kV Bank 3	McCall-Kingsburg #1 115 kV line and GWF-Kingsburg 115 kV line	29

Effectiveness factors:

All units within the Hanford sub-area have the same effectiveness factor.

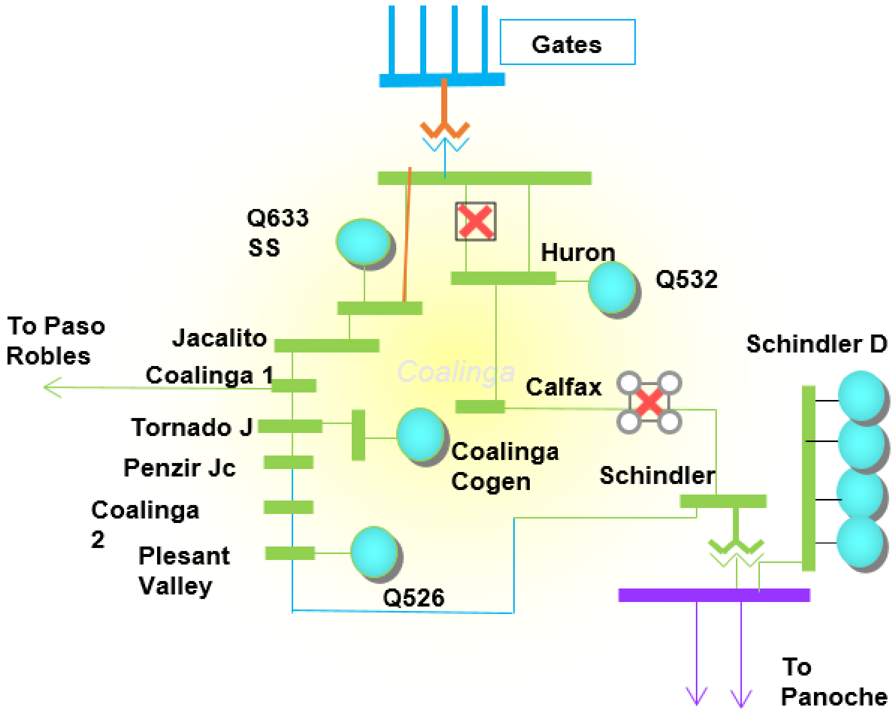
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7430 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.6.3 *Coalinga Sub-area*

Coalinga is a sub-area of the Fresno LCR area.

Coalinga LCR Sub-area Diagram

Figure 3.3-50 Coalinga LCR Sub-area



Coalinga LCR Sub-area Load and Resources

Table 3.3-44 provides the forecast load and resources in Coalinga LCR sub-area. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-44 Coalinga LCR Sub-area 2026 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	136	Market/Net Seller	0	0
AAEE	-1	Battery	10	10
Behind the meter DG	-1	MUNI/QF	3	3
Net Load	**134**	Solar	22	0
Transmission Losses	2	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**136**	**Total**	**35**	**13**

Coalinga LCR Sub-area Hourly Profiles

Figure 3.3-51 illustrates the forecast 2026 profile for the peak day for the Coalinga sub-area with the Category P6 normal and emergency load serving capabilities without local resources. The chart also includes an estimated amount of energy storage that can be added to this local area from charging restriction perspective. Figure 3.3-52 illustrates the forecast 2026 hourly profile for Coalinga sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-51 Coalinga LCR Sub-area 2026 Peak Day Forecast Profiles

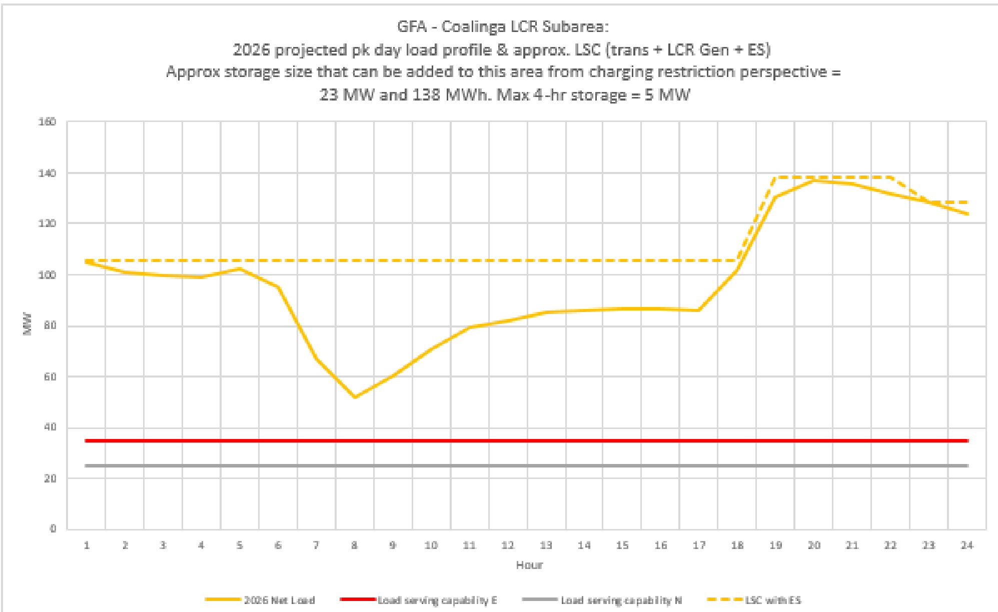
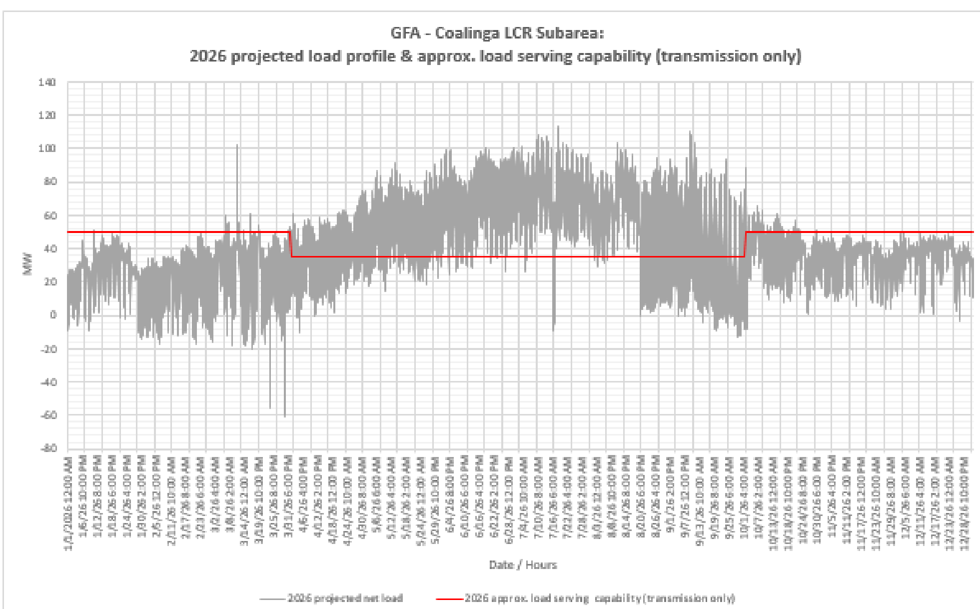


Figure 3.3-52 Coalinga LCR Sub-area 2026 Forecast Hourly Profiles



Coalinga LCR Sub-area Requirement

Table 3.3-45 identifies the sub-area requirements. The LCR Requirement for a Category P6 contingency is 94 MW including a 81 MW at peak deficiency and 59 MW NQC deficiency.

Table 3.3-45 Coalinga LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First Limit	P6	San Miguel-Coalinga 70 kV line	Gates 230/70 kV bank 5 and Schindler 115/70 kV bank 2	94 (81 Peak; 59 NQC)

Effectiveness factors:

All units within the Coalinga sub-area have the same effectiveness factor.

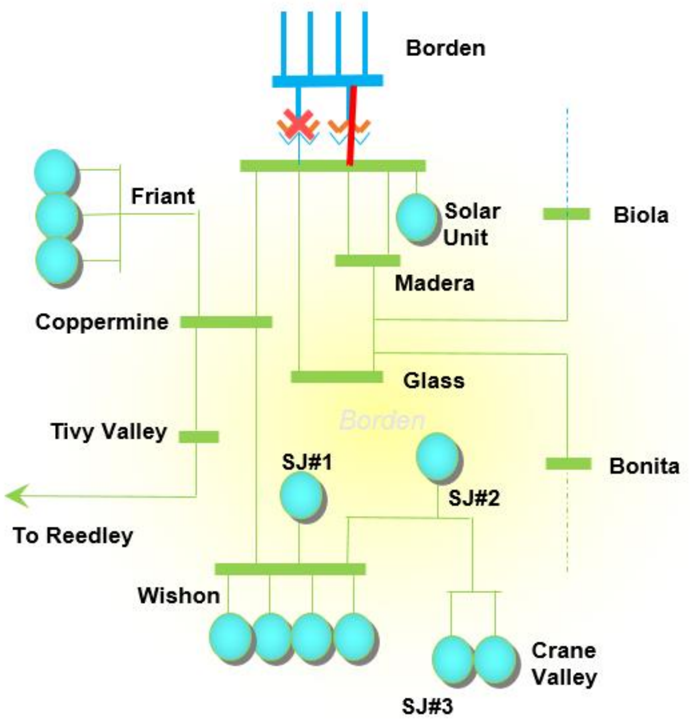
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7430 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.6.4 *Borden Sub-area*

Borden is a sub-area of the Fresno LCR area.

Borden LCR Sub-area Diagram

Figure 3.3-53 Borden LCR Sub-area



Borden LCR Sub-area Load and Resources

Table 3.3-46 provides the forecast load and resources in Borden LCR sub-area. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-46 Borden LCR Sub-area 2026 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	174	Market/Net Seller	11	11
AAEE	-2	Battery	0	0
Behind the meter DG	-4	MUNI/QF	0	0
Net Load	**168**	Solar	13	0
Transmission Losses	2	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**171**	**Total**	**24**	**11**

Borden LCR Sub-area Hourly Profiles

Figure 3.3-54 illustrates the forecasted 2026 profile for the peak day for the Borden sub-area with the Category P6 normal and emergency load serving capabilities without local resources. The chart also includes an estimated amount of energy storage that can be added to this local area from charging restriction perspective. Figure 3.3-55 illustrates the forecasted 2026 hourly profile for Borden sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-54 Borden LCR Sub-area 2026 Peak Day Forecast Profiles

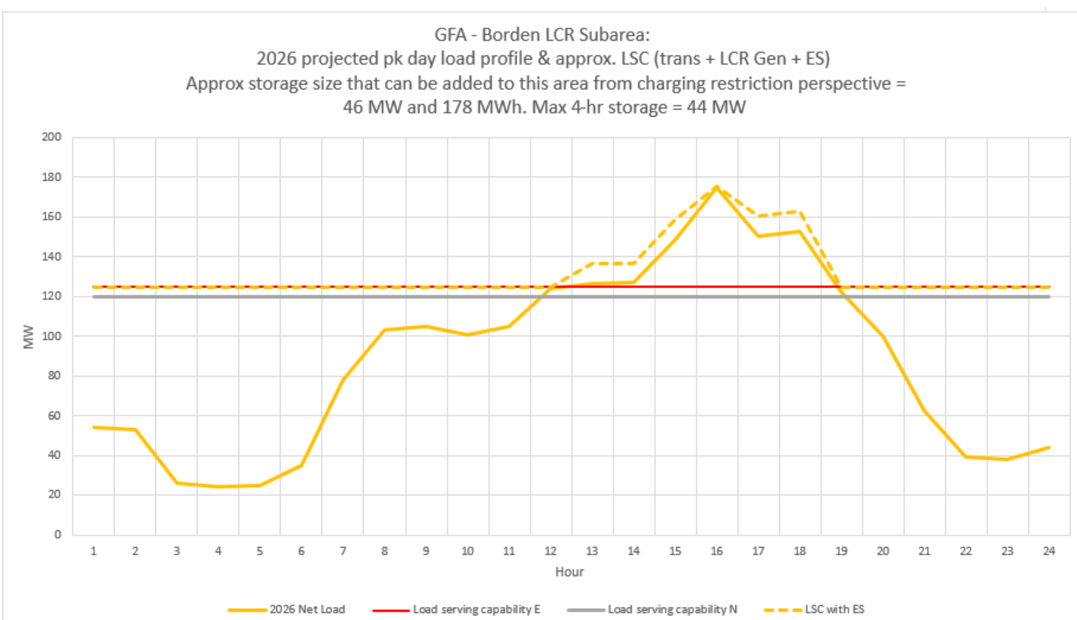
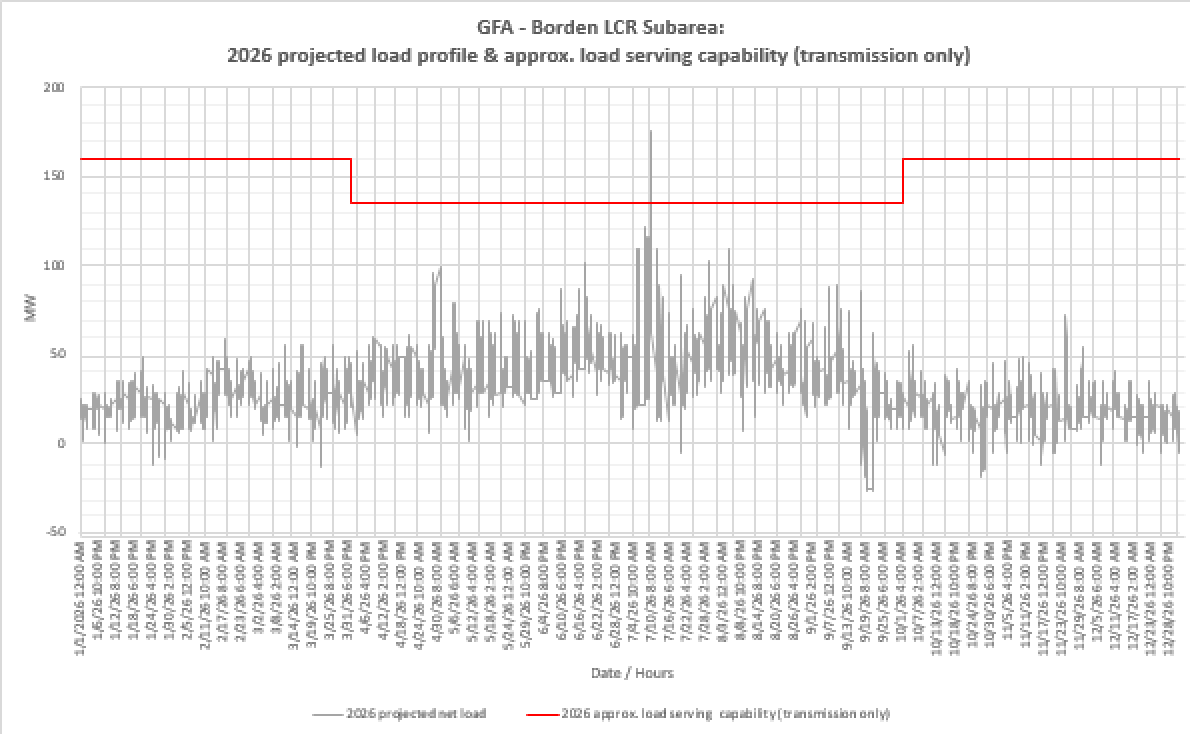


Figure 3.3-55 Borden LCR Sub-area 2026 Forecast Hourly Profiles



Borden LCR Sub-area Requirement

Table 3.3-47 identifies the sub-area requirements. The LCR Requirement for a Category P3 contingency is 52 MW with a 28 MW NQC deficiency and 41 MW peak deficiency.

Table 3.3-47 Borden LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First Limit	P3	Borden 230/70 kV TB # 1	Borden 230/70 kV TB # 4 with Friant#2 unit out of service	52 (28 NQC, 41 Peak)

Effectiveness factors:

All units within the Borden sub-area have the same effectiveness factor.

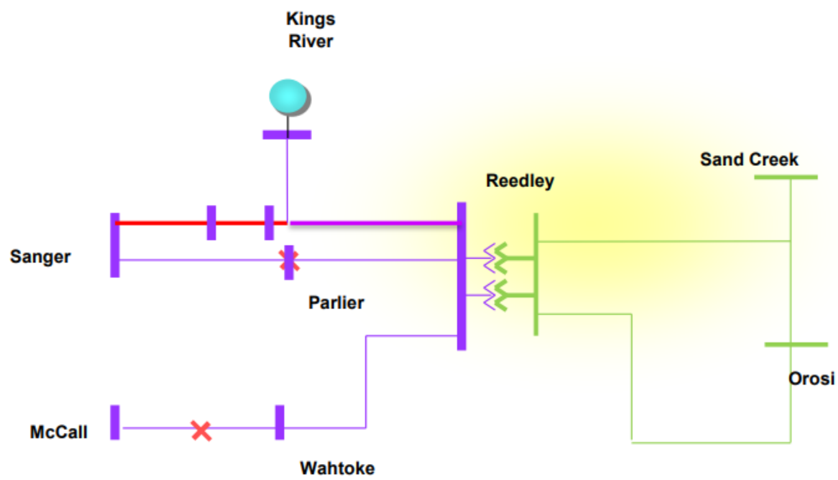
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7430 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.6.5 *Reedley Sub-area*

Reedley is a sub-area of the Fresno LCR area.

Reedley LCR Sub-area Diagram

Figure 3.3-56 Reedley LCR Sub-area



Reedley LCR Sub-area Load and Resources

Table 3.3-48 provides the forecast load and resources in Reedley LCR sub-area. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-48 Reedley LCR Sub-area 2026 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	241	Market/Net Seller	51	51
AAEE	-3	Battery	0	0
Behind the meter DG	-6	MUNI/QF	0	0
Net Load	**232**	LTPP Preferred Resources	0	0
Transmission Losses	39	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**271**	**Total**	**51**	**51**

Reedley LCR Sub-area Hourly Profiles

Figure 3.3-57 illustrates the forecast 2026 profile for the peak day for the Reedley sub-area with the Category P6 normal and emergency load serving capabilities without local resources. The chart also includes an estimated amount of energy storage that can be added to this local area from charging restriction perspective. Figure 3.3-58 illustrates the forecast 2026 hourly profile for Reedley sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-57 Reedley LCR Sub-area 2026 Peak Day Forecast Profiles

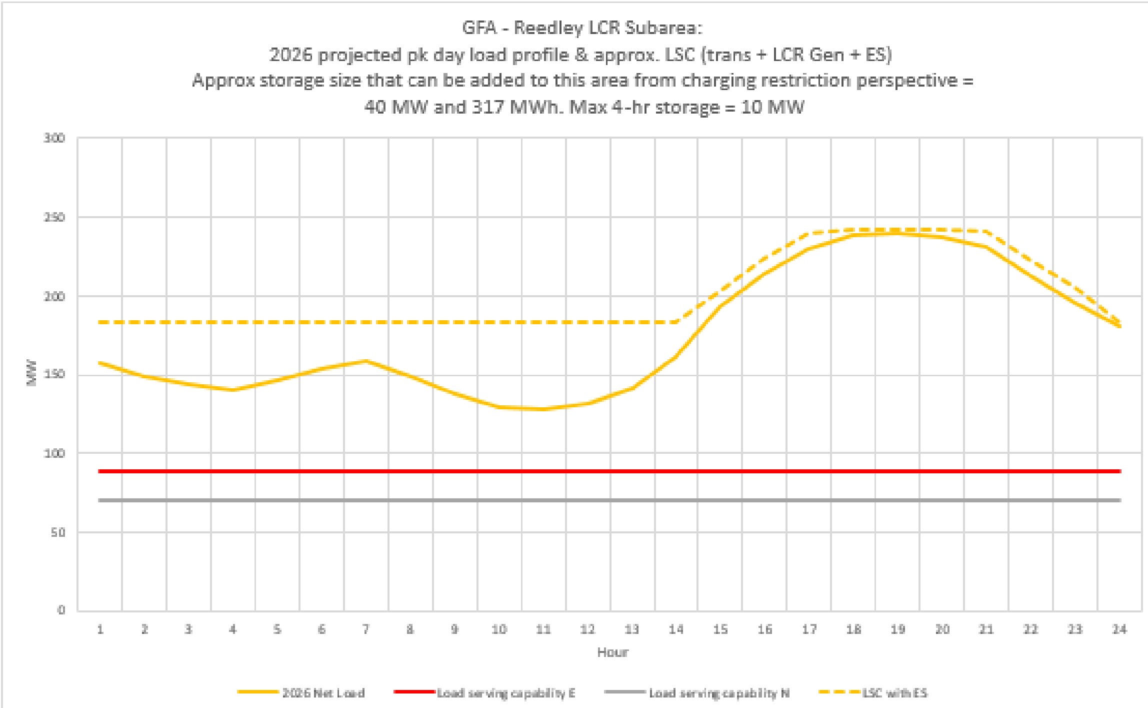
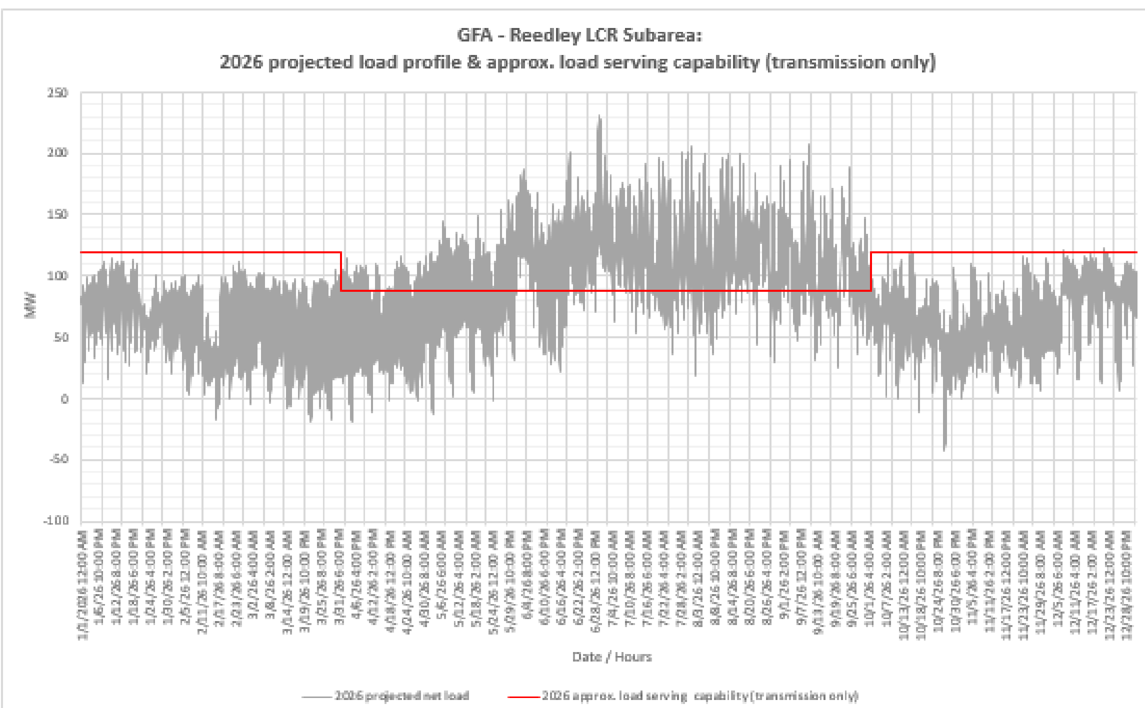


Figure 3.3-58 Reedley LCR Sub-area 2026 Forecast Hourly Profiles



Reedley LCR Sub-area Requirement

Table 3.3-49 identifies the sub-area requirements. The LCR Requirement for a Category P6 contingency is 128 MW with a 77 MW deficiency.

Table 3.3-49 Reedley LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First Limit	P6	Kings River-Sanger-Reedley 115 kV line with Wahtoke load online	McCall-Reedley 115 kV & Sanger-Reedley 115 kV	128 (77)

Effectiveness factors:

All units within the Reedley sub-area have the same effectiveness factor.

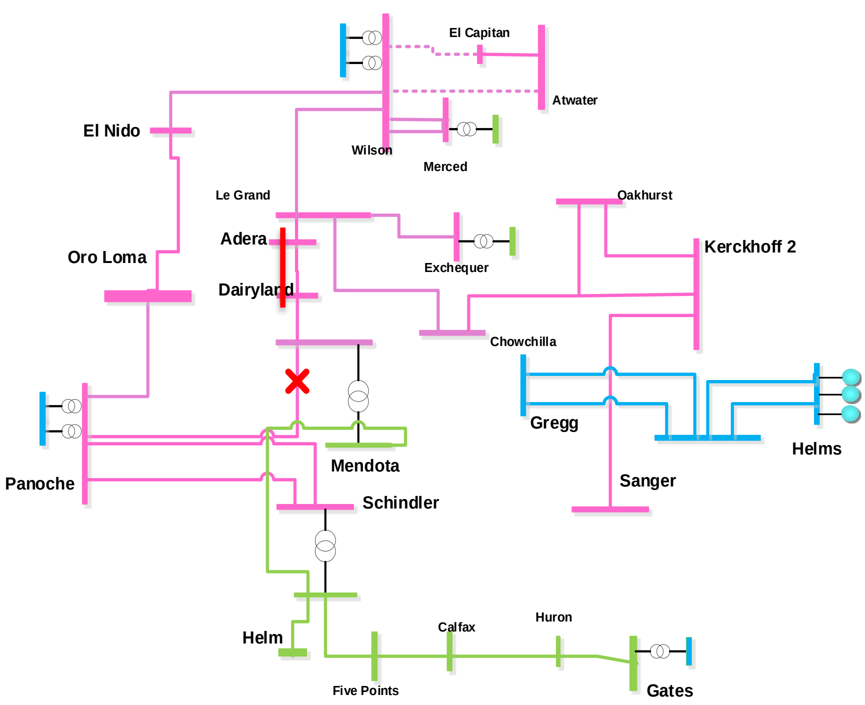
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7430 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.6.6 *Panoche Sub-area*

Panoche is a sub-area of the Fresno LCR area.

Panoche LCR Sub-area Diagram

Figure 3.3-59 Panoche LCR Sub-area



Panoche LCR Sub-area Load and Resources

Table 3.3-50 provides the forecast load and resources in Panoche LCR sub-area. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-50 Panoche LCR Sub-area 2026 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	518	Market/Net Seller	274	274
AAEE	-4	Battery	0	0
Behind the meter DG	-8	MUNI/QF	107	107
Net Load	**506**	Solar	89	0
Transmission Losses	15	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**521**	**Total**	**470**	**381**

Panoche LCR Sub-area Hourly Profiles

Figure 3.3-60 illustrates the forecast 2026 profile for the peak day for the Panoche sub-area with the Category P6 normal and emergency load serving capabilities without local resources. The chart also includes an estimated amount of energy storage that can be added to this local area from charging restriction perspective. Figure 3.3-61 illustrates the forecast 2026 hourly profile for Panoche sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-60 Panoche LCR Sub-area 2026 Peak Day Forecast Profiles

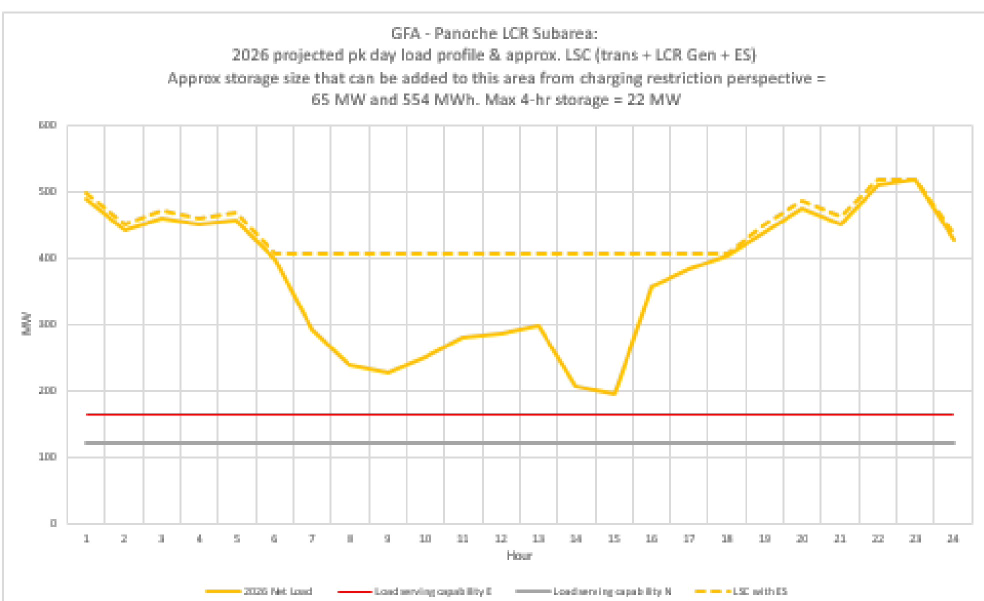
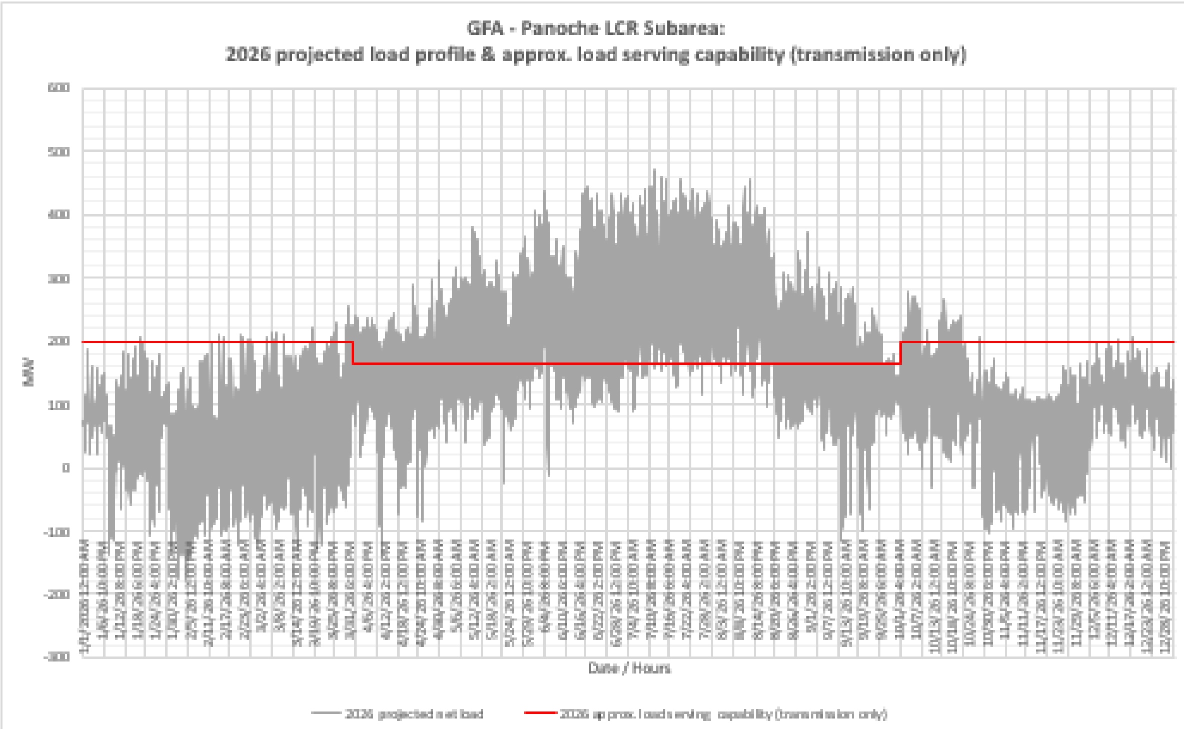


Figure 3.3-61 Panoche LCR Sub-area 2026 Forecast Hourly Profiles



Panoche LCR Sub-area Requirement

Table 3.3-51 identifies the sub-area LCR requirements. The LCR Requirement for a Category P6 contingency is 353 MW.

Table 3.3-51 Panoche LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First limit	P6	Huron-Calflax 70 kV line	Panoche #1 230/115 kV bank & Panoche #2 230/115 kV bank	353

Effectiveness factors:

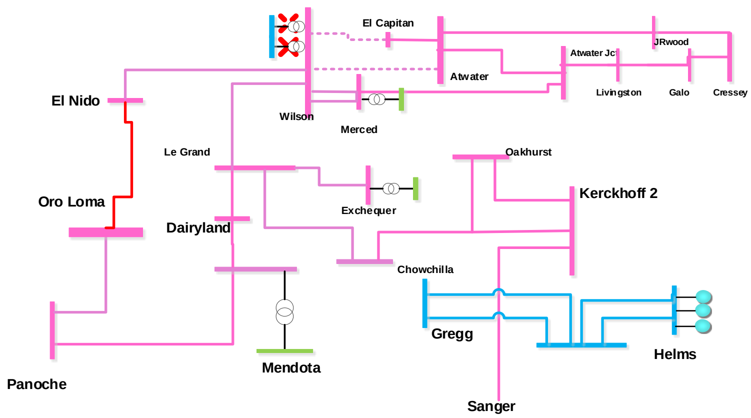
For other helpful procurement information please read procedure 2210Z Effectiveness Factors under 7430 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.6.7 *Wilson Sub-area*

Wilson is a sub-area of the Fresno LCR area.

Wilson LCR Sub-area Diagram

Figure 3.3-62 Wilson LCR Sub-area



Wilson LCR Sub-area Load and Resources

The Wilson sub-area does not has a defined load pocket with the limits based upon power flow through the area. Table 3.3-52 provides the forecasted resources in the sub-area. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-52 Wilson LCR Sub-area 2026 Forecast Load and Resources

Load (MW)	Generation (MW)	Aug NQC	At Peak
The Wilson sub-area does not have a defined load pocket with the limits based upon power flow through the area.	Market/nd Net Seller	127	127
	Battery	0	0
	MUNI/QF	103	103
	Solar	59	0
	Existing 20-minute Demand Response	0	0
	Mothballed	0	0
	Total	**289**	**230**

Wilson LCR Sub-area Hourly Profiles

The Wilson sub-area is a flow-through sub-area therefore hourly profiles are not provided.

Wilson LCR Sub-area Requirement

Table 3.3-53 identifies the sub-area LCR requirements. The LCR Requirement for a Category P6 contingency is 381 MW with a 151 MW deficiency at Peak and 92 MW NQC deficiency.

Table 3.3-53 Wilson LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First Limit	P6	Oro Loma-El Nido 115 kV Line	Wilson 230/115kV TB #1 and Wilson 230/115kV TB #2	381 (92 NQC; 151 Peak)

Effectiveness factors:

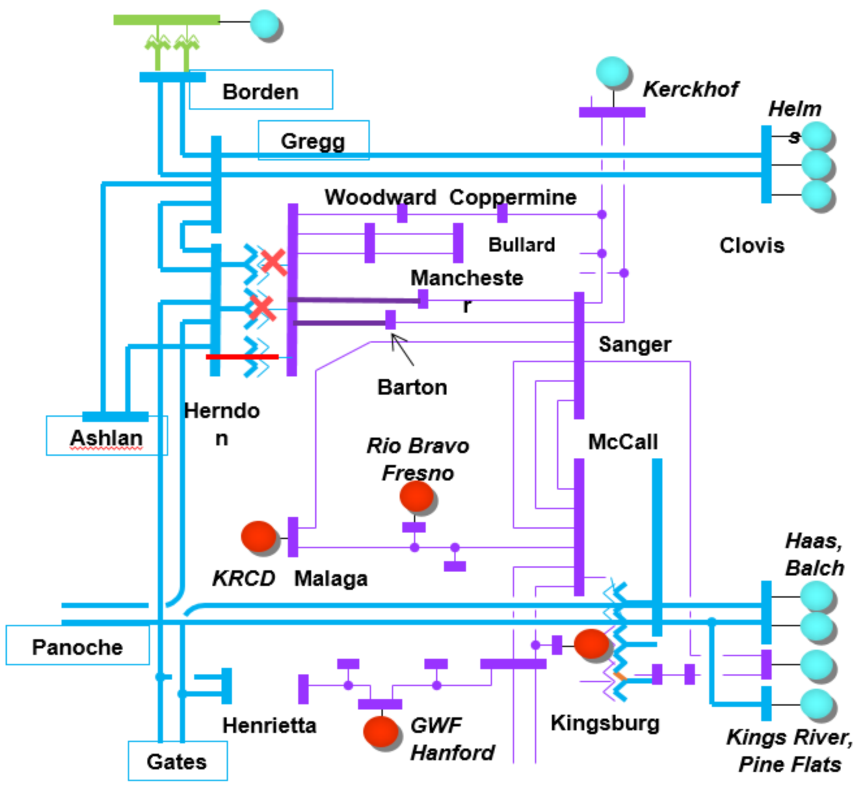
For other helpful procurement information please read procedure 2210Z Effectiveness Factors under 7430 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.6.8 *Herndon Sub-area*

Herndon is a sub-area of the Fresno LCR area.

Herndon LCR Sub-area Diagram

Figure 3.3-63 Herndon LCR Sub-area



Herndon LCR Sub-area Load and Resources

Table 3.3-54 provides the forecast load and resources in Herndon LCR sub-area. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-54 Herndon LCR Sub-area 2026 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	1624	Market/Net Seller	874	874
AAEE	-22	Battery	48	48
Behind the meter DG	-34	MUNI/QF	97	97
Net Load	**1568**	Solar	61	0
Transmission Losses	33	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**1601**	**Total**	**1080**	**1019**

Herndon LCR Sub-area Hourly Profiles

Figure 3.3-64 illustrates the forecast 2026 profile for the peak day for the Herndon sub-area with the Category P6 normal and emergency load serving capabilities without local resources. The chart also includes an estimated amount of energy storage that can be added to this local area from charging restriction perspective. Figure 3.3-65 illustrates the forecast 2026 hourly profile for Herndon sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-64 Herndon LCR Sub-area 2026 Peak Day Forecast Profiles

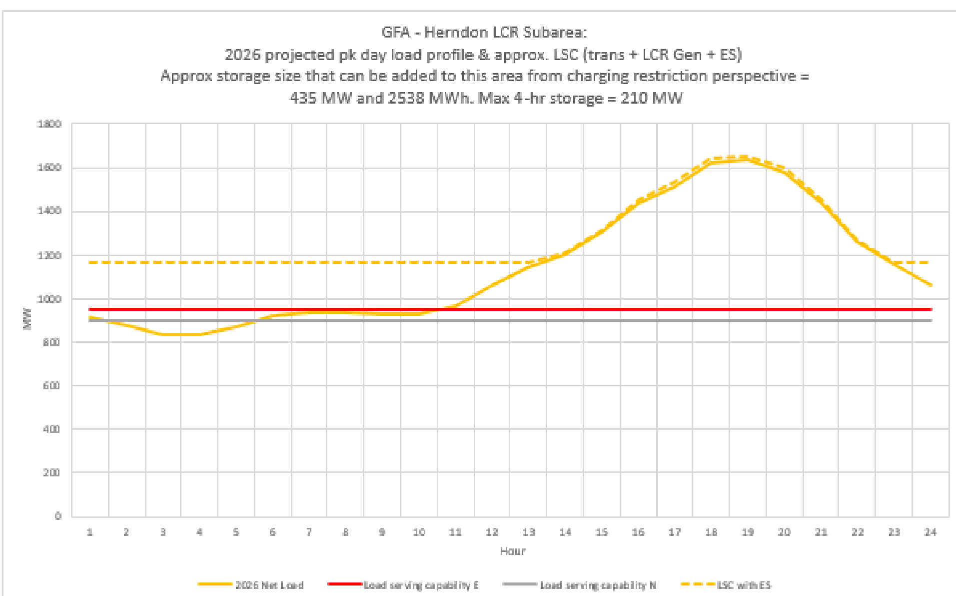
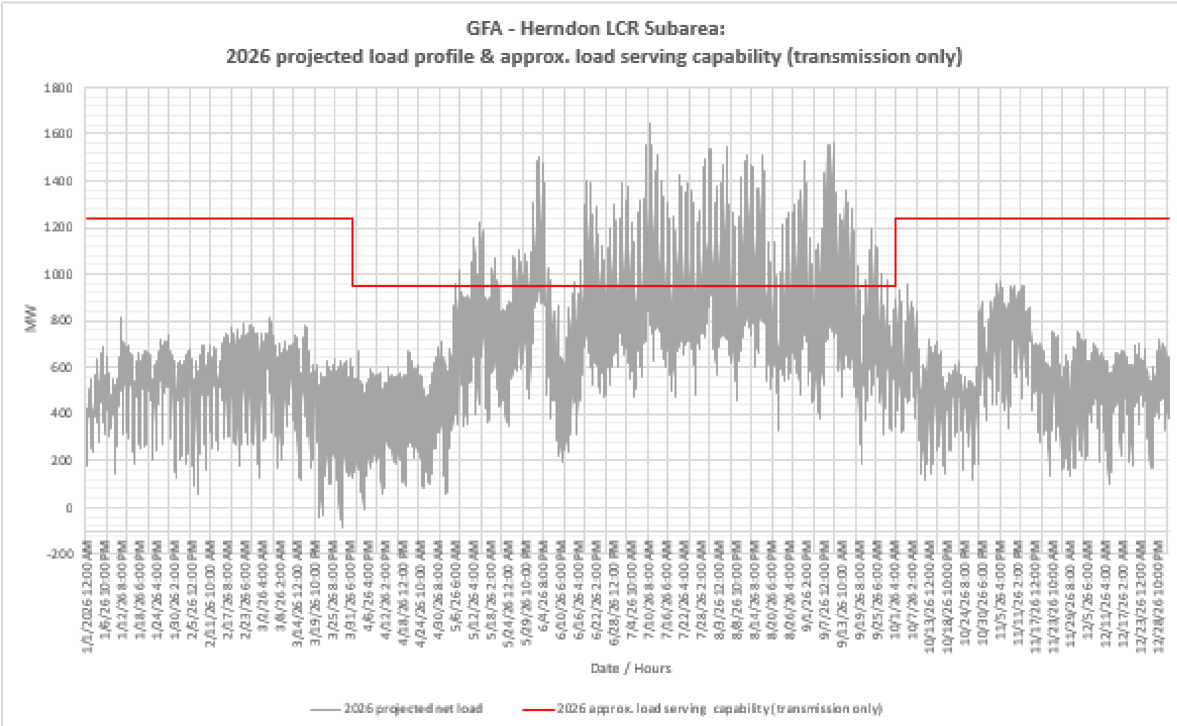


Figure 3.3-65 Herndon LCR Sub-area 2026 Forecast Hourly Profiles



Herndon LCR Sub-area Requirement

Table 3.3-55 identifies the sub-area LCR requirements. The LCR Requirement for a Category P6 contingency is 700 MW.

Table 3.3-55 Herndon LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First limit	P6	Herndon #3 230/115 kV Transformer Bank	Herndon 230/115 kV Bank 1 and Herndon 230/115 kV Bank 2	700

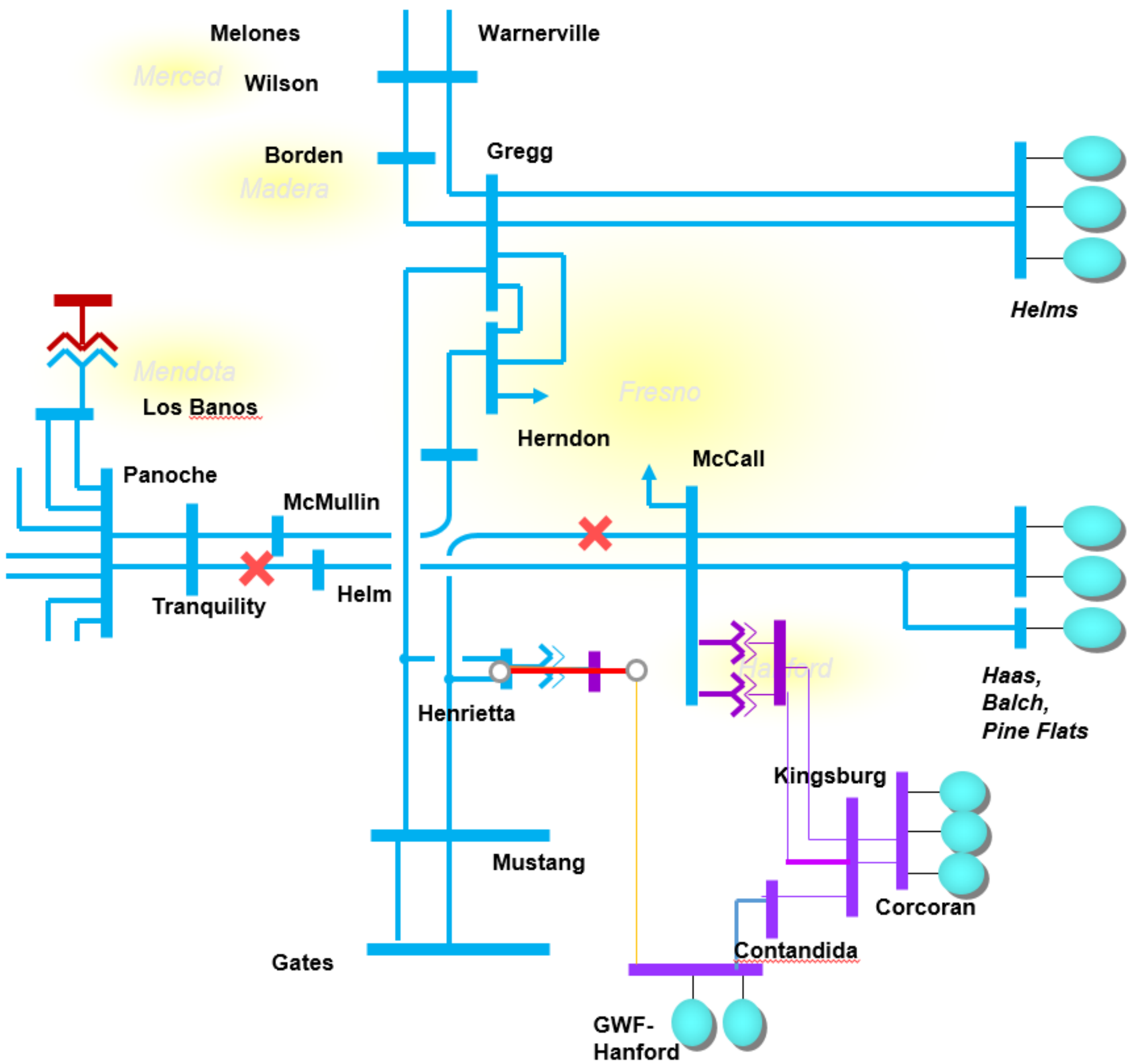
Effectiveness factors:

For other helpful procurement information please read procedure 2210Z Effectiveness Factors under 7430 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.6.9 *Fresno Overall area*

Fresno LCR area Diagram

Figure 3.3-66 Fresno LCR area



Fresno Overall LCR area Load and Resources

Table 3.3-41 provides the forecast load and resources in Fresno LCR area in 2026. The list of generators within the LCR area are provided in Attachment A.

Fresno Overall LCR area Hourly Profiles

Figure 3.3-67 illustrates the forecast 2026 profile for the peak day for the Fresno Overall sub-area with the Category P6 normal and emergency load serving capabilities without local resources. The chart also includes an estimated amount of energy storage that can be added to this local area from charging restriction perspective. Figure 3.3-68 illustrates the forecast 2026 hourly profile for Fresno Overall sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-67 Fresno LCR area 2026 Peak Day Forecast Profiles

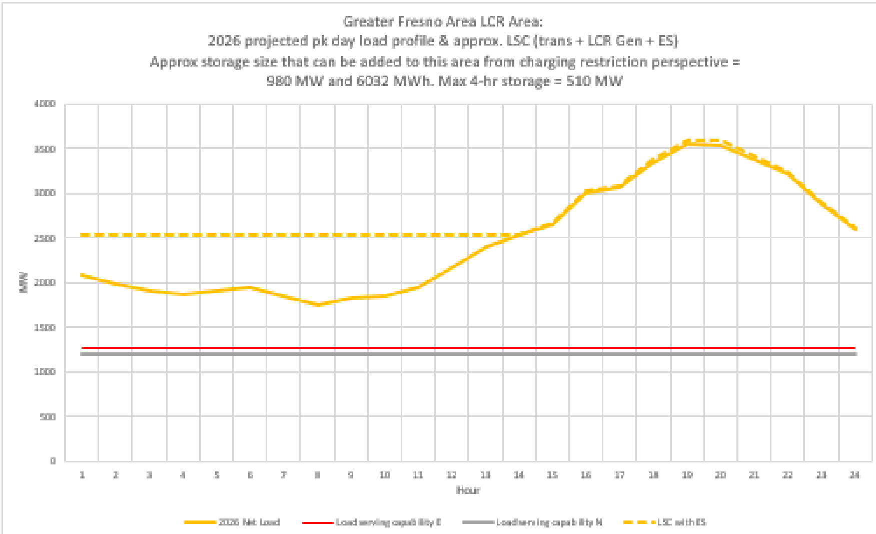
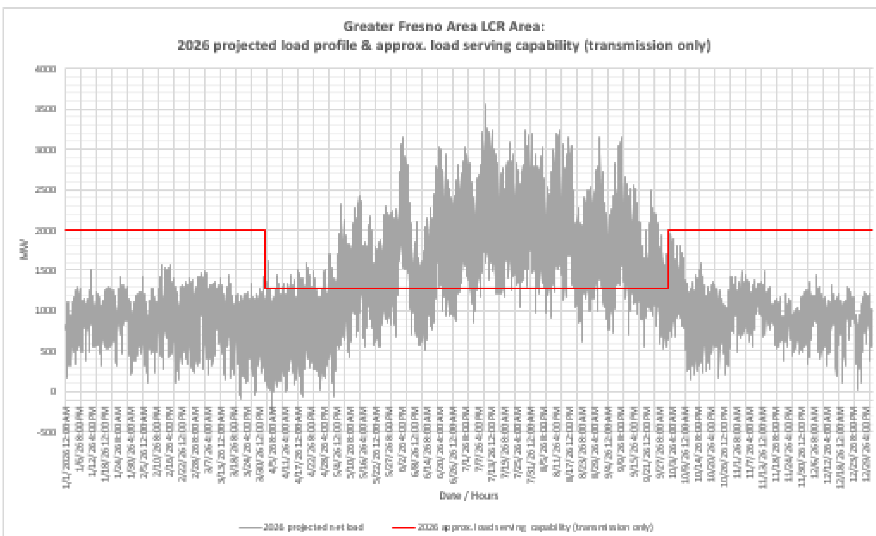


Figure 3.3-68 Fresno LCR area 2026 Forecast Hourly Profiles



Fresno Overall LCR Area Requirement

Table 3.3-56 identifies the area LCR requirements. The LCR Requirement for a Category P6 contingency is 2100 MW.

Table 3.3-56 Fresno Overall LCR Area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First limit	P6	Kingsburg-Contadina 115 kV line	Mc Call-Helm 230 kV Line and Mc Call-Mustang 230 kV line	2100

Effectiveness factors:

For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7430 posted at: http://www.caiso.com/Documents/2210Z.pdf

Changes compared to last year's results

Compared with 2025 the load forecast decreased by 296 MW and the LCR need decreased by 432 MW mostly due to load forecast decreases.

3.3.7 Kern Area

3.3.7.1 ***Area Definition:***

The transmission facilities coming into the Kern PP sub-area are:

Midway-Kern PP #1 230 kV Line

Midway-Kern PP #3 230 kV Line

Midway-Kern PP #4 230 kV Line

Famoso-Lerdo 115 kV Line (Seasonal Open)

Adobe Switching Station #1 115 kV Tap (Normal Open)

Wasco-Famoso 70 kV Line (Seasonal Open)

Kern-Magunden 70 kV Line (Seasonal Open)

Copus-Old River 70 kV Line (Seasonal Open)

Copus-Old River 70 kV Line (Normal Open)

The substations that delineate the Kern-PP sub-area are:

Midway 230 kV is out and Bakersfield 230 kV is in

Midway 230 kV is out and Kern PP 230 kV is in

Midway 230 kV is out and Kern PP 230 kV is in

Famoso 115 kV is out and Cawelo 115 kV is in

Adobe Switching Station 115 kV is out and Wheeler Ridge Junction 115 kV is in

Wasco 70 kV is out and Mc Farland 70 kV is in

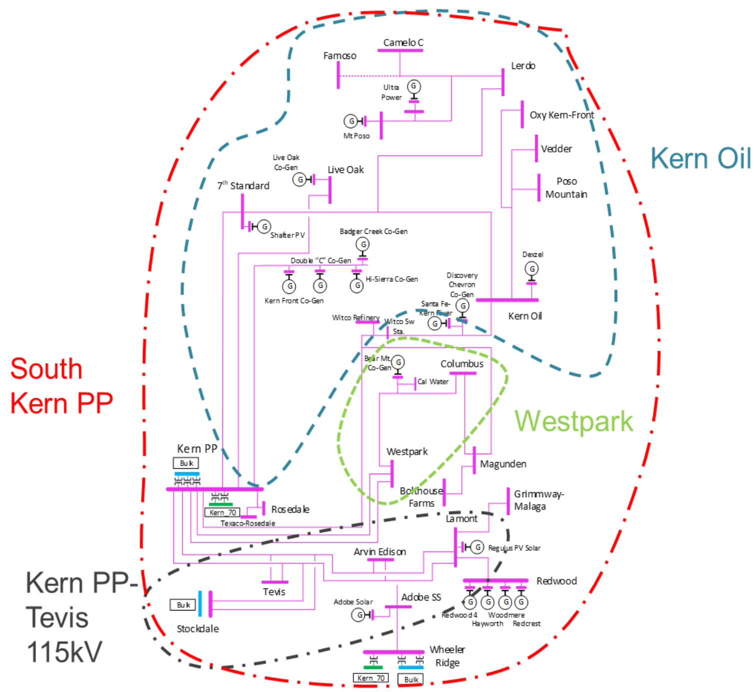
Magunden 70 kV is out and Bakersfield Junction 70 kV is in

Copus 70 kV is out and South Kern Solar 70 kV is in

Lakeview 70 kV is out and San Emidio Junction 70 kV is in

Kern LCR Area Diagram

Figure 3.3-69 Kern LCR Sub-area



Kern LCR Area Load and Resources

Table 3.3-57 provides the forecast load and resources in Kern LCR Area in 2026. The list of generators within the LCR area are provided in Attachment A.

In year 2026 the estimated time of local area peak is 19:20 PM.

At the local area peak time the estimated, ISO metered, solar output is 0.00%.

If required, all non-solar technology type resources are dispatched at NQC.

Table 3.3-57 Kern LCR Area 2026 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	1002	Market/Net Seller	368	368
AAEE	-15	Battery	0	0
Behind the meter DG	-25	MUNI/QF	12	12
Net Load	**962**	Solar	71	0
Transmission Losses	9	Existing 20-minute Demand Response	9	9
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**971**	**Total**	**460**	**389**

Approved transmission projects modeled

None

3.3.7.2 *Kern Power-Tevis Sub Area*

Kern Power-Tevis is a sub-area of the Kern LCR area.

Kern Power-Tevis Sub-area Diagram

Please see Figure 3.3-69 for Kern PWR-Tevis sub-area diagram.

Kern Power-Tevis LCR Sub-area Requirement

No LCR need was identified for the Kern Power-Tevis sub area.

3.3.7.3 *Westpark Sub-area*

Westpark is a sub-area of the Kern LCR area.

Westpark LCR Sub-area Diagram

Please see Figure 3.3-69 for Westpark sub-area diagram.

Westpark LCR Sub-area Load and Resources

Table 3.3-58 provides the forecast load and resources in Westpark LCR sub-area. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-58 Westpark LCR Sub-area 2026 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	120	Market/Net Seller	49	49
AAEE	-2	Battery	0	0
Behind the meter DG	-3	MUNI/QF	0	0
Net Load	**115**	LTPP Preferred Resources	0	0
Transmission Losses	0	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**115**	**Total**	**49**	**49**

Westpark LCR Sub-area Hourly Profiles

Figure 3.3-70 illustrates the forecast 2026 profile for the peak day for the Westpark LCR sub-area with the Category P3 normal and emergengy load serving capabilities without local resources. The chart also includes an estimated amount of energy storage that can be added to this local area from charging restriction perspective. Figure 3.3-71 illustrates the forecast 2026 hourly profile for Westpark LCR sub-area with the Category P7 emergency load serving capability without local resources.

Figure 3.3-70 Westpark LCR Sub-area 2026 Peak Day Forecast Profiles

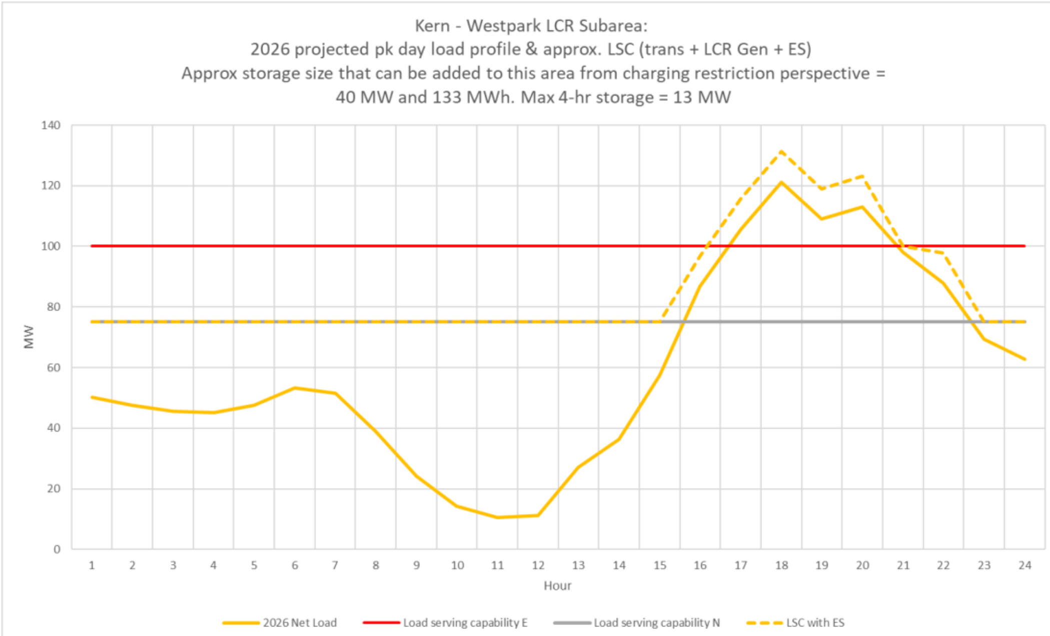
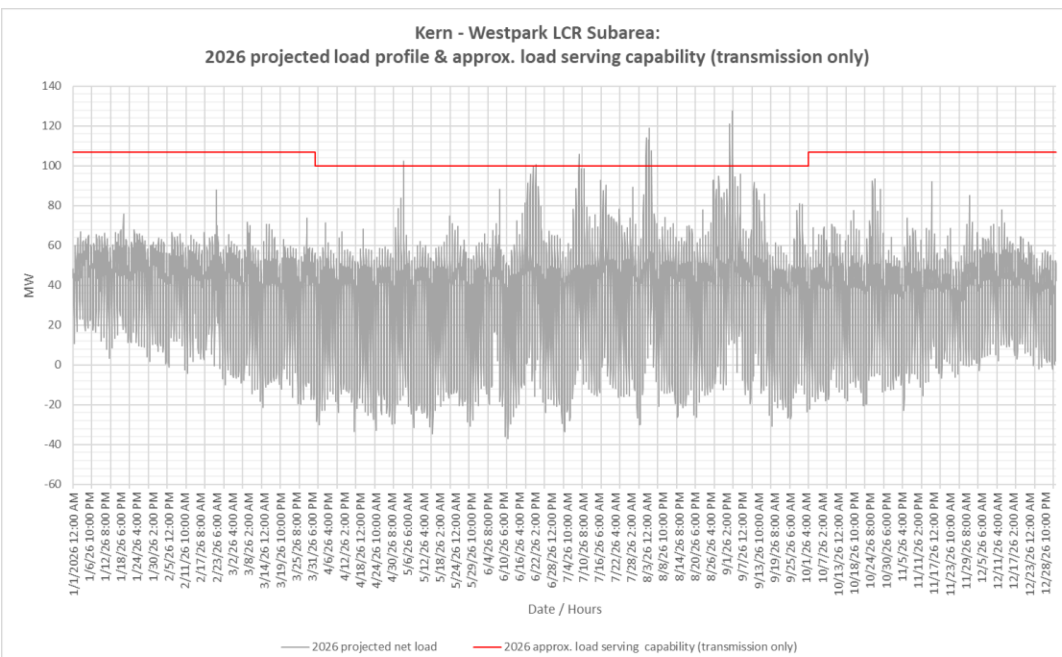


Figure 3.3-71 Westpark LCR Sub-area 2025 Forecast Hourly Profisles



Westpark LCR Sub-area Requirement

Table 3.3-59 identifies the sub-area LCR requirements. The LCR requirement for Category P7 contingency is 26 MW.

Table 3.3-59 Westpark LCR Sub-area Requirements

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	P7	Magunden–Magunden Jct 115 kV Line	Kern PP-Westpark No. 1 & 2 115 kV Lines	26

Effectiveness factors:

All units within the Westpark Sub-area have the same effectiveness factor.

For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7450 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.7.4 *Kern Oil Sub-area*

Kern Oil is a sub-area of the Kern LCR area.

Kern Oil LCR Sub-area Diagram

Please see Figure 3.3-69 for Kern Oil sub-area diagram.

Kern Oil LCR Sub-area Load and Resources

Table 3.3-60 provides the forecast load and resources in Kern Oil LCR sub-area. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-60 Kern Oil LCR Sub-area 2026 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	352	Market/Net Seller	110	110
AAEE	-2	Battery	0	0
Behind the meter DG	-5	MUNI/QF	12	12
Net Load	**345**	Solar	7	0
Transmission Losses	2	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**347**	**Total**	**129**	**122**

Kern Oil LCR Sub-area Hourly Profiles

Figure 3.3-72 illustrates the forecast 2026 profile for the peak day for the Kern Oil LCR sub-area with the Category P6 normal and emergengy load serving capabilities without local resources. The chart also includes an estimated amount of energy storage that can be added to this local area from charging restriction perspective. Figure 3.3-73 illustrates the forecast 2026 hourly profile for Kern Oil LCR sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-72 Kern Oil LCR Sub-area 2026 Peak Day Forecast Profiles

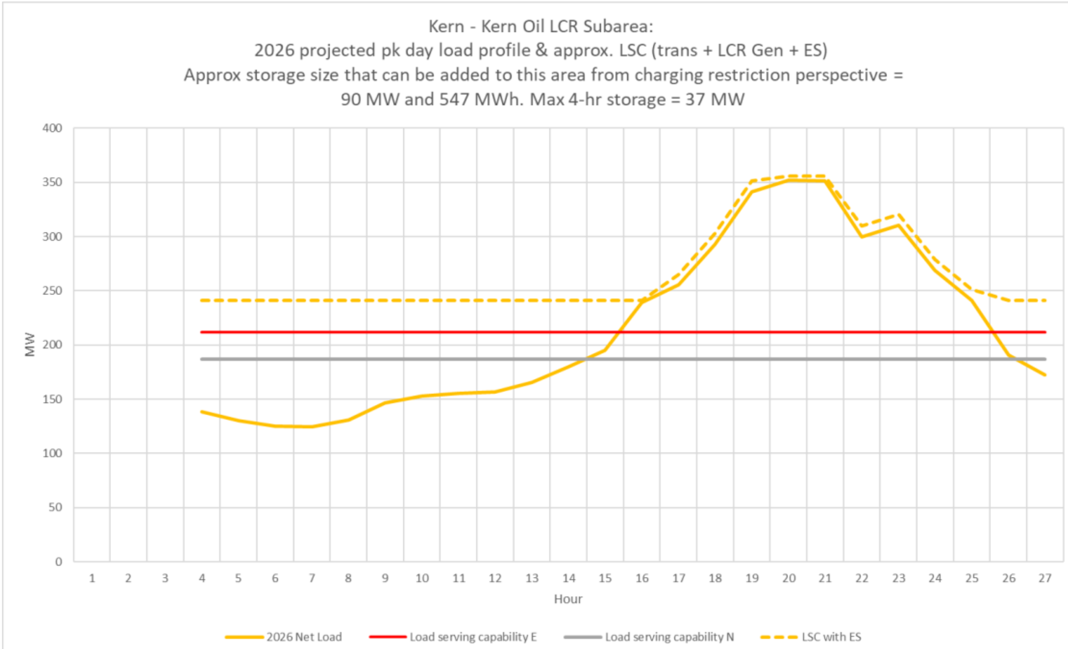
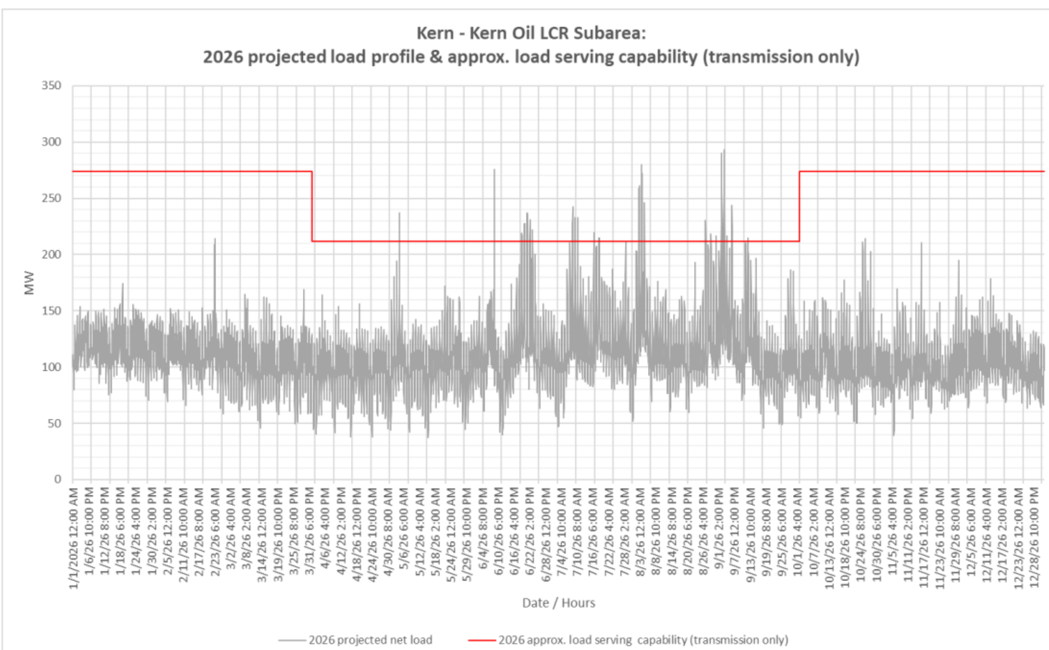


Figure 3.3-73 Kern Oil LCR Sub-area 2026 Forecast Hourly Profiles



Kern Oil LCR Sub-area Requirement

Table 3.3-61 identifies the sub-area LCR requirements. The LCR requirement for Category P6 contingency is 125 MW including 3 MW at peak deficiency as well as 0 MW of NQC deficiency.

Table 3.3-61 Kern Oil LCR Sub-area Requirements

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	P6	Kern Oil Jct –Kernwater 115 kV Line	7th Standard – Kern 115 kV line & Kern PP-Live Oak 115 kV Line	125 (3 MW Peak)

Effectiveness factors:

All units within the Kern Oil sub-area have the same effectiveness factor.

For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7450 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.7.5 *South Kern PP Sub-area*

South Kern PP is sub-area of the Kern LCR area.

South Kern PP LCR Sub-area Diagram

Please see Figure 3.3-69 for South Kern PP area diagram.

South Kern PP LCR Sub-area Load and Resources

Refer to Table 3.3-57 Kern Area Load and Resources table.

South Kern PP LCR Sub-area Hourly Profiles

Figure 3.3-74 illustrates the forecast 2026 profile for the peak day for the South Kern PP LCR sub-area with the Category P6 normal and emergengy load serving capabilities without local resources. The chart also includes an estimated amount of energy storage that can be added to this local area from charging restriction perspective. Figure 3.3-75 illustrates the forecast 2026 hourly profile for South Kern PP LCR sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-74 South Kern PP LCR Sub-area 2026 Peak Day Forecast Profiles

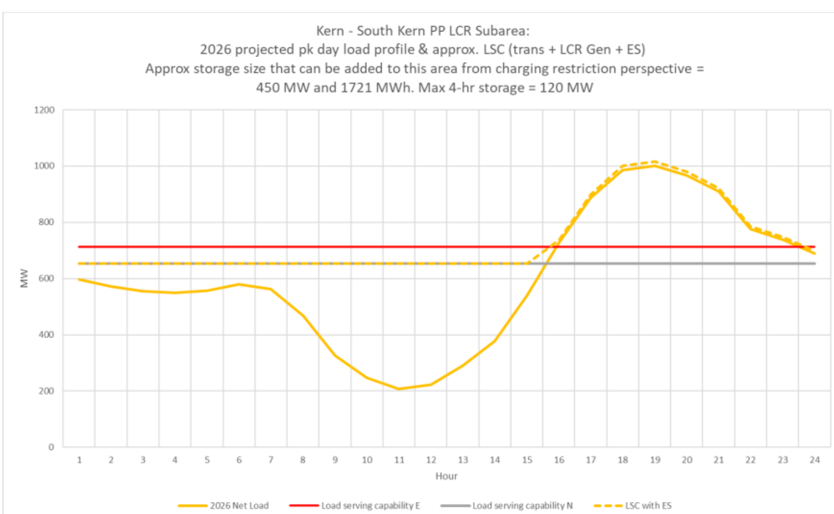
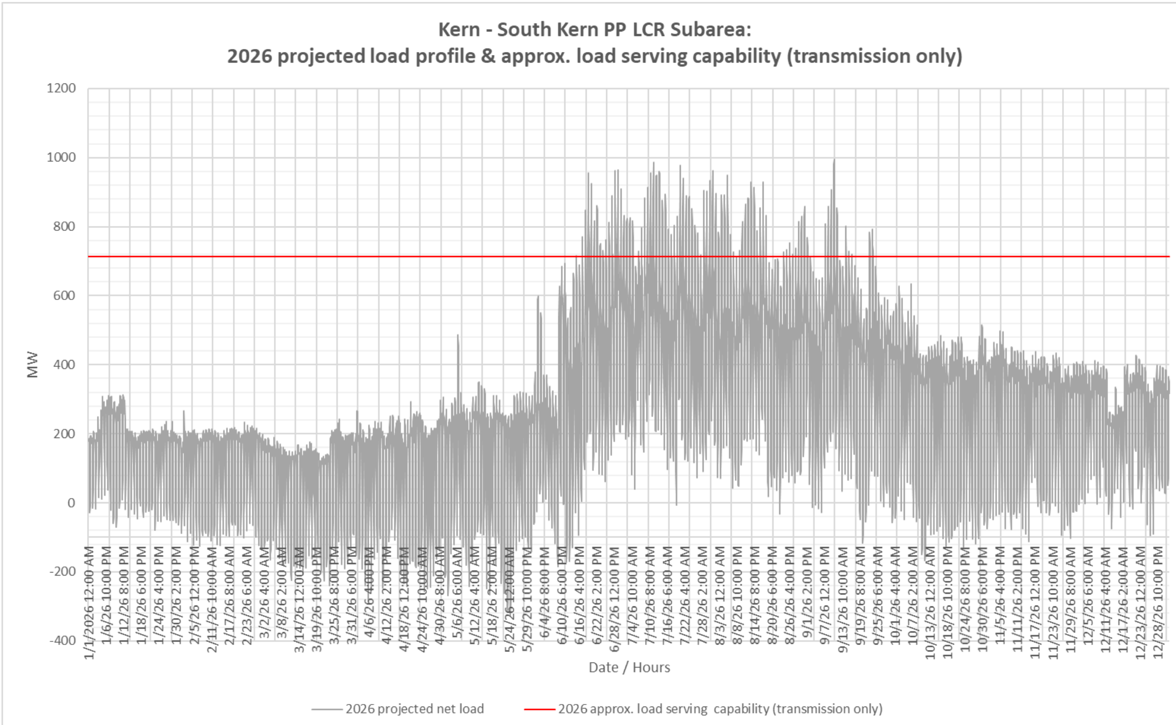


Figure 3.3-75 South Kern PP LCR Sub-area 2026 Forecast Hourly Profiles



South Kern PP LCR Sub-area Requirement

Table 3.3-62 identifies the sub-area LCR requirements. The LCR requirement for Category P6 contingency is 452 MW including a 63 MW at peak deficiency as well as 0 MW NQC deficiency.

Table 3.3-62 South Kern PP LCR Sub-area Requirements

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	P6	Kern 230/115 kV T/F # 5	Kern 230/115 kV T/F # 3 & Kern 230/115 kV T/F # 4	452 (0 NQC; 63 Peak)

Effectiveness factors:

All units within the South Kern PP sub-area have the same effectiveness factor.

For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7450 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.7.6 *Kern Area Overall Requirements*

Kern LCR Area Overall Requirement

Table 3.3-63 identifies the limiting facility and contingency that establishes the Kern Area 2026 LCR requirements. The LCR requirement for Category P6 (Multiple Contingency) is 452 MW including a 63 MW at peak deficiency as well as a 0 MW NQC deficiency.

Table 3.3-63 Kern Overall LCR Sub-area Requirements

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	P6	Aggregate of Sub-areas.		452 (0 NQC: 63 Peak)

Kern Overall LCR Area Hourly Profile

Refer to South Kern PP LCR area profiles.

Changes compared to last year's results

The 2026 load forecast has increased by 21 MW and the overall Kern resource requirements have decreased by 18 MW due to load forecast increase.

3.3.8 Big Creek/Ventura Area

3.3.8.1 *Area Definition:*

The transmission tie lines into the Big Creek/Ventura Area are:

Antelope #1 500/230 kV Transformer

Antelope #2 500/230 kV Transformer

Sylmar - Pardee 230 kV #1 and #2 Lines

Vincent - Pardee 230 kV #2 Line

Vincent - Santa Clara 230 kV Line

The substations that delineate the Big Creek/Ventura Area are:

Antelope 500 kV is out Antelope 230 kV is in

Antelope 500 kV is out Antelope 230 kV is in

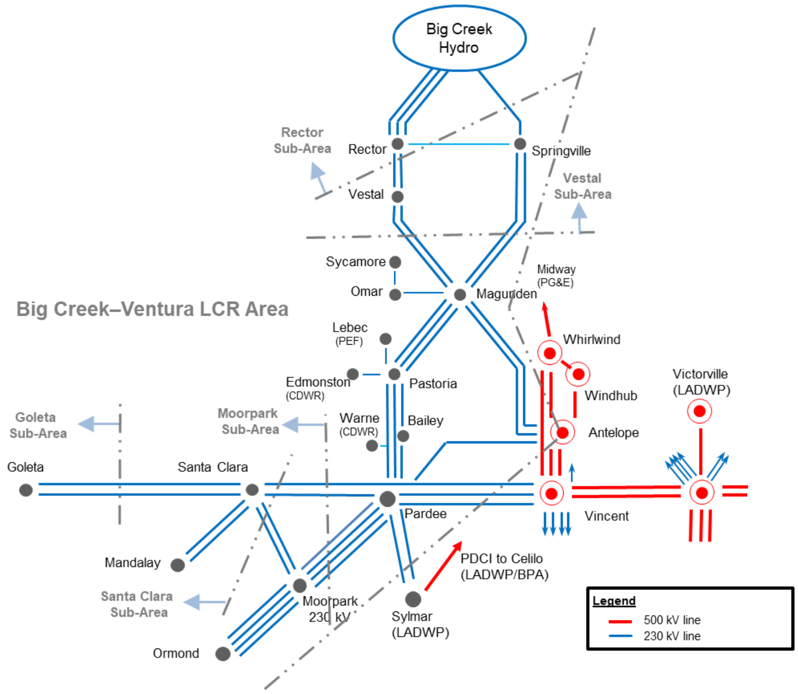
Sylmar is out Pardee is in

Vincent is out Pardee is in

Vincent is out Santa Clara is in

Big Creek/Ventura LCR Area Diagram

Figure 3.3-76 Big Creek/Ventura LCR Area



Big Creek/Ventura LCR Area Load and Resources

Table 3.3-64 provides the forecast load and resources in the Big Creek/Ventura LCR Area in 2026. The list of generators within the LCR area are provided in Attachment A.

In year 2026 the estimated time of local area peak is 4:00 PM (PDT).

At the local area peak time the estimated ISO-metered solar output is about 60%.

If required, all non-solar technology type resources are dispatched at NQC.

Table 3.3-64 Big Creek/Ventura LCR Area 2026 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	4551	Market/Net Seller/Wind	2572	2572
AAEE	-61	Battery/Hybrid	1623	1623
Behind the meter DG	0	MUNI/QF	448	448
Net Load	**4490**	Solar	400	400
Transmission Losses	86	Demand Response	63	63
Pumps	223	Mothballed	0	0
Load + Losses + Pumps	**4799**	**Total**	**5106**	**5106**

Approved transmission projects modeled:

- Sylmar Bank E is out of service through 2026

3.3.8.2 *Rector Sub-area*

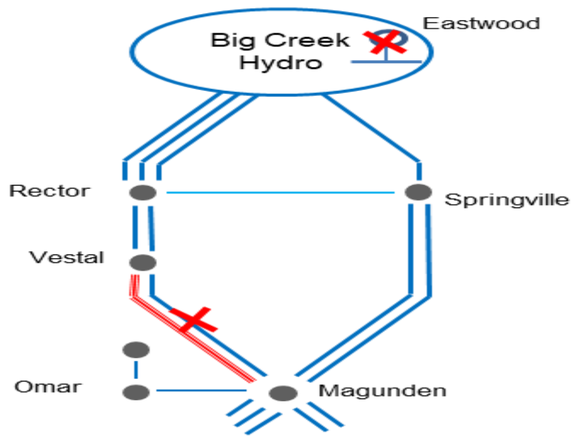
LCR need is satisfied by the need in the larger Vestal sub-area.

3.3.8.3 *Vestal Sub-area*

Vestal is a sub-area of the Big Creek/Ventura LCR area.

Vestal LCR Sub-area Diagram

Figure 3.3-77 Vestal LCR Sub-area



Vestal LCR Sub-area Load and Resources

Table 3.3-65 provides the forecast load and resources in Vestal LCR sub-area in 2026. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-65 Vestal LCR Sub-area 2026 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	1302	Market/Net Seller	953	953
AAEE	-19	Battery/Hybrid	469	469
Behind the meter DG	N/A	MUNI/QF	9	9
Net Load	**1283**	Solar	66	66
Transmission Losses	22	Existing 20-minute Demand Response	41	41
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**1305**	**Total**	**1538**	**1538**

Vestal LCR Sub-area Hourly Profiles

Figure 3.3-78 illustrates the forecast 2026 annual load profile in the Vestal LCR sub-area with the Category P3 normal and emergengy load serving capabilities without local capacity resources. Figure 3.3-79 provides the load shape for the peak load day, estimated energy storage maximum capacity and energy based on area maximum charging capability under the most critical contingency as well as estimated 1 for 1 replacement with four-hour capacity battery.

Figure 3.3-78 Vestal LCR Sub-area 2026 Annual Load Profile with Estimated Transmission Only Load Serving Capability

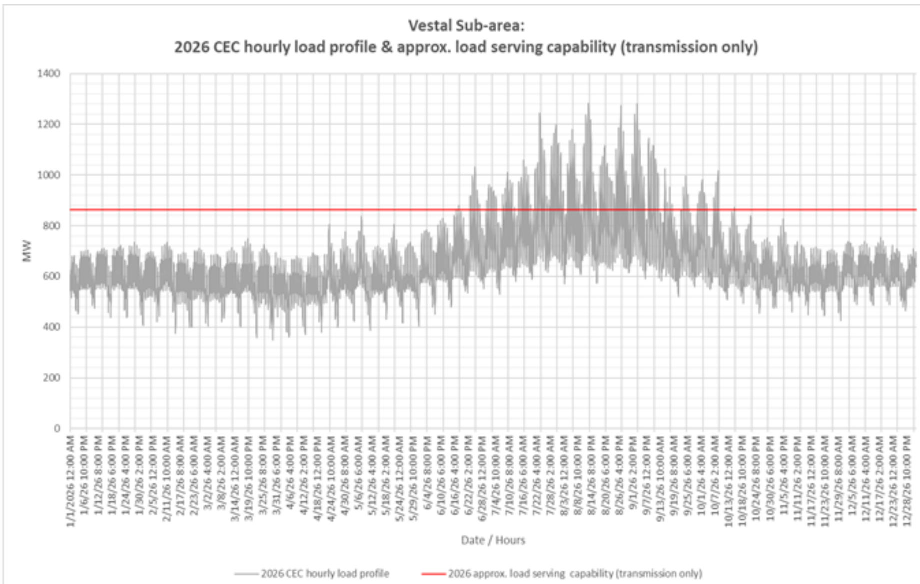
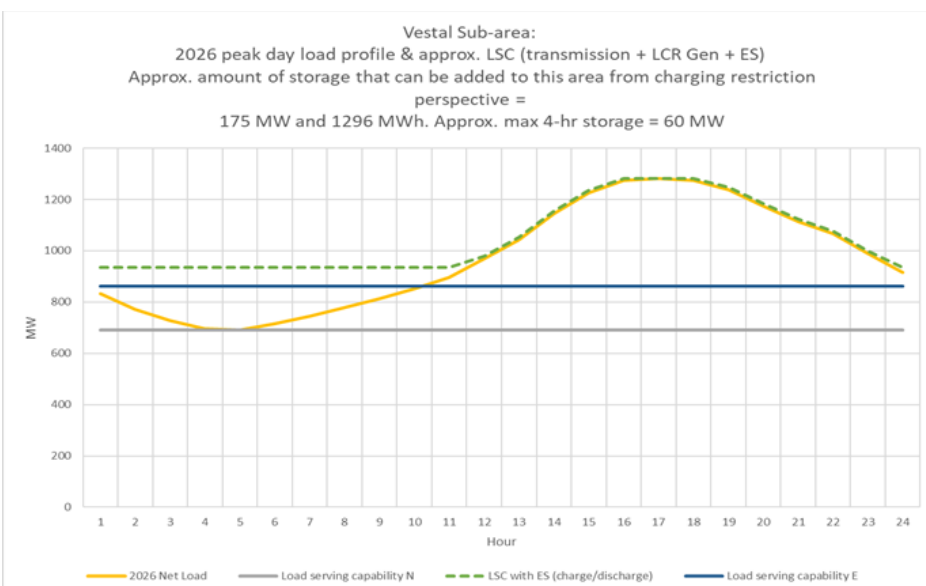


Figure 3.3-79 Vestal LCR Sub-area 2026 Load Shape and Estimated Maximum Energy Storage Capacity and Energy Based on Charging Capability Under Critical Contingency



Vestal LCR Sub-area Requirement

Table 3.3-66 identifies the sub-area requirements. The LCR requirement for Category P3 contingency is 421 MW.

Table 3.3-66 Vestal LCR Sub-area Requirements

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	P3	Magunden–Vestal #1 230 kV line	Magunden–Vestal #2 230 kV line with Eastwood out of service	421

Effectiveness factors:

For helpful procurement information please read procedure 2210Z Effectiveness Factors under 7500 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.8.4 *Goleta Sub-area*

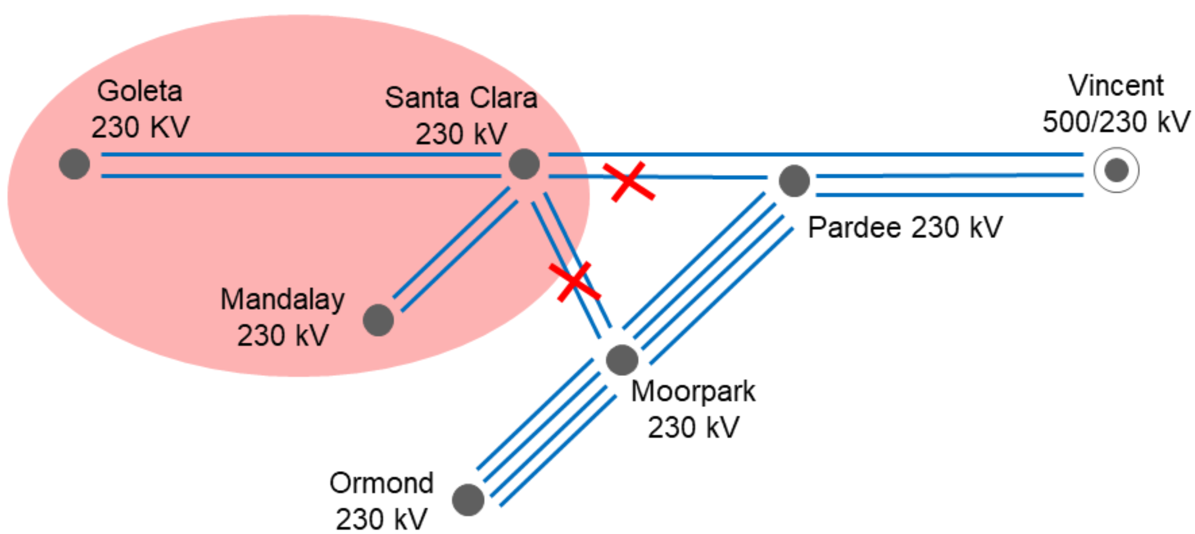
Goleta is a sub-area of the Santa Clara sub-area. LCR need in Goleta is satisfied by the need in the larger Santa Clara sub-area.

3.3.8.5 *Santa Clara Sub-area*

Santa Clara is a sub-area of the Big Creek/Ventura LCR area.

Santa Clara LCR Sub-area Diagram

Figure 3.3-80 Santa Clara LCR Sub-area



Santa Clara LCR Sub-area Load and Resources

Table 3.3-67 provides the forecast load and resources in Santa Clara LCR sub-area in 2026. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-67 Santa Clara LCR Sub-area 2026 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	869	Market/Net Seller	168	168
AAEE	-11	Battery	207	207
Behind the meter DG	N/A	MUNI/QF	87	87
Net Load	**858**	Solar	1	1
Transmission Losses	5	Existing Demand Response	7	7
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**863**	**Total**	**470**	**470**

Santa Clara LCR Sub-area Hourly Profiles

Figure 3.3-81 illustrates the forecast 2026 annual load profile in the Santa Clara LCR sub-area with the Category P1/P7 voltage stability related load serving capabily without local capacity resources. Figure 3.3-82 provides the load shape for the peak load day, estimated energy storage maximum capacity and energy based on area maximum charging capability under the most critical contingency as well as estimated 1 for 1 replacement with four-hour capacity battery.

Figure 3.3-81 Santa Clara LCR Sub-area 2026 Annual Load Profile with Estimated Transmission Only Load Serving Capability

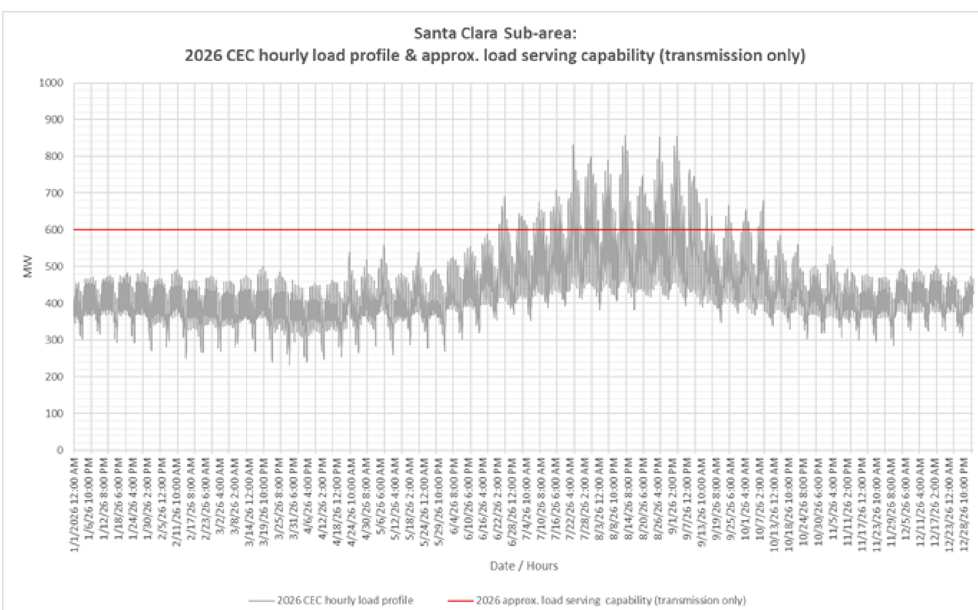
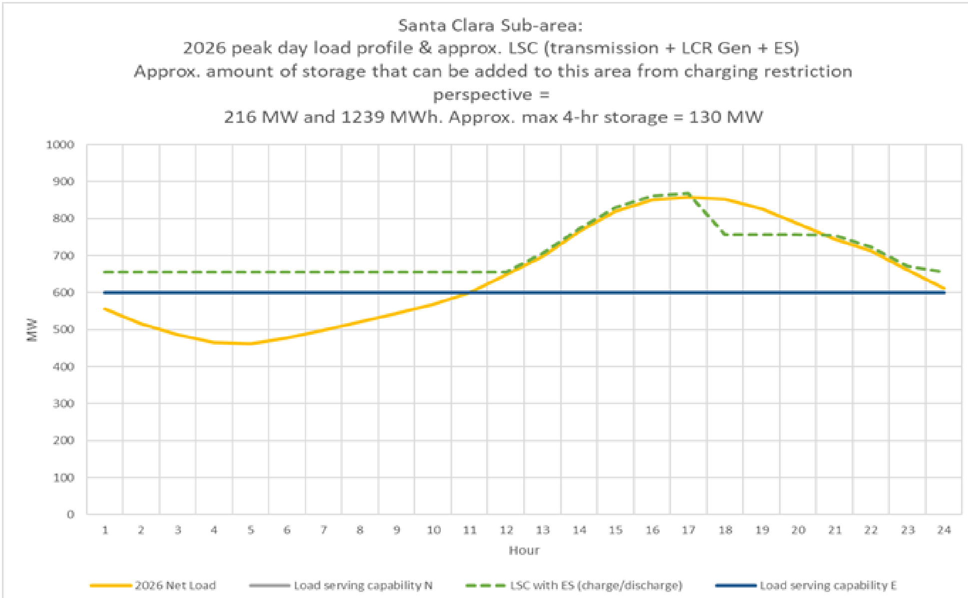


Figure 3.3-82 Santa Clara LCR Sub-area 2026 Load Shape and Estimated Maximum Energy Storage Capacity and Energy Based on Charging Capability Under Critical Contingency



Santa Clara LCR Sub-area Requirement

Table 3.3-68 identifies the sub-area requirements. The LCR requirement for Category P1 followed by P7 contingency is 258 MW.

Table 3.3-68 Santa Clara LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First Limit	P1 + P7	Voltage collapse	Pardee - Santa Clara 230 kV followed by Moorpark - Santa Clara #1 & #2 230 kV	258

Effectiveness factors:

For helpful procurement information please read procedure 2210Z Effectiveness Factors under 7550 and 7680 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.8.6 *Big Creek/Ventura Overall*

Big Creek/Ventura LCR Sub-area Hourly Profiles

Figure 3.3-83 illustrates the forecast 2026 annual load profile in the Big Creek/Ventura LCR area with the Category P6 normal and emergengy load serving capabilities without local capacity resources. The normal and emergency ratings for the limiting element are the same. Figure 3.3-84 provides the load shape for the peak load day, estimated energy storage maximum capacity and energy based on area maximum charging capability under the most critical contingency as well as estimated 1 for 1 replacement with four-hour capacity battery.

Figure 3.3-83 Big Creek/Ventura LCR area 2026 Annual Load Profile with Estimated Transmission Only Load Serving Capability

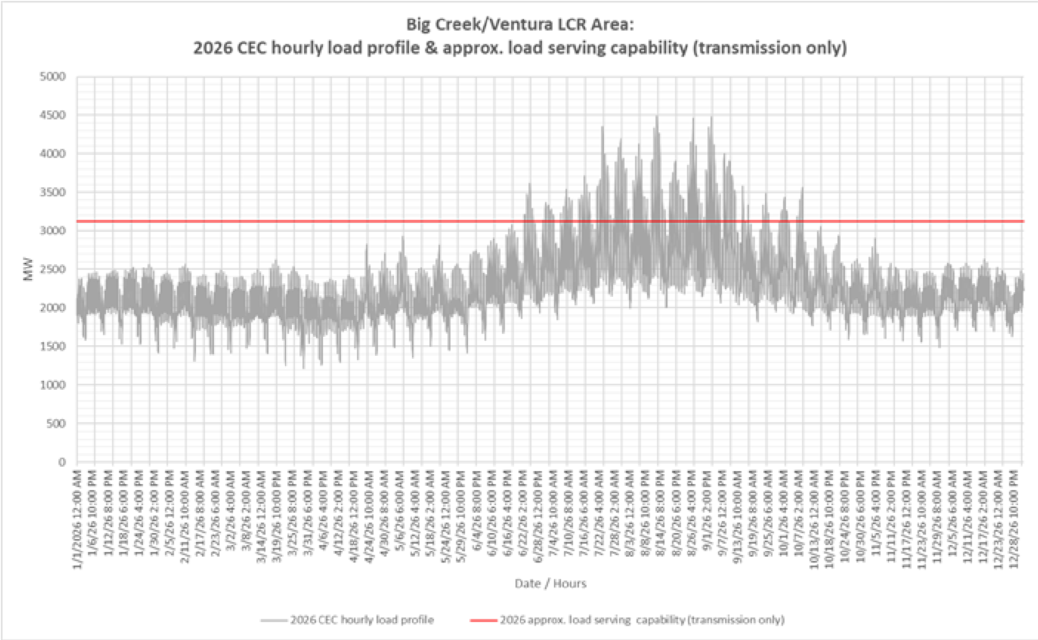
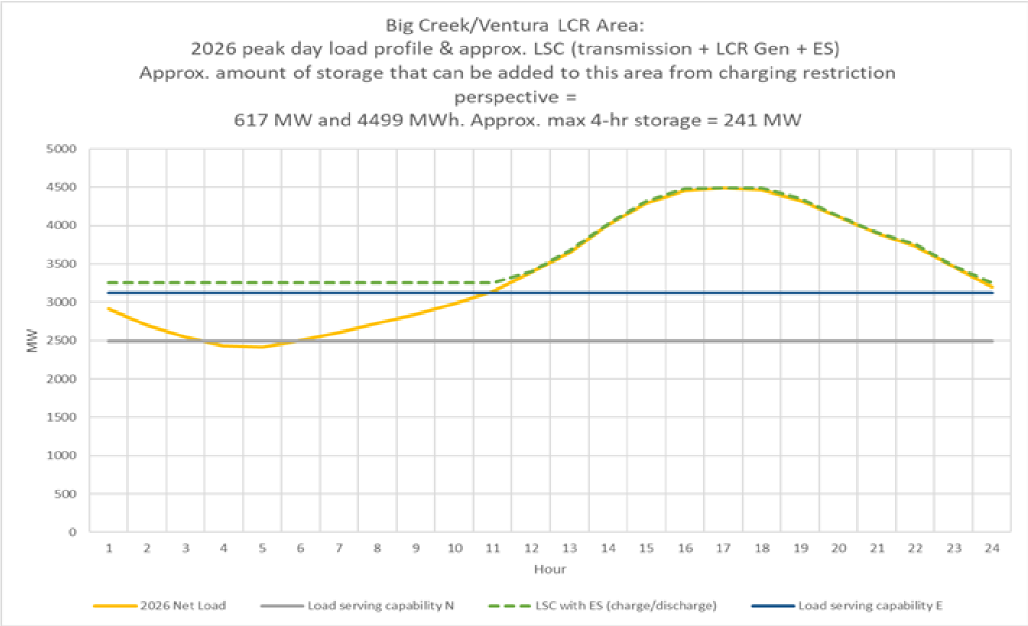


Figure 3.3-84 Big Creek/Ventura LCR area 2026 Load Shape and Estimated Maximum Energy Storage Capacity and Energy Based on Charging Capability Under Critical Contingency



Big Creek/Ventura LCR area Requirement

Table 3.3-69 identifies the area LCR requirements. The LCR requirement for Category P6 contingency is 1369 MW.

Table 3.3-69 Big Creek/Ventura LCR area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First Limit	P6	Remaining Sylmar - Pardee 230 kV	Lugo - Victorville 500 kV line followed by one of the Sylmar - Pardee #1 or #2 230 kV lines	1369

Effectiveness factors:

For helpful procurement information please read procedure 2210Z Effectiveness Factors under 7500, 7510, 7550 and 7680 posted at: http://www.caiso.com/Documents/2210Z.pdf

Changes compared to last year's results

Compared with the results for 2025, the load forecast is down by 276 MW and the LCR decreased by 776 MW mainly due to decrease in load and load distribution changes in the area.

3.3.9 LA Basin Area

3.3.9.1 *Area Definition:*

The transmission tie lines into the LA Basin Area are:

San Onofre - San Luis Rey #1, #2, and #3 230 kV Lines

San Onofre - Talega #2 230 kV Line

San Onofre – Capistrano #1 230 kV Line

Lugo - Mira Loma #2 & #3 500 kV Lines

Lugo - Rancho Vista #1 500 kV Line

Vincent – Mira Loma 500 kV Line

Sylmar - Eagle Rock 230 kV Line

Sylmar - Gould 230 kV Line

Vincent - Mesa #1 & #2 230 kV Lines

Vincent - Rio Hondo #1 & #2 230 kV Lines

Devers - Red Bluff 500 kV #1 and #2 Lines

Mirage – Coachella Valley # 1 230 kV Line

Mirage - Ramon # 1 & 2 230 kV Lines

Mirage - Julian Hinds 230 kV Line

The substations that delineate the LA Basin Area are:

San Onofre is in San Luis Rey is out

San Onofre is in Talega is out

San Onofre is in Capistrano is out

Mira Loma is in Lugo is out

Rancho Vista is in Lugo is out

Eagle Rock is in Sylmar is out

Gould is in Sylmar is out

Mira Loma is in Vincent is out

Mesa is in Vincent is out

Rio Hondo is in Vincent is out

Devers is in Red Bluff is out

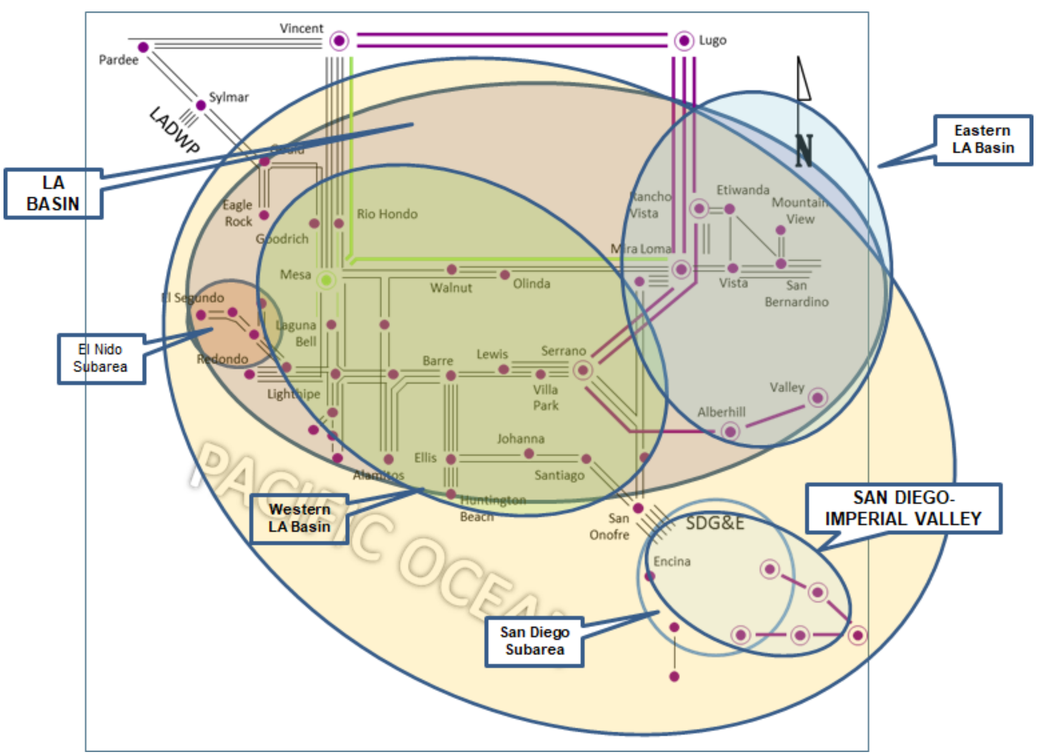
Mirage is in Coachella Valley is out

Mirage is in Ramon is out

Mirage is in Julian Hinds is out

LA Basin LCR Area Diagram

Figure 3.3-85 LA Basin LCR Area



LA Basin LCR Area Load and Resources

Table 3.3-70 provides the forecast load and resources in the LA Basin LCR Area in 2026. The list of generators within the LCR area are provided in Attachment A and does not include the CPUC-approved local capacity preferred resources or DR.

In year 2026 the estimated time of local area peak is 4:00 PM (PDT) based on the CEC hourly forecast for the 2024-2040 California Energy Demand Forecast.

At the local area peak time the estimated, ISO metered, solar output is 60%.

If required, all non-solar technology type resources are dispatched at NQC.

Table 3.3-70 LA Basin LCR Area 2026 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	21615	Market/Net Seller	5670	5670
AAEE, AAFS & AATE	79	Battery/Hybrid	3203	3203
Data Centers	115	Wnd	220	220
Behind the meter DG	-2379	Muni/QF	1266	1266
Net Load	**19430**	Local Capacity Preferred Resources (BTM BESS, EE, DR, PV)	148	148
Transmission Losses	296	Existing Demand Response	240	240
Pumps	0	Solar	29	29
Load + Losses + Pumps	**19726**	**Total**	**10776**	**10776**

Approved new transmission and resource projects modeled:

Laguna Bell-Mesa #1 230 kV line upgrade

Mesa Loop-In Project (500 kV and 230 kV)

West of Devers 230 kV Upgrades

Ten West Link Project (Delaney – Colorado 500 kV Line)

Various battery energy storage system projects in the LA Basin

3.3.9.2 *El Nido Sub-area*

El Nido is a Sub-area of the LA Basin LCR Area.

El Nido LCR Sub-area Diagram

Please refer to Figure 3.3-85 above.

El Nido LCR Sub-area Load and Resources

Table 3.3-71 provides the forecast load and resources in El Nido LCR sub-area in 2026. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-71 El Nido LCR Sub-area 2026 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	1050	Market/Net Seller	556	556
AAEE & AAFS	10	Battery	120	120
Behind the meter DG	-113	MUNI/QF	0	0
Net Load	**947**	LTPP Preferred Resources	10	10
Transmission Losses	18	Existing Demand Response	24	24
Pumps	0	Solar	0	0
Load + Losses + Pumps	**965**	**Total**	**710**	**710**

El Nido LCR Sub-area Hourly Profiles

Figure 3.3-86 illustrates the forecast 2026 annual load profile in the El Nido LCR sub-area with the transmission load serving capability only. Figure 3.3-87 provides load shape for peak load day, estimated energy storage maximum capacity and energy as well as estimated four-hour capacity amount based on its maximum charging capability under the most critical contingency.

Figure 3.3-86 El Nido LCR Sub-area 2026 Annual Load Profile with Estimated Transmission Load Serving Capability Only

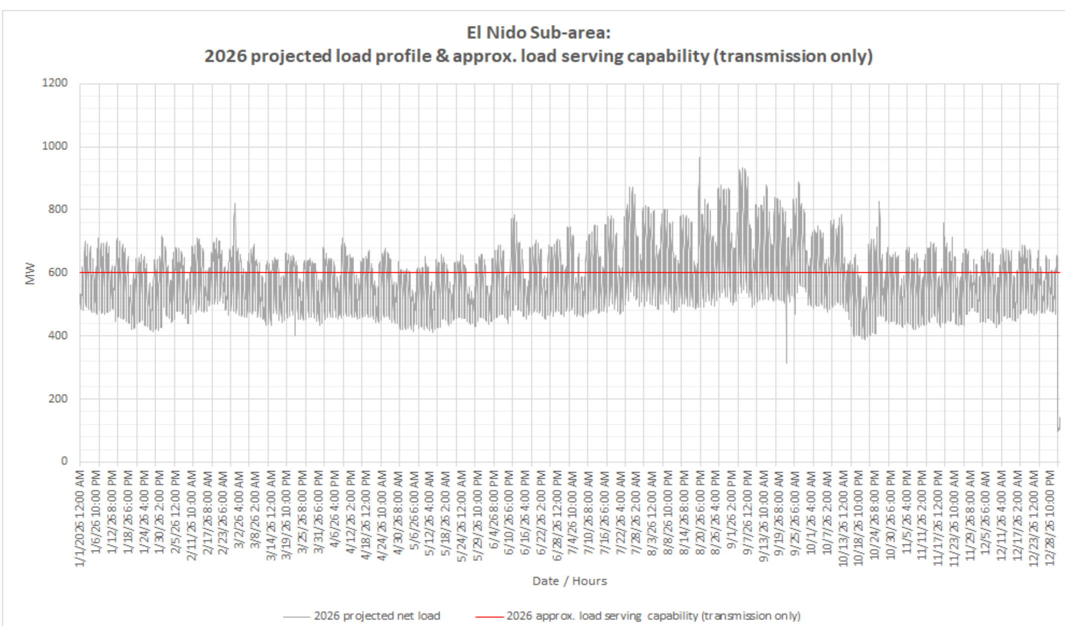
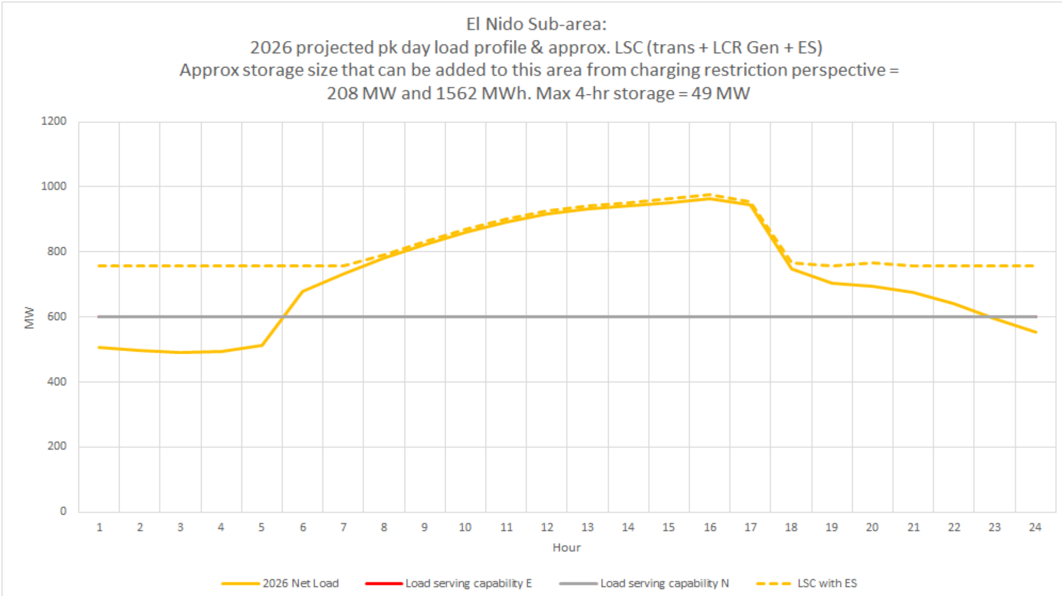


Figure 3.3-87 El Nido LCR Sub-area 2026 Load Shape and Estimated Maximum Energy Storage Capacity and Energy Based on Charging Capability Under Critical Contingency



El Nido LCR Sub-area Requirement

Table 3.3-72 identifies the sub-area requirements. The LCR requirement for Category P7 contingency is 365 MW.

Table 3.3-72 El Nido LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First Limit	P7	La Fresa - La Cienega 230 kV	La Fresa – El Nido #3 & 4 230 kV lines	365

Effectiveness factors:

All units within the El Nido Sub-area have the same effectiveness factor.

For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7630 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.9.3 *Western LA Basin Sub-area*

Western LA Basin is a sub-area of the LA Basin LCR area.

Western LA Basin LCR Sub-area Diagram

Please refer to Figure 3.3-85 above.

Western LA Basin LCR Sub-area Load and Resources

Table 3.3-73 provides the forecast load and resources in Western LA Basin LCR sub-area in 2026. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-73 Western LA Basin Sub-area 2026 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	12682	Market/Net Seller	3406	3406
AAEE, AAFS & AATE	76	Battery/Hybrid	1212	1212
Data Centers	115	Wind	0	0
Behind the meter DG	-1400	MUNI/QF	595	595
Net Load	**11473**	LTPP Preferred Resources	148	148
Transmission Losses	174	Existing Demand Response	119	119
Pumps	0	Solar	10	10
Load + Losses + Pumps	**11647**	**Total**	**5490**	**5490**

Western LA Basin LCR Sub-area Hourly Profiles

Figure 3.3-88 illustrates the forecast 2026 annual load profile in the Western LA Basin LCR sub-area with the transmission load serving capability only. Figure 3.3-89 provides load shape for peak load day, estimated energy storage maximum capacity and energy as well as estimated four-hour capacity amount based on its maximum charging capability under the most critical contingency.

Figure 3.3-88 Western LA Basin LCR Sub-area 2026 Annual Load Profile with Estimated Transmission Load Serving Capability Only

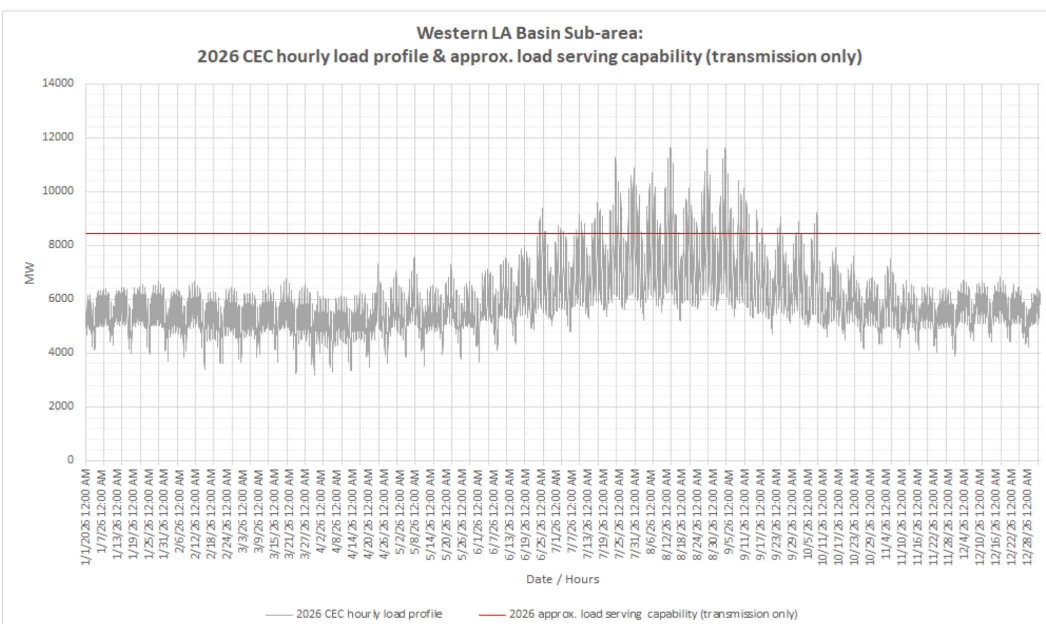
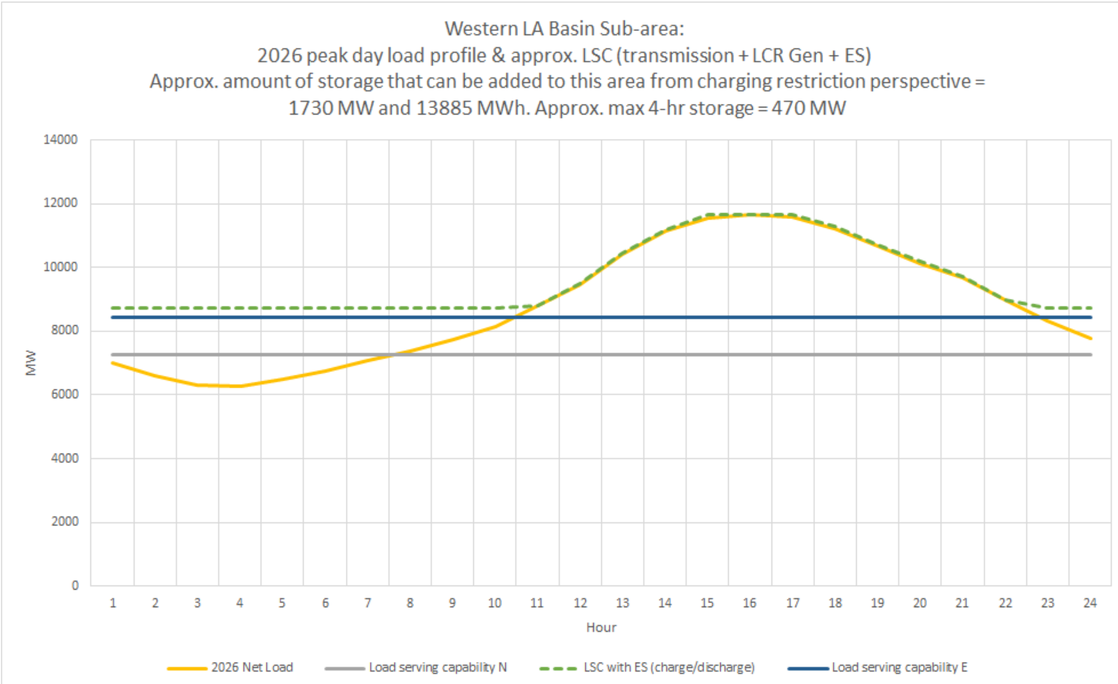


Figure 3.3-89 Western LA Basin LCR Sub-area 2026 Load Shape and Estimated Maximum Energy Storage Capacity and Energy Based on Charging Capability Under Critical Contingency



Western LA Basin LCR Sub-area Requirement

Table 3.3-74 identifies the sub-area LCR requirements. The LCR requirement for Category P6 contingency is 3202 MW. The LCR need for the Western LA Basin is higher than the 2025 LCR need due to higher CEC's demand forecast. It is noted that the limiting facility is different than the 2025 study results due to having a different limiting contingency after the Laguna Bell – Mesa #1 230 kV line upgrade is implemented by May 2025 timeframe.

Table 3.3-74 Western LA Basin LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First Limit	P6	Serrano 500/230kV Transformer Bank #2	Serrano 500/230kV Transformer Banks #3, followed by #1 (or vice versa)	3202

Effectiveness factors:

For other helpful procurement information please read procedure 2210Z Effectiveness Factors under 7630 (G-219Z) posted at: http://www.caiso.com/Documents/2210Z.pdf

There are other combinations of contingencies in the area that could overload a significant number of 230 kV lines in this sub-area have less LCR need. As such, anyone of them (combination of contingencies) could become binding for any given set of procured resources. As a result, these effectiveness factors may not be the best indicator towards informed procurement.

3.3.9.4 *West of Devers Sub-area*

West of Devers is a sub-area of the LA Basin LCR area.

There are no LCR needs for this sub-area due to implementation of prior transmission upgrades.

3.3.9.5 *Valley-Devers Sub-area*

Valley-Devers is a sub-area of the LA Basin LCR area.

There are no LCR needs for this sub-area due to implementation of prior transmission upgrades.

3.3.9.6 *Valley Sub-area*

Valley is a sub-area of the LA Basin LCR area.

There are no LCR needs for this sub-area due to implementation of prior transmission upgrades.

3.3.9.7 *Eastern LA Basin Sub-area*

Eastern LA Basin is a sub-area of the LA Basin LCR area.

Eastern LA Basin LCR Sub-area Diagram

Please refer to Figure 3.3-85 above.

Eastern LA Basin LCR Sub-area Load and Resources

Table 3.3-75 provides the forecast load and resources in Eastern LA Basin LCR sub-area. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-75 Eastern LA Basin LCR Sub-area 2026 Forecasted Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	8933	Market/Net Seller/Wind	2484	2484
AAEE, AAFS & AATE	3	Battery	1991	1991
Behind the meter DG	-979	MUNI/QF	671	671
Net Load	**7957**	LTPP Preferred Resources	0	0
Transmission Losses	122	Existing Demand Response	121	121
Pumps		Solar	19	19
Load + Losses + Pumps	**8079**	**Total**	**5286**	**5286**

Eastern LA Basin LCR Sub-area Hourly Profiles

Figure 3.3-90 illustrates the forecast 2026 annual load profile in the Eastern LA Basin LCR sub-area with the transmission load serving capability only. Figure 3.3-91 provides load shape for peak load day, estimated energy storage maximum capacity and energy as well as estimated four-hour capacity amount based on its maximum charging capability under the most critical contingency.

Figure 3.3-90 Eastern LA Basin LCR Sub-area 2026 Annual Load Profile with Estimated Transmission Load Serving Capability Only

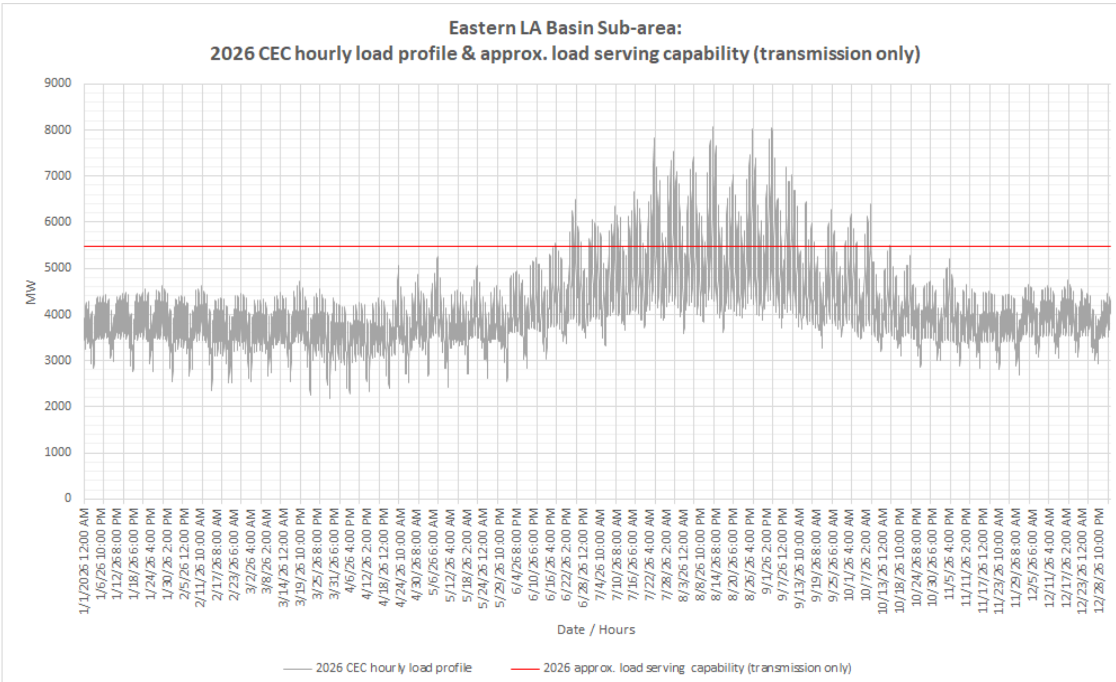
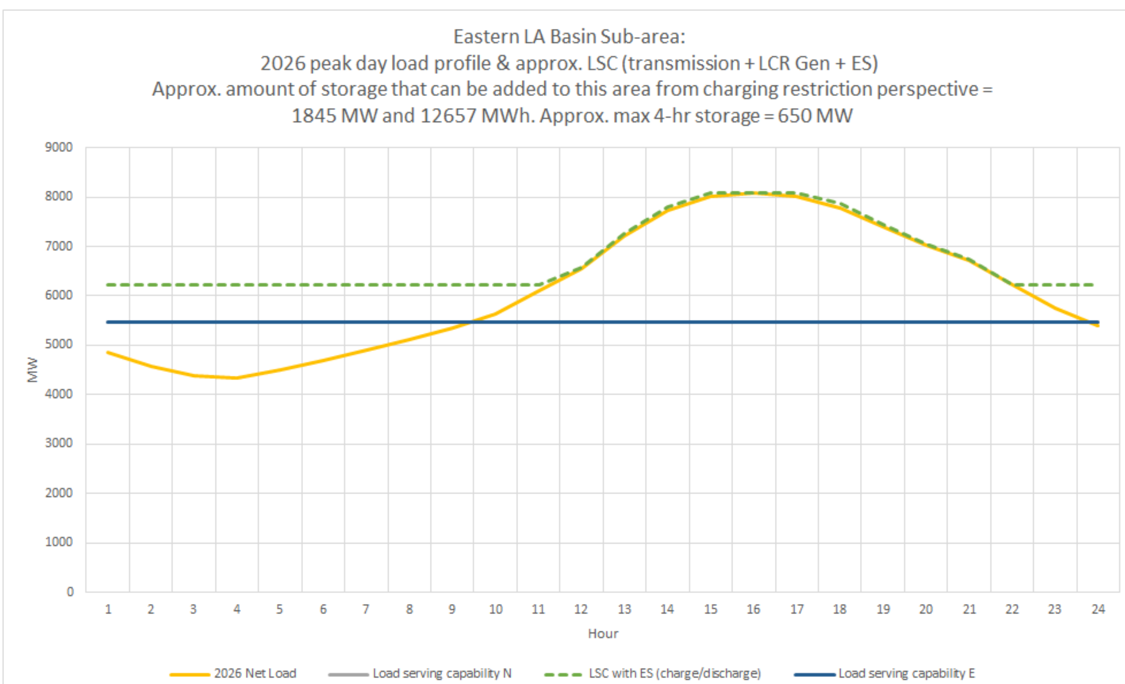


Figure 3.3-91 Eastern LA Basin LCR Sub-area 2026 Load Shape and Estimated Maximum Energy Storage Capacity and Energy Based on Charging Capability Under Critical Contingency



Eastern LA Basin LCR Sub-area Requirement

Table 3.3-76 identifies the sub-area LCR requirements. The LCR requirement for Category P1 followed by P7 contingency is 2610 MW. The LCR need for the Eastern LA Basin is higher than the 2025 LCR need due to higher demand forecast.

Table 3.3-76 Eastern LA Basin LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First Limit	P1 & P7	Voltage stability	Lugo – Rancho Vista 500 kV line, followed by N-2 of Lugo – Mira Loma #2 and #3 500 kV lines (common structure)	2610

Effectiveness factors:

All units within the Eastern LA Basin Sub-area have the same effectiveness factor.

For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7580, 7590, 7630 and 7750 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.9.8 *LA Basin Overall*

LA Basin LCR Hourly Profiles

The following is a summary of estimated amount of storage for the sub-areas and the overall area based on maximum charging capability perspective. The LA Basin overall estimated energy storage maximum capacity and energy is the sum of the Western and Eastern LA Basin sub-area amounts.

Table 3.3-77 Estimated LA Basin Subareas and Overall Area Energy Storage Capacity and Energy Based on Maximum Charging Capability Perspective

Area/Sub-area	Estimated Energy Storage Maximum Capacity (MW)	Estimated Energy Storage Maximum Energy (MWh)	1 for 1 Replacement with 4-hour Energy Storage Capacity (MW)
El Nido sub-area	208	1562	49
Western LA Basin sub-area	1730	13885	470
Eastern LA Basin sub-area	1845	12657	650
Overall LA Basin area	3575	26542	1120

LA Basin LCR area Requirement

Table 3.3-78 identifies the area requirements. The LCR requirement for the LA Basin is the sum of the Western and Eastern LA Basin local capacity requirements.

Table 3.3-78 LA Basin LCR area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First Limit	See Western LA Basin and Eastern LA Basin	Sum of Western and Eastern LA Basin LCR needs	See Western and Eastern LA Basin LCR results	5812

Effectiveness factors:

For other helpful procurement information please read procedure 2210Z Effectiveness Factors under 7550, 7570, 7580, 7590, 7630, and 7750 posted at: http://www.caiso.com/Documents/2210Z.pdf

There are other combinations of contingencies in the area that could overload other 230 kV lines in this sub-area resulting in less LCR need. As such, anyone of them (combination of contingencies) could become binding for any given set of procured resources. As a result, these effectiveness factors may not be the best indicator towards informed procurement.

Changes compared to last year's results

Compared with 2025, the study demand for the LA Basin is 429 MW higher and the LCR needs have increased by 1689 MW maily due to load forecast increase. The increase in the overall LA Basin LCR need is driven primarily by the voltage instability concern under critical combined P1 and P7 contingency in the Eastern LA Basin. Under this critical contingency, power flow (both active and reactive) increases significantly on the remaining 500 kV transmission lines into the LA Basin. In the Western LA Basin, the LCR need also increases but not as significant as in the Eastern LA Basin due to the implementation of the Laguna Bell – Mesa #1 230 kV line upgrade.

3.3.10 San Diego-Imperial Valley Area

3.3.10.1 *Area Definition:*

The transmission tie lines forming a boundary around the Greater San Diego-Imperial Valley area include:

Imperial Valley – North Gila 500 kV Line

Otay Mesa – Tijuana 230 kV Line

San Onofre – San Luis Rey #1 230 kV Line

San Onofre – San Luis Rey #2 230 kV Line

San Onofre – San Luis Rey #3 230 kV Line

San Onofre – Talega 230 kV Line

San Onofre – Capistrano 230 kV Line

Imperial Valley – Wixom – El Centro 230 kV Line

Imperial Valley – La Rosita 230 kV Line

The substations that delineate the Greater San Diego-Imperial Valley area are:

Imperial Valley is in North Gila is out

Otay Mesa is in Tijuana is out

San Onofre is out San Luis Rey is in

San Onofre is out San Luis Rey is in

San Onofre is out San Luis Rey is in

San Onofre is out Talega is in

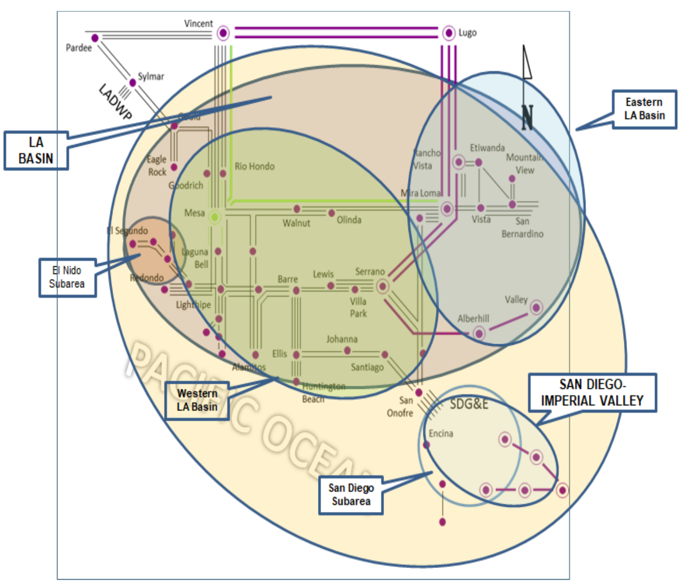
San Onofre is out Capistrano is in

Imperial Valley is in Wixom (El Centro) is out

Imperial Valley is in La Rosita is out

San Diego-Imperial Valley LCR Area Diagram

Figure 3.3-92 San Diego-Imperial Valley LCR Area



San Diego-Imperial Valley LCR Area Load and Resources

Table 3.3-79 provides the forecast load and resources in the San Diego-Imperial Valley LCR Area in 2026. The list of generators within the LCR area are provided in Attachment A.

In the year 2026 the estimated time of local area peak is 6:00 PM (PDT).

At the local area peak time the estimated, ISO metered, solar output is 26.8%.

If required, all non-solar technology type resources are dispatched at NQC.

Table 3.3-79 San Diego-Imperial Valley LCR Area 2026 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	5155	Market/Net Seller/Wind	3950	3950
AAEE, AAFS & AATE	31	Battery/Hybrid	1917	1917
Behind the meter DG	-518	MUNI/QF	3	3
Net Load	**4668**	LTPP Preferred Resources	0	0
Transmission Losses	114	Existing Demand Response	26	26
Pumps	0	Solar	243	243
Load + Losses + Pumps	**4782**	**Total**	**6139**	**6139**

Approved transmission projects modeled:

1. S-Line (aka Imperial Valley – El Centro 230kV) upgrade
2. Southern Orange County Reliability Upgrade Project – Alternative 3 (Rebuild Capistrano Substation, construct a new SONGS - Capistrano 230 kV line and a new 230 kV tap line to Capistrano)
3. TL649D Reconductor (San Ysidro - Otay Lake Tap)
4. Reconductor TL 605 Silvergate - Urban

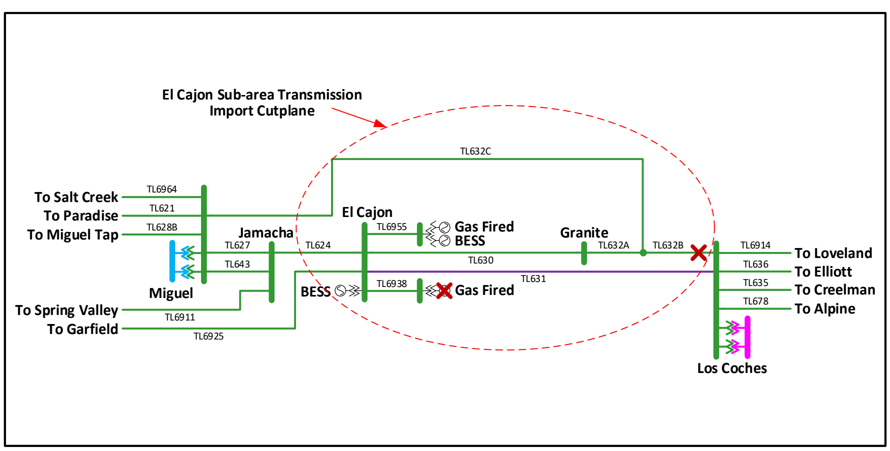
The 500kV line series capacitors on the on the Southwest Powerlink and Sunrise Powerlink lines are bypassed in the study case.

3.3.10.2 *El Cajon Sub-area*

El Cajon is sub-area of the San Diego-Imperial Valley LCR area.

El Cajon LCR Sub-area Diagram

Figure 3.3-93 El Cajon LCR Sub-area



El Cajon LCR Sub-area Load and Resources

Table 3.3-80 provides the forecast load and resources in El Cajon LCR sub-area. The list of generators within the LCR Sub-area are provided in Attachment A.

Table 3.3-80 El Cajon Sub-area Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	193	Market/Net Seller	94	94
AAEE, AAFS & AATE	-2	Battery/Hybrid	107	107
Behind the meter DG	-16	MUNI/QF	0	0
Net Load	**175**	LTPP Preferred Resources	0	0
Transmission Losses	1	Existing 20-minute Demand Response	0	0
Pumps	0	Solar	0	0
Load + Losses + Pumps	**176**	**Total**	**201**	**201**

El Cajon LCR Sub-area Hourly Profiles

Figure 3.3-94 illustrates the forecast 2026 annual load forecast profile in the El Cajon LCR sub-area and the Category P1 (L-1 Contingency) transmission load serving capability without generation. Figure 3.3-95 provides the 2026 daily load forecast profile for the peak day, estimated amount of energy storage that can be added to this local area from charging restriction perspective, and estimated four-hour capacity amount under the most critical contingency.

Figure 3.3-94 El Cajon LCR Sub-area 2026 Annual Load Forecast Profiles

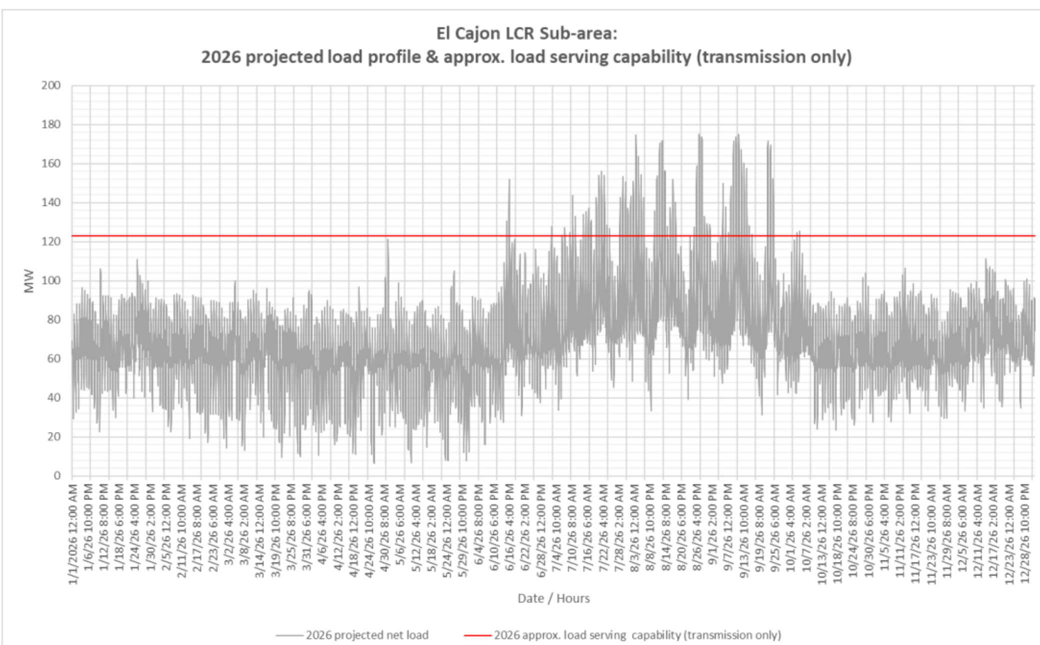
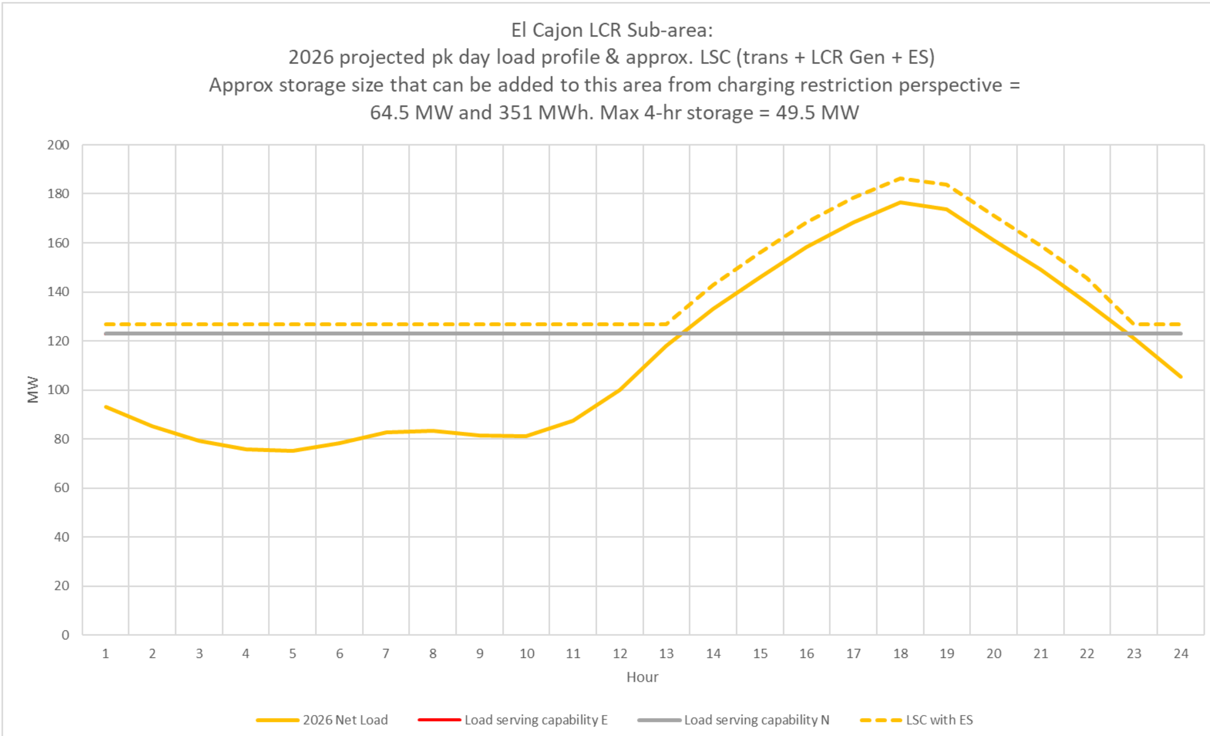


Figure 3.3-95 El Cajon LCR Sub-area 2026 Peak Day Forecast Profiles



El Cajon LCR Sub-area Requirement

Table 3.3-81 identifies the sub-area 2026 LCR requirements. The Category P3 (Single Contingency) LCR requirement is 114 MW.

Table 3.3-81 El Cajon LCR Sub-area Requirements

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	P3	El Cajon – Los Coches 69 kV Line (TL631)	El Cajon unit out of service followed by TL632 Granite–Los Coches–Miguel 69 kV 3-Terminal Line	114

Effectiveness factors:

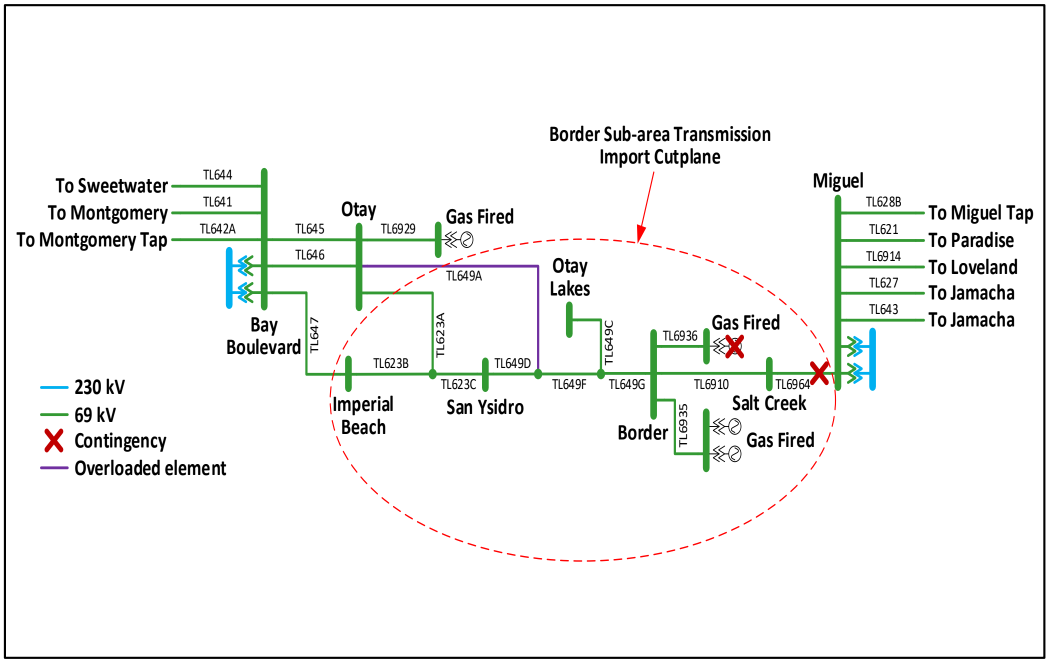
All units within the El Cajon sub-area have the same effectiveness factor.

3.3.10.3 *Border Sub-area*

Border is sub-area of the San Diego – Imperial Valley LCR area.

Border LCR Sub-area Diagram

Figure 3.3-96 Border LCR Sub-area



Border LCR Sub-area Load and Resources

Table 3.3-82 provides the forecast load and resources in Border LCR sub-area. The list of generators within the LCR Sub-area are provided in Attachment A.

Table 3.3-82 Border Sub-area Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	196	Market/Net Seller	149	149
AAEE, AAFS & AATE	-2	Battery	0	0
Behind the meter DG	-18	MUNI/QF	0	0
Net Load	**176**	LTPP Preferred Resources	0	0
Transmission Losses	1	Existing 20-minute Demand Response	0	0
Pumps	0	Solar	0	0
Load + Losses + Pumps	**177**	**Total**	**149**	**149**

Border LCR Sub-area Hourly Profiles

Figure 3.3-97 illustrates the 2026 annual load forecast profile in the Border LCR sub-area and the Category P1 transmission load serving capability without gas generation. Figure 3.3-98 illustrates the 2026 daily load forecast profile for the peak day, estimated amount of energy storage that can be added to this local area from charging restriction perspective, and estimated four-hour capacity amount under the most critical contingency.

Figure 3.3-97 Border LCR Sub-area 2026 Annual Day Forecast Profiles

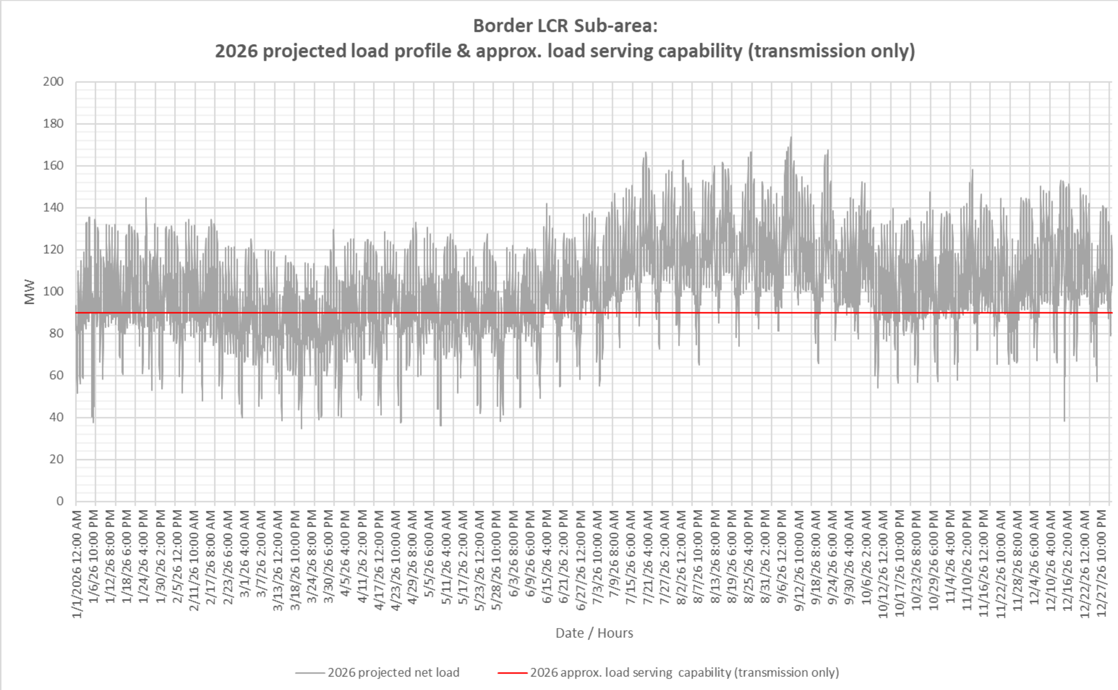
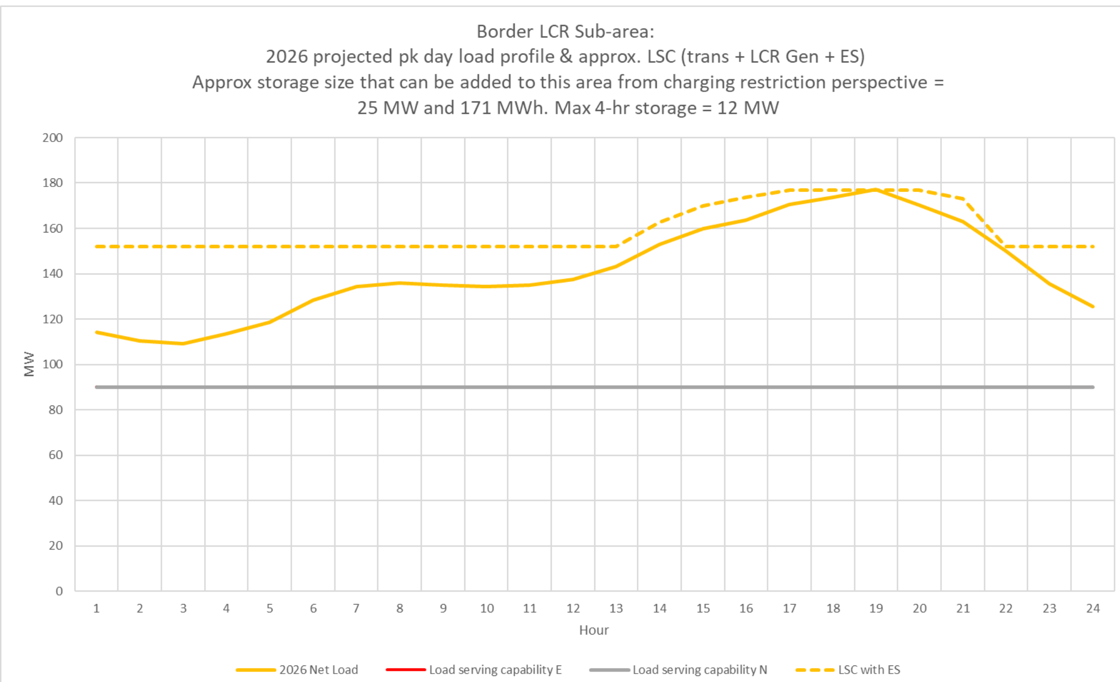


Figure 3.3-98 Border LCR Sub-area 2026 Peak Day Forecast Profiles



Border LCR sub-area requirement

Table 3.3-83 identifies the sub-area requirements. The LCR requirement for Category P3 contingency is 110 MW.

Table 3.3-83 Border LCR Sub-area Requirements

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	P3	Otay – Otay Lakes Tap 69 kV (TL649A)	Border unit out of service followed by the outage of Miguel-Salt Creek 69 kV (TL6964)	110

Effectiveness factors:

All units within the Border sub-area have the same effectiveness factor.

3.3.10.4 *San Diego Sub-area*

San Diego is a sub-area of the San Diego-Imperial Valley LCR area.

San Diego LCR Sub-area Diagram

Please refer to Figure 3.3-92 above.

San Diego LCR Sub-area Load and Resources

Table 3.3-84 provides the forecast load and resources in San Diego LCR sub-area. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-84 San Diego Sub-area 2026 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	5155	Market/Net Seller/Wind	2706	2706
AAEE, AAFS & AATE	31	Battery/Hybrid	1562	1562
Behind the meter DG	-518	MUNI/QF	3	3
Net Load	**4668**	LTPP Preferred Resources	0	0
Transmission Losses	114	Existing Demand Response	26	26
Pumps	0	Solar	8	8
Load + Losses + Pumps	**4782**	**Total**	**4305**	**4305**

San Diego LCR Sub-area Hourly Profiles

Figure 3.3-99 illustrates the forecast 2026 annual load profile in the San Diego LCR sub-area with the transmission load serving capability only. Figure 3.3-100 provides load shape for peak load day, estimated energy storage maximum capacity and energy as well as estimated four-hour capacity amount based on its maximum charging capability under the most critical contingency.

Figure 3.3-99 San Diego LCR Sub-area 2026 Annual Load Profile with Estimated Transmission Load Serving Capability Only

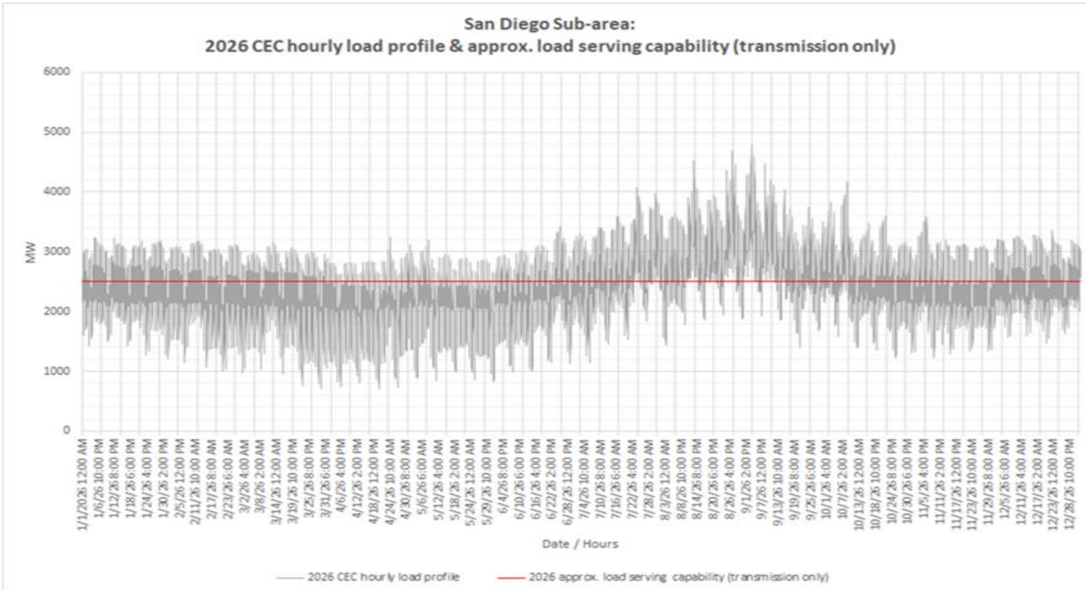
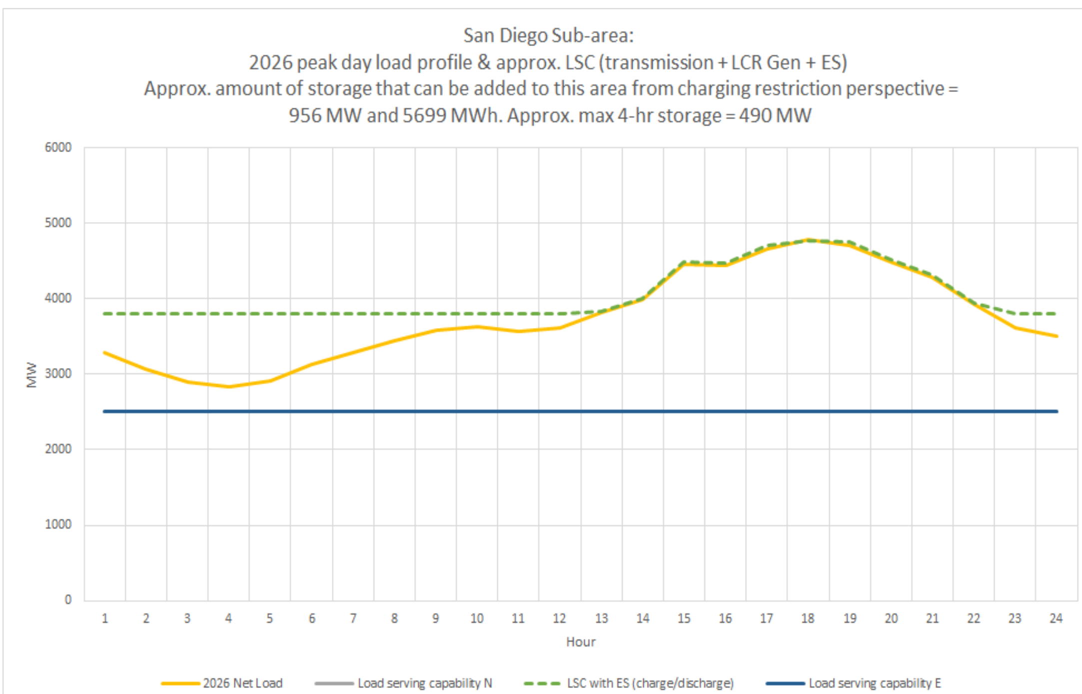


Figure 3.3-100 San Diego LCR Sub-area 2026 Load Shape and Estimated Maximum Energy Storage Capacity and Energy Based on Charging Capability Under Critical Contingency



San Diego LCR Sub-area Requirement

Table 3.3-85 identifies the sub-area LCR requirements. The Category P6 contingency LCR requirement is 2631 MW. The LCR need is lower due to lower demand forecast from the CEC for the San Diego area.

Table 3.3-85 San Diego Sub-area LCR Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First Limit	P6	Remaining Sycamore-Suncrest 230 kV line	ECO-Miguel 500 kV line, system readjustment, followed by one of the Sycamore-Suncrest 230 kV lines, or vice versa	2631

Effectiveness factors:

See Attachment B - Table titled San Diego.

For other helpful procurement information please read procedure 2210Z Effectiveness Factors under 7820 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.10.5 *San Diego-Imperial Valley Overall*

San Diego-Imperial Valley LCR area Hourly Profiles

Since the San Diego sub-area has all the substation loads, the overall San Diego-Imperial Valley area has the same load profile as the San Diego bulk sub-area (Figure 3.3-101). The Imperial Valley area has extra generating resources. With the implementation of the S-line upgrade, additional LCR need beyond the San Diego sub-area need is eliminated. Thus, the LCR need for the overall San Diego-Imperial Valley LCR area is the same as the San Diego bulk sub-area.

The following is a summary of estimated amount of storage for the sub-areas and the overall area based on maximum charging capability perspective. Due to non-linearity of power system and the various critical contingencies and load shapes for each sub-area and the overall area, it is noted that the estimated maximum amount of storage for the sub-areas many not add up to be sum of the overall area. Since the San Diego sub-area has all the substation loads, the overall San Diego-Imperial Valley area has the same load profile as the San Diego bulk sub-area and therefore same amount of energy storage for the San Diego sub-area.

Table 3.3-86 Estimated San Diego Sub-areas and Overall Area Energy Storage Capacity and Energy Based on Maximum Charging Capability Perspective

Area/Sub-area	Estimated Energy Storage Maximum Capacity (MW)	Estimated Energy Storage Maximum Energy (MWh)	1 for 1 Replacement with 4-hour Energy Storage Capacity (MW)
El Cajon sub-area	65	351	50
Border sub-area	25	171	12
San Diego sub-area	956	5699	490
Overall San Diego-Imperial Valley Area	956	5699	490

San Diego-Imperial Valley LCR area Requirement

Table 3.3-87 identifies the area LCR requirements. The LCR requirement for Category P6 contingency is 2631 MW.

Table 3.3-87 San Diego-Imperial Valley LCR area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2026	First Limit	P6	Remaining Sycamore-Suncrest 230 kV line	ECO-Miguel 500 kV line, system readjustment, followed by one of the Sycamore-Suncrest 230 kV lines, or vice versa	2631

Effectiveness factors:

See Attachment B - Table titled San Diego.

For other helpful procurement information please read procedure 2210Z Effectiveness Factors under 7820 posted at: http://www.caiso.com/Documents/2210Z.pdf

Changes compared to last year's results

Compared with the 2025 LCT Study results, the demand forecast is slightly higher by 2 MW. The overall LCR needs for the San Diego-Imperial Valley decreases by 78 MW due to higher dispatch of local resources in the LA Basin to meet its LCR needs. The LA Basin and the San Diego-Imperial Valley areas exhibit some inter-dependent relationship due to strong electrical tie between these two areas.

3.3.11 Valley Electric Area

Valley Electric Association LCR area has been eliminated on the basis of the following:

No category B issues were observed in this area

Category C and beyond –

- No common-mode N-2 issues were observed
- No issues were observed for category B outage followed by a common-mode N-2 outage
- All the N-1-1 issues that were observed can either be mitigated by the existing UVLS or by an operating procedure

3.4 Summary of Engineering Estimates for Intermediate Years by Local Area

Engineering estimates, along with detailed explanations for contributing factors in each local area are given below per methodology explained in Chapter 2 above. The estimates represent an engineering approximation. They are not actual technical studies and they may be superseded by actual technical studies.

3.4.19.1 *Humboldt Area*

The net peak load growth from 2026 to 2030 is estimated at 13. 5 MW/year.

There is one new transmission project that directly affects the LCR change from 2026 to 2030, the Garberville area reinforcement with estimated in service date of Decemebr 2017.

There is no new resource that directly affects the LCR change from 2026 to 2030.

There is no projected change in resource contractual status that directly affects the LCR change from 2026 to 2030.

There is no resource projected to retire that directly affects the LCR change from 2026 to 2030.

The total increase for year 2027 depends only on the load forecast and the study results for year 2026 and it is estimated at about 13.5 MW/year for Category P6.

The total increase for year 2028 depends only on the load forecast and the study results for year 2030 and it is estimated at about 13.5 MW/year for Category P6.

Table 3.4-1 ISO's estimated Humboldt LCR need:

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2027	First Limit	P6	Humboldt-Trinity 115 kV	Cottonwood-Bridgeville 115 kV & Humboldt - Humboldt Bay 115 kV	150
2028	First Limit	P6	Humboldt-Trinity 115 kV	Cottonwood-Bridgeville 115 kV & Humboldt - Humboldt Bay 115 kV	167

3.4.19.2 *North Coast/ North Bay Area*

The net peak load growth from 2026 to 2030 is estimated at about 24.25 MW/year.

There are 4 new transmission project that directly affects the LCR change from 2026 to 2030.

- Clear Lake 60 kV System Reinforcement (sub-area need only-2030)
- Vaca Dixon-Lakeville 230 kV Corridor Series Compensation (2027)
- Santa Rosa 115 kV lines Reconductoring project (sub-area need only-2029)
- New Collinsville 500 kV Substation (2028)

The Vaca Dixon-Lakeville 230 kV Corridor Series Compensation project will be in-service before year 2027 and will influence the results in both year, whereas the New Collinsville 500 kV

Substation project with LCR reduction will be in-service in 2028 and will only influence the LCR results starting 2028.

There is no new resource that directly affects the LCR change from 2026 to 2030.

There is no projected change in resource contractual status that directly affects the LCR change from 2026 to 2030.

There is no resource projected to retire that directly affects the LCR change from 2026 to 2030.

The total need for year 2027 depends on load growth and the drop in need due to the Vaca Dixon-Lakeville 230 kV Corridor Series Compensation project (estimated at 140 MW).

The total need for year 2028 depends on load growth and the resulta for year 2030 hat includes the dop in need due to both transmission projects.

Table 3.4-2 ISO's estimated North Coast/ North Bay LCR need:

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2027	First Limit	P6	Eagle Rock-Cortina 115 kV line	Vaca Dixon-Tulucay 230 kV and Cortina-Mendocino 115 kV lines	732
2028	First Limit	P6	Eagle Rock-Cortina 115 kV line	Vaca Dixon-Tulucay 230 kV and Cortina-Mendocino 115 kV lines	558

3.4.19.3 *Sierra Area*

The net peak load growth from 2026 to 2030 is estimated at -32 MW/year.

There are 2 new transmission projects that directly affects the LCR change from 2026 to 2030.

- Reconductor Rio Oso–SPI Jct–Lincoln 115 kV line (Dec 2028)
- Gold Hill 230/115 kV Transformer Addition (June 2029)

These projects inpact sub-area need only and will not influence years 2027 and 2028,

There is no new resource that directly affects the LCR change from 2026 to 2030.

There is no projected change in resource contractual status that directly affects the LCR change from 2026 to 2030.

There is no resource projected to retire that directly affects the LCR change from 2026 to 2030.

The total requirement for both year 2027 and 2028 depend on the result for year 2026 only plus an estimated increase of 139.25 MW/year for Category P6.

Table 3.4-3 ISO's estimated Sierra LCR need:

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2027	First limit	P6	Table Mountain – Pease 60 kV	Table Mountain – Palermo 230 kV Table Mountain – Rio Oso 230 kV	1493
2028	First limit	P6	Table Mountain – Pease 60 kV	Table Mountain – Palermo 230 kV Table Mountain – Rio Oso 230 kV	1633

3.4.19.4 *Stockton Area*

The net peak load growth from 2026 to 2030 is estimated at -15 MW/year.

There are two new transmission project that directly affects the LCR change from 2026 to 2030.

- Vierra 115 kV Looping project with in-service date in May 2027 that affects the Tesla-Bellota sub-area in year 2027 and 2028
- Lockeford – Lodi Area 230 kV Development project with in-service date in December 2029 that affects Lockeford sub-area and therefore it will not impact the LCR results in 2027 and 2028.

There is one new resource that directly affects the LCR change from 2026 to 2030 and it get's added to the Tesla-Bellota sub-area in 2027 after the in-service date of the Vierra Loop-in project.

There is no projected change in resource contractual status that directly affects th e LCR change from 2026 to 2030.

There is no resource projected to retire that directly affects the LCR change from 2026 to 2030.

The total increase for each intermediate year depends on the study results for year 2026 and 2030 and on the available resources in the Lockeford and Tesla-Bellota sub-areas.

Table 3.4-4 ISO's estimated Stockton LCR need:

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2027	First Limit	N/A	Stockton Overall		760
2028	First Limit	N/A	Stockton Overall		774

3.4.19.5 *Bay Area*

The net peak load growth from 2026 to 2030 is estimated at 935 MW/year.

There are a few new transmission projects that directly affect the LCR change from 2026 to 2030.

The TPP project impact is minimal to the Bay Area overall requirement for year 2027 because the most important LCR reduction projects in-service dates are before summer 2028.

There are no new resources that directly affect the LCR change from 2026 to 2030.

There is no projected change in resource contractual status that directly affects the LCR change from 2026 to 2030.

There are no resources projected to retire that directly affects the LCR change from 2026 to 2030.

The total LCR need in 2027 and 2028 depend on the studies results for year 2026 and 2030, the load growth between years and the available resources in the area. Because Bay Area is already deficient in year 2026 it will stay deficient in 2027 and 2028.

Table 3.4-5 ISO's estimated Bay Area LCR need:

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2027	First limit	P6	Metcalf #13 500/230 kV TB	Metcalf #11 & #12 500/230 kV TBs	7558
2028	First limit	P6	Metcalf #13 500/230 kV TB	Metcalf #11 & #12 500/230 kV TBs	7558

3.4.19.6 *Fresno Area*

The net peak load growth from 2026 to 2030 is estimated at 68.25 MW/year.

There are a few new transmission projects that directly affect the LCR change from 2026 to 2030.

The TPP project impact is minimal to both years because none of the projects directly impact the Fresno overall LCR need.

There are no new resources that directly affect the LCR change from 2026 to 2030.

There is no projected change in resource contractual status that directly affects the LCR change from 2026 to 2030.

There is no resource projected to retire that directly affects the LCR change from 2026 to 2030.

The total increase for each intermediate year depends on load growth and the study results between years 2026 and 2030 and it is estimated at about 125.75 MW/year for Category P6.

Table 3.4-6 ISO's estimated Fresno LCR need:

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2027	First limit	P6	Kingsburg-Contadina 115 kV Line	Mc Call-Helm 230 kV Line and Mc Call-Mustang 230 kV line	2226
2028	First limit	P6	Kingsburg-Contadina 115 kV Line	Mc Call-Helm 230 kV Line and Mc Call-Mustang 230 kV line	2352

3.4.19.7 *Kern Area*

The net peak load growth from 2026 to 2030 is estimated at 11.25 MW/year.

There is one new transmission project (Kern PP 115 kV area reinforcement) that directly affects the LCR change from 2026 to 2030. (The late 2027 in-service date does not influence the year 2027 results and only influences the year 2028 results.)

There are no new resources that directly affect the LCR change from 2026 to 2030.

There is no projected change in resource contractual status that directly affects the LCR change from 2026 to 2030.

There is no resource projected to retire that directly affects the LCR change from 2026 to 2030.

The total requirement for year 2027 depends on the load increase and the study results regarding South Kern PP sub-area in year 2026 and it is estimated to be an increase of about 11.25 MW/year for Category P6. The increase is however limited by the available resources in the area to 460 MWs, the rest is an increase in deficiency.

The total requirement for year 2028 depends on the load increase and the study results regarding South Kern PP sub-area in year 2030 and it is estimated to be an increase of about 11.25 MW/year for Category P6.

Table 3.4-7 ISO's estimated Kern LCR need:

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2027	N/A	P6	Aggregate of Sub-areas.		460
2028	N/A	P6	Aggregate of Sub-areas.		324

3.4.19.8 *Big Creek/Ventura Area*

The net peak load growth from 2026 to 2030 is estimated at 85 MW/year.

There is one new transmission project that directly affects the LCR change from 2026 to 2030.

The Sylmar-Pardee 230 kV Rating Increase Project does not influence years 2027 and 2028 due to it June 2029 in-service date.

The maintenance on Sylmar bank E also directly affects the LCR change from 2026 to 2030.

The Sylmar bank E return to service in early 2027 does influence both years 2027 and 2028.

There are no new resources that directly affect the LCR change from 2026 to 2030.

There is no projected change in resource contractual status that directly affects the LCR change from 2026 to 2030.

There are no resources projected to retire that directly affects the LCR change from 20265 to 2030.

The total LCR requirement for year 2027 and 2028 are only dependent on year 2026 results, the Sylamr bank E return to service and load growth between years.

Table 3.4-8 ISO's estimated Big Creek/Ventura LCR need:

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2027	First Limit	P6	Remaining Sylmar - Pardee 230 kV	Lugo - Victorville 500 kV line followed by one of the Sylmar - Pardee #1 or #2 230 kV lines	1536
2028	First Limit	P6	Remaining Sylmar - Pardee 230 kV	Lugo - Victorville 500 kV line followed by one of the Sylmar - Pardee #1 or #2 230 kV lines	1621

3.4.19.9 *LA Basin Area*

The net peak load growth from 2026 to 2030 is estimated at 429. 5 MW/year.

There are one new transmission projects that directly affect the LCR change from 2026 to 2030.

There are no new resources that directly affect the LCR change from 2026 to 2030.

There is no projected change in resource contractual status that directly affects the LCR change from 2026 to 2030.

There are no resources projected to retire that directly affect the LCR change from 2026 to 2030.

The total increase for each intermediate year depends on load growth and the study results between years 2026 and 2030 and it is estimated at about 364.25 MW/year.

Table 3.4-9 ISO's estimated LA Basin LCR need:

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2027	First Limit	N/A	Sum of Western and Eastern	See Western and Eastern	6176
2028	First Limit	N/A	Sum of Western and Eastern	See Western and Eastern	6541

3.4.19.10 *San Diego-Imperial Valley Area*

The net peak load growth from 2026 to 2030 is estimated at 133.75 MW/year.

There are a few transmission projects that directly affect the LCR change from 2026 to 2030. The projects however do not meaningfully impact the overall LCR results.

There are a few new resources that do not directly affect the LCR change from 2026 to 2030.

There is no projected change in resource contractual status that directly affects the LCR change from 2026 to 2030.

There is no resource projected to retire that directly affects the LCR change from 2026 to 2030.

The total increase for each intermediate year depends on load growth and the study results between years 2026 and 2030 and it is estimated at about 168.5 MW/year for Category P6.

Table 3.4-10 ISO's estimated San Diego-Imperial Valley LCR need:

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2027	First Limit	P6	Remaining Sycamore – Suncrest 230 kV	Eco – Miguel 500 kV, followed by one of the Sycamore – Suncrest 230 kV lines	2800
2028	First Limit	P6	Remaining Sycamore – Suncrest 230 kV	Eco – Miguel 500 kV, followed by one of the Sycamore – Suncrest 230 kV lines	2968

4. Energy Storage Assessment as Part of LCR Study

4.1 Introduction

Energy storage is emerging as an essential part of the of the resource mix due to its characteristic of being able to store and release energy as required. Due to this flexibility, the energy storage compliments the development of renewable generation like wind and solar which are intermittent in nature. However, similar to wind and solar, energy storage resources are also use limited. As such, when energy storage is considered as a solution to the transmission system reliability needs, the sufficiency of the alternative needs to be validated for every hour of the day. Unlike other use limited resources, energy storage is also a load when it is operating in a charging mode. Therefore, the 24-hour validation also need to make sure that the transmission system has sufficient capability to charge the energy storage resource.

As part of the annual LCR study, the ISO has been performing assessment to estimate a maximum amount of energy storage that can be added to a local capacity area from the charging restriction perspective. The purpose of this section is to outline the approach of the evaluation of energy storage as part of the LCR study.

4.2 Energy Storage Assessment Approach

The basic concept of the energy storage assessment is to perform a 24-hour validation. The 24-hour validation is performed to make sure that there will be sufficient window and system capacity to be able to charge the storage for the next day peak under the worst contingency condition. The validation includes hour-by-hour comparison of the net load[7] versus the total (transmission + generation) load serving capability.

Peak day 24-hour load profile is used, either directly from the CEC hourly load forecast for the year of study or, if the study area is smaller (local) and the corresponding CEC hourly load forecast is not available, the future year load profile is developed by escalating from the historical load profile for the study area. In the latter approach, the historical load profile is escalated in a manner that accounts for the change in load shape from historical due to forecasted incremental behind-the-meter PV generation (BTM-PV) in the area.

System load serving capability includes transmission system load serving capability and local generation load serving capability. The transmission system load serving capability is calculated under the worst contingency condition without any local generation. The local generation load serving capability is calculated under the worst contingency condition with amount of generation needed according to the local capacity requirement considering effectiveness of the aggregate of local generation to the worst constraint.

[7] Net load here is defined as gross load minus contribution from behind-the-meter generation and load modifier, like additional achievable energy efficiency (AAEE).

Table below includes key assumptions used in the energy storage assessment.

Table 4.2-1 Key assumptions used in the energy storage assessment

Assumption	Rationale
Storage added displaces existing generation (all types) MW to MW in aggregation.	To maintain local RA capacity. Any incremental storage is assumed to be an local RA resource
Maximum storage addition cannot exceed LCR amount.	To maintain local RA capacity. Any incremental storage is assumed to be an local RA resource
Includes storage charging/discharging efficiency of 85%.	Based on general battery efficiency
Storage is charged in all hours where the storage is not discharged. Maximum charging is capped at the amount of storage size (Pmin).	Under worst contingency condition, for battery to have sufficient discharge energy, it is assumed that battery is charged in all hours it is not discharged.
An hourly energy margin of 5% or 10 MW, the larger of the two, is applied to both charging and discharging need.	To add margin when battery is discharging so it does not have to follow load curve exactly. For charging same margin is added to discount available system capability each hour.

4.2.1 Load Data

The first step in preforming the 24-hour validation is to develop a peak-day load profile. For the local capacity areas for which the area definition match with the definition of areas in CEC load forecast, the 24-hour peak day profile can be extracted directly from the CEC hourly load forecast data. For other local capacity areas, future year load profile need to be developed by escalating from the historical load profile for the study area. In the latter approach, the historical load profile is escalated in a manner that accounts for the change in load shape from historical due to forecasted incremental behind-the-meter PV generation (BTM-PV) in the area.

4.2.2 Load Serving Capabilities

Second step in performing the 24-hour validation is to calculate load serving capabilities. Transmission-only load serving capabilities are calculated in power flow under the worst LCR contingency by turning off all local generation following by scaling down load in the local area until the constraint is addressed. For some local areas, it may not be feasible to achieve this with AC solution in the power flow and may need to rely on the spreadsheet based calculation using DC effectiveness factors. The transmission-only load serving capability is used uniformly for each hour within the 24-hour validation. Local generation load serving capability is calculated under the same worst LCR contingency condition with amount of generation needed according to the local capacity requirement considering effectiveness of the aggregate of local generation to the constraint. The generation load serving capability needs to be captured separately for different technologies due to having different output profiles within the 24-hour period. The conventional thermal resources are assumed to have uniform capability throughout the 24-hour period. Whereas, the renewables, like solar and wind are dispatched using appropriate output profiles. The use-limited resources, like storage and demand response are to be dispatched within the period of peak load hours staying within the available total energy. The transmission-only and the local generation load serving capabilities are then added together to get the total load serving capabilities for each hour.

With the transmission-only load serving capability and generation load serving capabilities using LCR resources calculated, each hour should have sufficient load serving capability to serve the net load and provides the setup for energy storage addition estimation.

4.2.3 Estimating Energy Storage Addition

Once the hourly data for the net load and load serving capabilities are stablished, additional amount storage can be estimated by adding storage and displacing existing local area LCR resource by the same amount. Because of the displacement of the existing local resources, generation load serving capability will be reduced, which will result in the total load serving capability being less than the net load for certain hours. The storage added then can be dispatched within those hours. An hourly energy margin of 5% or 10 MW, the larger of the two, is added to the storage MW needed for each of the deficient hours. This is done to create a step dispatch in the storage operation instead of following the load curve perfectly. Once the storage is dispatched for all the deficient hours with appropriate amount, the storage MW dispatched are added together to get the total storage energy (MWh) need associated with the storage MW chosen. The storage is charged within the hours that it is not discharged by using the surplus load serving capability. An hourly energy margin of 5% or 10 MW, the larger of the two, is reduced from the surplus load serving capabilities to account for potential inaccuracies load forecasting and in calculating various load serving capabilities. The process is repeated by increasing or decreasing the chosen storage MW until the total discharging energy becomes equal to the total available charging energy, which establishes the maximum amount of energy storage that can be added to the local area from the charging restriction perspective.

The energy storage addition estimation is performed only for the LCR area /subareas with a defined load pocket. The energy storage addition estimation is not performed for flow-through areas as these don’t have defined load pocket and as such, don’t have a particular load profile.

4.2.4 1-to-1 Replacement with 4-hour Storage

The maximum 4-hour energy storage amount is also estimated as part of this assessment. The maximum 4-hour MW is not a physical limit. Instead, it is a limit up to which a 4-hour energy storage can replace the existing local resource 1-to-1.

Attachment A - List of physical resources accounted for in the 2026 and 2030 Local Capacity Technical studies

https://stakeholdercenter.caiso.com/InitiativeDocuments/AttachmentA-ListofPhysicalResourcesAccountedforinthe2026and2030LocalCapacityTechnicalStudies.xlsx

Attachment B – Effectiveness factors for procurement guidance

Table - Eagle Rock.

Effectiveness factors to the Eagle Rock-Cortina 115 kV line:

Gen Bus	Gen Name	Gen ID	Eff Factor (%)
31406	GEYSR5-6	1	36
31406	GEYSR5-6	2	36
31408	GEYSER78	1	36
31408	GEYSER78	2	36
31412	GEYSER11	1	37
31435	GEO.ENGY	1	35
31435	GEO.ENGY	2	35
31433	POTTRVLY	1	34
31433	POTTRVLY	3	34
31433	POTTRVLY	4	34
38020	CITY UKH	1	32
38020	CITY UKH	2	32

Table - Fulton

Effectiveness factors to the Lakeville-Petaluma-Cotati 60 kV line:

Gen Bus	Gen Name	Gen ID	Eff Factor (%)
31466	SONMA LF	1	52
31422	GEYSER17	1	12
31404	WEST FOR	1	12
31404	WEST FOR	2	12
31414	GEYSER12	1	12
31418	GEYSER14	1	12
31420	GEYSER16	1	12
31402	BEAR CAN	1	12
31402	BEAR CAN	2	12

Gen Bus	Gen Name	Gen ID	Eff Factor (%)
38110	NCPA2GY1	1	12
38112	NCPA2GY2	1	12
32700	MONTICLO	1	10
32700	MONTICLO	2	10
32700	MONTICLO	3	10
31435	GEO.ENGY	1	6
31435	GEO.ENGY	2	6
31408	GEYSER78	1	6
31408	GEYSER78	2	6
31412	GEYSER11	1	6
31406	GEYSR5-6	1	6
31406	GEYSR5-6	2	6

Table – North Coast and North Bay

Effectiveness factors to the Vaca Dixon-Lakeville 230 kV line:

Gen Bus	Gen Name	Gen ID	Eff Factor (%)
31400	SANTA FE	2	38
31430	SMUDGEO1	1	38
31400	SANTA FE	1	38
31416	GEYSER13	1	38
31424	GEYSER18	1	38
31426	GEYSER20	1	38
38106	NCPA1GY1	1	38
38108	NCPA1GY2	1	38
31421	BOTTLERK	1	36
31404	WEST FOR	2	36
31402	BEAR CAN	1	36
31402	BEAR CAN	2	36
31404	WEST FOR	1	36
31414	GEYSER12	1	36
31418	GEYSER14	1	36
31420	GEYSER16	1	36

Gen Bus	Gen Name	Gen ID	Eff Factor (%)
31422	GEYSER17	1	36
38110	NCPA2GY1	1	36
38112	NCPA2GY2	1	36
31446	SONMA LF	1	36
32700	MONTICLO	1	31
32700	MONTICLO	2	31
32700	MONTICLO	3	31
31406	GEYSR5-6	1	18
31406	GEYSR5-6	2	18
31405	RPSP1014	1	18
31408	GEYSER78	1	18
31408	GEYSER78	2	18
31412	GEYSER11	1	18
31435	GEO.ENGY	1	18
31435	GEO.ENGY	2	18
31433	POTTRVLY	1	15
31433	POTTRVLY	2	15
31433	POTTRVLY	3	15
38020	CITY UKH	1	15
38020	CITY UKH	2	15

Table – Rio Oso

Effectiveness factors to the Rio Oso-Atlantic 230 kV line:

Gen Bus	Gen Name	Gen ID	Eff Factor. (%)
32498	SPILINCF	1	49
32500	ULTR RCK	1	49
32456	MIDLFORK	1	33
32456	MIDLFORK	2	33
32458	RALSTON	1	33
32513	ELDRADO1	1	32
32514	ELDRADO2	1	32
32510	CHILIBAR	1	32

32486	HELLHOLE	1	31
32508	FRNCH MD	1	30
32460	NEWCSTLE	1	26
32478	HALSEY F	1	24
32512	WISE	1	24
38114	Stig CC	1	14
38123	Q267CT	1	14
38124	Q267ST	1	14
32462	CHI.PARK	1	8
32464	DTCHFLT1	1	4

Table – Sierra Overall

Effectiveness factors to the Table Mountain – Pease 60 kV line:

Gen Bus	Gen Name	Gen ID	Eff Factor. (%)
32492	GRNLEAF2	1	17
32494	YUBA CTY	1	17
32496	YCEC	1	17
31794	WOODLEAF	1	6
31814	FORBSTWN	1	6
31832	SLY.CR.	1	6
31834	KELLYRDG	1	6
31888	OROVLENRG	1	6
32451	FREC	1	5
32450	COLGATE1	1	5
32466	NARROWS1	1	5
32468	NARROWS2	1	5
32470	CMP.FARW	1	5
32452	COLGATE2	1	5
32156	WOODLAND	1	4
32498	SPILINCF	1	4
32502	DTCHFLT2	1	4
32454	DRUM 5	1	3
32474	DEER CRK	1	3

Attachment B – Effectiveness factors for procurement guidance

Gen Bus	Gen Name	Gen ID	Eff Factor. (%)
32476	ROLLINSF	1	3
32484	OXBOW F	1	3
32504	DRUM 1-2	1	3
32504	DRUM 1-2	2	3
32506	DRUM 3-4	1	3
32506	DRUM 3-4	2	3
32464	DTCHFLT1	1	3
32480	BOWMAN	1	3
32488	HAYPRES+	1	3
32488	HAYPRES+	2	3
32472	SPAULDG	1	3
32472	SPAULDG	2	3
32472	SPAULDG	3	3
32462	CHI.PARK	1	3
32500	ULTR RCK	1	3
31784	BELDEN	1	3
31786	ROCK CK1	1	3
31788	ROCK CK2	1	3
31790	POE 1	1	3
31792	POE 2	1	3
31812	CRESTA	1	3
31812	CRESTA	2	3
31820	BCKS CRK	1	3
31820	BCKS CRK	2	3
32478	HALSEY F	1	2
32512	WISE	1	2
32460	NEWCSTLE	1	2
32510	CHILIBAR	1	2
32513	ELDRADO1	1	2
32514	ELDRADO2	1	2
32456	MIDLFORK	1	2
32456	MIDLFORK	2	2
32458	RALSTON	1	2

Gen Bus	Gen Name	Gen ID	Eff Factor. (%)
32486	HELLHOLE	1	2
32508	FRNCH MD	1	2
38114	STIG CC	1	1
38123	LODI CT1	1	1
38124	LODI ST1	1	1

Table – San Jose

Effectiveness factors to the Metcalf 230/115 kV transformer #1:

Gen Bus	Gen Name	Gen ID	Eff Factor (%)
35850	GLRY COG	1	25
35850	GLRY COG	2	25
35851	GROYPKR1	1	25
35852	GROYPKR2	1	25
35853	GROYPKR3	1	25
35623	SWIFT	BT	21
35863	CATALYST	1	20
36863	DVRaGT1	1	9
36864	DVRbGt2	1	9
36865	DVRaST3	1	9
36859	Laf300	2	9
36859	Laf300	1	9
36858	Gia100	1	8
36895	Gia200	1	8
35861	SJ-SCL W	1	8
35854	LECEFGT1	1	7
35855	LECEFGT2	1	7
35856	LECEFGT3	1	7
35857	LECEFGT4	1	7
35858	LECEFST1	1	7
35860	OLS-AGNE	1	7

Table – South Bay-Moss Landing

Effectiveness factors to the Moss Landing-Las Aguillas 230 kV line:

Gen Bus	Gen Name	Gen ID	Eff Factor. (%)
36209	SLD ENRG	1	20
36221	DUKMOSS1	1	20
36222	DUKMOSS2	1	20
36223	DUKMOSS3	1	20
36224	DUKMOSS4	1	20
36225	DUKMOSS5	1	20
36226	DUKMOSS6	1	20
36405	MOSSLND6	1	17
36406	MOSSLND7	1	17
35881	MEC CTG1	1	13
35882	MEC CTG2	1	13
35883	MEC STG1	1	13
35850	GLRY COG	1	12
35850	GLRY COG	2	12
35851	GROYPKR1	1	12
35852	GROYPKR2	1	12
35853	GROYPKR3	1	12
35623	SWIFT	BT	10
35863	CATALYST	1	10
36863	DVRaGT1	1	8
36864	DVRbGt2	1	8
36865	DVRaST3	1	8
36859	Laf300	2	8
36859	Laf300	1	8
36858	Gia100	1	7
36895	Gia200	1	7
35854	LECEFGT1	1	7
35855	LECEFGT2	1	7
35856	LECEFGT3	1	7
35857	LECEFGT4	1	7
35858	LECEFST1	1	7
35860	OLS-AGNE	1	7

Table – Ames/Pittsburg/Oakland

Effectiveness factors to the Ames-Ravenswood #1 115 kV line:

Gen Bus	Gen Name	Gen ID	Eff Factor. (%)
35304	RUSELCT1	1	10
35305	RUSELCT2	2	10
35306	RUSELST1	3	10
33469	OX_MTN	1	10
33469	OX_MTN	2	10
33469	OX_MTN	3	10
33469	OX_MTN	4	10
33469	OX_MTN	5	10
33469	OX_MTN	6	10
33469	OX_MTN	7	10
33107	DEC STG1	1	3
33108	DEC CTG1	1	3
33109	DEC CTG2	1	3
33110	DEC CTG3	1	3
33102	COLUMBIA	1	3
33111	LMECCT2	1	3
33112	LMECCT1	1	3
33113	LMECST1	1	3
33151	FOSTER W	1	2
33151	FOSTER W	2	2
33151	FOSTER W	3	2
33136	CCCSD	1	2
33141	SHELL 1	1	2
33142	SHELL 2	1	2
33143	SHELL 3	1	2
32900	CRCKTCOG	1	2
32910	UNOCAL	1	2
32910	UNOCAL	2	2
32910	UNOCAL	3	2
32920	UNION CH	1	2

32921	ChevGen1	1	2
32922	ChevGen2	1	2
32923	ChevGen3	3	2
32741	HILLSIDE_12	1	2
32901	OAKLND 1	1	1
32902	OAKLND 2	2	1
32903	OAKLND 3	3	1
38118	ALMDACT1	1	1
38119	ALMDACT2	1	1

Effectiveness factors to the Moraga-Claremont #2 115 kV line:

Gen Bus	Gen Name	Gen ID	Eff Factor (%)
32921	ChevGen1	1	17
32922	ChevGen2	1	17
32923	ChevGen3	3	17
32901	OAKLND 1	1	16
32902	OAKLND 2	1	16
32903	OAKLND 3	1	16
38118	ALMDACT1	1	16
38119	ALMDACT2	1	16
32920	UNION CH	1	16
32910	UNOCAL	1	15
32910	UNOCAL	2	15
32910	UNOCAL	3	15
33141	SHELL 1	1	10
33142	SHELL 2	1	10
33143	SHELL 3	1	10
33136	CCCSD	1	9
32900	CRCKTCOG	1	8
33151	FOSTER W	1	6
33151	FOSTER W	2	6
33151	FOSTER W	3	6
33102	COLUMBIA	1	3
33111	LMECCT2	1	3
33112	LMECCT1	1	3
33113	LMECST1	1	3
33107	DEC STG1	1	3
33108	DEC CTG1	1	3

33109	DEC CTG2	1	3
33110	DEC CTG3	1	3

Table – Greater Bay Area

Effectiveness factors to the Metcalf 500/230 kV Transformer #13:

Gen Bus	Gen Name	Gen ID	Eff Factor (%)
35881	MEC CTG1	1	40
35882	MEC CTG2	1	40
35883	MEC STG1	1	40
35859	HGST-LV	RN	36
35850	GLRY COG	1	30
35850	GLRY COG	2	30
35851	GROYPKR1	1	30
35852	GROYPKR2	1	30
35853	GROYPKR3	1	30
35623	SWIFT	BT	29
35863	CATALYST	1	28
33469	OX_MTN	1	22
33469	OX_MTN	2	22
33469	OX_MTN	3	22
33469	OX_MTN	4	22
33469	OX_MTN	5	22
33469	OX_MTN	6	22
33469	OX_MTN	7	22
36863	DVRaGT1	1	21
36864	DVRbGt2	1	21
36865	DVRaST3	1	21
36859	Laf300	2	20
36859	Laf300	1	20
36858	Gia100	1	20
36895	Gia200	1	20
35861	SJ-SCL W	1	20
35854	LECEFGT1	1	20
35855	LECEFGT2	1	20
35856	LECEFGT3	1	20
35857	LECEFGT4	1	20
35858	LECEFST1	1	20
35860	OLS-AGNE	1	20
33468	SRI INTL	1	16

35304	RUSELCT1	1	12
35305	RUSELCT2	2	12
35306	RUSELST1	3	12
36209	SLD ENRG	1	9
36221	DUKMOSS1	1	7
36222	DUKMOSS2	1	7
36223	DUKMOSS3	1	7
36224	DUKMOSS4	1	7
36225	DUKMOSS5	1	7
36226	DUKMOSS6	1	7
30532	0162-WD	FW	7
39233	GRNRDG	1	6
33107	DEC STG1	1	6
33108	DEC CTG1	1	6
33109	DEC CTG2	1	6
33110	DEC CTG3	1	6
33102	COLUMBIA	1	6
33111	LMECCT2	1	6
33112	LMECCT1	1	6
33113	LMECST1	1	6
33136	CCCSD	1	6
33141	SHELL 1	1	6
33142	SHELL 2	1	6
33143	SHELL 3	1	6
33151	FOSTER W	1	6
33151	FOSTER W	2	6
33151	FOSTER W	3	6
32901	OAKLND 1	1	6
32902	OAKLND 2	1	6
32903	OAKLND 3	1	6
38118	ALMDACT1	1	6
38119	ALMDACT2	1	6
32910	UNOCAL	1	6
32910	UNOCAL	2	6
32910	UNOCAL	3	6
32920	UNION CH	1	5
33139	STAUFER	1	5
32741	HILLSIDE_12	1	5
32921	ChevGen1	1	5
32922	ChevGen2	1	5
32923	ChevGen3	3	5

32900	CRCKTCOG	1	5
33188	MARSHCT1	1	3
33189	MARSHCT2	2	3
33190	MARSHCT3	3	3
33191	MARSHCT4	4	3
33118	GATEWAY1	1	3
33119	GATEWAY2	1	3
33120	GATEWAY3	1	3
30522	0354-WD	EW	3
33178	RVEC_GEN	1	3
35310	PPASSWND	1	3

Table – Herndon

Effectiveness factors to the Herndon-Manchester 115 kV line:

Gen Bus	Gen Name	Gen ID	Eff Factor. (%)
34624	BALCH 1	1	22
34616	KINGSRIV	1	21
34648	DINUBA E	1	20
34671	KRCDPCT1	1	19
34672	KRCDPCT2	1	19
34308	KERCKHOF	1	18
34344	KERCK1-1	1	18
34345	KERCK1-3	3	18
34677	Q558	1	15
34690	CORCORAN_3	FW	15
34692	CORCORAN_4	FW	15
34696	CORCORANPV_S	1	15
34610	HAAS	1	13
34610	HAAS	2	13
34612	BLCH 2-2	1	13
34614	BLCH 2-3	1	13
34431	GWF_HEP1	1	8
34433	GWF_HEP2	1	8
34617	Q581	1	5
34680	KANSAS	1	5

34467	GIFFEN_DIST	1	4
34563	STROUD_DIST	2	4
34563	STROUD_DIST	1	4
34608	AGRICO	2	4
34608	AGRICO	3	4
34608	AGRICO	4	4
34644	Q679	1	4
365502	Q632BC1	1	4

Table – LA Basin

Effectiveness factors to the San Onofre – San Luis Rey #1 230 kV line:

Gen Bus	Gen Name	Gen ID	Eff. Factor (%)
24067	HUNT2 G	LP	16
24067	HUNT2 G	HP	16
24580	HUNTBCH CTG1	G1	16
24581	HUNTBCH CTG2	G2	16
24582	HUNTBCH STG	S1	16
25671	WH_STN_2	1	14
25670	WH_STN_1	1	14
25883	VILLAPK EQFD	EQ	13
29952	CanyonGT 2	2	13
29952	CanyonGT 3	3	13
29952	CanyonGT 4	4	13
29952	CanyonGT 1	1	13
24005	ALAMT5 G	5	12
24003	ALAMT3 G	LP	12
24003	ALAMT3 G	HP	12
24004	ALAMT4 G	HP	12
24004	ALAMT4 G	LP	12
25812	CHINO EQFD	EQ	12
24575	ALAMT CTG1	G1	12
24576	ALAMT CTG2	G2	12
24577	ALAMT STG	S1	12
25818	DELAMO EQFD	EQ	12

25810	CENTER EQFD	EQ	12
25523	ALMITOS B1_G	1	12
24164	ARCO 6G	6	12
24171	LBEACH34	4	12
24171	LBEACH34	3	12
24170	LBEACH12	2	12
24170	LBEACH12	1	12
24139	SERRFGEN	D1	12
25844	MIRALOM EQFD	EQ	11
24337	VENICE	1	11
25820	EL NIDO EQFD	EQ	11
25838	LA FRSA EQFD	EQ	11
25889	WALNUT EQFD	EQ	11
24122	REDON6 G	6	11
24124	REDON8 G	8	11
29902	ELSEG7GT	7	11
29904	ELSEG5GT	5	11
24062	HARBOR G	1	11
24062	HARBOR G	HP	11
29903	ELSEG6ST	6	11
25510	HARBORG4	LP	11
29901	ELSEG8ST	8	11
24241	MALBRG3G	S3	11
24240	MALBRG2G	C2	11
24239	MALBRG1G	C1	11
25842	MESACAL EQFD	EQ	11
29205	WALCRKG5	1	11
29204	WALCRKG4	1	11
29203	WALCRKG3	1	11
29202	WALCRKG2	1	11
29201	WALCRKG1	1	11
25849	NEWMARK FD1	EQ	11
25857	RIOHNDO EQFD	EQ	11
25851	PADUA EQFD	EQ	11
25042	PASADNA3	1	10

25043	PASADNA4	1	10
25822	ETIWNDA EQFD	EQ	10
25422	ETI MWDG	1	10
29013	GLENARM5_CT	CT	10
25885	VSTA EQFD	EQ	10
29014	GLENARM5_ST	ST	10
29594	VSTA_EQFD	EQ	10
25603	DVLCYN3G	3	9
25604	DVLCYN4G	4	9
25659	MJVSPHN3	3	9
25658	MJVSPHN2	2	9
25657	MJVSPHN1	1	9
24300	RERC2G4	1	9
24299	RERC2G3	1	9
24243	RERC2G	1	9
24242	RERC1G	1	9
25648	DVLCYN1G	1	9
25649	DVLCYN2G	2	9
25861	SNBRDNO EQFD	EQ	9
25863	SNBRDNO FD1	EQ	9
24921	MNTV-G3A	1	9
24922	MNTV-G3B	1	9
24923	MNTV-ST3	1	9
24924	MNTV-G4A	1	9
25872	VALLEYS EQFD	EQ	9
25846	WDT786G	EQ	9
100712	CABAZON_WND	1	8
25634	BUCKWND	W5	7
25634	BUCKWND	QF	7
25646	SANWIND	Q1	7
25645	VENWIND	EU	7
25645	VENWIND	Q2	7
25645	VENWIND	Q1	7
25646	SANWIND	Q2	7
25636	RENWIND	Q1	7

24815	GARNET	QF	7
24815	GARNET	W2	7
24815	GARNET	W3	7
24815	GARNET	G2	7
24815	GARNET	G3	7
24815	GARNET	G1	7
24815	GARNET	PC	7
25636	RENWIND	Q2	7
25639	SEAWIND	QF	7
25637	TRANWND	QF	7
25640	PANAERO	QF	7
25827	GARNET FD	EQ	7
29021	WINTEC6	1	7
25677	WHITEWTR	1	7
25834	HI DSRT FD	EQ	7
25833	WDT458G	EQ	7
698105	ALTWNDGEN1	1	7
29069	MOUNTWND_3G	1	7
29049	BLAST_G	1	7
29290	CABAZON_G	1	7
698106	ALTWNDGEN2	1	7
29066	MOUNTWND_2G	1	7
29107	SENTINEL_G7	1	7
29103	SENTINEL_G3	1	7
29102	SENTINEL_G2	1	7
29105	SENTINEL_G5	1	7
29106	SENTINEL_G6	1	7
29108	SENTINEL_G8	1	7
29104	SENTINEL_G4	1	7
29101	SENTINEL_G1	1	7
29064	MOUNTWND_1G	1	7
25633	CAPWIND	QF	6

Attachment B – Effectiveness factors for procurement guidance

Effectiveness factors to the Mesa – Laguna Bell #1 230 kV line:

Gen Bus	Gen Name	Gen ID	Eff Factor. (%)
29951	REFUSE	D1	35
24239	MALBRG1G	C1	34
24240	MALBRG1G	C2	34
24241	MALBRG1G	S3	34
29903	ELSEG6ST	6	27
29904	ELSEG5GT	5	27
29902	ELSEG7ST	7	27
29901	ELSEG8GT	8	27
24337	VENICE	1	26
24094	MOBGEN1	1	26
24329	MOBGEN2	1	26
24332	PALOGEN	D1	26
24011	ARCO 1G	1	23
24012	ARCO 2G	2	23
24013	ARCO 3G	3	23
24014	ARCO 4G	4	23
24163	ARCO 5G	5	23
24164	ARCO 6G	6	23
24062	HARBOR G	1	23
24062	HARBOR G	HP	23
25510	HARBORG4	LP	23
24327	THUMSGEN	1	23
24020	CARBGEN1	1	23
24328	CARBGEN2	1	23
24139	SERRFGEN	D1	23
24070	ICEGEN	1	22
24001	ALAMT1 G	I	18
24002	ALAMT2 G	2	18
24003	ALAMT3 G	3	18
24004	ALAMT4 G	4	18
24005	ALAMT5 G	5	18
24161	ALAMT6 G	6	18
90000	ALMT-GT1	X1	18

90001	ALMT-GT2	X2	18
90002	ALMT-ST1	X3	18
29308	CTRPKGEN	1	18
29953	SIGGEN	D1	18
29309	BARPKGEN	1	13
29201	WALCRKG1	1	12
29202	WALCRKG2	1	12
29203	WALCRKG3	1	12
29204	WALCRKG4	1	12
29205	WALCRKG5	1	12
29011	BREAPWR2	C1	12
29011	BREAPWR2	C2	12
29011	BREAPWR2	C3	12
29011	BREAPWR2	C4	12
29011	BREAPWR2	S1	12
24325	ORCOGEN	I	12
24341	COYGEN	I	11
25192	WDT1406_G	I	11
25208	DowlingCTG	1	10
25211	CanyonGT 1	1	10
25212	CanyonGT 2	2	10
25213	CanyonGT 3	3	10
25214	CanyonGT 4	4	10
24216	VILLA PK	DG	9

Table – Rector

Effectiveness factors to the Rector-Vestal 230 kV line:

Gen Bus	Gen Name	Gen ID	MW Eff Factor (%)
24370	KAWGEN	1	51
24306	B CRK1-1	1	45
24306	B CRK1-1	2	45
24307	B CRK1-2	3	45
24307	B CRK1-2	4	45
24319	EASTWOOD	1	45

24323	PORTAL	1	45
24308	B CRK2-1	1	45
24308	B CRK2-1	2	45
24309	B CRK2-2	3	45
24309	B CRK2-2	4	45
24310	B CRK2-3	5	45
24310	B CRK2-3	6	45
24315	B CRK 8	81	45
24315	B CRK 8	82	45
24311	B CRK3-1	1	45
24311	B CRK3-1	2	45
24312	B CRK3-2	3	45
24312	B CRK3-2	4	45
24313	B CRK3-3	5	45
24317	MAMOTH1G	1	45
24318	MAMOTH2G	2	45
24314	B CRK 4	41	43
24314	B CRK 4	42	43

Table – San Diego

Effectiveness factors to the Sycamore – Suncrest 230 kV line:

Gen Bus	Gen Name	Gen ID	Eff. Factor (%)
23929	Q1669_ES	12	24
22124	CHCARITA	1	23
22487	MEF MR2	1	23
22486	MEF MR1	1	23
22120	CARLTNHS	1	23
22120	CARLTNHS	2	23
22915	KUMEYAAY	1	23
23871	Q1662_ES	1	22
22208	EL CAJON	13	22
23320	EC GEN2	1	22
23560	Q1047_BESS	1	22
23412	Q1434_G	10	22

22150	EC GEN1	1	22
22204	EASTGATE	1	22
22625	LkHodG1	1	22
22626	LkHodG2	1	22
22448	MESAHGTS	1	22
22496	MISSION	1	22
22092	CABRILLO	1	22
23933	Q1670_ES	12	22
22870	VALCNTR	59	22
22704	SAMPSON	1	22
22333	GOALLINE GEN	1	22
22333	GOALLINE GEN	2	22
23628	Q1191_G2	1	22
22074	LRKSPBD1	1	22
22075	LRKSPBD2	1	22
22604	OTAY	3	22
22604	OTAY	1	22
22617	OY GEN	1	22
22262	PEN_CT1	1	22
22149	CALPK_BD	1	21
22153	CALPK_ES	1	21
22257	ES GEN	1	21
22256	ESCNDIDO	12	21
22256	ESCNDIDO	11	21
22256	ESCNDIDO	10	21
23685	Q1045_GEN	C7	21
22263	PEN_CT2	1	21
22265	PEN_ST	1	21
23557	Q1048_BESS	C7	21
22724	SANMRCOS	1	21
22789	EA GEN1 U10	1	21
22783	EA GEN1 U8	1	20
22784	EA GEN1 U9	1	20
22786	EA GEN1 U6	1	20
22787	EA GEN1 U7	1	20
22628	PA GEN1	1	20

22629	PA GEN2	1	20
22606	OTAYMGT2	1	20
22605	OTAYMGT1	1	20
22607	OTAYMST1	1	20
23544	Q1169_BESS1	1	19
23162	PIO PICO 1A	1	19
23163	PIO PICO 1B	1	19
23164	PIO PICO 1C	1	19
23519	Q1169_BESS2	1	19
23841	Q1657_ES	12	17
22112	CAPSTRNO	1	17

Effectiveness factors to the Imperial Valley – El Centro 230 kV line (i.e., the “S” line):

Gen Bus	Gen Name	Gen ID	Eff Factor. (%)
22982	TDM CTG2	1	25
22983	TDM CTG3	1	25
22981	TDM STG	1	25
22997	INTBCT	1	25
22996	INTBST	1	25
23440	DW GEN2 G1	1	25
23298	DW GEN1 G1	G1	25
23156	DU GEN1 G2	G2	25
23299	DW GEN1 G2	G2	25
23155	DU GEN1 G1	G1	25
23441	DW GEN2 G2	1	25
23442	DW GEN2 G3A	1	25
23443	DW GEN2 G3B	1	25
23314	OCO GEN G1	G1	23
23318	OCO GEN G2	G2	23
23100	ECO GEN1 G	G1	22
23352	ECO GEN2 G	1	21
22605	OTAYMGT1	1	18
22606	OTAYMGT2	1	18
22607	OTAYMST1	1	18

23162	PIO PICO CT1	1	18
23163	PIO PICO CT2	1	18
23164	PIO PICO CT3	1	18
22915	KUMEYAAY	1	17
23320	EC GEN2	1	17
22150	EC GEN1	1	17
22617	OY GEN	1	17
22604	OTAY	1	17
22604	OTAY	3	17
22172	DIVISION	1	17
22576	NOISLMTR	1	17
22704	SAMPSON	1	17
22092	CABRILLO	1	17
22074	LRKSPBD1	1	17
22075	LRKSPBD2	1	17
22660	POINTLMA	1	17
22660	POINTLMA	2	17
22149	CALPK_BD	1	17
22448	MESAHGTS	1	16
22120	CARLTNHS	1	16
22120	CARLTNHS	2	16
22496	MISSION	1	16
22486	MEF MR1	1	16
22124	CHCARITA	1	16
22487	MEF MR2	1	16
22625	LkHodG1	1	16
22626	LkHodG2	2	16
22332	GOALLINE	1	15
22262	PEN_CT1	1	15
22153	CALPK_ES	1	15
22786	EA GEN1 U6	1	15
22787	EA GEN1 U7	1	15
22783	EA GEN1 U8	1	15
22784	EA GEN1 U9	1	15
22789	EA GEN1 U10	1	15
22257	ES GEN	1	15

22263	PEN_CT2	1	15
22265	PEN_ST	1	15
22724	SANMRCOS	1	15
22628	PA GEN1	1	14
22629	PA GEN2	1	14
22082	BR GEN1	1	14
22112	CAPSTRNO	1	12