BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Oversee the Resource Adequacy Program, Consider Program Reforms and Refinements, and Establish Forward Resource Adequacy Procurement Obligations.	Rulemaking 21-10-002 (Filed October 7, 2021)

CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION DRAFT 2024 LOCAL CAPACITY TECHNICAL REPORT

Roger E. Collanton
General Counsel
Anthony Ivancovich
Deputy General Counsel
Marissa Nava
Counsel
California Independent System
Operator Corporation
250 Outcropping Way
Folsom, CA 95630
Tel: 916-963-0521
Fax: 916-608-7222
Email: mnava@caiso.com

Dated: April 6, 2023

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CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION DRAFT 2024 LOCAL CAPACITY TECHNICAL REPORT

The California Independent System Operator Corporation (CAISO) hereby provides its draft 2024 Local Capacity Technical Report. The CAISO is providing the draft local capacity report as requested in the September 2, 2022 *Assigned Commissioner's Amended Scoping Memo and Ruling* (Scoping Memo). The final results are subject to change based on feedback received in the CAISO's stakeholder processes and the CAISO's own internal review. The CAISO held a stakeholder meeting to discuss the draft results for 2024 and 2028 on March 9, 2023, followed by a stakeholder comment period. The CAISO will hold a stakeholder meeting to discuss proposed final results for 2024 and 2028 on April 12, 2023, followed by another stakeholder comment opportunity. The CAISO will provide the final 2024 Local Capacity Technical Report and final 2024 Flexible Capacity Needs Assessment in May 2023, as provided in the Scoping Memo. The draft 2024 Local Capacity Technical Report is included herewith as Attachment A and can be found at:

http://www.caiso.com/InitiativeDocuments/Draft-2024-Local-Capacity-Technical-Report.pdf

Respectfully submitted

By: *Marissa Nava*
Roger E. Collanton
General Counsel
Anthony Ivancovich
Deputy General Counsel
Marissa Nava
Counsel
California Independent System Operator Corporation
250 Outcropping Way
Folsom, CA 95630
Tel: 916-963-0521
Fax: 916-608-7222
Email: mnava@caiso.com

Date: April 6, 2023

2024 LOCAL CAPACITY TECHNICAL STUDY

DRAFT REPORT

AND STUDY RESULTS

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Executive Summary

This Report documents the results and recommendations of the 2024 Local Capacity Technical (LCT) Study. The LCT Study assumptions, processes, and criteria were discussed and recommended through the 2024 Local Capacity Technical Study Criteria, Methodology and Assumptions Stakeholder Meeting held on October 31, 2022. On balance, the assumptions, and processes used for the 2024 LCT Study mirror those used in the 2007-2023 LCT Studies.

Overall, the capacity needed for LCR has decreased by about 3369 MW or about 13.2% from 2023 to 2024.

The LCR needs have decreased in the following areas: Humboldt due to load forecast decrease, Big Creek/Ventura due to lower flows from Sylmar because Sylmar Bank E is out of service, Kern due to change in resources NQC values, LA Basin and San Diego/Imperial Valley due to new transmission projects.

The LCR needs have increased in the following areas: Fresno due to load forecast increase, Bay Area and North Coast/North Bay due to a different load pattern, Sierra due to change in NQC values, Stockton due to new resources being available

The 2024 LCT study results are provided to the CPUC for consideration in its 2024 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 t 2022-2035 Forecast developed by the CEC; namely the load-serving entity (LSE) and balancing authority (BA) tables for Local Reliability Scenario: https://efiling.energy.ca.gov/GetDocument.aspx?tn=248666&DocumentContentId=83163.

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 2024 are provided below and 2028 LCR needs are provided for comparison:

2024 Local Capacity Needs

	August Qualifying Capacity				Capacity Available at Peak	2024 LCR Need
Local Area Name	**QF/ Muni (MW)**	**Non-Solar (MW)**	**Solar (MW)**	**Total (MW)**	**Total (MW)**	**Capacity Needed**
Humboldt	0	176	0	**176**	**176**	**133**
North Coast/ North Bay	137	852	0	**989**	**989**	**983**
Sierra	1197	686	0	**1883**	**1883**	**1212***
Stockton	130	613	7	**750**	**743**	**750***
Greater Bay	617	7327	4	**7948**	**7944**	**7329***
Greater Fresno	206	2740	181	**3127**	**2946**	**2028***
Kern	10	374	43	**427**	**384**	**427***
Big Creek/ Ventura	406	3446	265	**4117**	**4117**	**1971**
LA Basin	1179	7164	10	**8353**	**8353**	**4413**
San Diego/ Imperial Valley	2	5204	182	**5388**	**5206**	**2834**
Total	**3884**	**28582**	**692**	**33158**	**32741**	**22080**

2028 Local Capacity Needs

	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	176	0	**176**	**176**	**148**
North Coast/ North Bay	137	852	0	**989**	**989**	**891**
Sierra	1197	686	0	**1883**	**1883**	**1415***
Stockton	106	659	7	**772**	**765**	**772***
Greater Bay	617	7327	4	**7948**	**7944**	**6261**
Greater Fresno	206	2740	181	**3127**	**2946**	**2728***
Kern	10	374	43	**427**	**384**	**427**
Big Creek/ Ventura	406	3446	265	**4117**	**4117**	**1216**
LA Basin	1179	7164	10	**8353**	**8353**	**5940**
San Diego/ Imperial Valley	2	5204	182	**5388**	**5206**	**3575**
Total	**3860**	**28628**	**692**	**33180**	**32763**	**23373**

* 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 2025 and 2026 LCR needs are provided below:

2025 Estimated Local Capacity Needs (No technical studies conducted)

	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	176	0	**176**	**176**	**137**
North Coast/ North Bay	137	852	0	**989**	**989**	**989***
Sierra	1197	686	0	**1883**	**1883**	**1263***
Stockton	130	613	7	**750**	**743**	**750***
Greater Bay	617	7327	4	**7948**	**7944**	**7498***
Greater Fresno	206	2740	181	**3127**	**2946**	**2203***
Kern	10	374	43	**427**	**384**	**427***
Big Creek/ Ventura	406	3446	265	**4117**	**4117**	**1110**
LA Basin	1179	7164	10	**8353**	**8353**	**4795**
San Diego/ Imperial Valley	2	5204	182	**5388**	**5206**	**3019**
Total	**3884**	**28582**	**692**	**33158**	**32741**	**22191**

2026 Estimated Local Capacity Needs (No technical studies conducted)

	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	176	0	**176**	**176**	**141**
North Coast/ North Bay	137	852	0	**989**	**989**	**853**
Sierra	1197	686	0	**1883**	**1883**	**1314***
Stockton	130	613	7	**750**	**743**	**750***
Greater Bay	617	7327	4	**7948**	**7944**	**7667***
Greater Fresno	206	2740	181	**3127**	**2946**	**2378***
Kern	10	374	43	**427**	**384**	**427***
Big Creek/ Ventura	406	3446	265	**4117**	**4117**	**1146**
LA Basin	1179	7164	10	**8353**	**8353**	**5177**
San Diego/ Imperial Valley	2	5204	182	**5388**	**5206**	**3205**
Total	**3884**	**28582**	**692**	**33158**	**32741**	**23058**

* 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 2023 LCR needs are provided below for comparison:

2023 Local Capacity Needs

	August Qualifying Capacity				Capacity Available at Peak	2023 LCR Need
Local Area Name	**QF/ Muni (MW)**	**Non-Solar (MW)**	**Solar (MW)**	**Total (MW)**	**Total (MW)**	**Capacity Needed**
Humboldt	0	178	0	**178**	**178**	**141**
North Coast/ North Bay	138	773	0	**911**	**911**	**857**
Sierra	1206	698	5	**1909**	**1904**	**1150***
Stockton	136	431	12	**579**	**567**	**579***
Greater Bay	611	7151	8	**7770**	**7770**	**7312***
Greater Fresno	216	2759	436	**3411**	**2979**	**1870***
Kern	6	360	73	**439**	**366**	**439***
Big Creek/ Ventura	407	4593	475	**5475**	**5475**	**2240**
LA Basin	1080	8570	11	**9661**	**9656**	**7529**
San Diego/ Imperial Valley	2	4960	396	**5358**	**4962**	**3332**
Total	**3802**	**30473**	**1416**	**35691**	**34768**	**25449**

* 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 2023 and 2024 LCT study results.

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

1.1 Objectives

The intent of the 2023 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 2024 LCT Study Criteria, Methodology and Assumptions Stakeholder Meeting held on October 31, 2022. 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 2024 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 2024 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

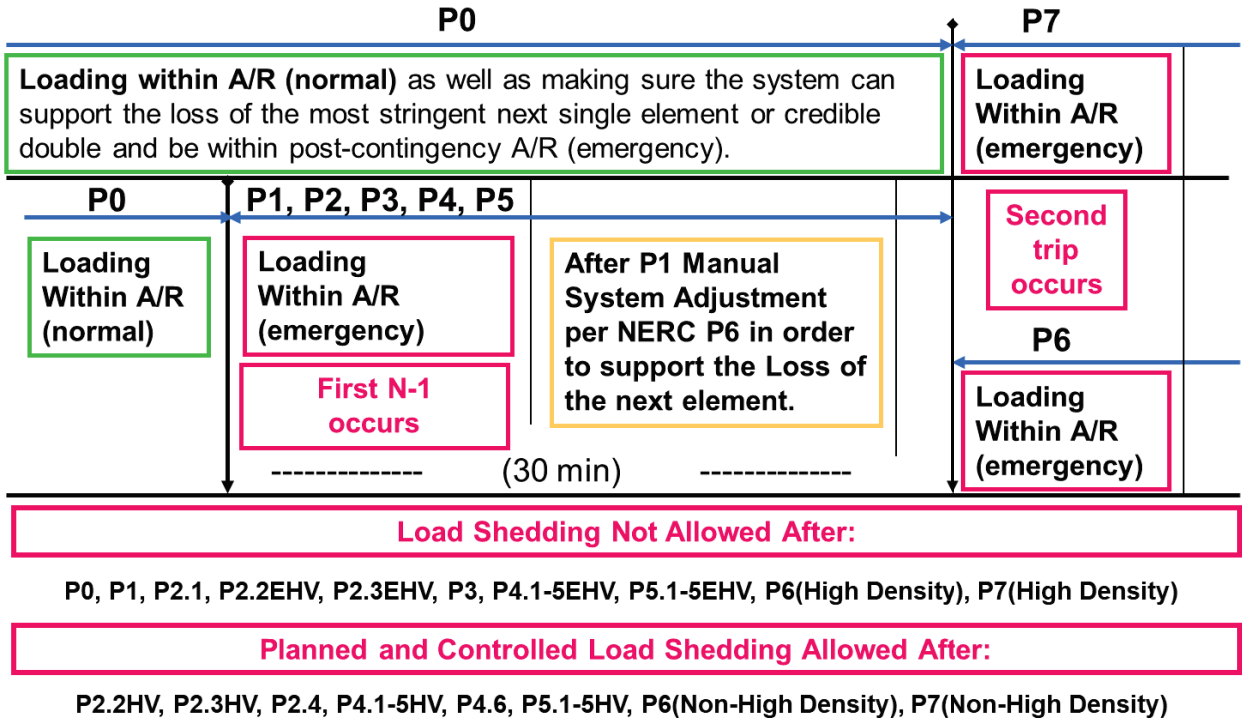
[3] A Special Protection Scheme is typically proposed as an operational solution that does not require additional generation and permits operators to effectively prepare for the next event as well as ensure security should the next event occur. However, these systems have their own risks, which limit 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

P6 – Multiple Contingency – P1.2-P1.5 system adjustment and:	X	x	X
1. Transmission Circuit (L-1)	X	x	X
2. Transformer (T-1)	X		X
3. Shunt Device	X		X
4. Bus section			
P7 – Multiple Contingency - Fault plus stuck breaker			
1. Two circuits on common structure (L-2)	X	X	X
2. Bipolar DC line	X	X	X
Extreme event – loss of two or more elements			
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
P0 – No Contingencies	X	X	X
P1 – Single Contingency			
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
P2 – Single contingency			
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.

2.1.19 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.

2.1.20 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.

2.1.21 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.

2.1.22 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:

2.1.22.1 *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.

2.1.22.2 *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).

2.1.22.3 *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

2.1.22.4 *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.

2.1.22.5 *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.

2.1.22.6 *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 21.0.10.1 and PowerGem's Transmission Adequacy and Reliability Assessment (TARA) program version 2102_1. 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 2024 Local Capacity Needs vs. Peak Load and Local Area Resources

	2024 Total LCR (MW)	Peak Load (1 in10) (MW)	2024 LCR as % of Peak Load	Total NQC Local Area Resources (MW)	2024 LCR as % of Total NQC
Humboldt	133	173	77%	176	76%
North Coast/North Bay	983	1495	66%	989	99%
Sierra	1212	1758	69%	1883	64%**
Stockton	750	1080	69%	750	100%**
Greater Bay	7329	11081	66%	7948	92%**
Greater Fresno	2028	3354	60%	3127	65%**
Kern	427	924	46%	427	100%**
Big Creek/Ventura	1971	4579	43%	4117	48%
LA Basin	4413	19637	22%	8353	53%
San Diego/Imperial Valley	2834	4908	58%	5388	53%
Total*	**22080**	**48989**	**45%**	**33158**	**67%**

Table 3.1-2 2023 Local Capacity Needs vs. Peak Load and Local Area Resources

	2023 Total LCR (MW)	Peak Load (1 in10) (MW)	2023 LCR as % of Peak Load	Total Dependable Local Area Resources (MW)	2023 LCR as % of Total Area Resources
Humboldt	141	175	81%	178	79%
North Coast/North Bay	857	1494	57%	911	94%
Sierra	1150	1812	63%	1909	60%**
Stockton	579	1090	53%	579	100%**
Greater Bay	7312	11136	66%	7770	94%**
Greater Fresno	1870	3288	57%	3411	55%**
Kern	439	940	47%	439	100%**
LA Basin	2240	4427	51%	5475	41%
Big Creek/Ventura	7529	19537	39%	9661	78%
San Diego/Imperial Valley	3332	4768	70%	5358	62%
Total*	**25449**	**48667**	**52%**	**35691**	**71%**

* 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 2024 have been included in this 2024 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 2024 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	122	10	24	gas	
North Coast/North Bay Overall	520	3757	11	300	geothermal	
Eagle Rock	85	553	10	25	geothermal	
Fulton	280	1995	10	175	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	51	357	9	22	hydro	
Pease	59	314	9	52	gas	Need to be eliminated
Gold Hill-Drum	175	997	9	90	hydro	
Stockton	-	-	-	-	-	Sum of sub-areas
Lockeford	24	120	6	24	gas	Need to be eliminated
Tesla-Bellota	385	1945	12	330	gas	
Greater Bay Overall	1847	12607	11	482	gas	
Llagas	70	523	11	12	gas	
San Jose	460	2748	11	300	gas	
South Bay-Moss Landing	967	3813	18	967	gas	
Oakland	-	-	-	-	distillate	N/A
Greater Fresno Overall	990	5777	11	620	hydro	
Panoche	90	718	12	38	gas	
Herndon	328	2151	11	128	hydro	
Hanford	58	391	10	30	gas	
Coalinga	14	93	8	6	solar	
Borden	9	27	3	0	gas	
Reedley	56	331	10	41	hydro	
Kern Overall	-	-	-	-	-	N/A
Westpark	31	136	8	15	gas	
Kern Power-Tevis	-	-	-	-	solar	N/A
Kern Oil	70	280	8	70	gas	
South Kern PP	454	1488	9	150	gas	
Big Creek/Ventura Overall	955	4518	20	805	gas	
Vestal	378	2330	10	175	gas	
Santa Clara	196	843	13	16	gas	
LA Basin Overall	3634	30196	12	704	gas	
Eastern	1160	7503	10	290	gas	
Western	1871	15619	12	414	gas	
El Nido	200	1507	11	46	gas	
San Diego/Imperial Valley Overall	1180	7694	9	1170	gas	
San Diego	1180	7694	9	1170	gas	
El Cajon	47	380	11	19	gas	

Area/Sub-area	Pmax MW	Energy MWh	Max. # of discharge hours	1 for 1 Replacement with 4-hour battery	Replacing mostly	Comment
Border	20	144	9	10	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	28310	4247	-7630	-3750	**21177**
NP26=NP15+ZP26	20867	3130	-3411	-3000	**17586**

Where:

Load Forecast is the most recent 1 in 2 CEC forecast for year 2024 - California Energy Demand 2022-2035, Mid Demand Baseline, Mid AAEE and Mid AAFS Savings. **CED 2022 LSE and BA Planning Forecast Tables**

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

Allocated Imports are the actual 2023 Available Import Capability for loads in the CAISO control area numbers that are not expected to change much by 2024, other then the accounted for increase in MIC from the IID area.

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. This is done in order to be consistent with the import allocation methodology.

[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.

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.

3.2.19.1 *Changes compared to last year's results:*

The load forecast went up in Northern California by about 120 MW and in Southern California by about 160 MW.

The Import Allocations have increased by about 35 MW in Southern California and are the same in Northern California.

The Path 26 maximum transfer capability has not changed and is not envisioned to change in the near future.

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

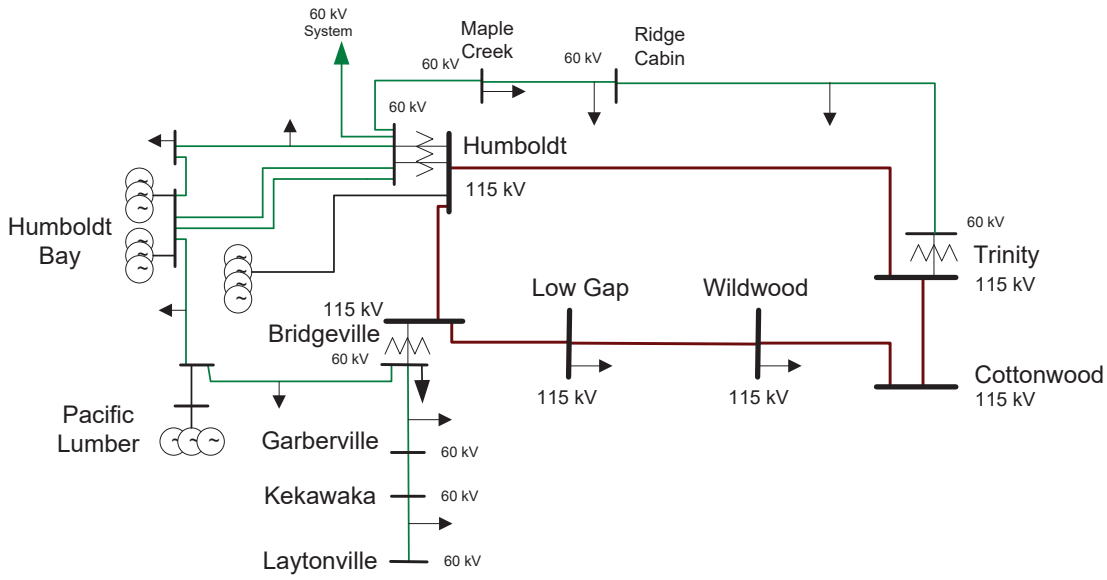
Humboldt is in, Trinity is out

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 2024 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 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	156	Market /Net Seller	176	176
AAEE	-3	Battery	0	0
Behind the meter DG	0	MUNI/QF	0	0
Net Load	**155**	Solar	0	0
Transmission Losses	17	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**172**	**Total**	**176**	**176**

Humboldt LCR Area Hourly Profiles

Figure 3.3-2 illustrates the forecast 2024 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 2024 hourly profile for Humboldt LCR area with the Category P6 transmission capability without resources.

Figure 3.3-2 Humboldt 2024 Peak Day Forecast Profiles

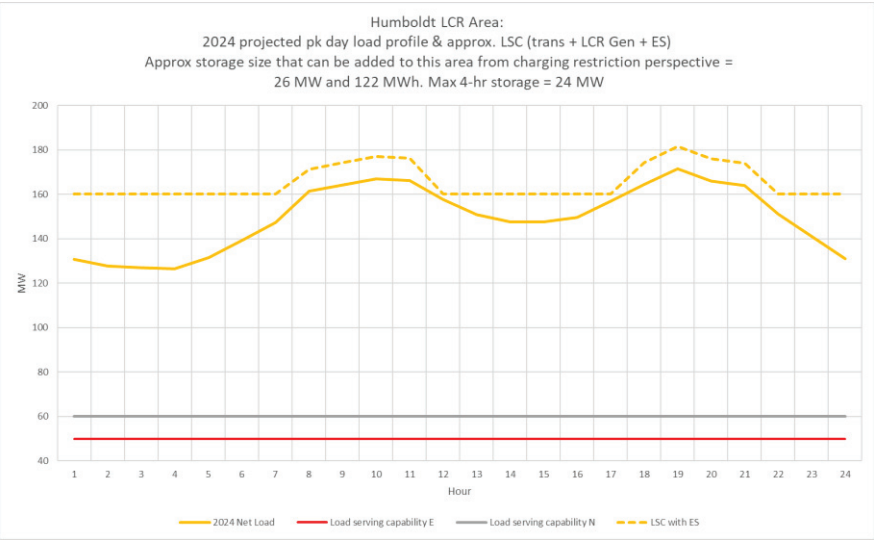
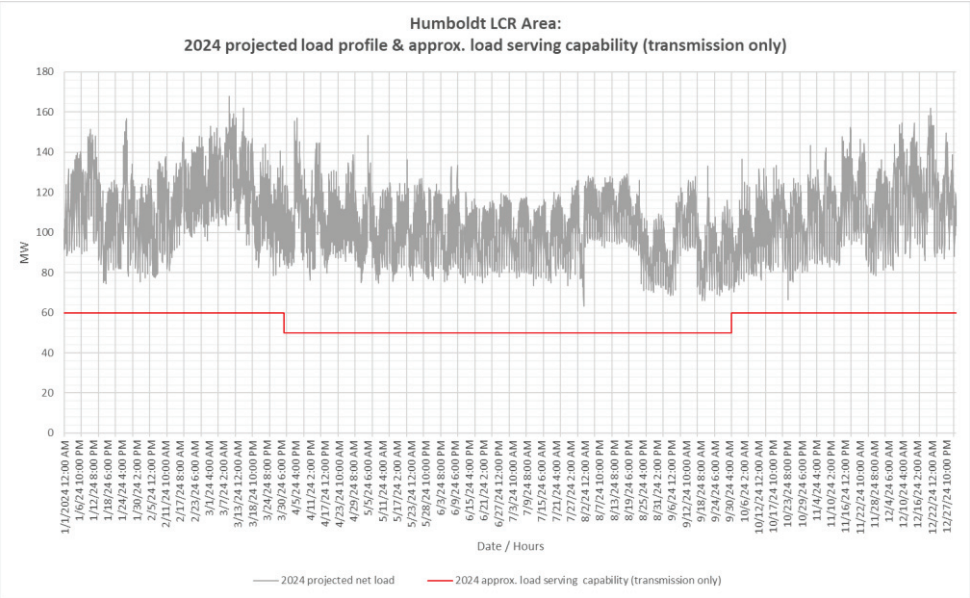


Figure 3.3-3 Humboldt 2024 Forecast Hourly Profile



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 133 MW.

Table 3.3-2 Humboldt LCR Area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	First Limit	P6	Humboldt-Trinity 115 kV	Cottonwood-Bridgeville 115 kV & Humboldt - Humboldt Bay 115 kV	133

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 2023, the load forecast has decreased by 2 MW and the total LCR has decreased by 8 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

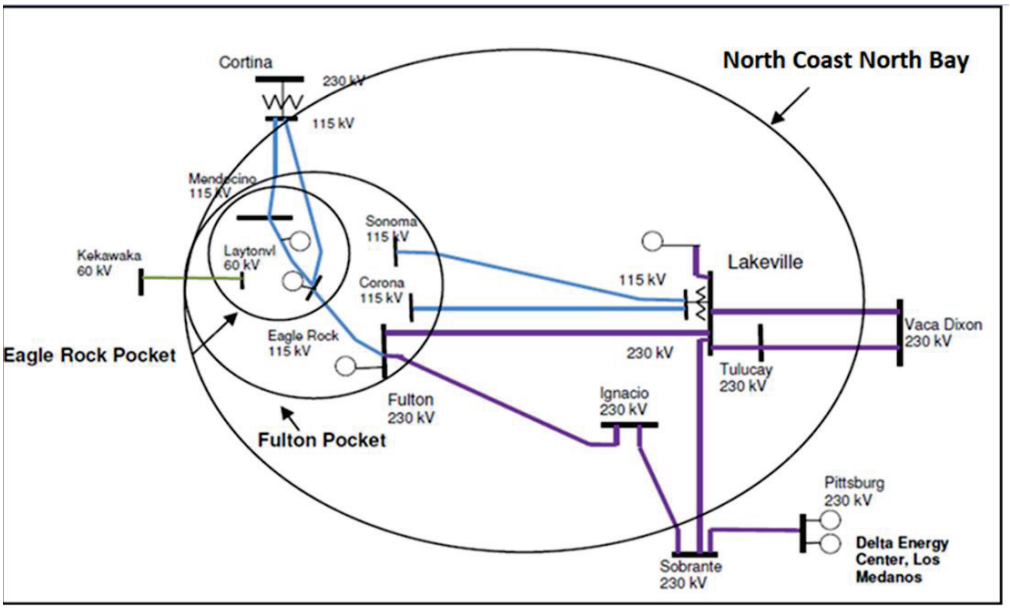
Tulucay is in, Vaca Dixon is out

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 2024 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 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	1485	Market/Net Seller	840	840
AAEE	-8	Battery	0	0
Behind the meter DG	-23	MUNI/QF	137	137
Net Load	**1454**	Solar	0	0
Transmission Losses	41	Existing 20-minute Demand Response	12	12
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**1495**	**Total**	**989**	**989**

North Coast and North Bay LCR Area Hourly Profiles

Figure 3.3-5 5 illustrates the forecast 2024 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 2024 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 2024 Peak Day Forecast Profiles

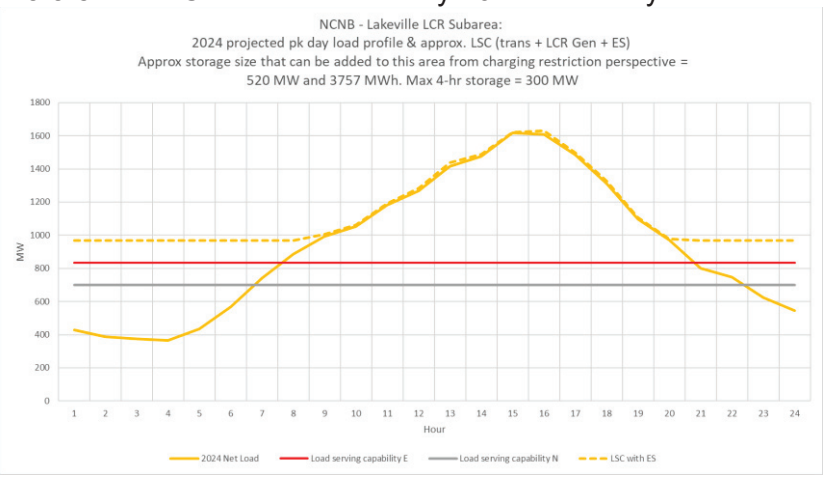
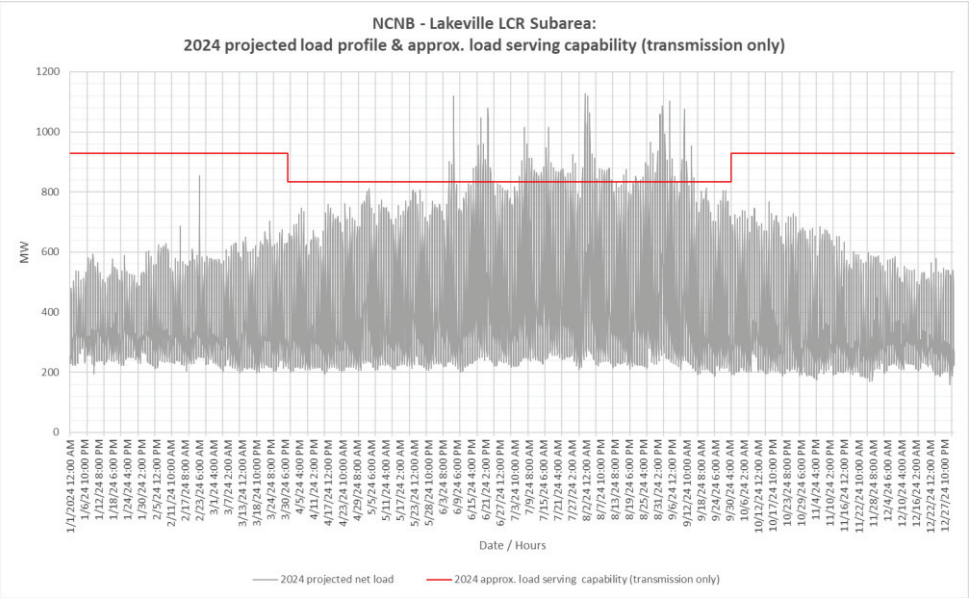


Figure 3.3-6 North Coast and North Bay 2024 Forecast Hourly Profile



Approved transmission projects modeled in base cases

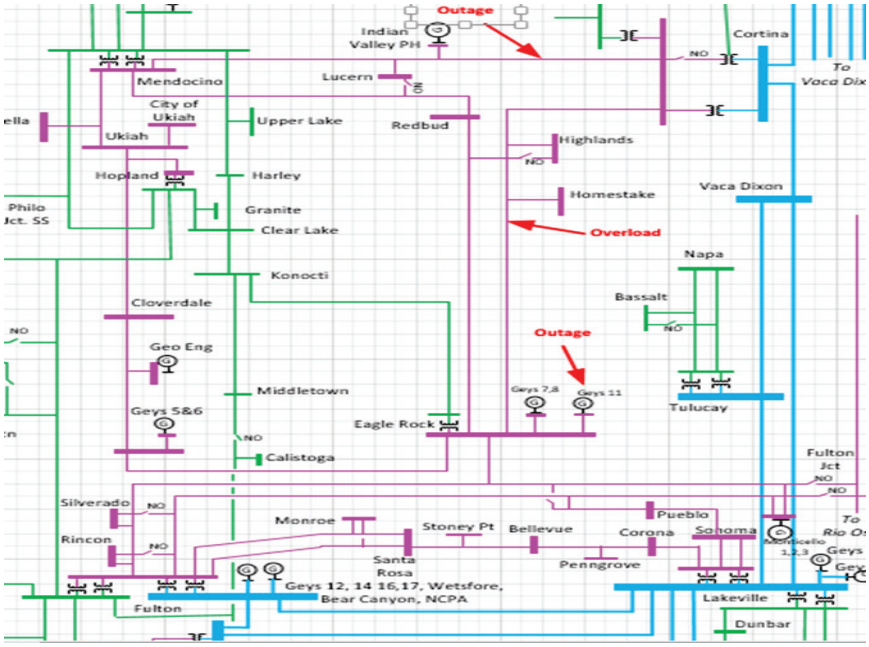
None.

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 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	247	Market/Net Seller	274	274
AAEE	-1	Battery	0	0
Behind the meter DG	-3	MUNI/QF	2	2
Net Load	**243**	Solar	0	0
Transmission Losses	12	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**255**	**Total**	**276**	**276**

Eagle Rock LCR Sub-area Hourly Profiles

Figure 3.3-8 illustrates the forecast 2024 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 2024 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 2024 Peak Day Forecast Profiles

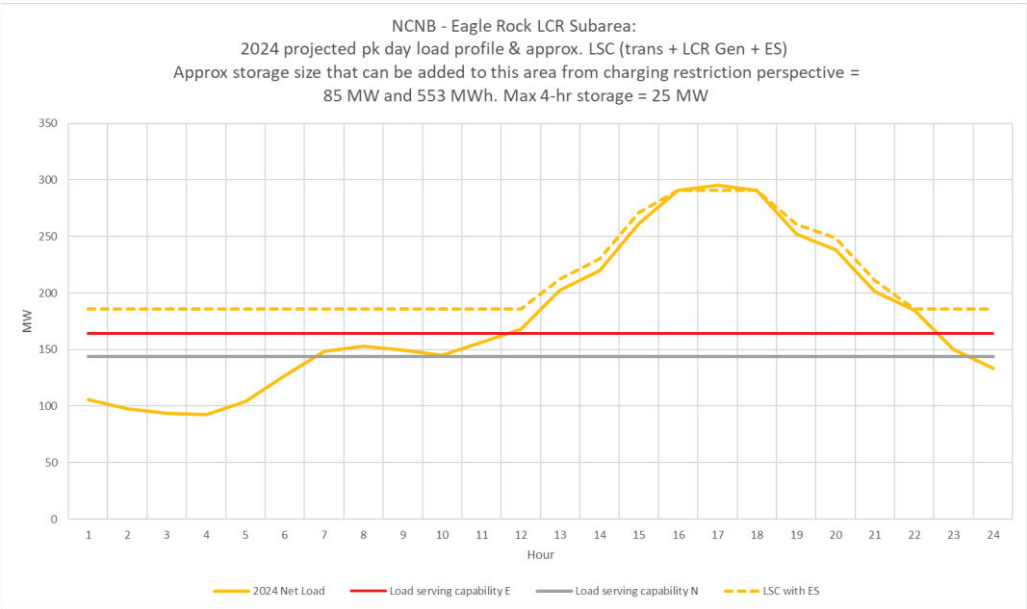
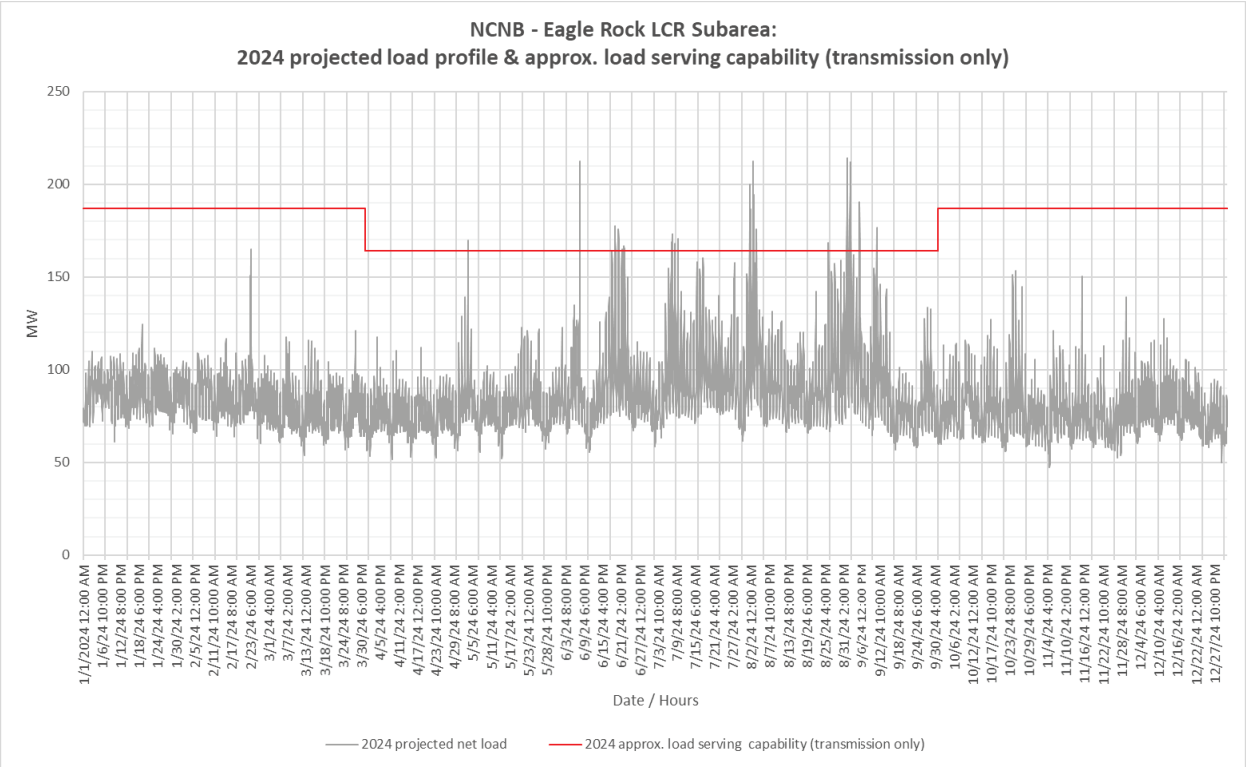


Figure 3.3-9 Eagle Rock LCR Sub-area 2024 Forecast Hourly Profiles



Eagle Rock LCR Sub-area Requirement

Table 3.3-5 identifies the sub-area LCR requirements. The LCR requirement for Category P3 contingency is 195 MW.

Table 3.3-5 Eagle Rock LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	First Limit	P3	Eagle Rock-Cortina 115 kV line	Cortina-Mendocino 115 kV with Geyser #11 unit out	195

Effectiveness factors

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

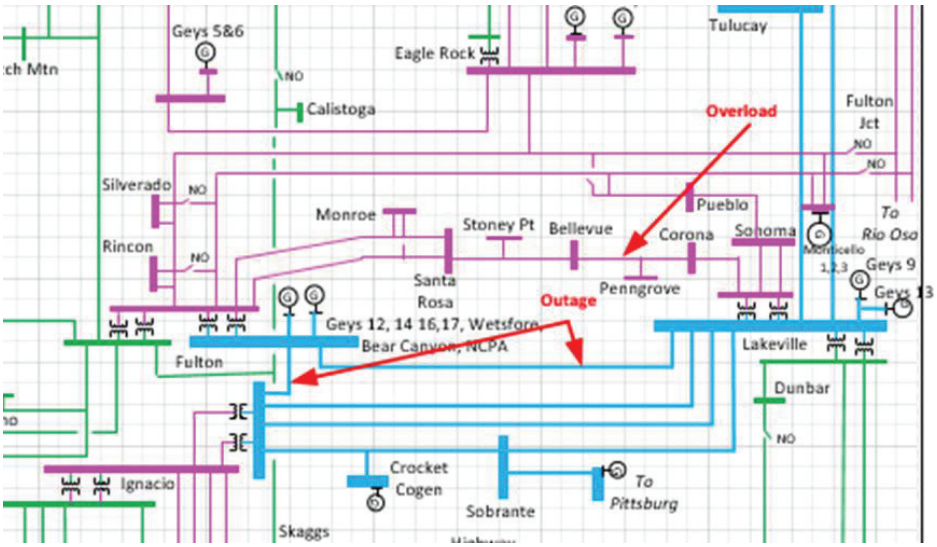
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7120 posted at: http://www.caiso.com/Documents/2210Z.pdf

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 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	882	Market/Net Seller	539	539
AAEE	-5	Battery	0	0
Behind the meter DG	-13	MUNI/QF	58	58
Net Load	**864**	Solar	0	0
Transmission Losses	26	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**890**	**Total**	**597**	**597**

Fulton LCR Sub-area Hourly Profiles

Figure 3.3-11 illustrates the forecast 2024 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 2024 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 2024 Peak Day Forecast Profiles

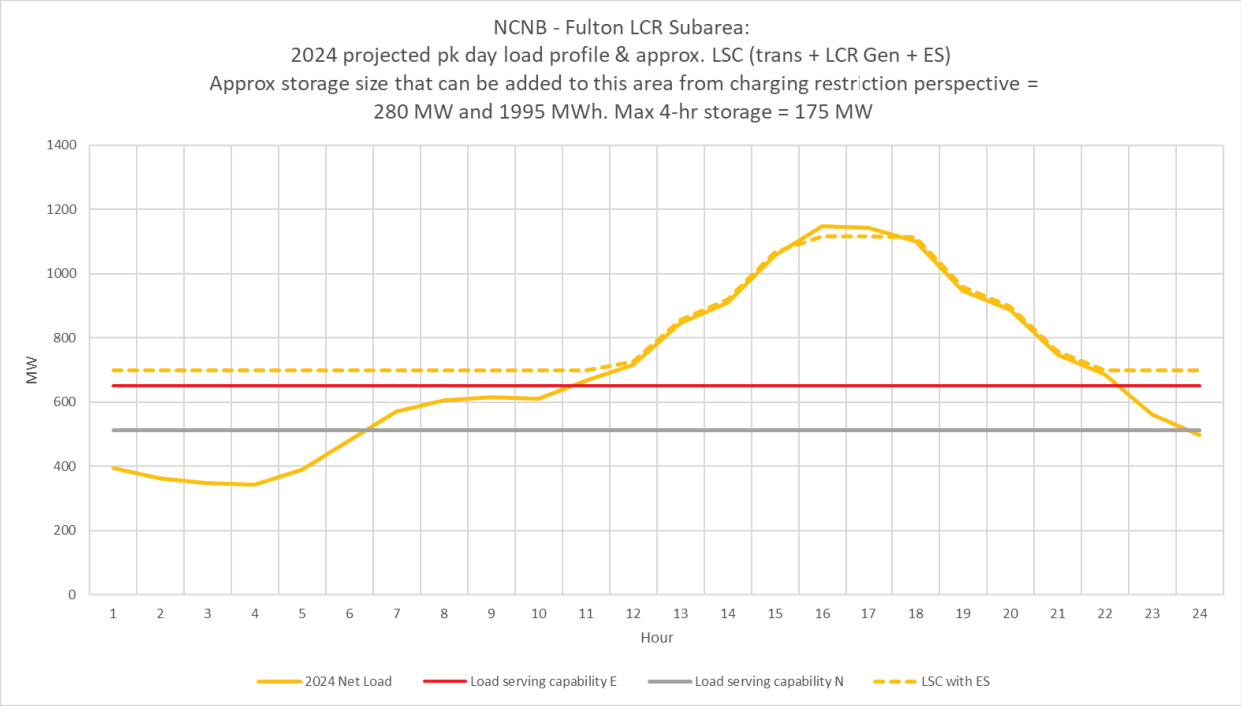
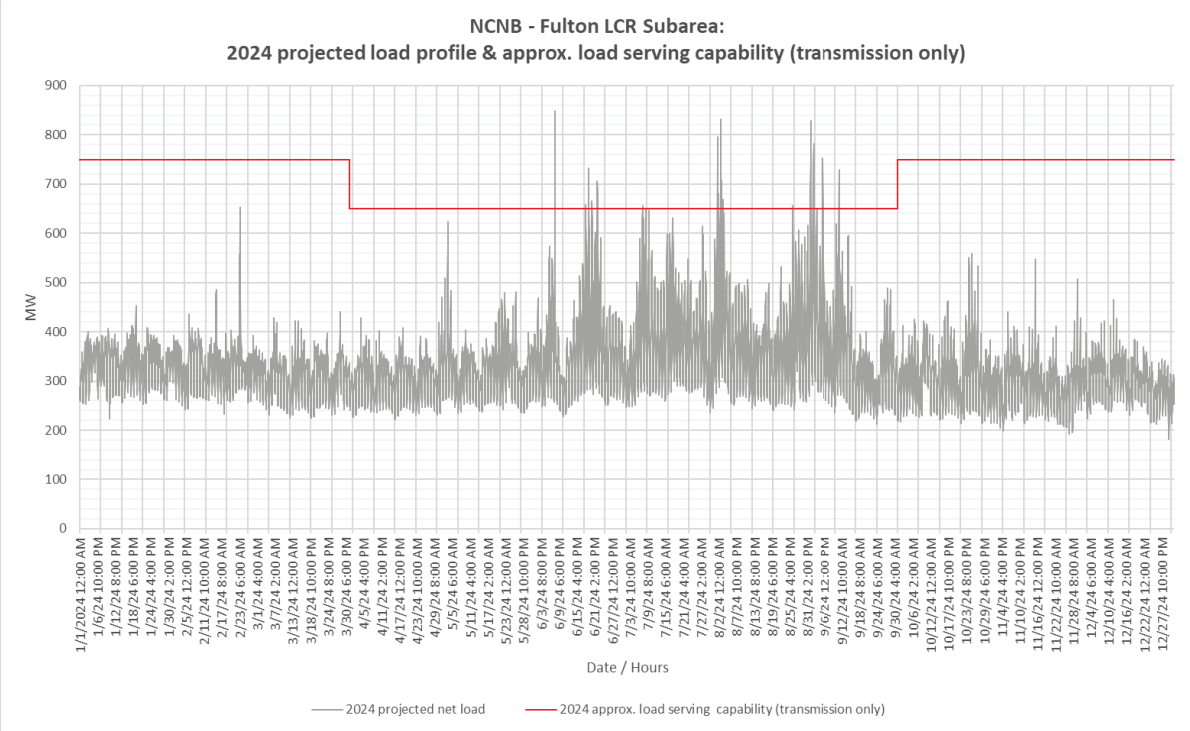


Figure 3.3-12 Fulton LCR Sub-area 2024 Forecast Hourly Profiles



Fulton LCR Sub-area Requirement

Table 3.3-7 identifies the sub-area LCR requirements. The LCR requirement for Category P6 contingency is 304 MW.

Table 3.3-7 Fulton LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	First Limit	P6	Thermal overload on Corona-Penngrove 115 kV Line	Fulton-Lakeville #1 230 kV & Fulton-Ignacio #1 230 kV	304

Effectiveness factors

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

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 983 MW.

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	First Limit	P3	Vaca Dixon-Tulucay 230 kV line	Vaca Dixon-Lakeville 230 kV line with Delta Energy Center power plant out of service	983

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 2023 load forecast decreased up by 1 MW; and, the total LCR need increased up by 126 MW due to a different load pattern in the NCNB 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

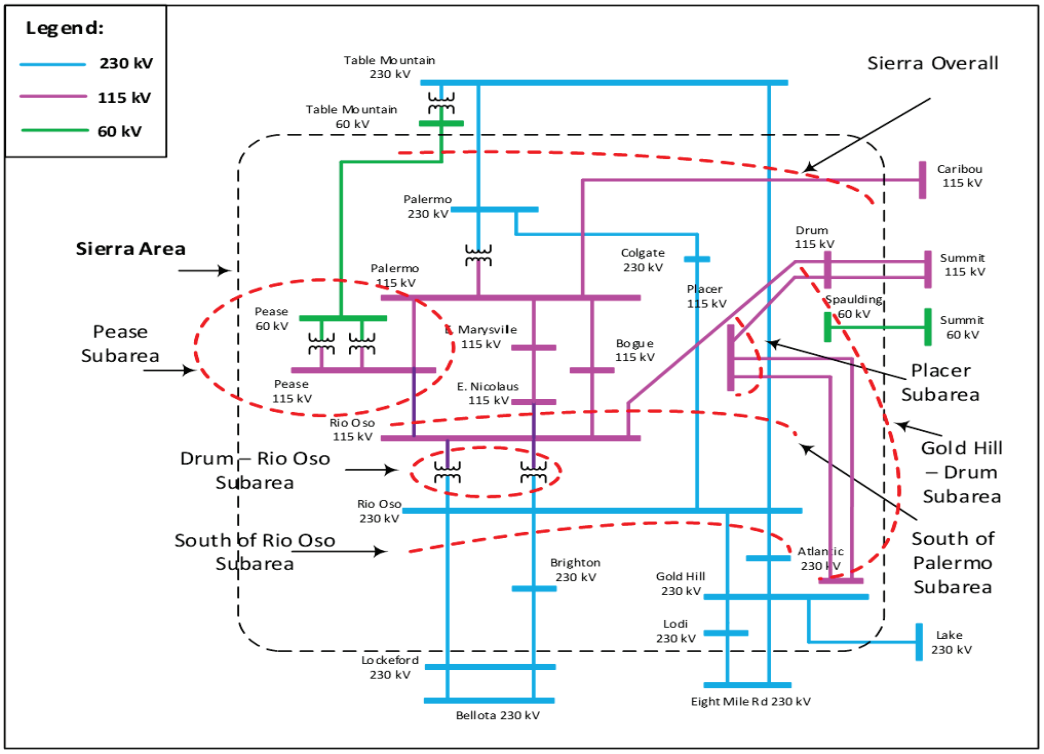
Gold Hill is in Eight Mile is out

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 2024 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 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	1703	Market/Net Seller	681	681
AAEE	-11	Battery	5	5
Behind the meter DG	0	MUNI/QF	1197	1197
Net Load	**1692**	Solar	0	0
Transmission Losses	66	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**1758**	**Total**	**1883**	**1883**

Approved transmission projects modeled:

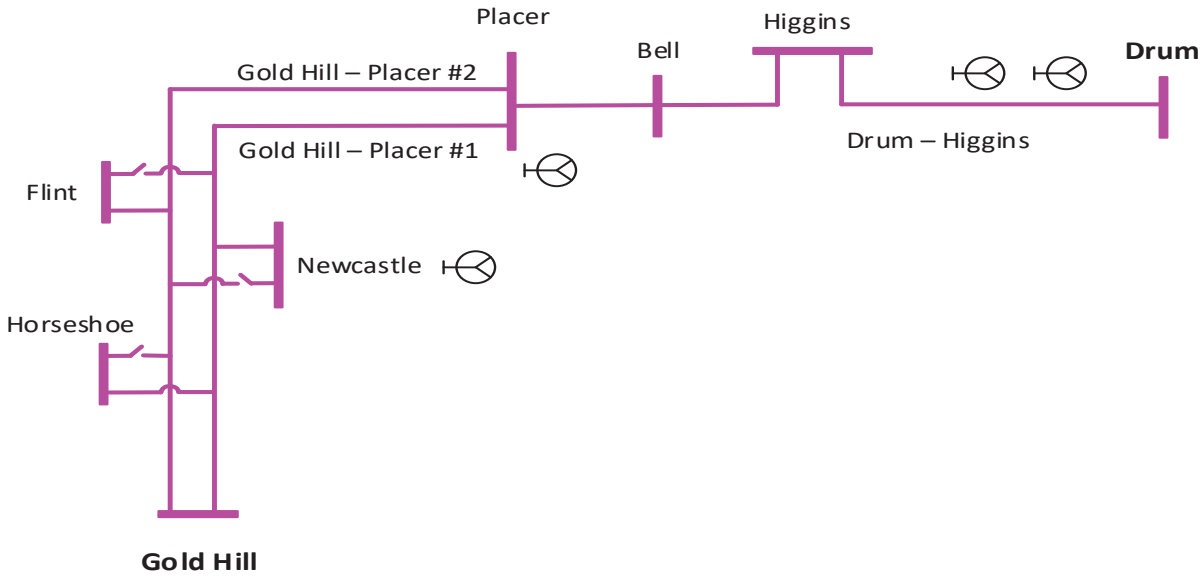
Rio Oso 230/115 kV transformer upgrade

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 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	168	Market/Net Seller	33	33
AAEE	-1	Battery	0	0
Behind the meter DG	0	MUNI/QF	27	27
Net Load	**167**	Solar	0	0
Transmission Losses	3	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**170**	**Total**	**60**	**60**

Placer LCR Sub-area Hourly Profiles

Figure 3.3-15 illustrates the forecast 2024 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 2024 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 2024 Peak Day Forecast Profiles

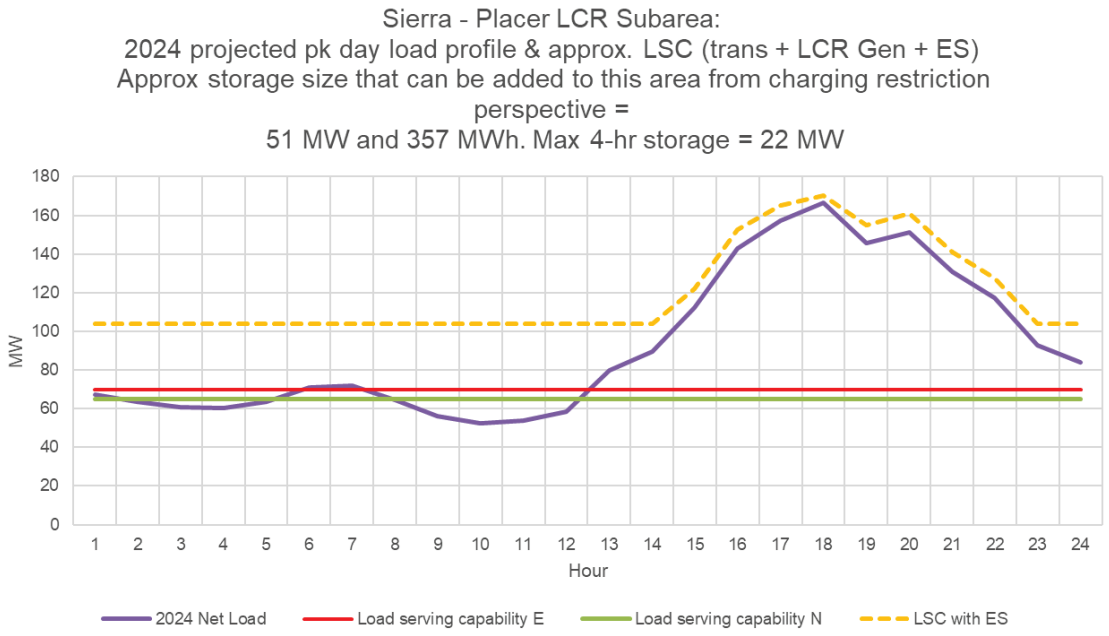
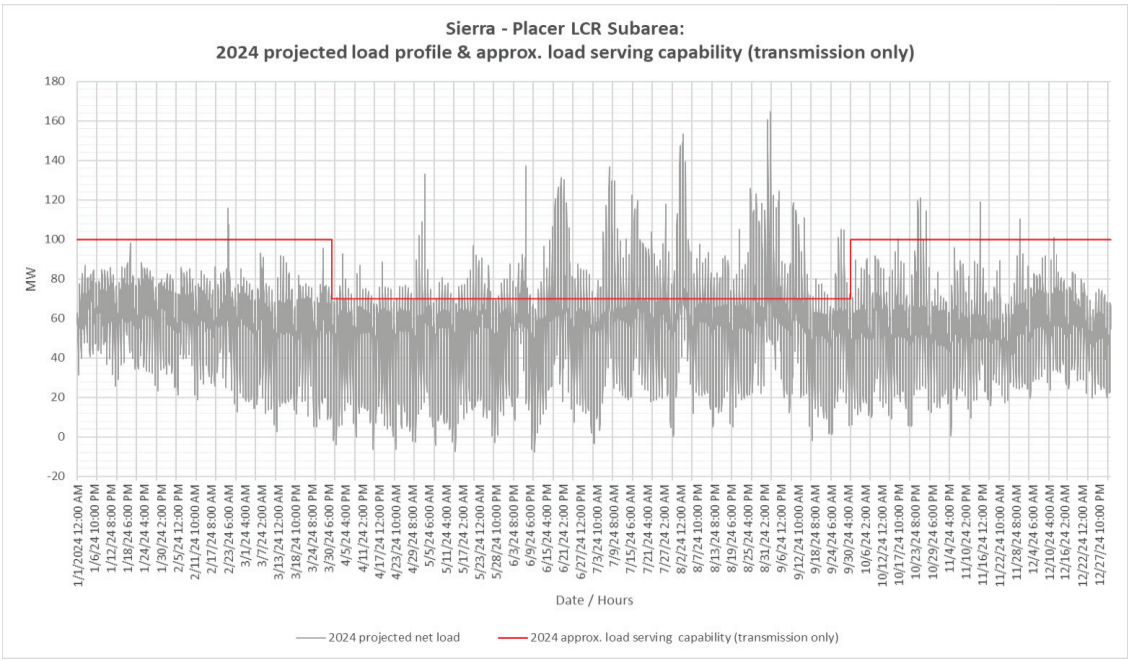


Figure 3.3-16 Placer LCR Sub-area 2024 Forecast Hourly Profiles



Placer LCR Sub-area Requirement

Table 3.3-11 identifies the sub-area requirements. The Category P6 and P7 LCR requirement is 90 MW including 30 MW of NQC and peak deficiencies..

Table 3.3-11 Placer LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	First Limit	P6, P7	Drum–Higgins 115 kV	Gold Hill-Placer #1 115 kV & Gold Hill-Placer #2 115 kV	90 (30)

Effectiveness factors

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

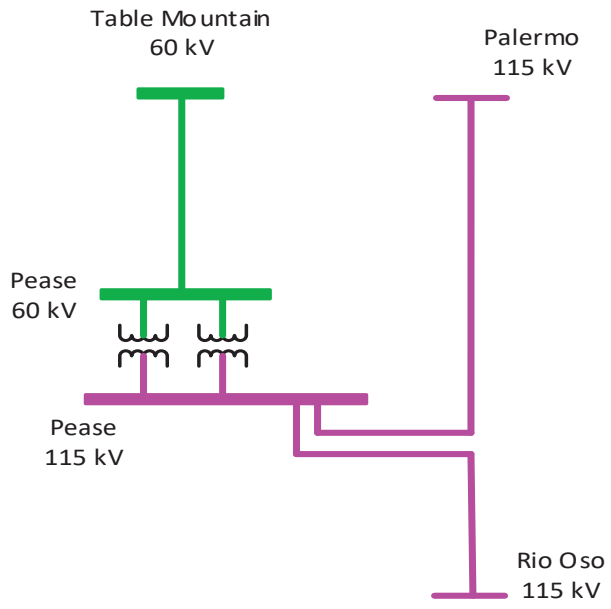
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7240 posted at: http://www.caiso.com/Documents/2210Z.pdf

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 2024 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	150	Market/Net Seller	97	97
AAEE	-1	Battery	5	5
Behind the meter DG		MUNI/QF	49	49
Net Load	**149**	Solar	0	0
Transmission Losses	3	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**152**	**Total**	**151**	**151**

Pease LCR Sub-area Hourly Profiles

Figure 3.3-18 illustrates the forecast 2024 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 2024 hourly profile for Pease sub-area with the Category P6 load serving capability without local resources.

Figure 3.3-18 Pease LCR Sub-area 2024 Peak Day Forecast Profiles

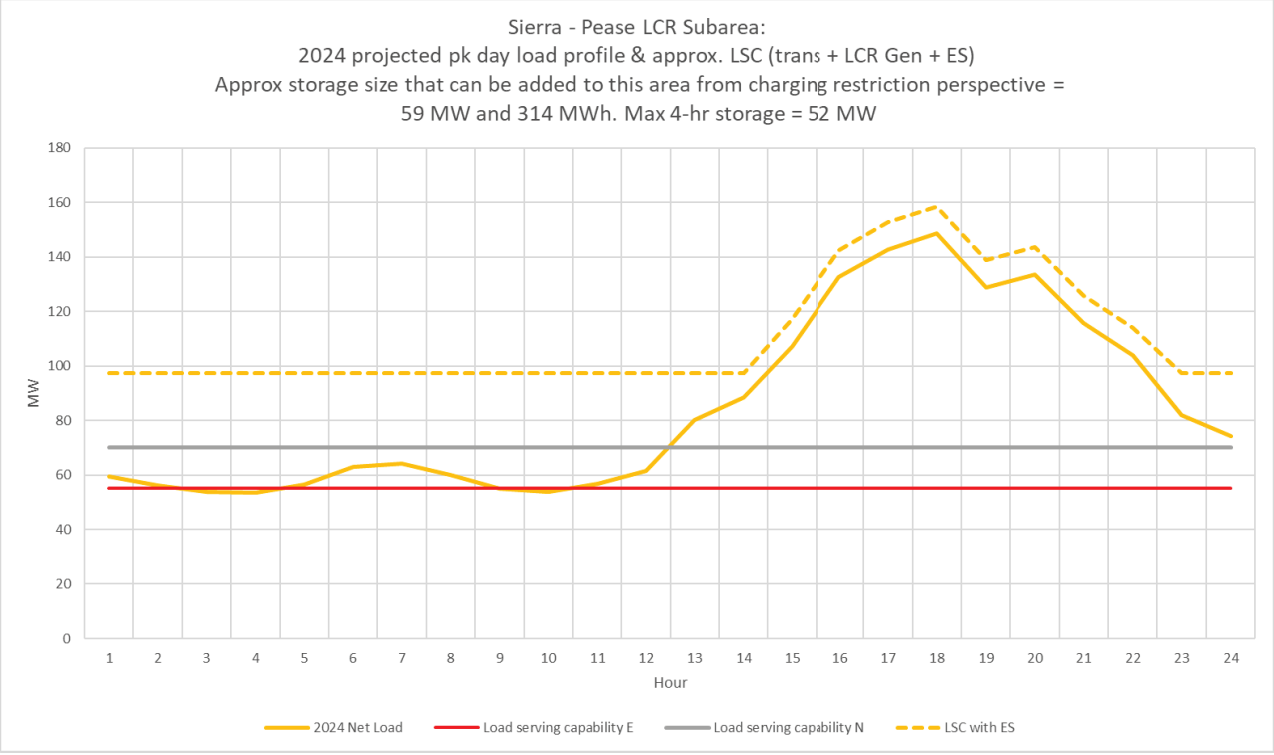
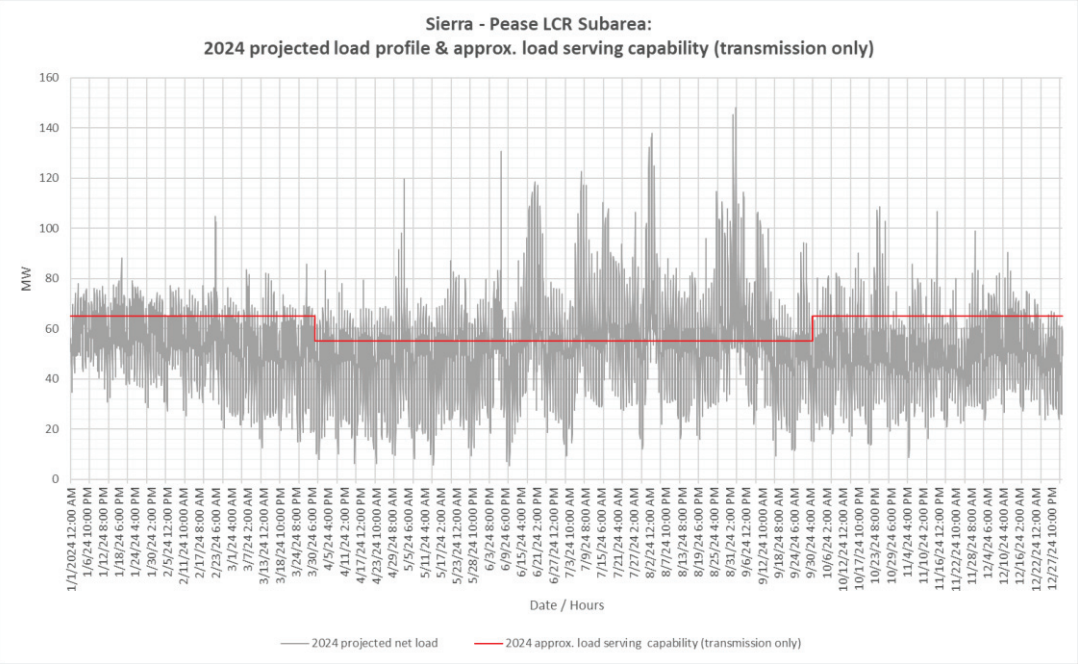


Figure 3.3-19 Pease LCR Sub-area 2024 Forecast Hourly Profiles



Pease LCR Sub-area Requirement

Table 3.3-13 identifies the sub-area LCR requirements. The Category P6, P7 LCR requirement is 86 MW.

Table 3.3-13 Pease LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	First Limit	P6, P7	Table Mountain – Pease 60 kV	Palermo – Pease 115 kV and Pease – Rio Oso 115 kV lines	86

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

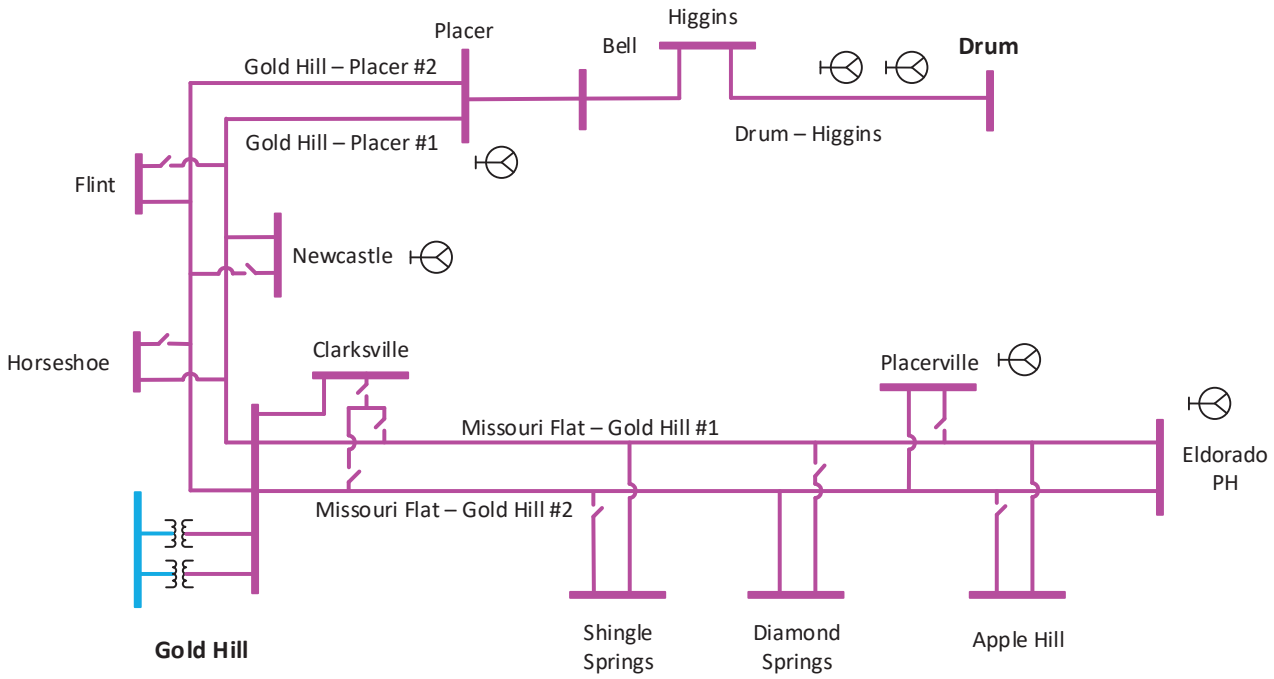
Drum-Rio Oso sub-area will be eliminated due to the Rio Oso 230/115 kV Transformers Upgrade project.

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 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	474	Market/Net Seller	43	43
AAEE	-3	Battery	0	0
Behind the meter DG		MUNI/QF	27	27
Net Load	**471**	Solar	0	0
Transmission Losses	8	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**479**	**Total**	**70**	**70**

Gold Hill-Drum LCR Sub-area Hourly Profiles

Figure 3.3-21 illustrates the forecast 2024 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 2024 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 2024 Peak Day Forecast Profiles

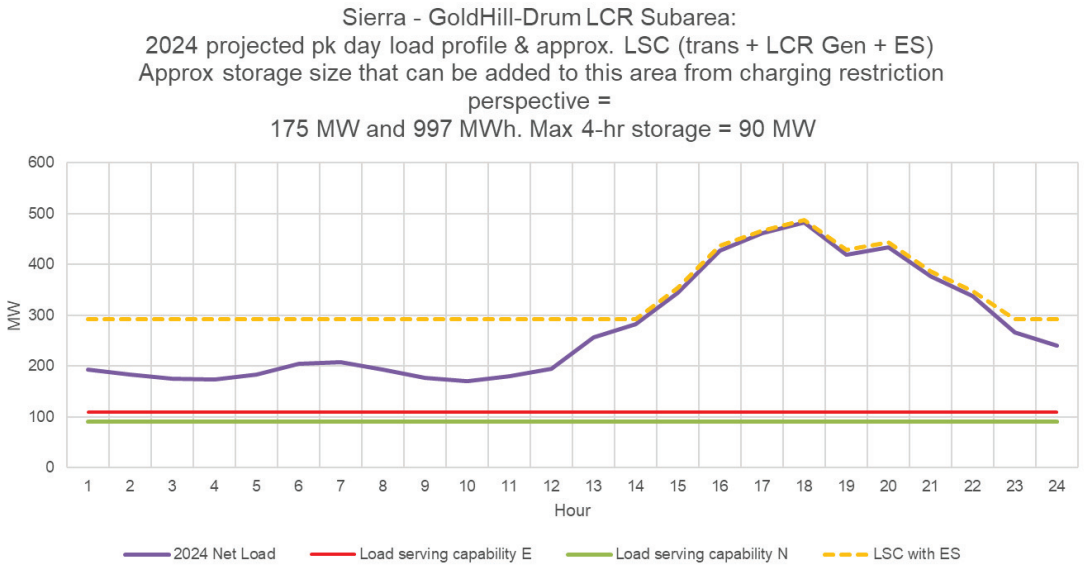
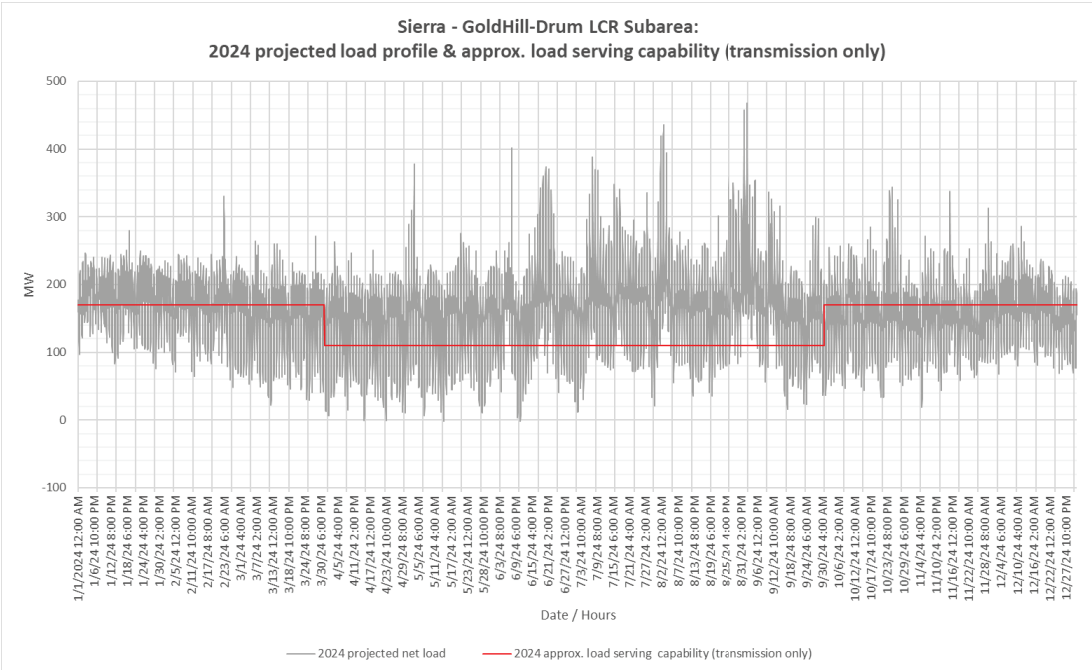


Figure 3.3-22 Gold Hill-Drum LCR Sub-area 2024 Forecast Hourly Profiles



Gold Hill-Drum LCR Sub-area Requirement

Table 3.3-15 identifies the sub-area LCR requirements. The Category P6 LCR requirement is 377 MW including 307 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)
2024	First Limit	P6	Drum – Higgins 115 kV	Gold Hill 230/115 kV #1 and Gold Hill 230/115 kV #2 Txrs	377 (307)

Effectiveness factors:

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

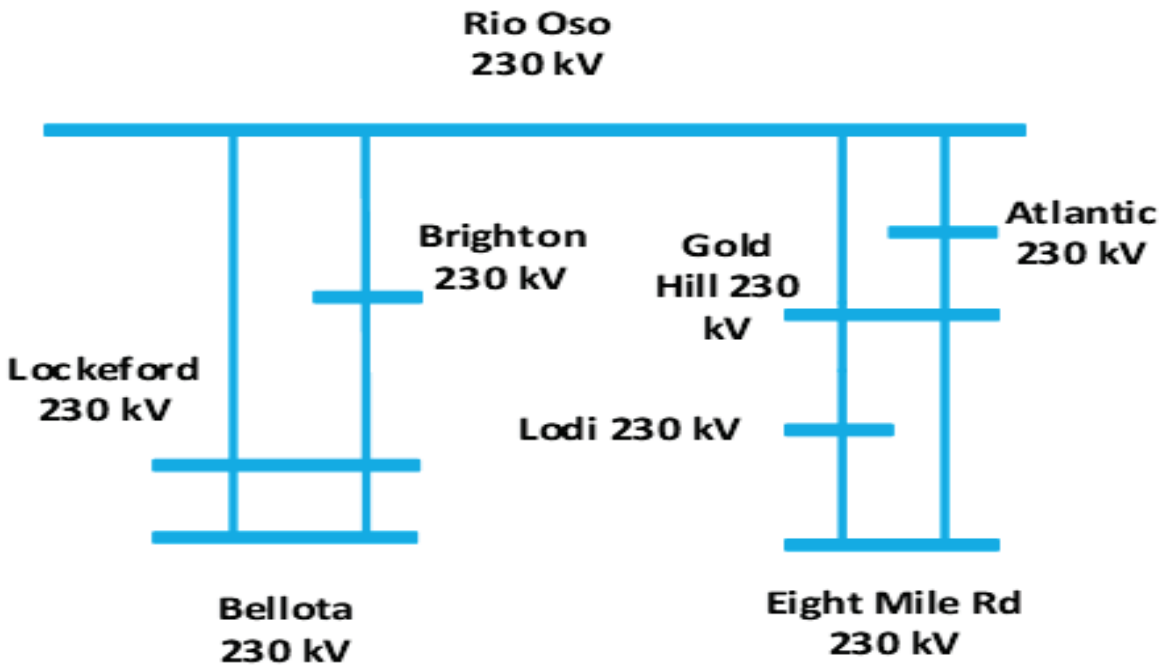
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7230 and 7240 posted at: http://www.caiso.com/Documents/2210Z.pdf

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 2024 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	80	80
	Battery	0	0
	MUNI/QF	606	606
	Solar	0	0
	Existing 20-minute Demand Response	0	0
	Mothballed	0	0
	Total	**686**	**686**

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 375 MW.

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2024	First limit	P6	Rio Oso – Atlantic 230 kV	Rio Oso – Gold Hill 230 kV Rio Oso – Brighton 230 kV	375

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 1212 MW.

Table 3.3-18 Sierra LCR Area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2024	First limit	P6	Table Mountain – Pease 60 kV	Table Mountain – Palermo 230 kV Table Mountain – Rio Oso 230 kV	1212

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 went down by 54 MW, the total LCR need has increased by 24 MW and the total deficiency has decreased by 38 MW mostly due to the change in NQC values and the flow-through nature of the Sierra area.

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 2024 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 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	1063	Market/Net Seller	454	454
AAEE	-5	Battery	153	153
Behind the meter DG	0	MUNI/QF	130	130
Net Load	**1058**	Solar	7	0
Transmission Losses	22	Existing 20-minute Demand Response	6	6
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**1080**	**Total**	**750**	**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

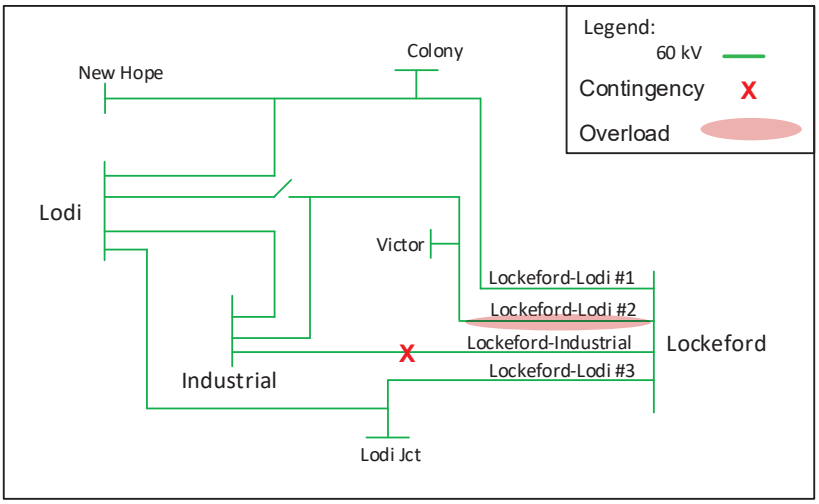
Banta 60 kV Bus Voltage Conversion

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 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	175	Market	0	0
AAEE	-1	MUNI	24	24
Behind the meter DG	0	QF	0	0
Net Load	**174**	Solar	0	0
Transmission Losses	2	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**176**	**Total**	**24**	**24**

Lockeford LCR Sub-area Hourly Profiles

Figure 3.3-25 illustrates the forecast 2024 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 2024 hourly profile for Lockeford sub-area with the Category P3 load serving capability without local resources.

Figure 3.3-25 Lockeford LCR Sub-area 2024 Peak Day Forecast Profiles

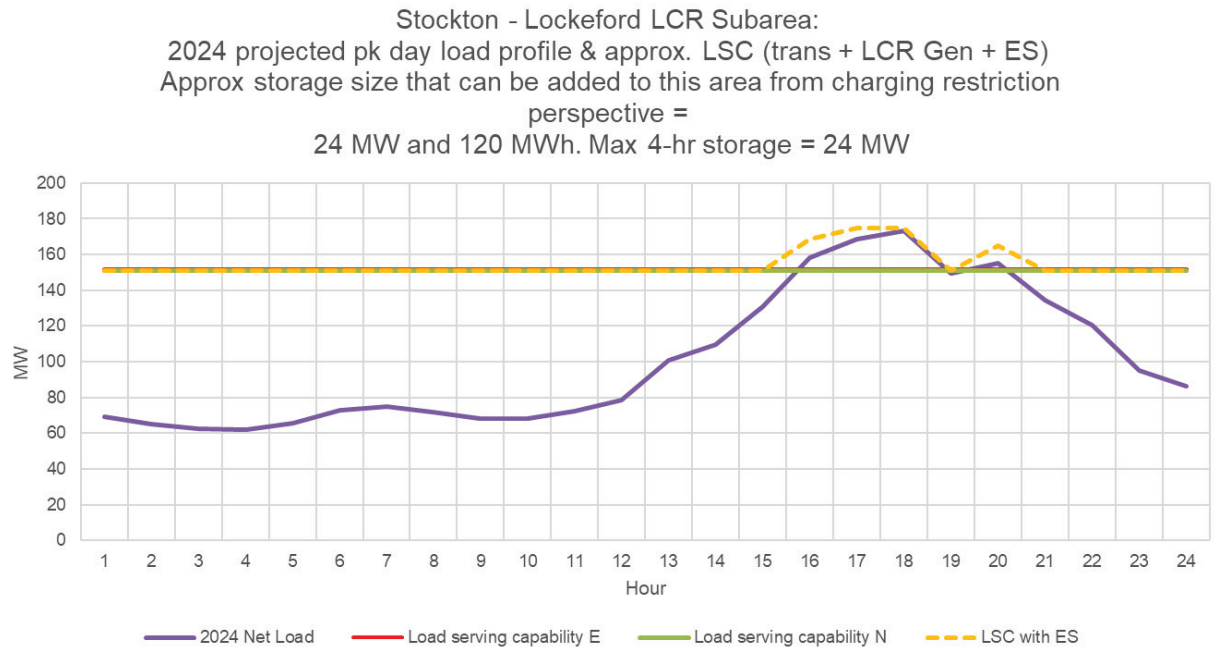
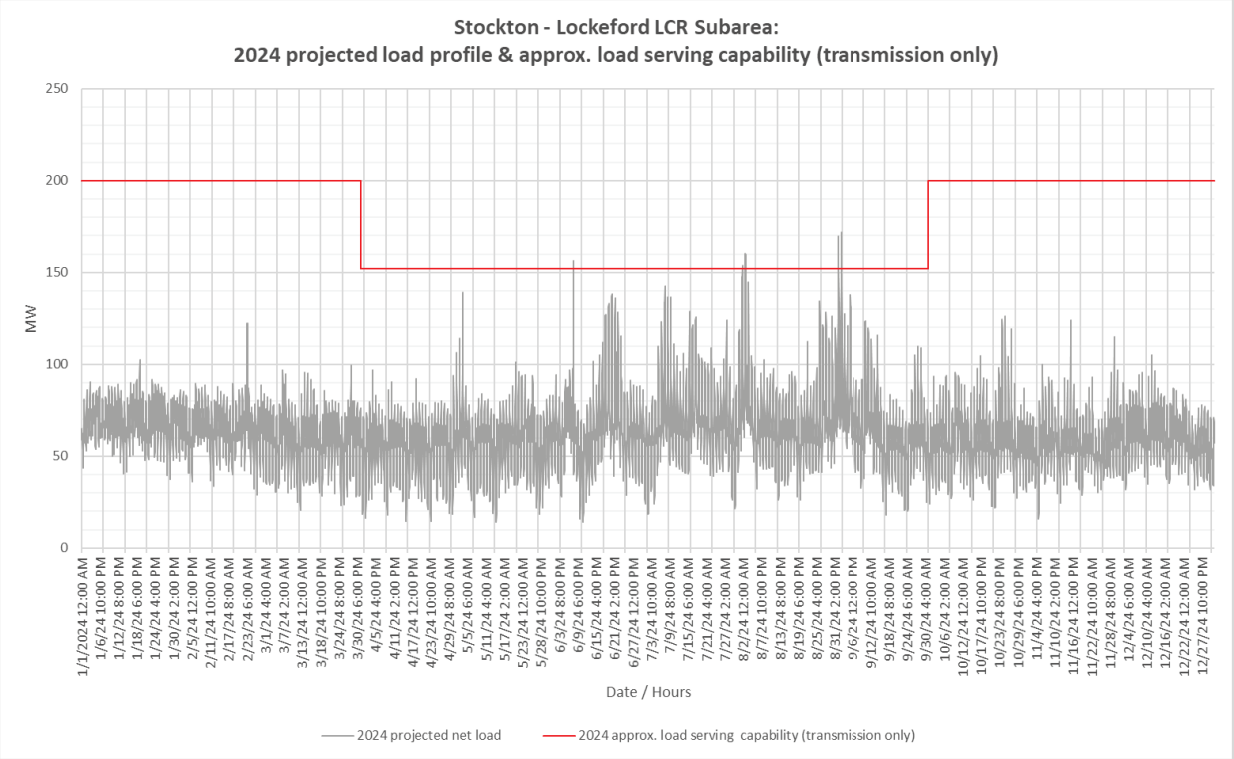


Figure 3.3-26 Lockeford LCR Sub-area 2024 Forecast Hourly Profiles



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 24 MW.

Table 3.3-21 Lockeford LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	First Limit	P3	Lockeford-Lodi #2 60 kV	Lockeford-Industrial 60 kV & Lodi CT	24

Effectiveness factors:

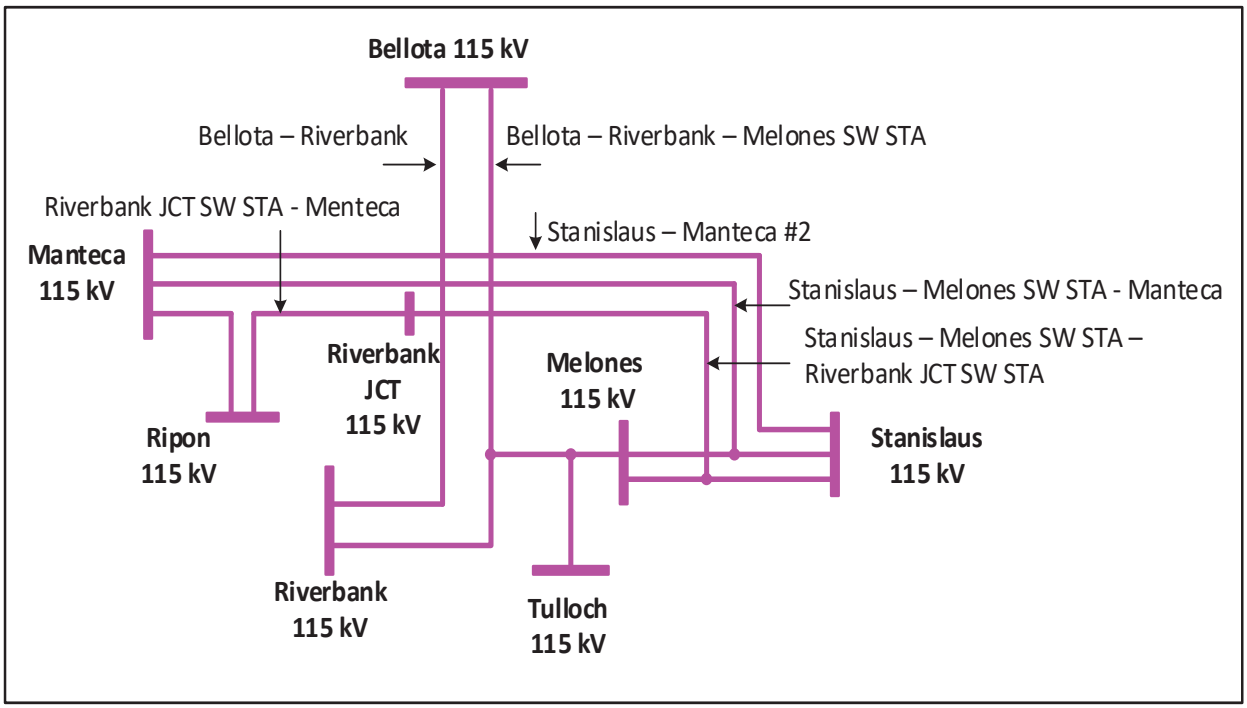
No effectiveness factor is required.

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 2024 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	99	99
	Battery	132	132
	MUNI/QF	85	85
	Solar	0	0
	Existing 20-minute Demand Response	0	0
	Mothballed	0	0
	Total	**316**	**316**

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 177 MW.

Table 3.3-23 Stanislaus LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	First limit	P3	Vierra 115 kV – Manteca 115 kV	Bellota-Riverbank-Melones 115 kV and Stanislaus PH	177

Effectiveness factors:

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

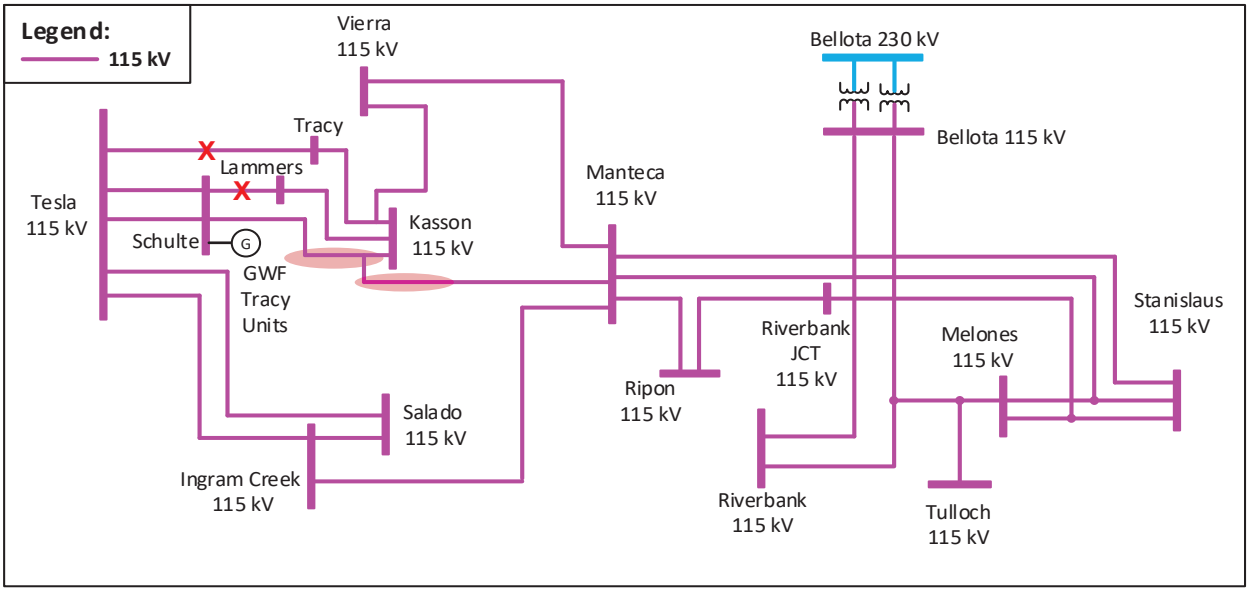
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7410 posted at: http://www.caiso.com/Documents/2210Z.pdf

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 2024 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	1063	Market/Net Seller	454	454
AAEE	-5	Battery	152	152
Behind the meter DG	0	MUNI/QF	107	107
Net Load	**1058**	Solar	7	0
Transmission Losses	22	Existing 20-minute Demand Response	6	6
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**1080**	**Total**	**726**	**719**

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 2024 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 2024 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 2024 Peak Day Forecast Profiles

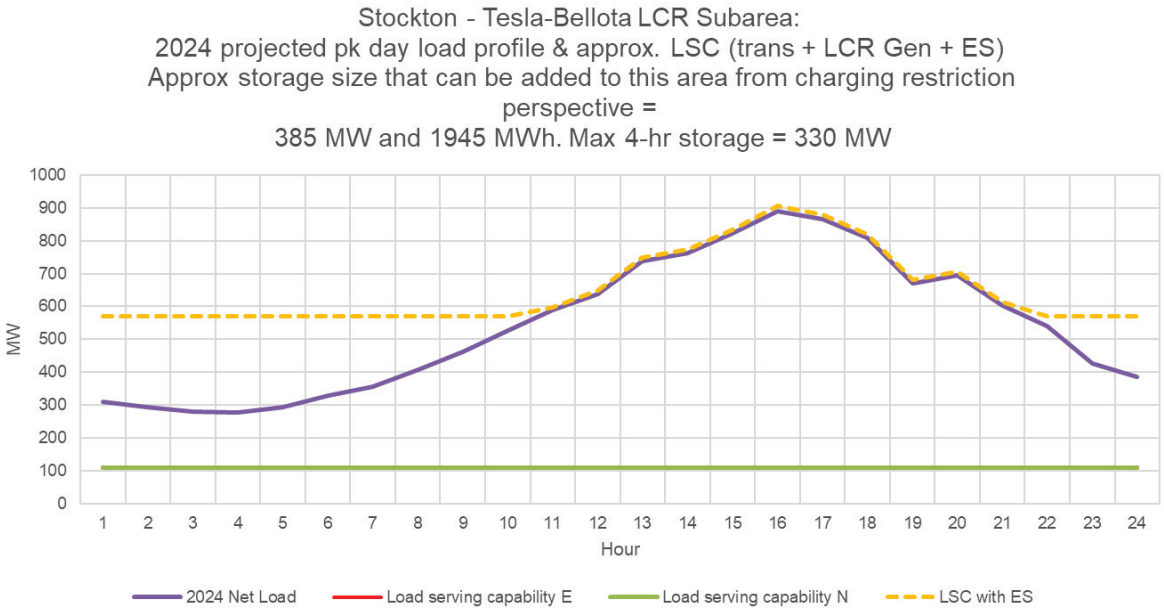
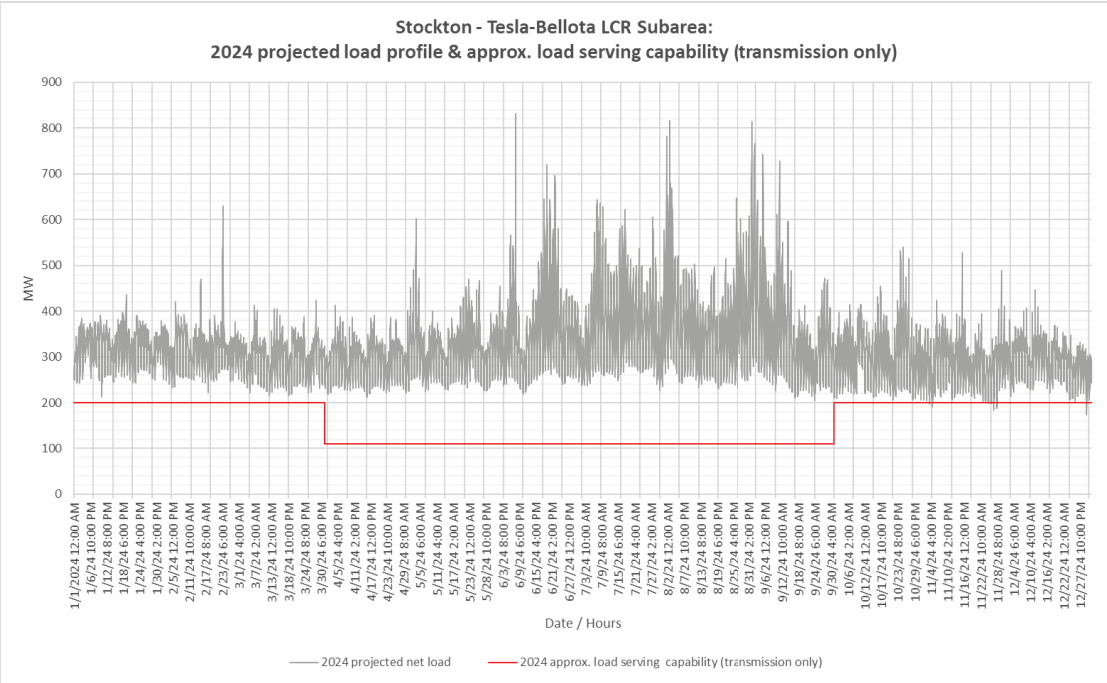


Figure 3.3-30 Tesla-Bellota LCR Sub-area 2024 Forecast Hourly Profiles



Tesla-Bellota LCR Sub-area Requirement

Table 3.3-25 identifies the sub-area requirements. The LCR requirement for Category P6 contingency is 1274 MW including a 548 MW NQC and 555 MW at peak deficiency.

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	First limit	P2-4	Melones–Riverbank-Bellota 115 kV	Tesla 115 KV - Section 2D & 1D	706 (112 NQC/ 119 Peak)
2024	First limit	P6	Tesla – Tracy 115 kV	Schulte - Lammers 115 kV Line and Schulte - Kasson - Manteca 115 kV Line	938 (548 NQC/ 555 Peak)
Total LCR Need for Tesla – Bellota Sub-area in 2024					1274 (548 NQC/ 555 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 1298 MW with a 548 MW NQC deficiency or 555 MW at peak deficiency.

Table 3.3-26 Stockton LCR Area Overall Requirements

Year	LCR (MW) (Deficiency)
2024	1298 (548 NQC/ 555 Peak)

Changes compared to last year's results

The load forecast went down by 10 MW and the total resource need has increased by 147 MW mainly due to new resources in the area.

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

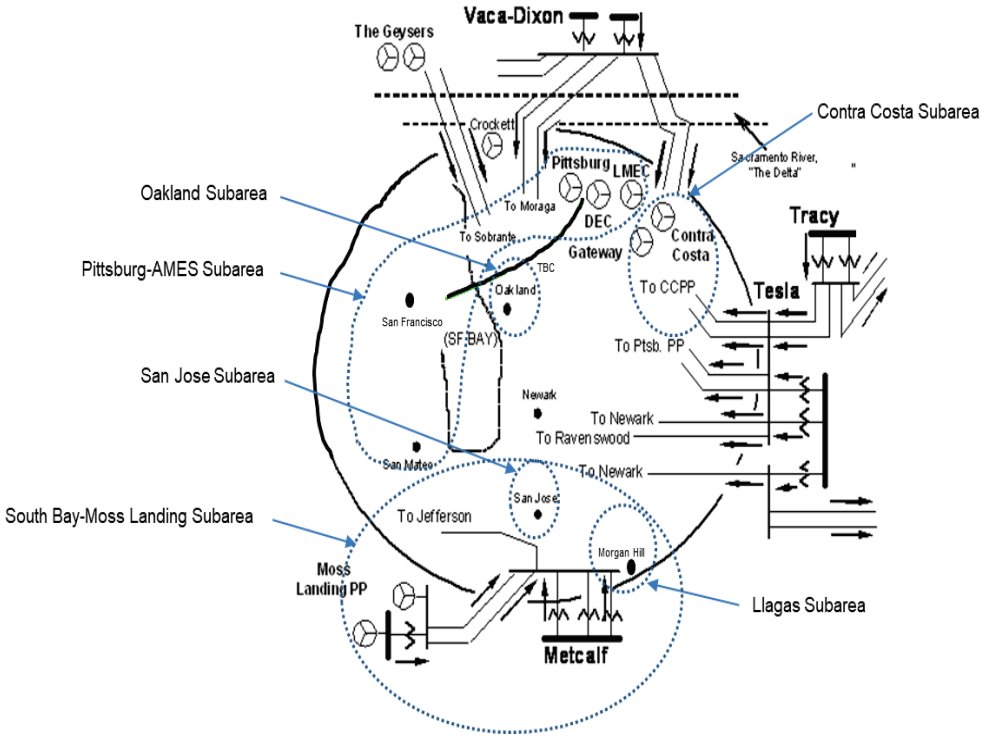
Las Aquilas is out Moss Landing is in

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 2024 the estimated time of local area peak is 19:00 PM.

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

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

Table 3.3-27 Greater Bay Area LCR Area 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	10767	Market/Net Seller	6032	6032
AAEE	-73	Wind	248	248
Behind the meter DG	-115	Battery	982	982
Net Load	10579	MUNI/QF	617	617
Transmission Losses	282	Existing 20-minute Demand Response	65	65
Pumps	220	Solar	4	0
Load + Losses + Pumps	11081	**Total**	**7948**	**7944**

Approved transmission projects modeled

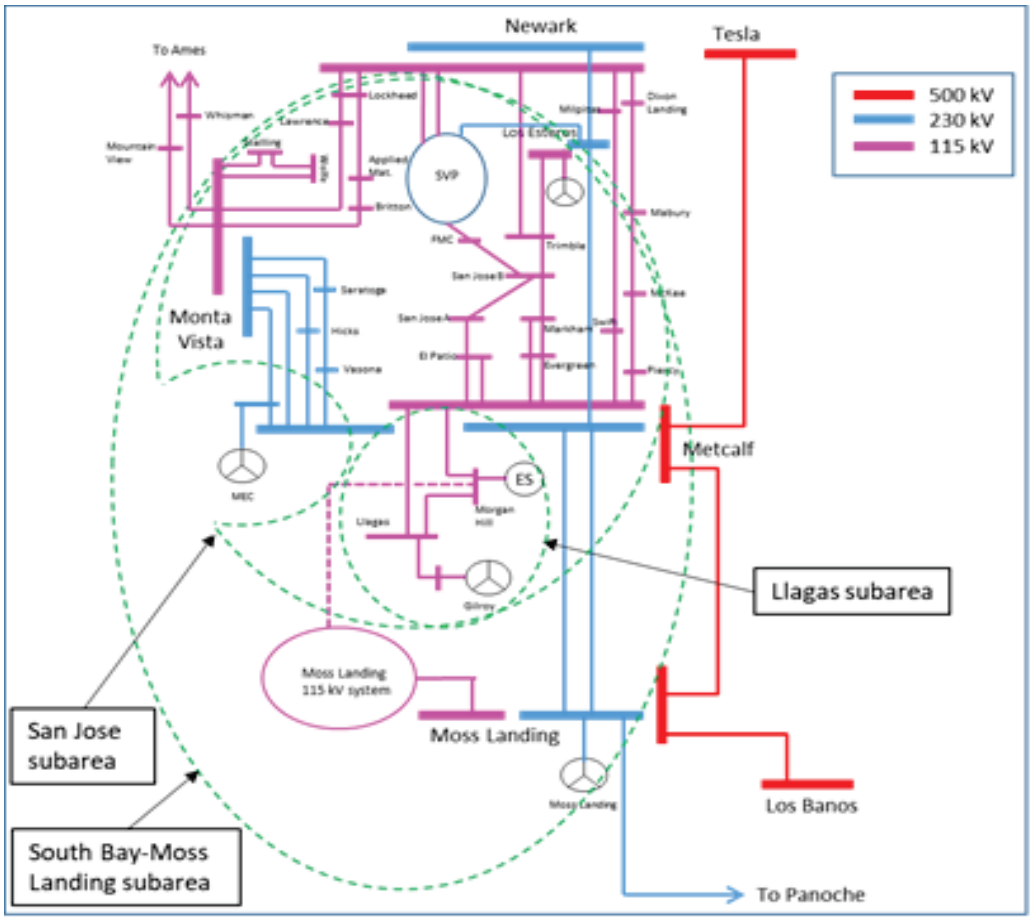
- Cooley Landing-Palo Alto and Ravenswood-Cooley Landing 115 kV Line Rerate
- East Shore-Oakland J 115 kV Reconductoring Project
- Oakland Clean Energy Initiative Project
- Ravenswood 230/115 kV Transformer #1 Limiting Facility Upgrade
- Newark – Milpitas #1 115 kV Line Limiting Facility Upgrade
- Series Compensation on Los Esteros – Nortech 115 kV Line

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 2024 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	268	Market/Net Seller	256	256
AAEE	-1	Battery	0	0
Behind the meter DG	-4	MUNI/QF	0	0
Net Load	263	Solar	0	0
Transmission Losses	1	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**264**	**Total**	**256**	**256**

Llagas LCR Sub-area Hourly Profiles

Figure 3.3-33 illustrates the forecast 2024 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 2024 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 2024 Peak Day Forecast Profiles

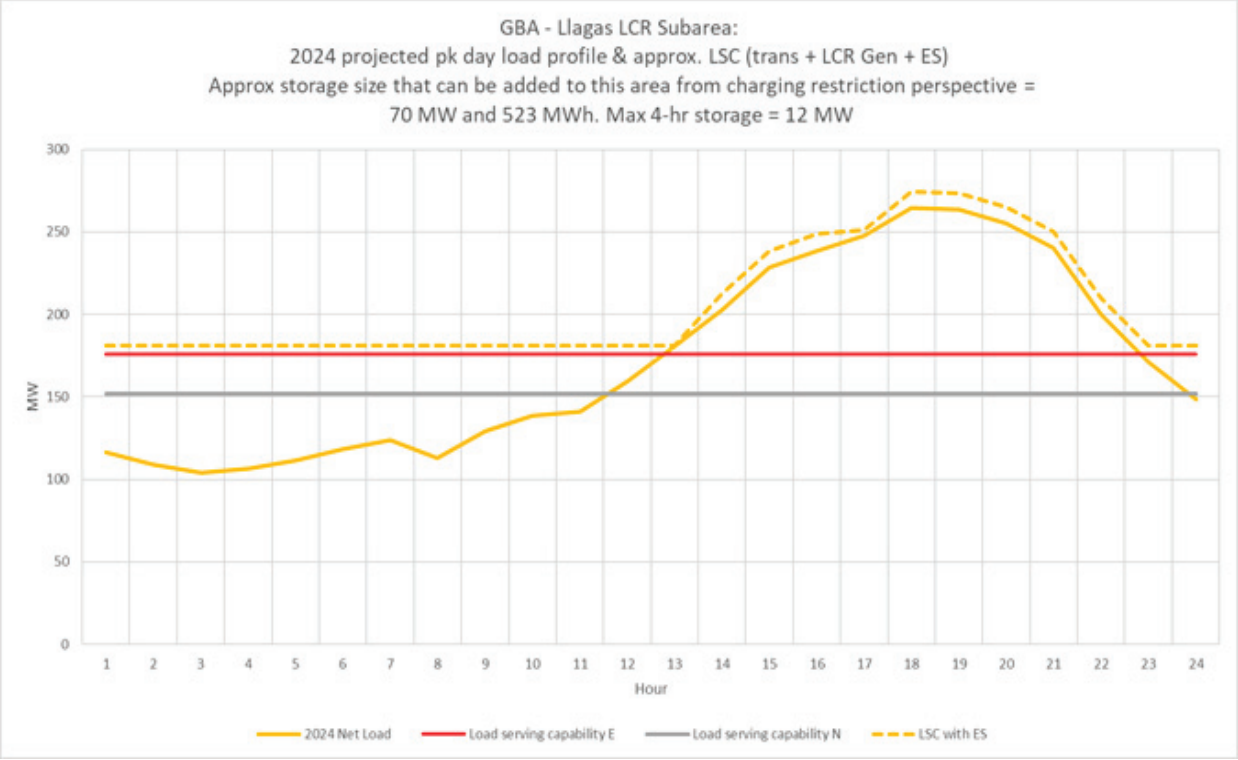
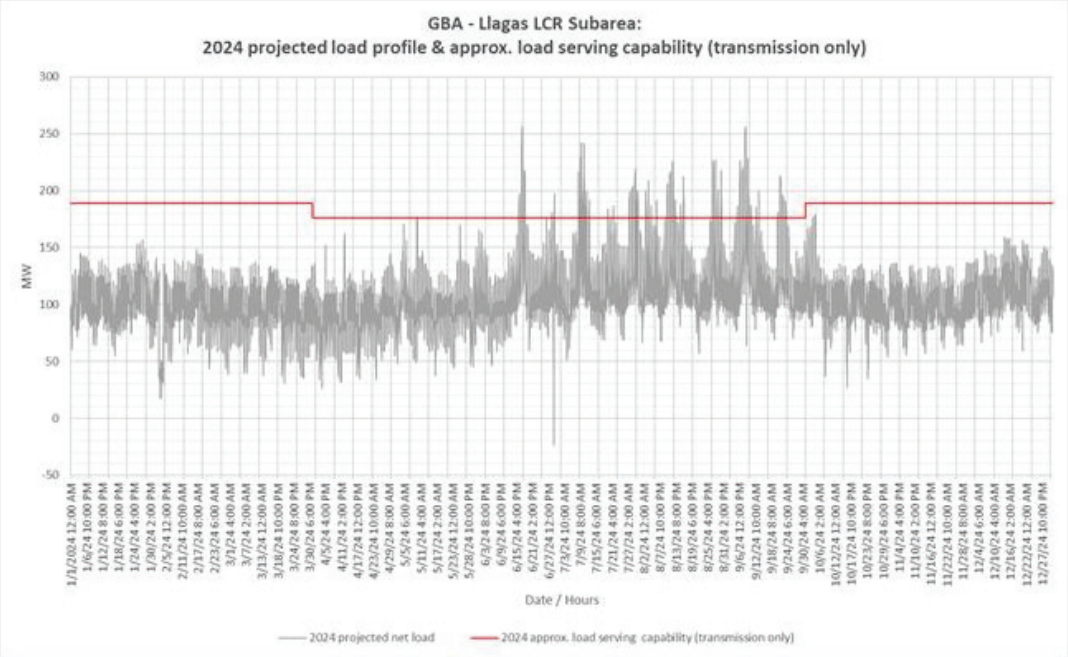


Figure 3.3-34 Llagas LCR Sub-area 2024 Forecast Hourly Profiles



Llagas LCR Sub-area Requirement

Table 3.3-29 identifies the sub-area requirements. The LCR requirement for the worst contingency is 158 MW.

Table 3.3-29 Llagas LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	First limit	P3	Metcalf-Llagas 115 kV	Metcalf-Morgan Hill 115 kV + Gilroy Cogen Unit 1	158

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 2024. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-30 San Jose LCR Sub-area 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	2783	Market/Net Seller	584	584
AAEE	-20	Battery	75	75
Behind the meter DG	-20	MUNI/QF	197	197
Net Load	2743	Solar	0	0
Transmission Losses	102	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	2845	**Total**	**856**	**856**

San Jose LCR Sub-area Hourly Profiles

Figure 3.3-35 illustrates the forecast 2024 profile for the peak day for the San Jose 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 3.3-36 illustrates the forecast 2024 hourly profile for San Jose LCR sub-area with the Category P2 emergency load serving capability without local resources.

Figure 3.3-35 San Jose LCR Sub-area 2024 Peak Day Forecast Profiles

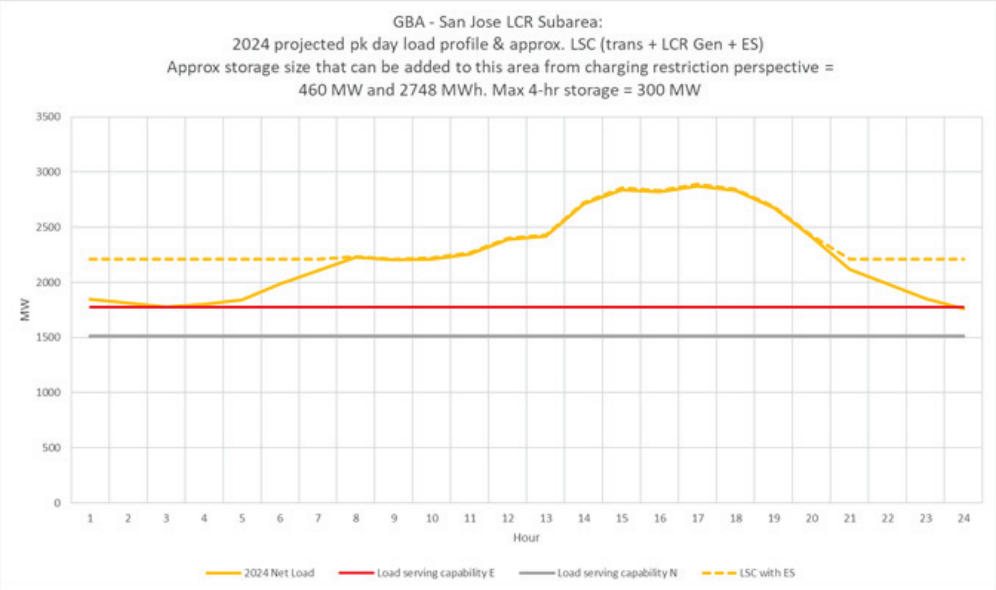
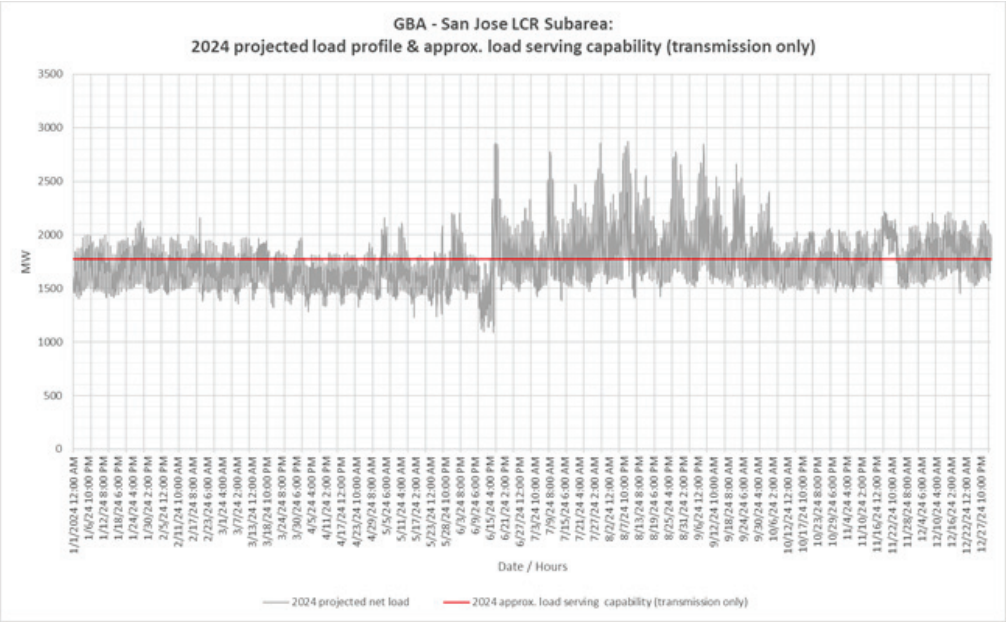


Figure 3.3-36 San Jose LCR Sub-area 2024 Forecast Hourly Profiles



San Jose LCR Sub-area Requirement

Table 3.3-31 identifies the sub-area LCR requirements. The LCR requirement for the worst contingency is 1170 MW including a deficiency of 324 MW.

Table 3.3-31 San Jose LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2024	First limit	P2	Metcalf 230/115 kV transformer # 1 or # 3	Metcalf 230 kV - Section 2D & 2E	1170 (324)

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 2024. 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 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	4393	Market/Net Seller	2201	2201
AAEE	-35	Battery	658	658
Behind the meter DG	-42	MUNI/QF	197	197
Net Load	4316	Solar	0	0
Transmission Losses	131	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	4447	**Total**	**3056**	**3056**

South Bay-Moss Landing LCR Sub-area Hourly Profiles

Figure 3.3-37 illustrates the forecasted 2024 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 2024 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 2024 Peak Day Forecast Profiles

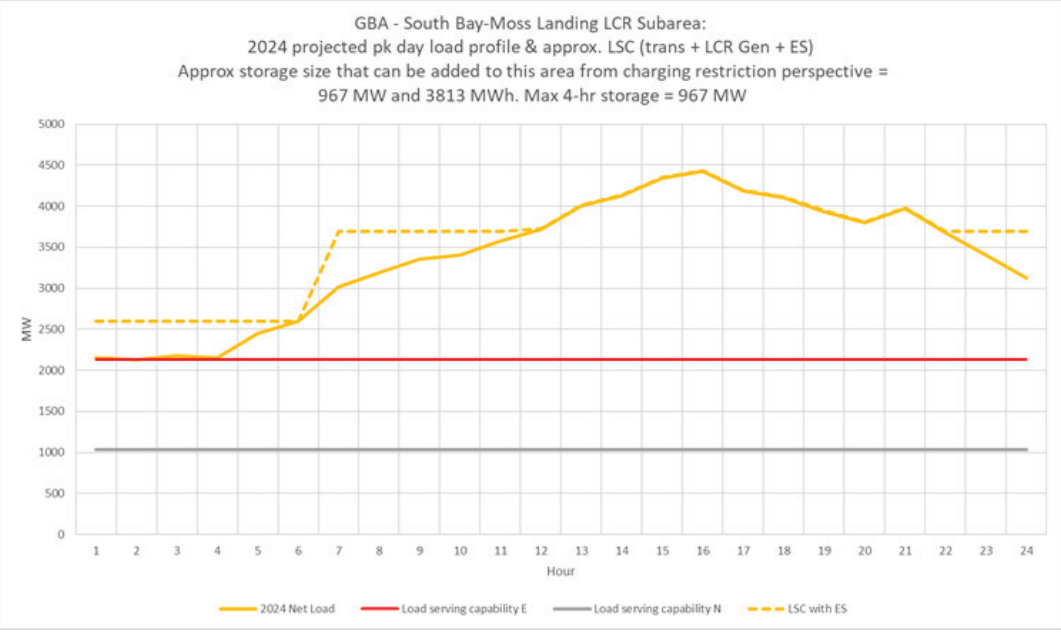
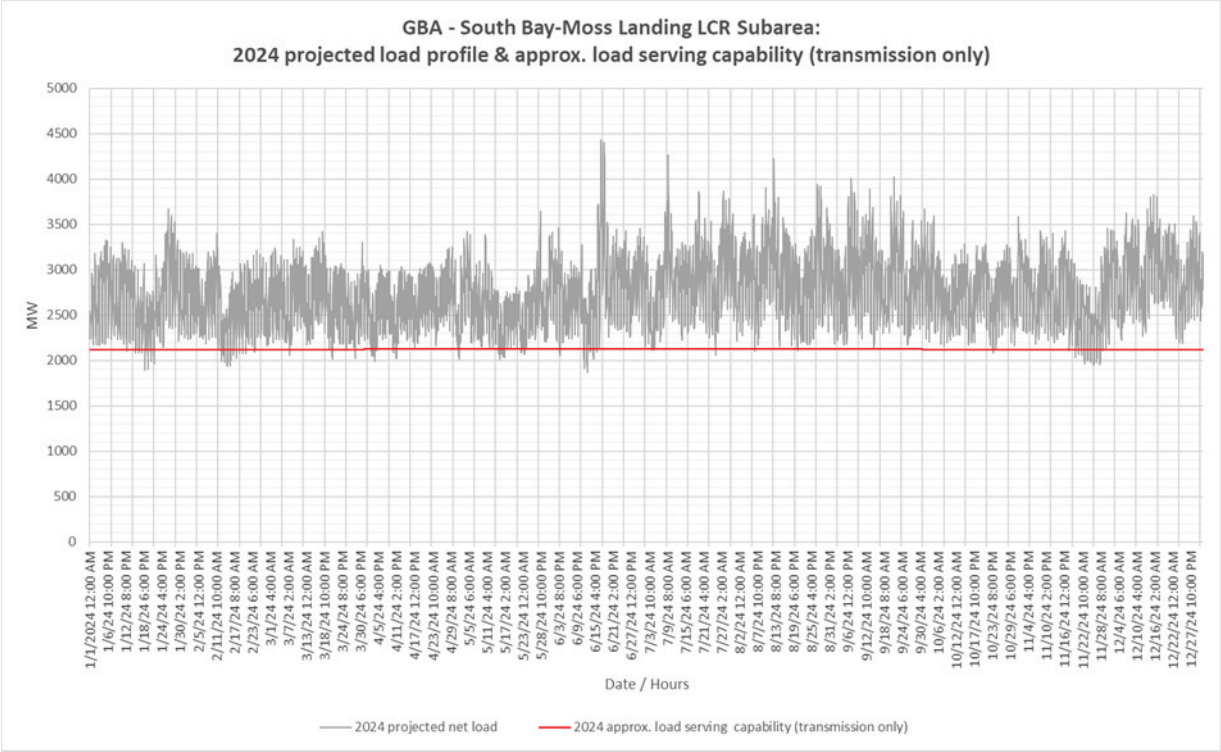


Figure 3.3-38 South Bay-Moss Landing LCR Sub-area 2024 Forecast Hourly Profiles



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 2124 MW.

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2024	First Limit	P6	Moss Landing-Las Aguilas 230 kV	Tesla-Metcalf 500 kV and Moss Landing-Los Banos 500 kV	2124

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.

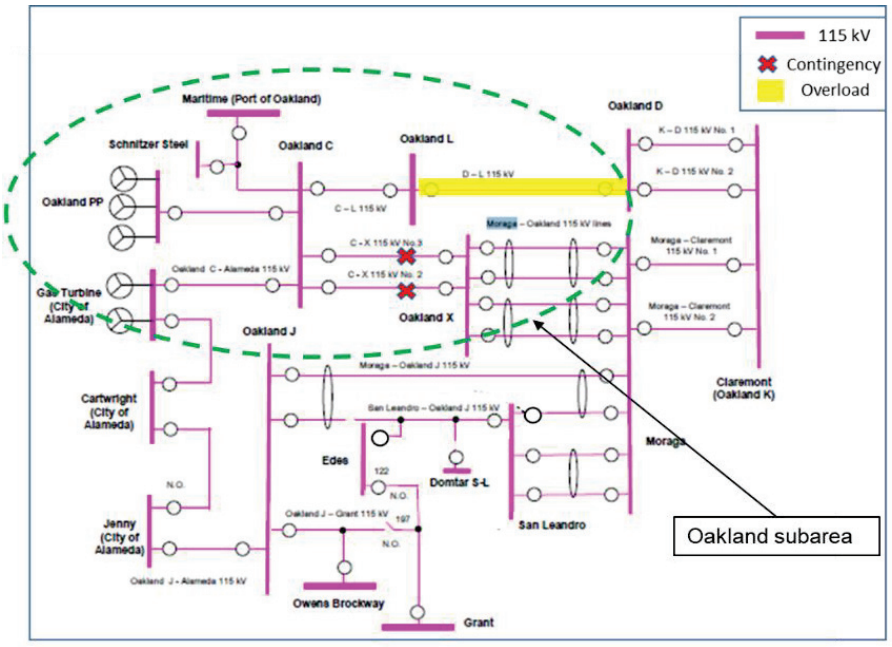
For other helpful procurement information please read procedure 2210Z Effectiveness Factors under 7320 posted at: http://www.caiso.com/Documents/2210Z.pdf

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 2024. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-34 Oakland LCR Sub-area 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	177	Market/Net Seller	55	55
AAEE	-1	Battery	55	55
Behind the meter DG	-1	MUNI/QF	48	48
Net Load	175	Solar	0	0
Transmission Losses	0	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	175	**Total**	**158**	**158**

Oakland LCR Sub-area Hourly Profiles

The Oakland Sub-area does not have a chart for the amount of energy storage that can be added to this local area from charging restriction perspective since there are no “non-battery” resources for replacement.

Oakland LCR Sub-area Requirement

Table 3.3-35 identifies the sub-area requirements. The LCR Requirement for the worst contingency is 31 MW.

Table 3.3-35 Oakland LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2024	First limit	P6	Oakland C-X #2 115 kV cable	Oakland C-X #3 & Oakland D-L #1 115 kV cables	31

Effectiveness factors:

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

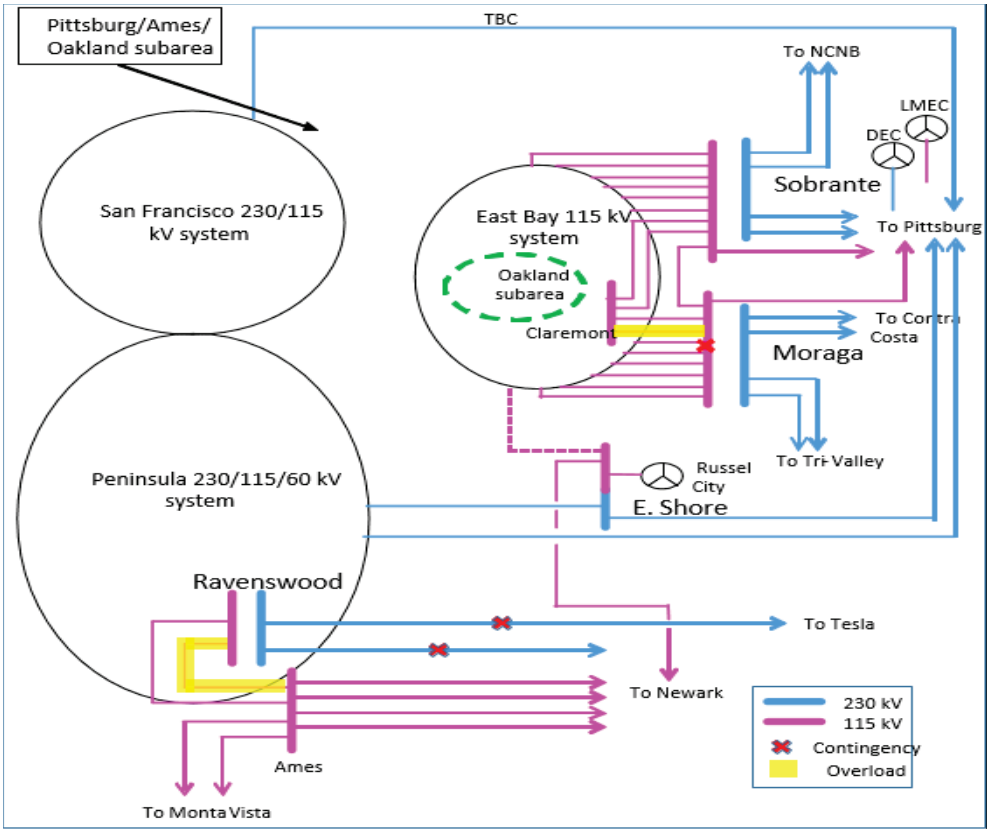
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7320 posted at: http://www.caiso.com/Documents/2210Z.pdf

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 3.3-40 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 2024. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-36 Ames-Pittsburg-Oakland LCR Sub-area 2024 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	2158	2158
	Battery	235	235
	MUNI/QF	287	287
	Solar	2	2
	Existing 20-minute Demand Response	0	0
	Mothballed	0	0
	Total	**2772**	**2772**

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 2086 MW.

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2024	First limit	P6	Ames-Ravenswood #1 115 kV line	Newark-Ravenswood 230 kV & Tesla-Ravenswood 230 kV lines	2086
		P2	Martinez-Sobrante 115 kV line	Pittsburg Section 1D & 1E 230 kV	

Effectiveness factors:

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

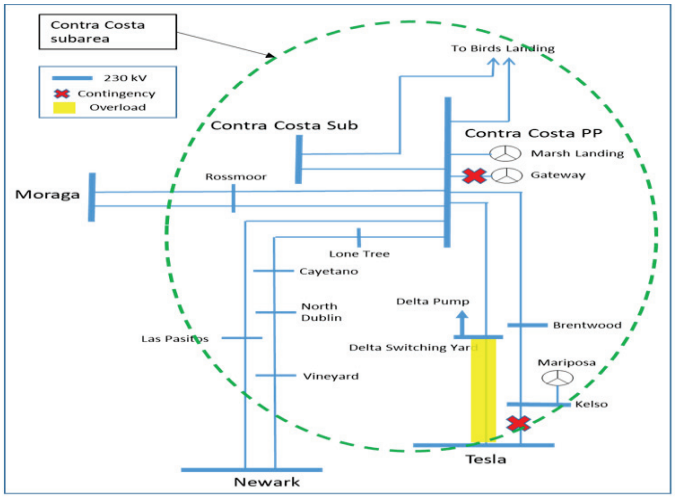
For other helpful procurement information please read procedure 2210Z Effectiveness Factors under 7320 posted at: http://www.caiso.com/Documents/2210Z.pdf

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 3.3-41 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 2024 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	1671	1671
	Wind	248	248
	Battery	0	0
	MUNI/QF	127	127
	Existing 20-minute Demand Response	0	0
	Solar	0	0
	Total	**2046**	**2046**

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 960 MW.

Table 3.3-39 Contra Costa LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2024	First limit	P3	Delta Switching Yard-Tesla 230 kV Line	Kelso-Tesla 230 kV Line and Gateway unit	960

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 3.3-42 illustrates the forecast 2024 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 3.3-43 illustrates the forecast 2024 hourly profile for Bay Area LCR area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-42 Bay Area LCR Area 2024 Peak Day Forecast Profiles

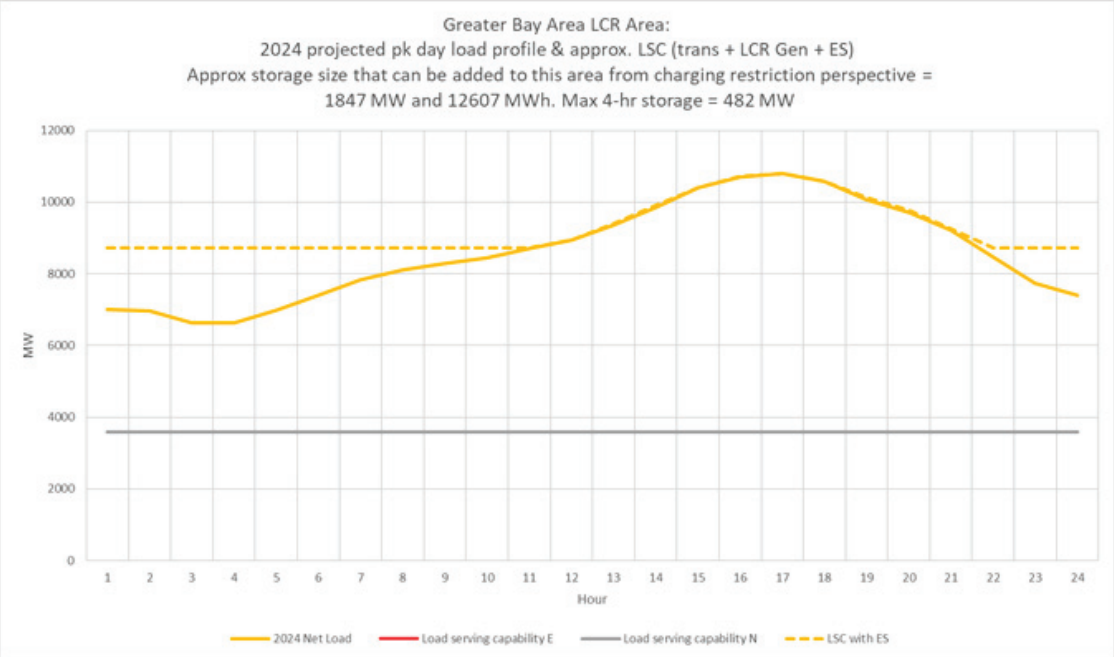
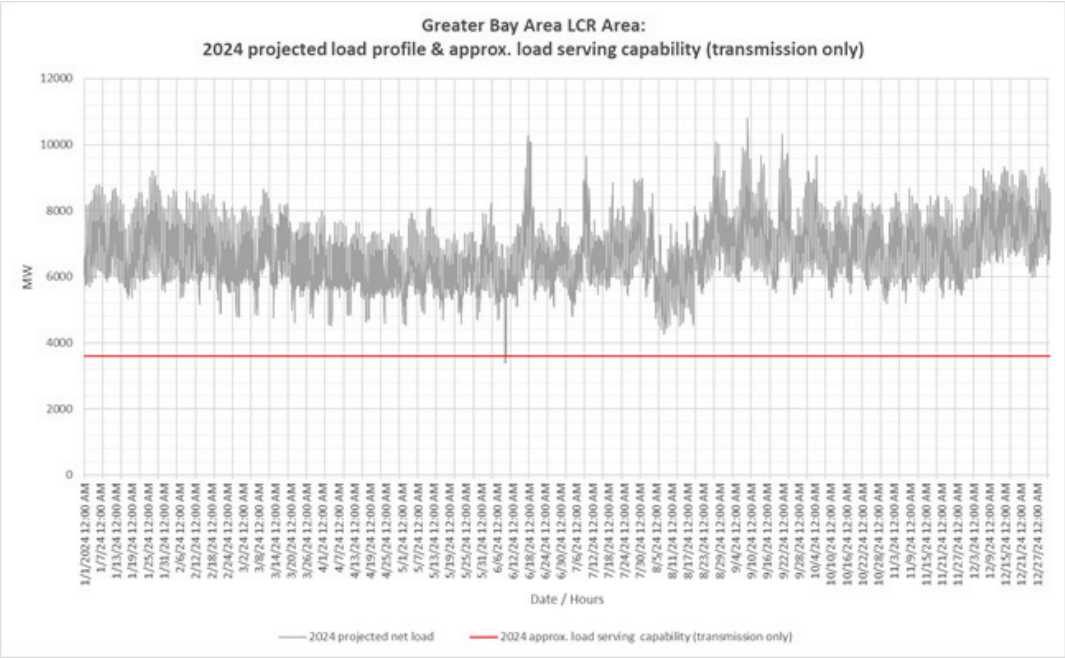


Figure 3.3-43 Bay Area LCR Area 2024 Forecast Hourly Profiles



Greater Bay LCR Area Overall Requirement

Table 3.3-40 identifies the area LCR requirements. The LCR requirement for the worst contingency is 7329 MW.

Table 3.3-40 Bay Area LCR Overall area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2024	First limit	P6	Metcalf 500/230 kV #13 transformer	Metcalf 500/230 kV #11 & #12 transformers	7329

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

Compared to 2023 load forecast went down by 55 MW and total LCR need went up by 17 MW, remaining almost the same as the previous year. This small difference in results is mainly due to differences in load distribution within the Bay Area.

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

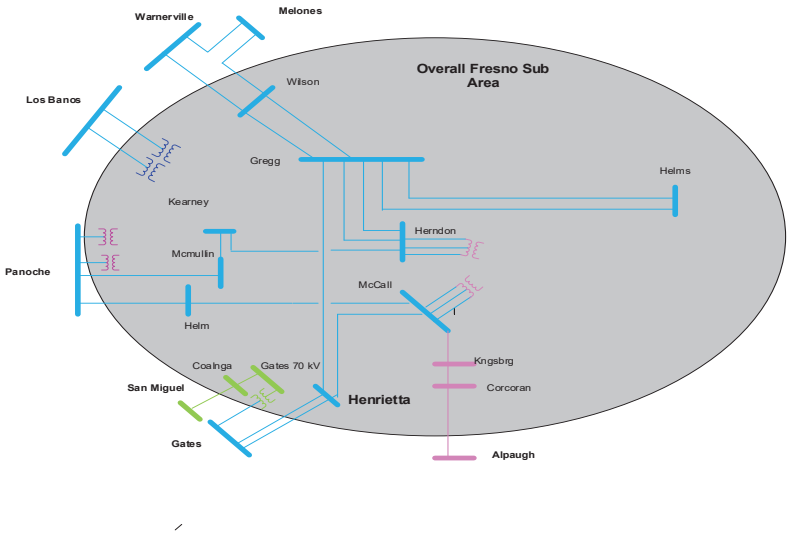
Panoche 230 is out Panoche 115 is in

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 3.3-44 Fresno LCR Area



Fresno LCR Area Load and Resources

Table 3.3-41 provides the forecast load and resources in Fresno LCR Area in 2024. The list of generators within the LCR sub-area are provided in Attachment A.

In year 2024 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 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	3375	Market/Net Seller	2382	2382
AAEE	-23	Battery/Hybrid	358	358
Behind the meter DG	134	MUNI/QF	206	206
Net Load	3217	Solar	181	0
Transmission Losses	135	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**3354**	**Total**	**3127**	**2946**

Approved transmission projects modeled

Wilson 115 kV Area Reinforcement (Mar 2025)

Oro Loma 70 kV Area Reinforcement (Jan 2026)

Giffen Line Reconductoring (Jan 2023)

Borden 230/70 kV Transformer Bank #1 Capacity Increase (Jan 2027)

Wilson-Oro Loma 115 kV Line Reconductoring (Dec 2026)

Bellota-Warnerville 230 kV Reconductoring (Dec 2024)

Herndon-Bullard #1 and #2 115 kV Reconductoirng (Dec 2026)

Reedley 70 kV Area Reinforcement Projects (Includes battery at Dinuba) (Dec 2023)

Herndon-Bullard 230kV Reconductoring Project (Apr 2024)

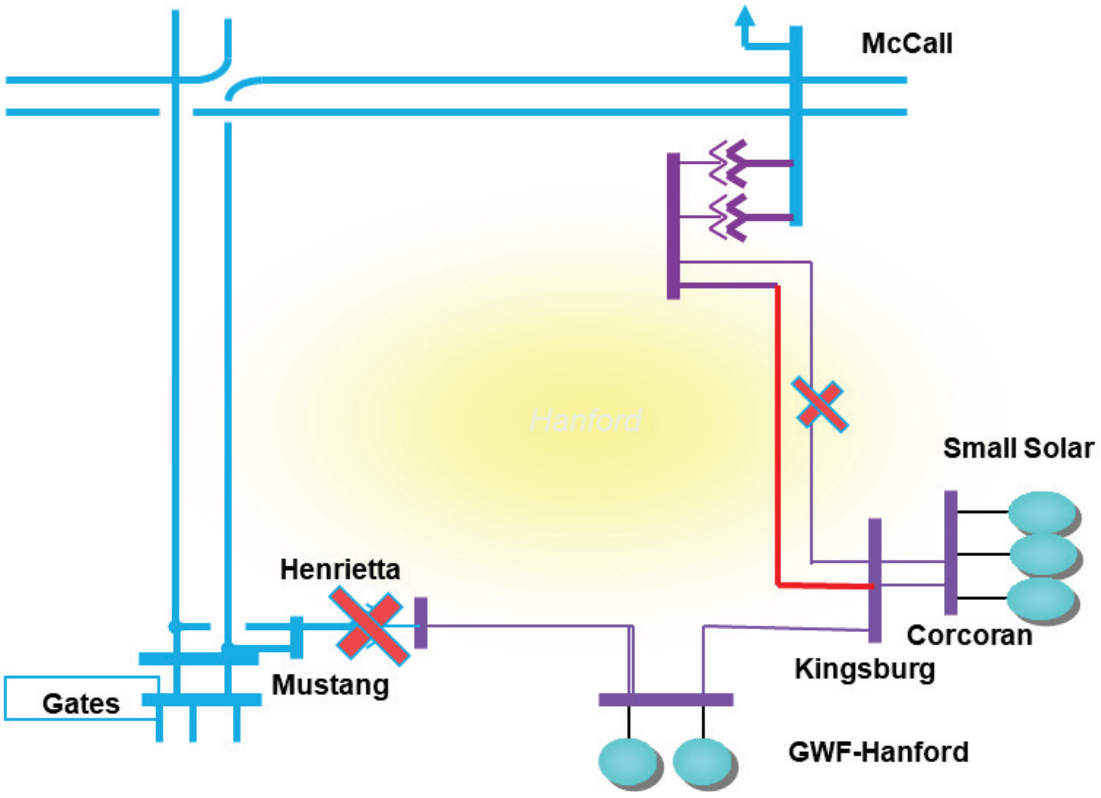
Panoche – Oro Loma 115 kV Line Reconductoring (Mar 2023)

3.3.6.2 *Hanford Sub-area*

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

Hanford LCR Sub-area Diagram

Figure 3.3-45 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 2024. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-42 Hanford LCR Sub-area 2024 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	213	Market/Net Seller	133	133
AAEE	-1	Battery	0	0
Behind the meter DG	0	MUNI/QF	0	0
Net Load	203	Solar	28	0
Transmission Losses	5	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**208**	**Total**	**161**	**133**

Hanford LCR Sub-area Hourly Profiles

Figure 3.3-46 illustrates the forecast 2024 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 3.3-47 illustrates the forecast 2024 hourly profile for Hanford sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-46 Hanford LCR Sub-area 2024 Peak Day Forecast Profiles

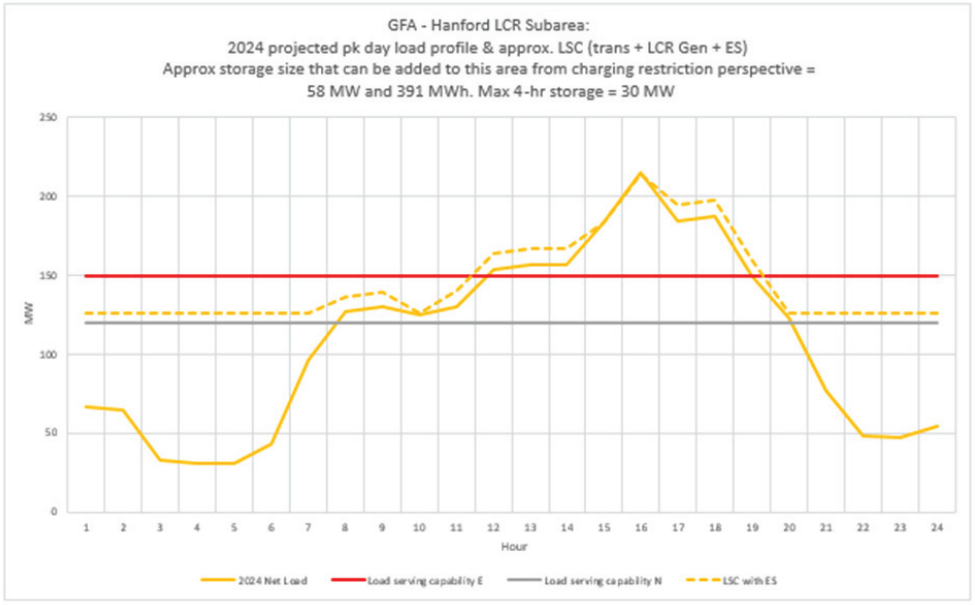
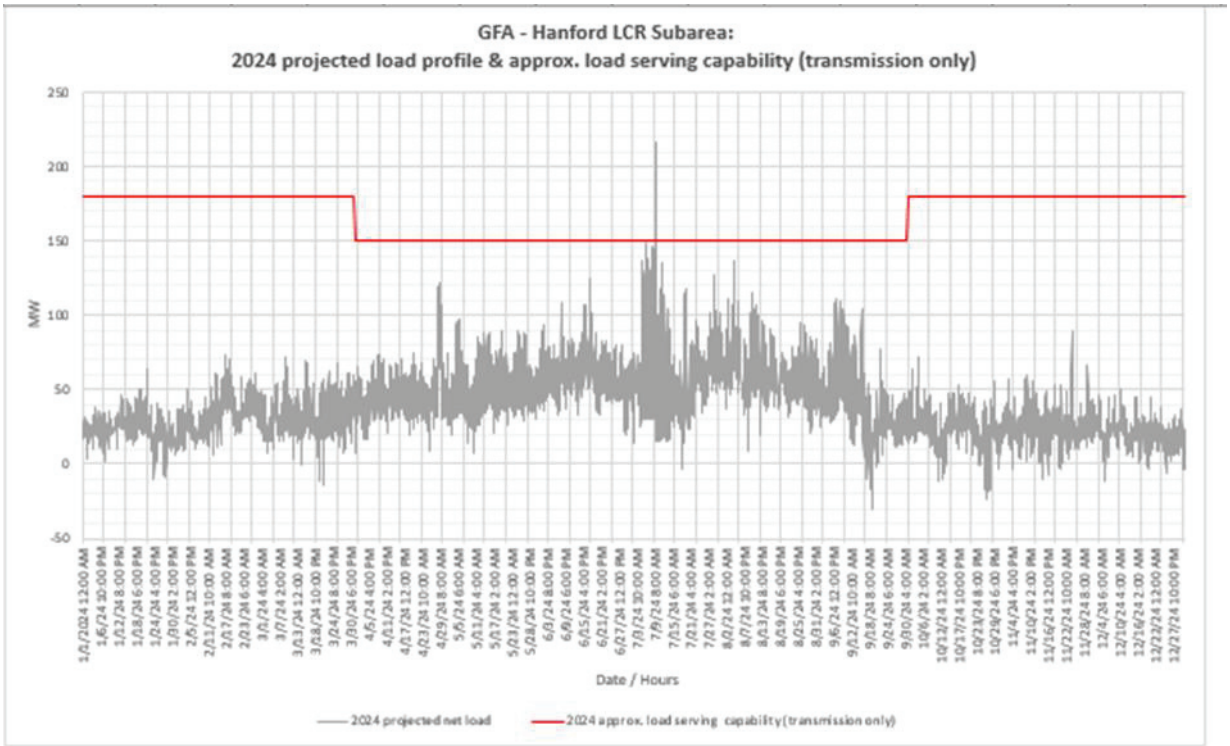


Figure 3.3-47 Hanford LCR Sub-area 2024 Forecast Hourly Profiles



Hanford LCR Sub-area Requirement

Table 3.3-43 identifies the sub-area requirements. The LCR Requirement for a Category P6 contingency is 58 MW.

Table 3.3-43 Hanford LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	First Limit	P6	McCall-Kingsburg #2 115 kV	McCall-Kingsburg #1 115 kV line and Henrietta 230/115 kV TB#3	58

Effectiveness factors:

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

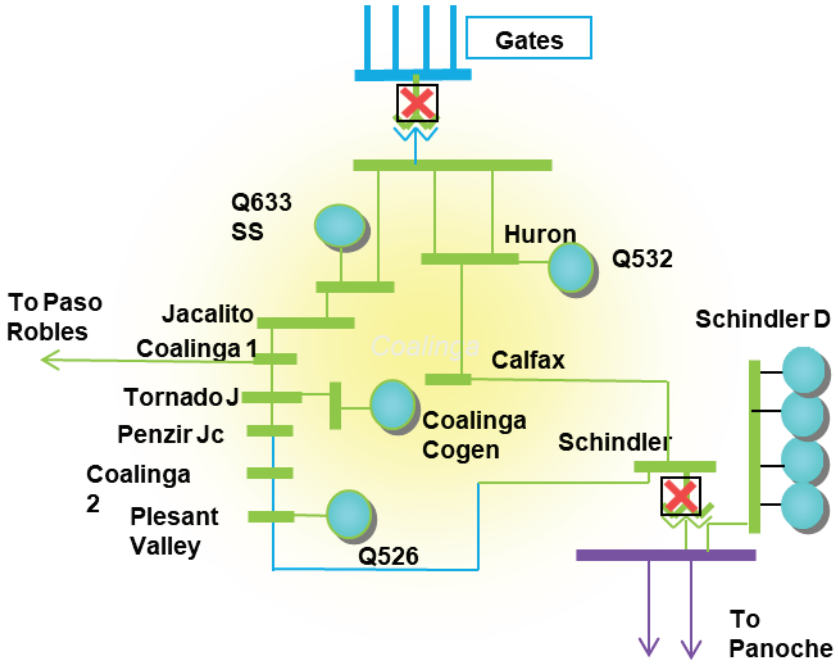
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7430 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.6.3 *Coalinga Sub-area*

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

Coalinga LCR Sub-area Diagram

Figure 3.3-48 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 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	151	Market/Net Seller	0	0
AAEE	-1	Battery	0	0
Behind the meter DG	3	MUNI/QF	3	3
Net Load	147	Solar	12	0
Transmission Losses	3	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**150**	**Total**	**15**	**3**

Coalinga LCR Sub-area Hourly Profiles

Figure 3.3-49 illustrates the forecast 2024 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 3.3-50 illustrates the forecast 2024 hourly profile for

Coalinga sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-49 Coalinga LCR Sub-area 2024 Peak Day Forecast Profiles

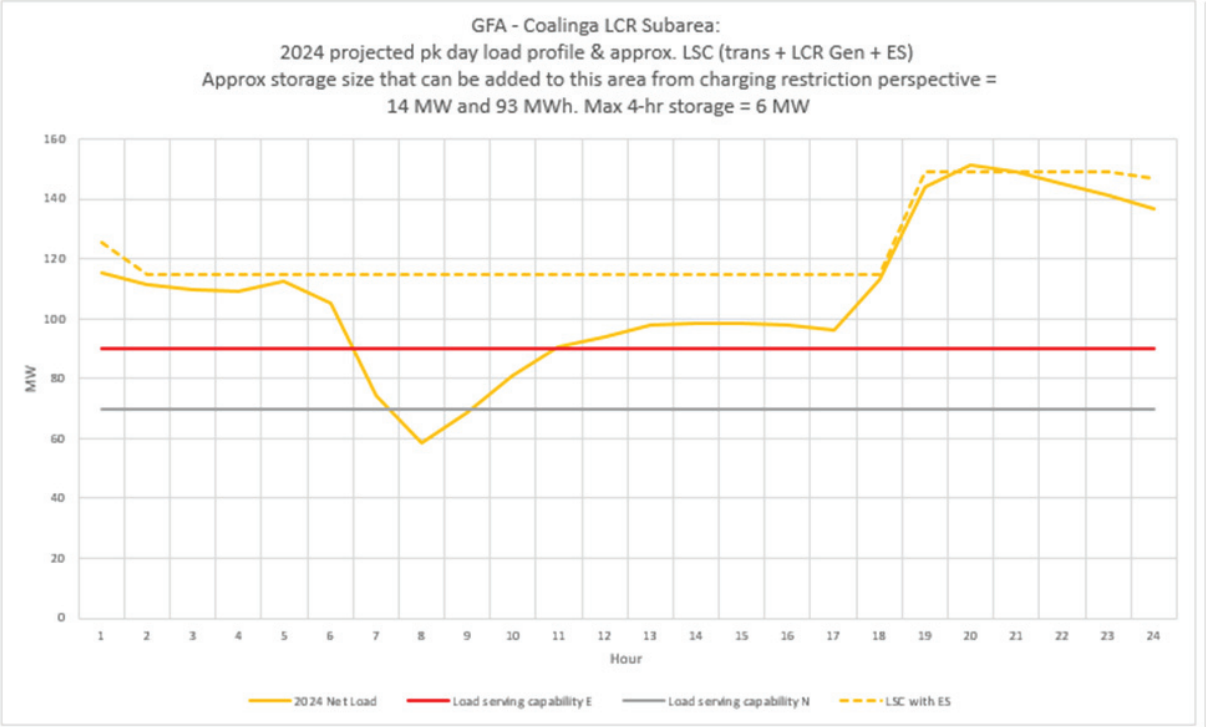
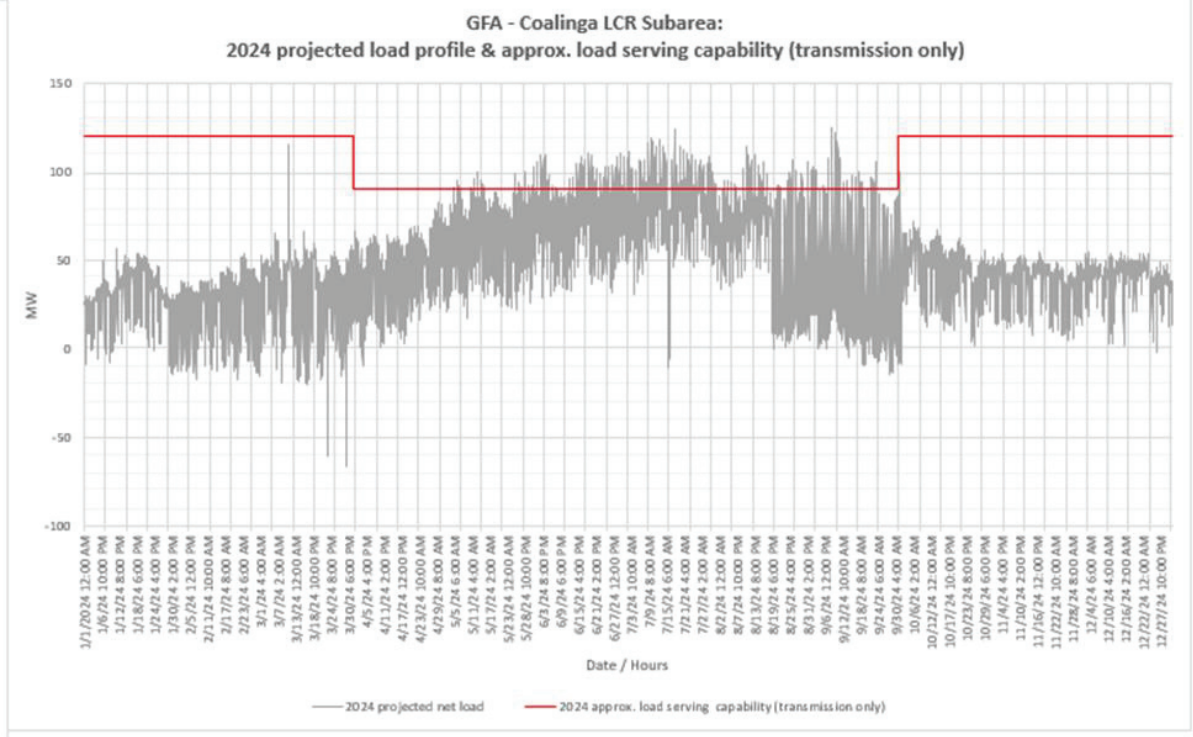


Figure 3.3-50 Coalinga LCR Sub-area 2024 Forecast Hourly Profiles



Coalinga LCR Sub-area Requirement

Table 3.3-45 identifies the sub-area requirements. The LCR Requirement for a Category P6 contingency is 110 MW including a 107 MW at peak deficiency and 95 MW NQC deficiency.

Table 3.3-45 Coalinga LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	First Limit	P6	Five Point Solar-Calflax 70 kV Line and Voltage Instability	T-1/T-1: Gates 230/70 kV TB #5 and Schindler 115/70 kV TB#1	110 (107 Peak; 95 NQC)

Effectiveness factors:

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

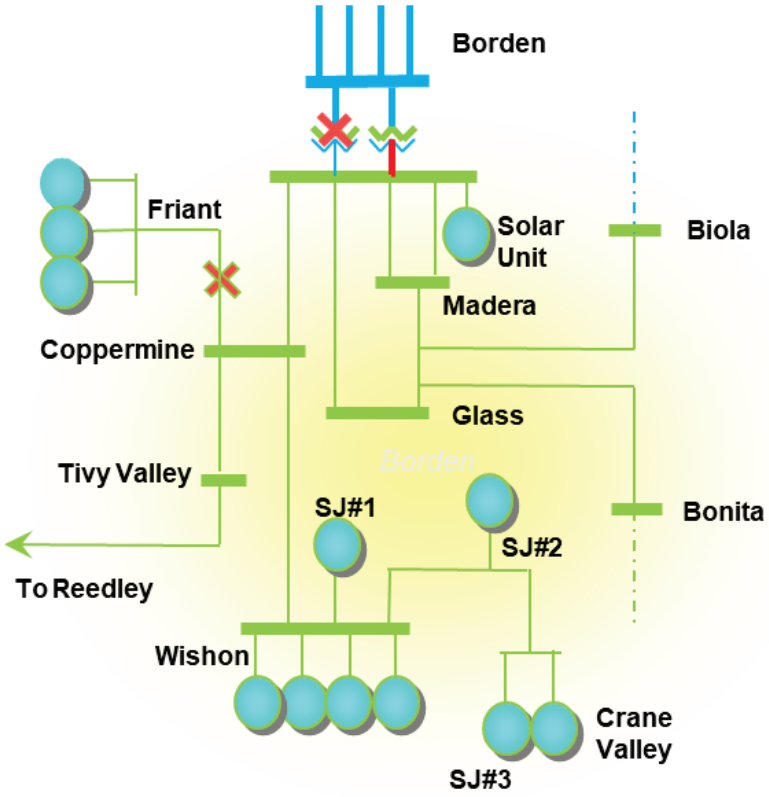
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7430 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.6.4 *Borden Sub-area*

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

Borden LCR Sub-area Diagram

Figure 3.3-51 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 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	142	Market/Net Seller	11	11
AAEE	-1	Battery	0	0
Behind the meter DG	7	MUNI/QF	0	0
Net Load	134	Solar	6	0
Transmission Losses	3	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**137**	**Total**	17	**11**

Borden LCR Sub-area Hourly Profiles

Figure 3.3-52 illustrates the forecasted 2024 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 3.3-53 illustrates the forecasted 2024 hourly profile for Borden sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-52 Borden LCR Sub-area 2024 Peak Day Forecast Profiles

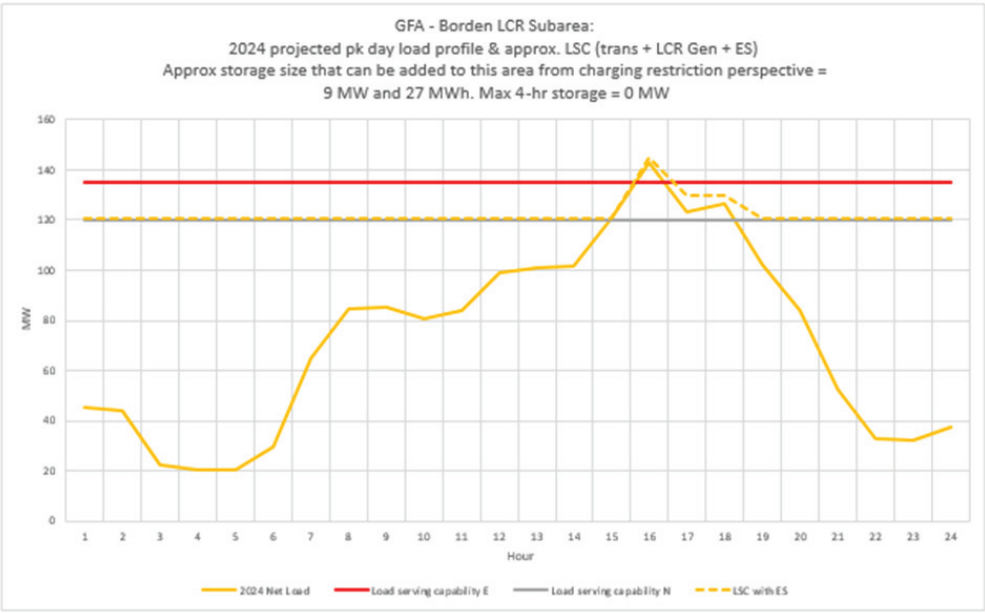
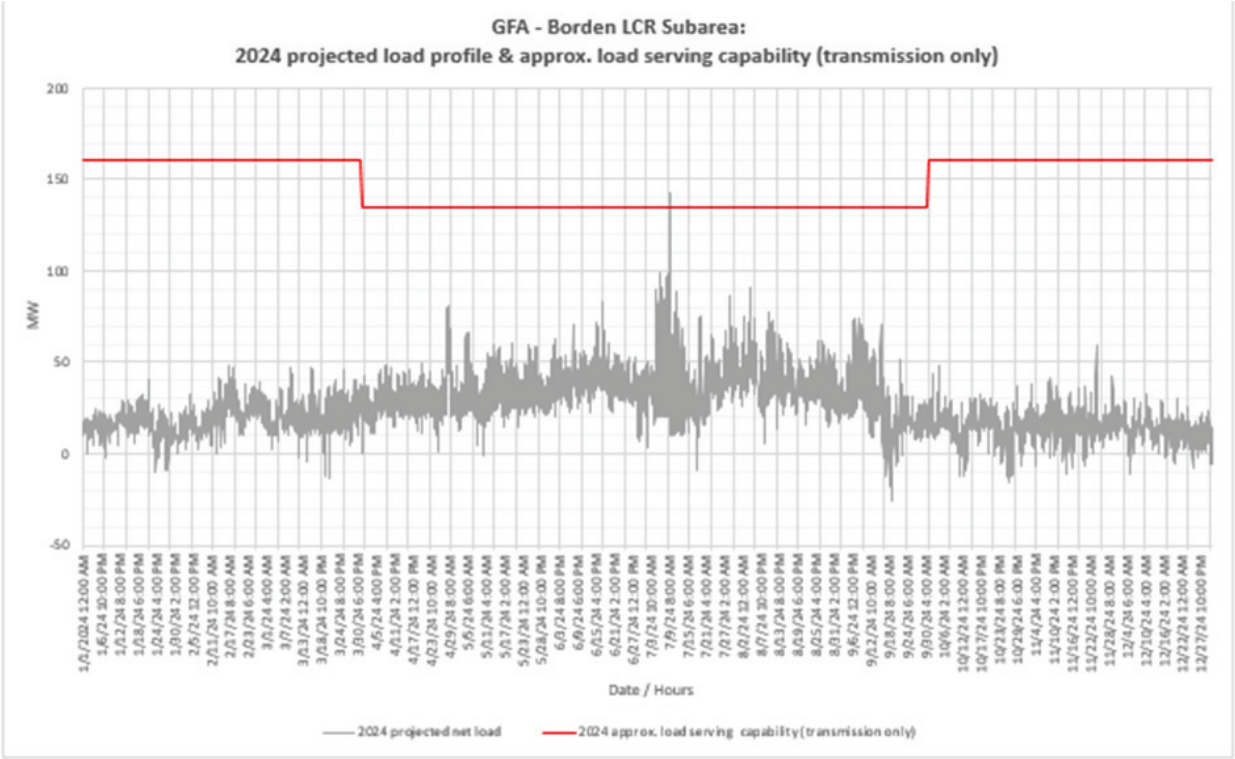


Figure 3.3-53 Borden LCR Sub-area 2024 Forecast Hourly Profiles



Borden LCR Sub-area Requirement

Table 3.3-47 identifies the sub-area requirements. The LCR Requirement for a Category P6 contingency is 9 MW.

Table 3.3-47 Borden LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	First Limit	P6	Borden 230/70 kV TB # 1	Friant - Coppermine 70 kV Line and Borden 230/70 kV TB # 4	9

Effectiveness factors:

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

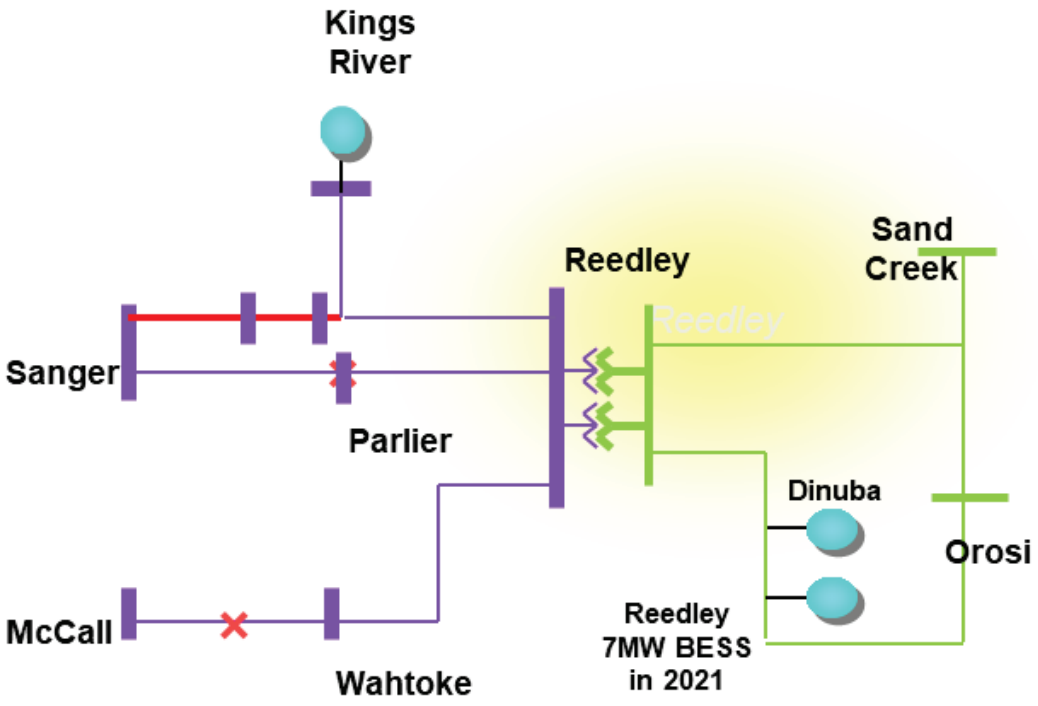
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7430 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.6.5 *Reedley Sub-area*

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

Reedley LCR Sub-area Diagram

Figure 3.3-54 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 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	223	Market/Net Seller	39	39
AAEE	-2	Battery	0	0
Behind the meter DG	10	MUNI/QF	0	0
Net Load	211	LTPP Preferred Resources	0	0
Transmission Losses	50	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**261**	**Total**	**39**	**39**

Reedley LCR Sub-area Hourly Profiles

Figure 3.3-55 illustrates the forecast 2024 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 3.3-56 illustrates the forecast 2024 hourly profile for Reedley sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-55 Reedley LCR Sub-area 2024 Peak Day Forecast Profiles

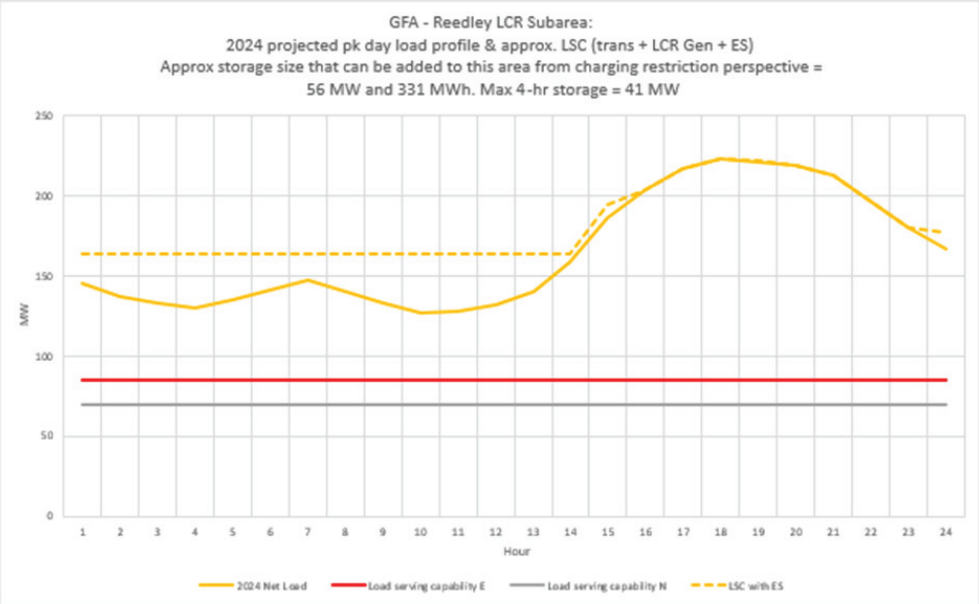
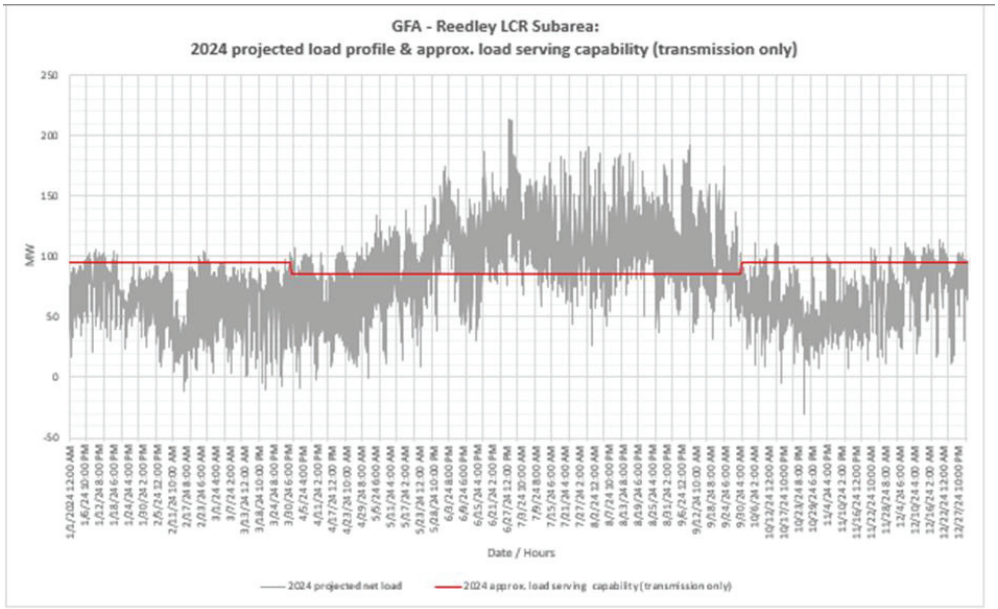


Figure 3.3-56 Reedley LCR Sub-area 2024 Forecast Hourly Profiles



Reedley LCR Sub-area Requirement

Table 3.3-49 identifies the sub-area requirements. The LCR Requirement for a Category P6 contingency is 132 MW with a 93 MW deficiency.

Table 3.3-49 Reedley LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	First Limit	P6	Kings River-Sanger-Reedley 115 kV line with Wahtoke load online	McCall-Reedley 115 kV & Sanger-Reedley 115 kV	132 (93)

Effectiveness factors:

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

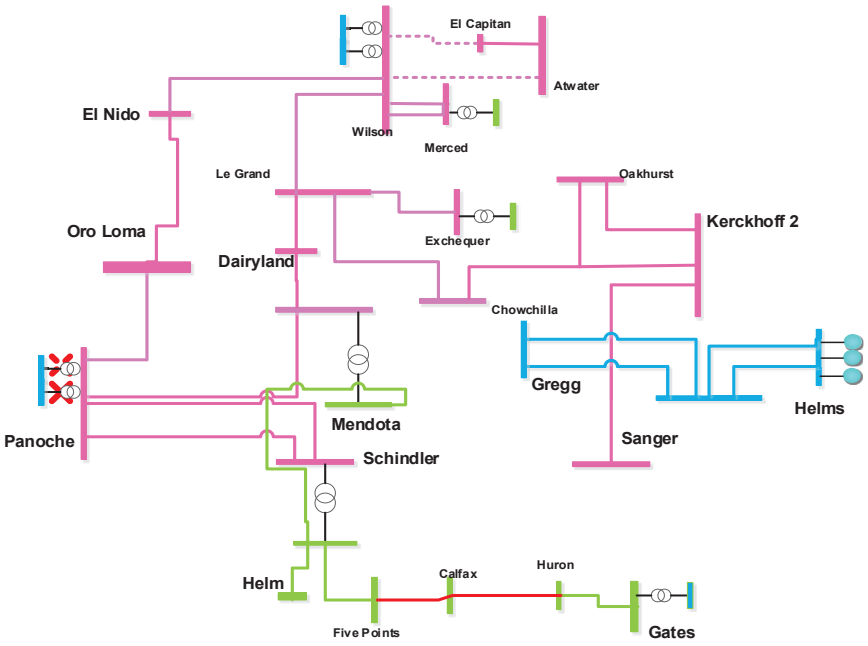
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7430 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.6.6 *Panoche Sub-area*

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

Panoche LCR Sub-area Diagram

Figure 3.3-57 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 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	527	Market/Net Seller	284	284
AAEE	-3	Battery	0	0
Behind the meter DG	-16	MUNI/QF	104	104
Net Load	508	Solar	43	0
Transmission Losses	14	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**522**	**Total**	**431**	**388**

Panoche LCR Sub-area Hourly Profiles

Figure 3.3-58 illustrates the forecast 2024 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 3.3-59 illustrates the forecast 2024 hourly profile for Panoche sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-58 Panoche LCR Sub-area 2024 Peak Day Forecast Profiles

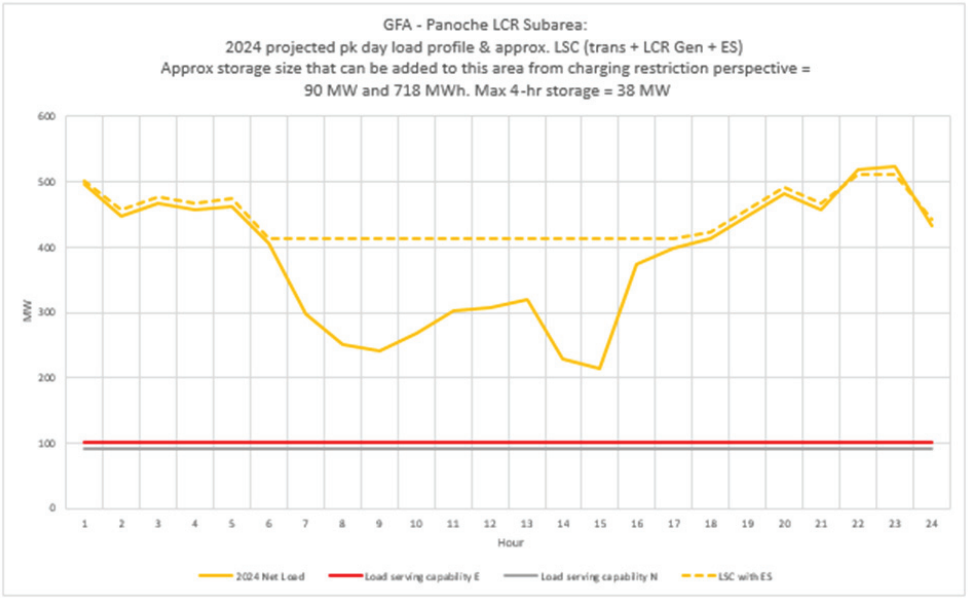
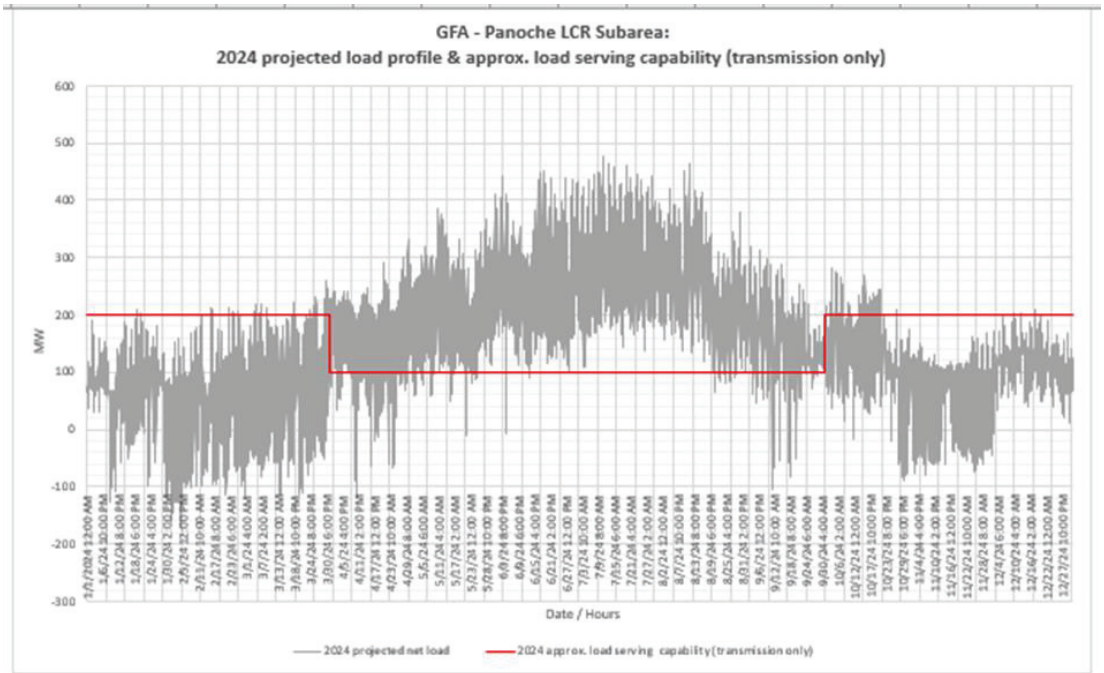


Figure 3.3-59 Panoche LCR Sub-area 2024 Forecast Hourly Profiles



Panoche LCR Sub-area Requirement

Table 3.3-51 identifies the sub-area LCR requirements. The LCR Requirement for a Category P6 contingency is 412 MW.

Table 3.3-51 Panoche LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	First limit	P6	Five Points-Huron-Gates 70 kV line	Panoche 230/115 kV TB #2 and Panoche 230/115 kV TB #1	412 (0 NQC, 24 at Peak)

Effectiveness factors:

Effective factors for generators in the Panoche LCR sub-area are in Attachment B table title Panoche.

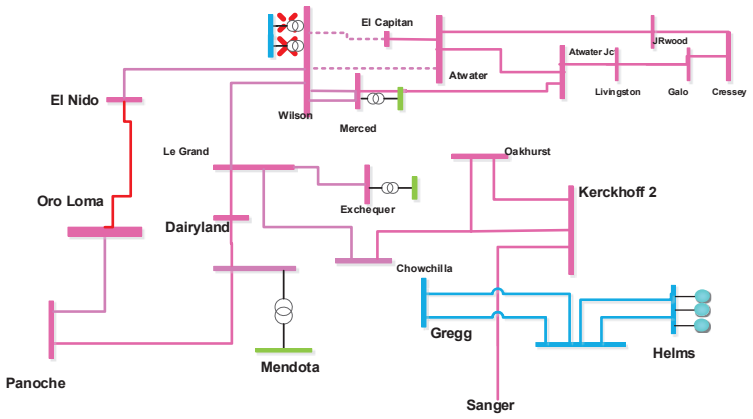
For other helpful procurement information please read procedure 2210Z Effectiveness Factors under 7430 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.6.7 *Wilson Sub-area*

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

Wilson LCR Sub-area Diagram

Figure 3.3-60 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 2024 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	146	146
	Battery	0	0
	MUNI/QF	101	101
	Solar	27	0
	Existing 20-minute Demand Response	0	0
	Mothballed	0	0
	Total	**274**	**247**

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 459 MW with a 114 MW deficiency at Peak and 87 MW NQC deficiency.

Table 3.3-53 Wilson LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	First Limit	P6	Oro Loma-El Nido 115 kV Line	Wilson 230/115kV TB #1 and Wilson 230/115kV TB #2	459 (87 NQC; 114 Peak)

Effectiveness factors:

Effective factors for generators in the Wilson 115 kV LCR sub-area are in Attachment B table titled Wilson 115 kV.

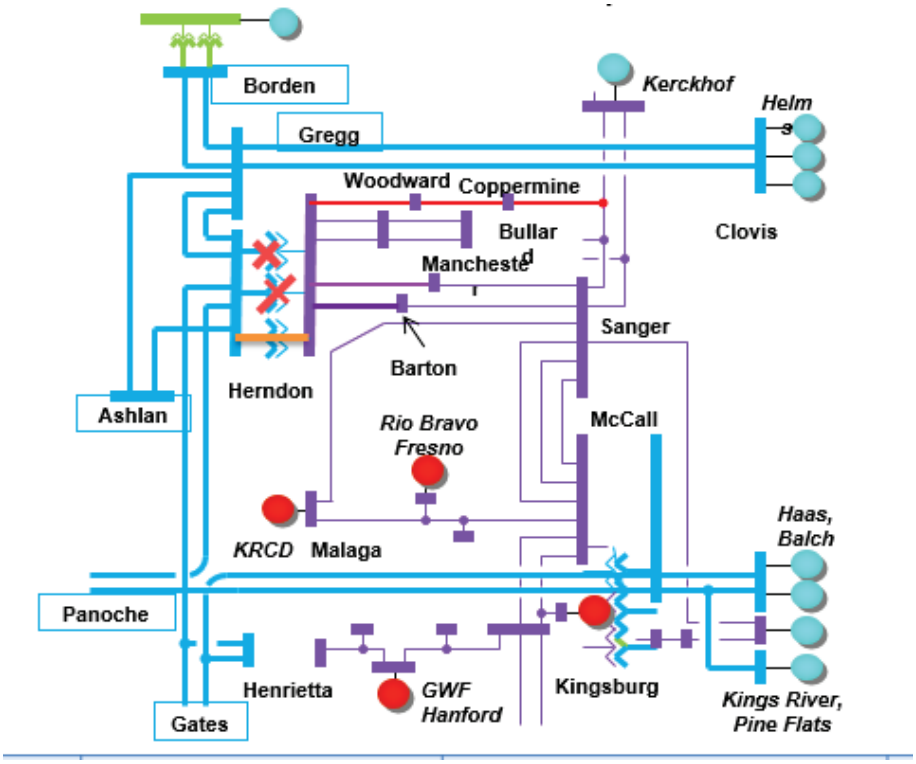
For other helpful procurement information please read procedure 2210Z Effectiveness Factors under 7430 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.6.8 *Herndon Sub-area*

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

Herndon LCR Sub-area Diagram

Figure 3.3-61 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 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	1522	Market/Net Seller	873	873
AAEE	-11	Battery	0	0
Behind the meter DG	-62	MUNI/QF	100	100
Net Load	1447	Solar	29	0
Transmission Losses	29	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**1476**	**Total**	**1002**	**973**

Herndon LCR Sub-area Hourly Profiles

Figure 3.3-62 illustrates the forecast 2024 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 3.3-63 illustrates the forecast 2024 hourly profile for Herndon sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-62 Herndon LCR Sub-area 2024 Peak Day Forecast Profiles

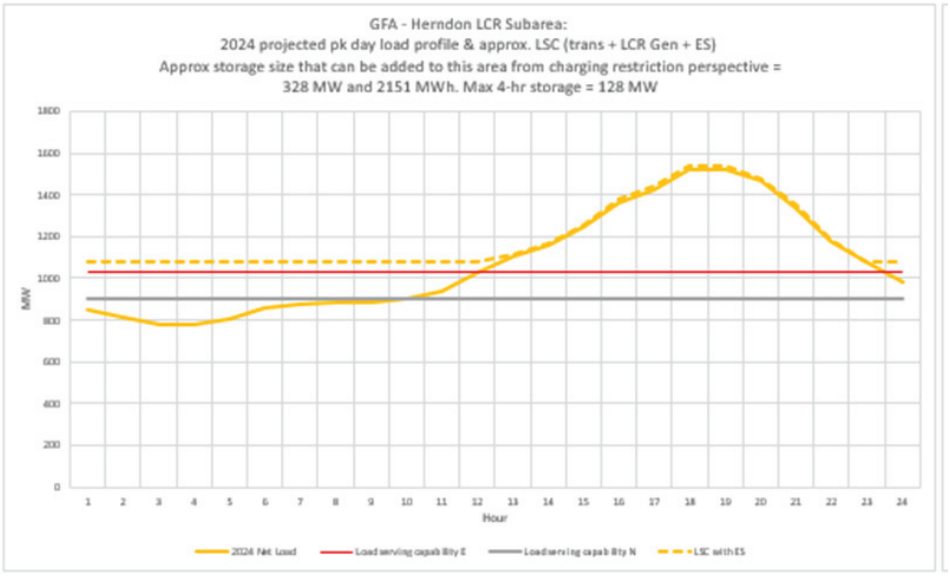
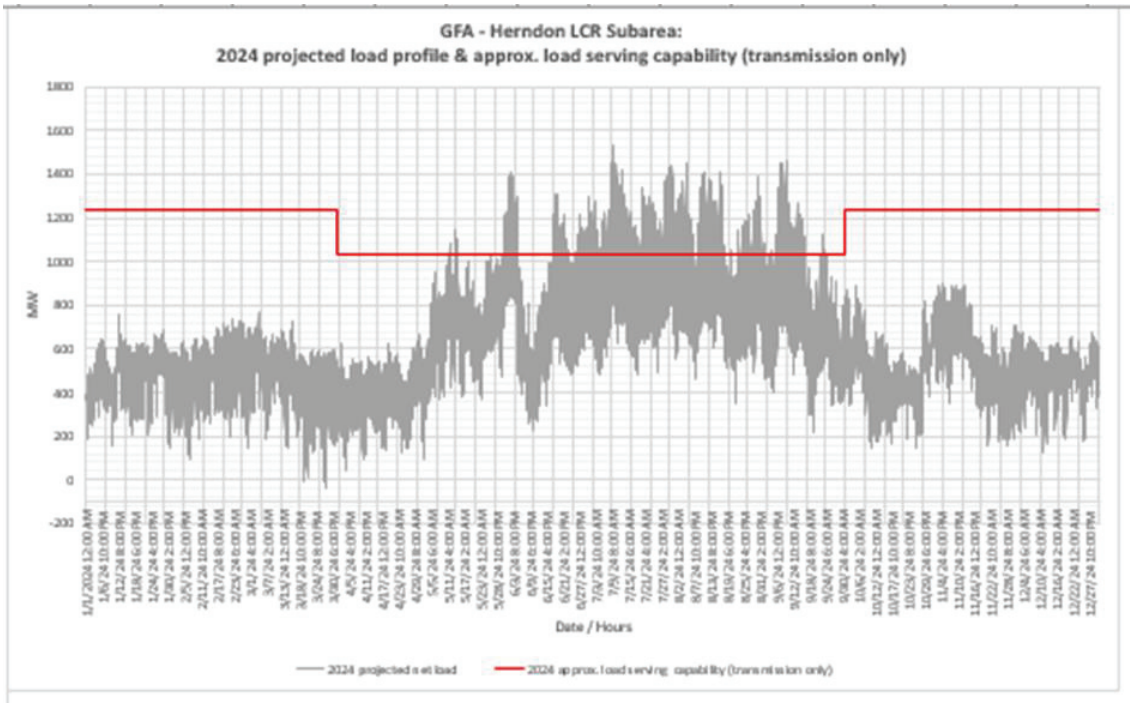


Figure 3.3-63 Herndon LCR Sub-area 2024 Forecast Hourly Profiles



Herndon LCR Sub-area Requirement

Table 3.3-55 identifies the sub-area LCR requirements. The LCR Requirement for a Category P6 contingency is 459 MW.

Table 3.3-55 Herndon LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	First limit	P6	Herndon #3 230/115 kV Transformer Bank	Herndon 230/115 kV Bank 1 and Herndon 230/115 kV Bank 2	459

Effectiveness factors:

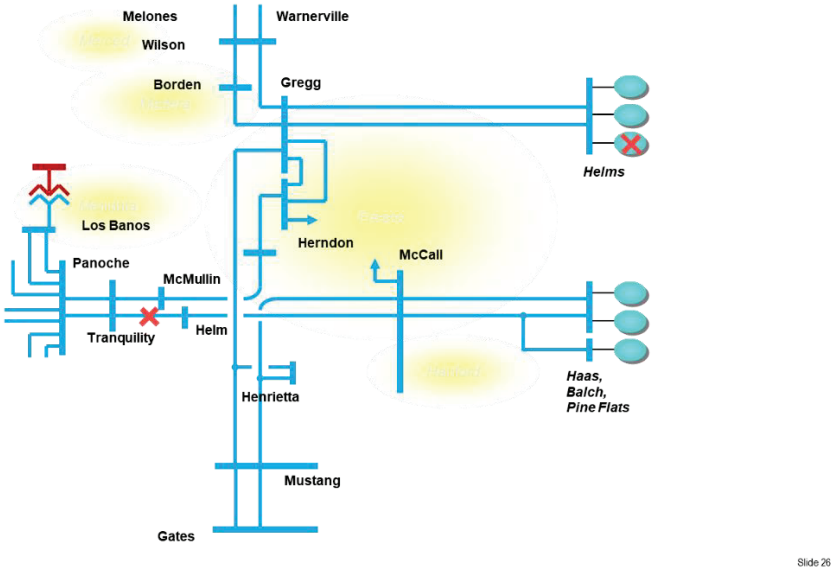
Effective factors for generators in the Herndon LCR Sub-area are in Attachment B table titled Herndon.

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 3.3-64 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 2024. The list of generators within the LCR area are provided in Attachment A.

Fresno Overall LCR area Hourly Profiles

Figure 3.3-65 illustrates the forecast 2024 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 3.3-66 illustrates the forecast 2024 hourly profile for Fresno Overall sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-65 Fresno LCR area 2024 Peak Day Forecast Profiles

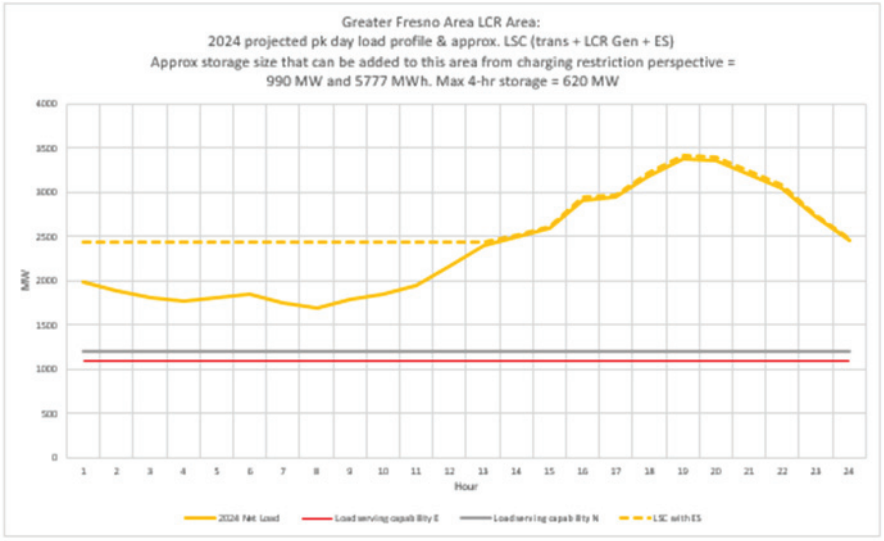
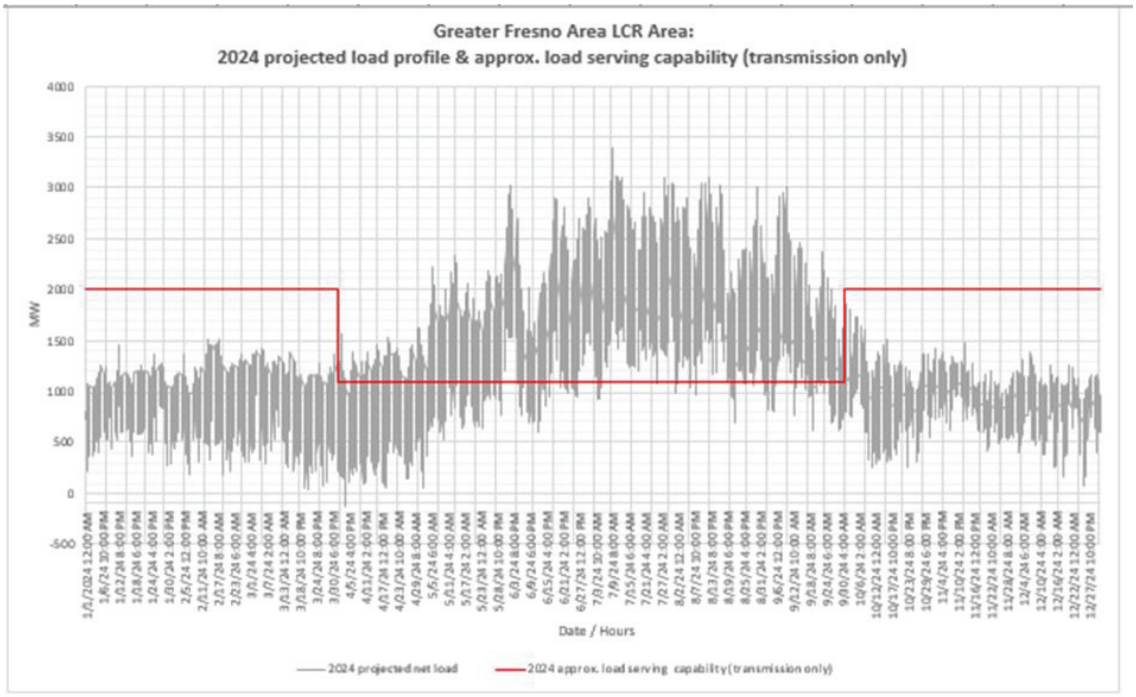


Figure 3.3-66 Fresno LCR area 2024 Forecast Hourly Profiles



Fresno Overall LCR Area Requirement

Table 3.3-56 identifies the area LCR requirements. The LCR Requirement for a Category P6 contingency is 2028 MW.

Table 3.3-56 Fresno Overall LCR Area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	First limit	P6	Kingsburg-Contadina 115 kV Line	Mc Call-Helm 230 kV Line and Mc Call-Mustang 230 kV line	2028

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 2023 the load forecast increased by 66 MW and the LCR need increased by 158 MW mostly due to load forecast increase.

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

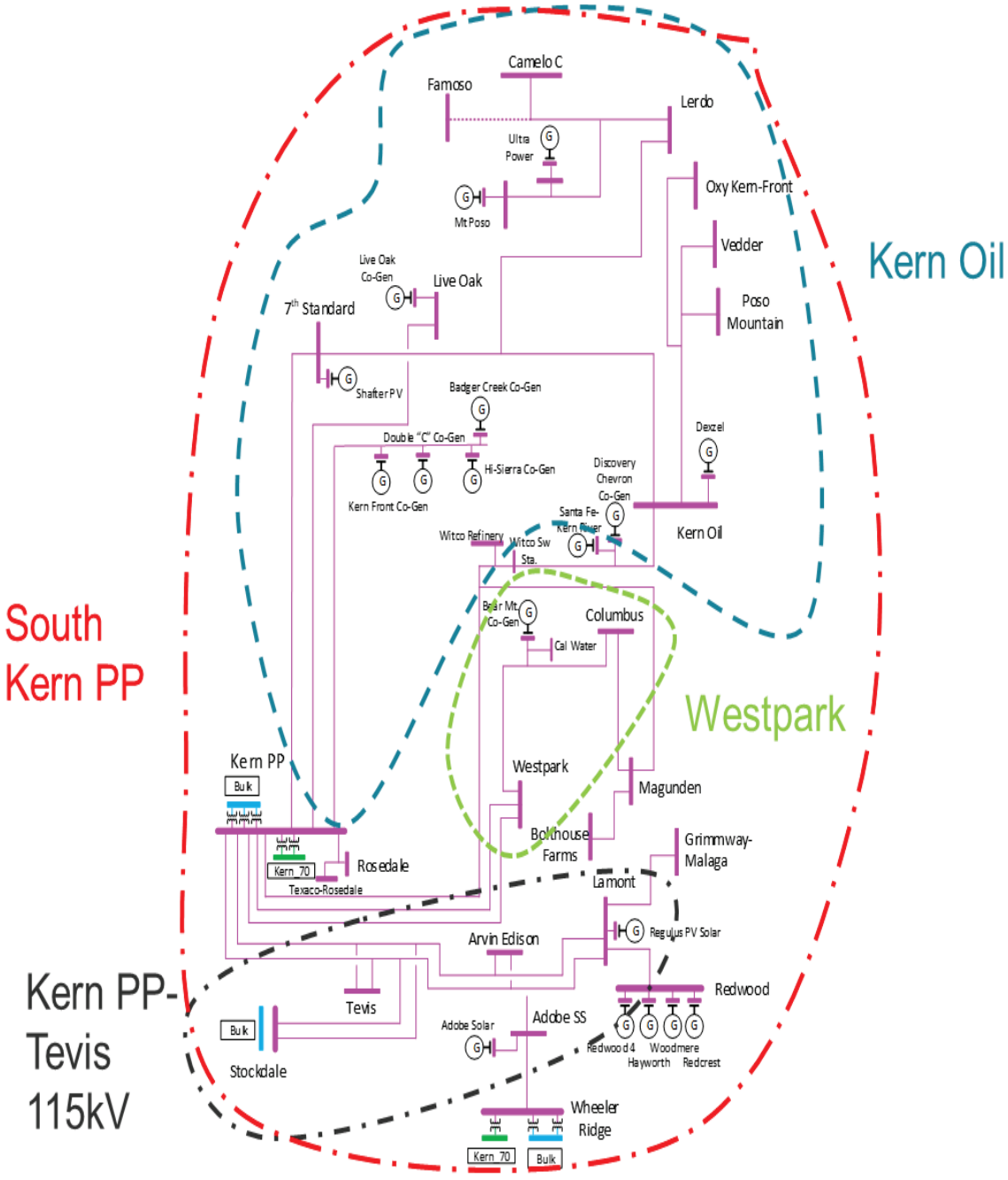
Magunden 70 kV is out and Bakersfield Junction 70 kV is in

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 3.3-67 Kern LCR Area



Kern LCR Area Load and Resources

Table 3.3-57 provides the forecast load and resources in Kern LCR Area in 2024. The list of generators within the LCR area are provided in Attachment A.

In year 2024 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 2024 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	923	Market/Net Seller	365	365
AAEE	-7	Battery	0	0
Behind the meter DG	0	MUNI/QF	10	10
Net Load	**914**	Solar	43	0
Transmission Losses	10	Existing 20-minute Demand Response	9	9
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**924**	**Total**	**427**	**384**

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 3.3-67 for Kern PWR-Tevis sub-area diagram

Kern Power-Tevis Sub-area Load and Resources

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

Table 3.3-58 Kern Power-Tevis LCR Sub-area 2024 Forecast Load and Resources

Load (MW)	Generation (MW)	Aug NQC	At Peak

Gross Load	136	Market/Net Seller	0	0
AAEE	-1	Battery	0	0
Behind the meter DG	0	MUNI/QF	0	0
Net Load	**135**	Solar	34	0
Transmission Losses	1	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**136**	**Total**	**34**	**0**

Kern Power-Tevis LCR Sub-area Requirement

Table 3.3-59 identifies the sub-area LCR requirements. The LCR requirement for Category P1 contingency is 13 MW .

Table 3.3-59 Kern Power-Tevis LCR Sub-area Requirements

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	P1	Kern-Lamont 115 kV Lines (Kern-Tevis Jct 2/Tevis J1)	Stockdale-Lamont-Kern PWR-Tevis 115 KV	13 (13 Peak)

Effectiveness factors:

All units within the Kern PWR-Tevis 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

3.3.7.3 *Westpark Sub-area*

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

Westpark LCR Sub-area Diagram

Please see

Figure 3.3-67 for Westpark sub-area diagram.

Westpark LCR Sub-area Load and Resources

Table 3.3-60 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 3.3-60 Westpark LCR Sub-area 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	116	Market/Net Seller	49	49
AAEE	-1	Battery	0	0
Behind the meter DG	0	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 3.3-68 illustrates the forecast 2024 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 3.3-69 illustrates the forecast 2024 hourly profile for Westpark LCR sub-area with the Category P7 emergency load serving capability without local resources.

Figure 3.3-68 Westpark LCR Sub-area 2024 Peak Day Forecast Profiles

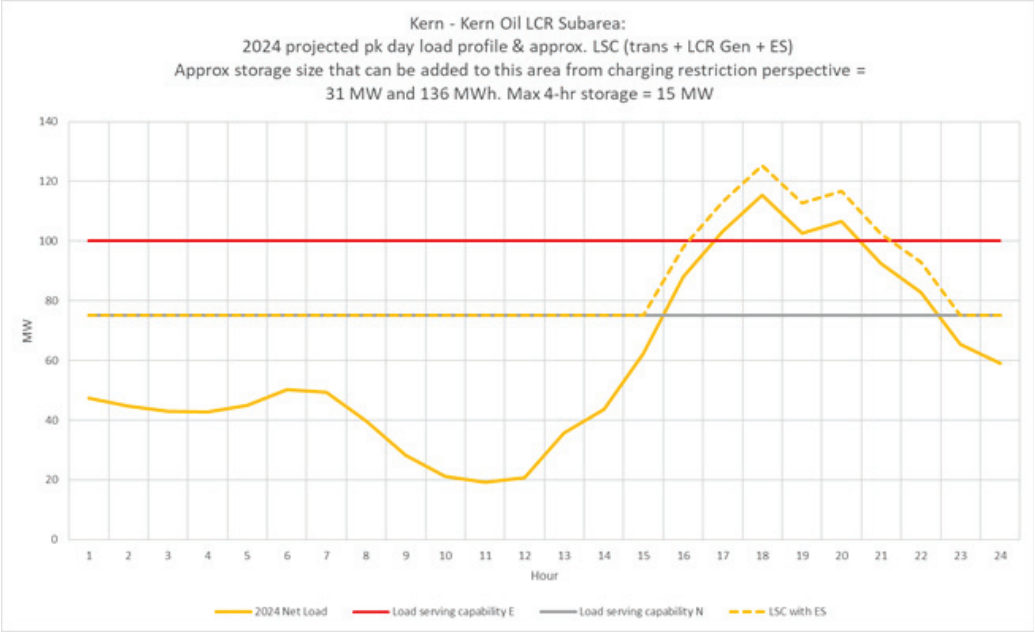
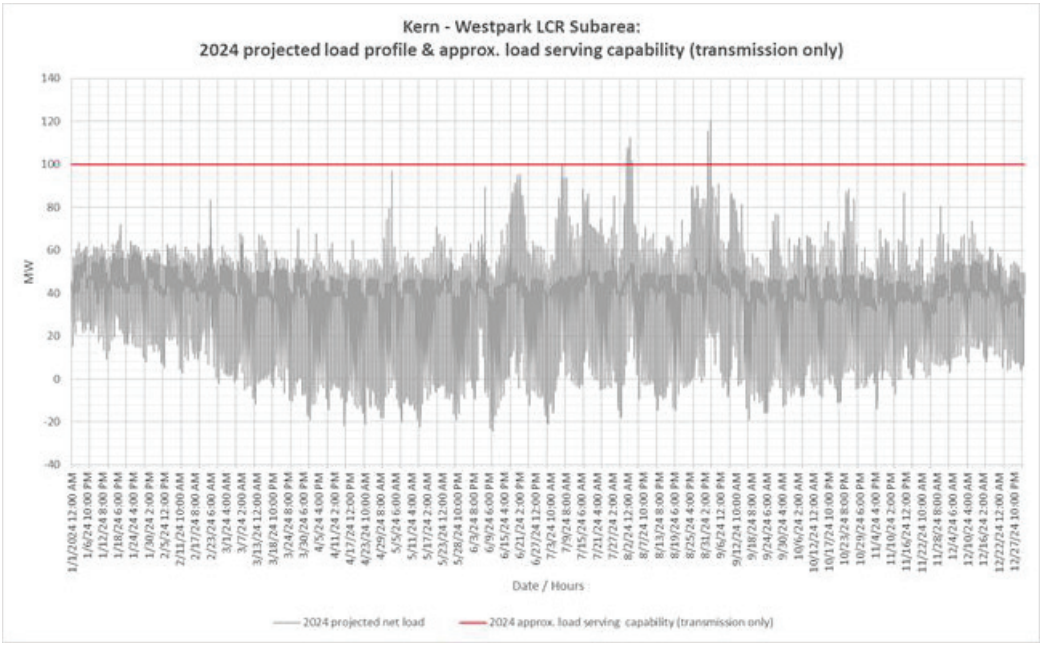


Figure 3.3-69 Westpark LCR Sub-area 2024 Forecast Hourly Profiles



Westpark LCR Sub-area Requirement

Table 3.3-61 identifies the sub-area LCR requirements. The LCR requirement for Category P7 contingency is 31 MW.

Table 3.3-61 Westpark LCR Sub-area Requirements

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)

2024	P7	Magunden–Magunden Jct 115 kV Line	Kern PP-Westpark No. 1 & 2 115 kV Lines	31

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 3.3-67 for Kern Oil sub-area diagram

Kern Oil LCR Sub-area Load and Resources

Table 3.3-62 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 3.3-62 Kern Oil LCR Sub-area 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	259	Market/Net Seller	107	107
AAEE	-3	Battery	0	0
Behind the meter DG	0	MUNI/QF	10	10
Net Load	**256**	Solar	3	0
Transmission Losses	1	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0

Load + Losses + Pumps	257	Total	120	117

Kern Oil LCR Sub-area Hourly Profiles

Figure 3.3-70 illustrates the forecast 2024 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 3.3-71 illustrates the forecast 2024 hourly profile for Kern Oil LCR sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-70 Kern Oil LCR Sub-area 2024 Peak Day Forecast Profiles

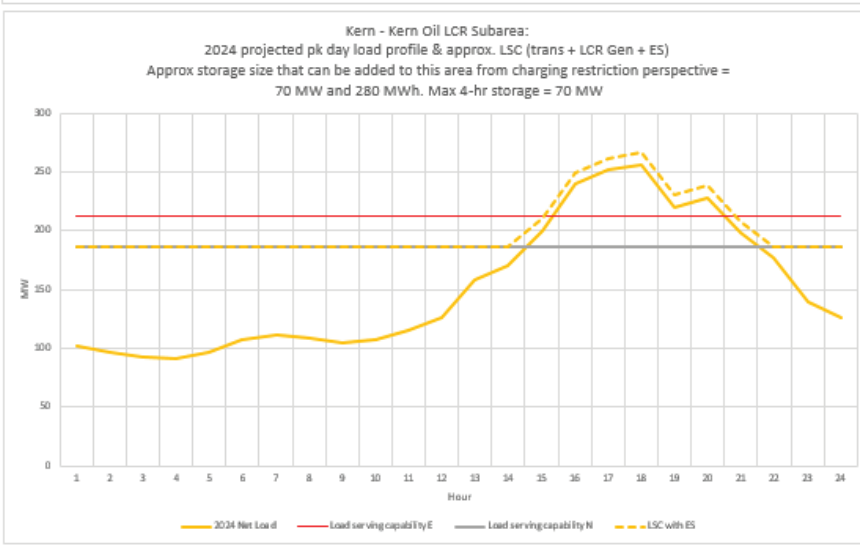
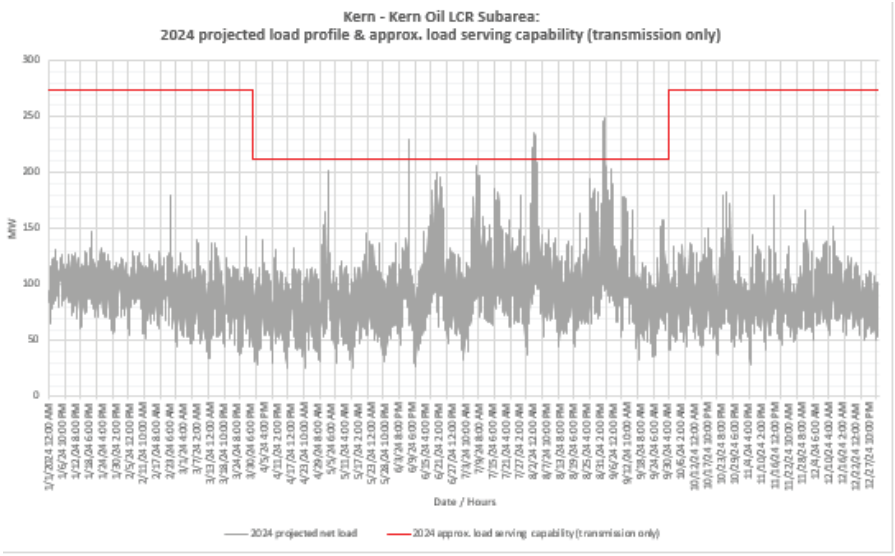


Figure 3.3-71 Kern Oil LCR Sub-area 2024 Forecast Hourly Profiles



Kern Oil LCR Sub-area Requirement

Table 3.3-63 identifies the sub-area LCR requirements. The LCR requirement for Category P6 contingency is 127 MW.

Table 3.3-63 Kern Oil LCR Sub-area Requirements

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	P6	Kern Oil Jct –Kernwater 115 kV Line	7th Standard – Kern 115 kV line & Kern PP-Live Oak 115 kV Line	127 (7 NQC; 10 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 3.3-67 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 3.3-72 illustrates the forecast 2024 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 3.3-73 illustrates the forecast 2024 hourly profile for South Kern PP LCR sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-72 South Kern PP LCR Sub-area 2024 Peak Day Forecast Profiles

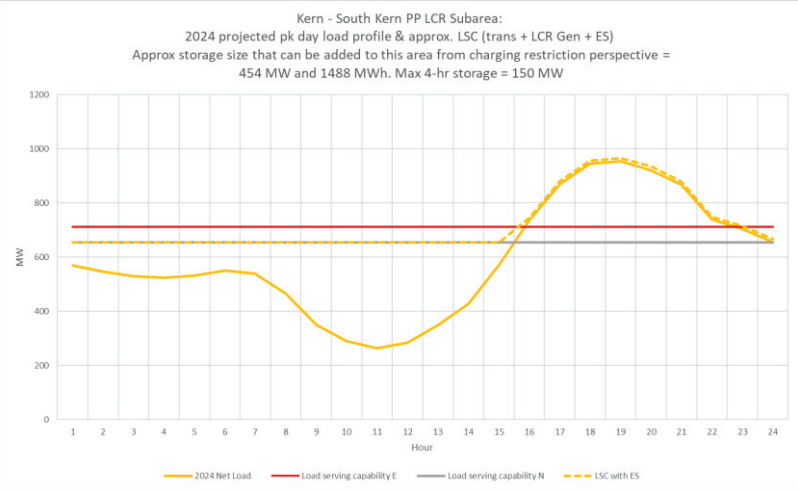
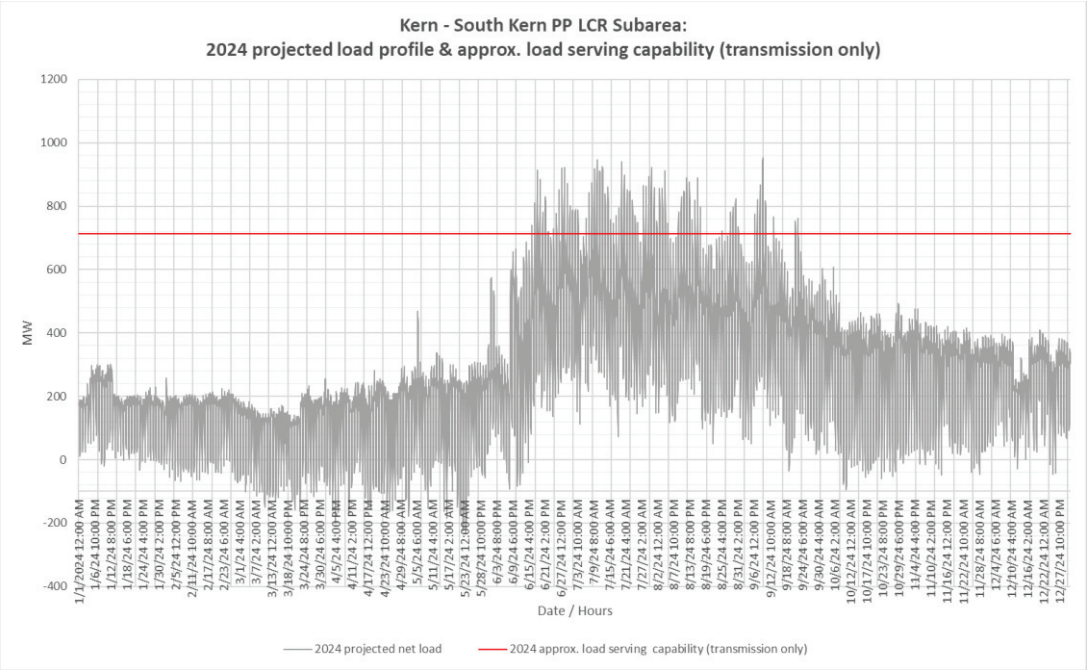


Figure 3.3-73 South Kern PP LCR Sub-area 2024 Forecast Hourly Profiles



South Kern PP LCR Sub-area Requirement

Table 3.3-64 identifies the sub-area LCR requirements. The LCR requirement for Category P6 contingency is 454 MW including a 70 MW at peak deficiency as well as 27 MW NQC deficiency.

Table 3.3-64 South Kern PP LCR Sub-area Requirements

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)

2024	P6	Kern 230/115 kV T/F # 5	Kern 230/115 kV T/F # 3 & Kern 230/115 kV T/F # 4	454 (27 NQC; 70 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 3.3-65 identifies the limiting facility and contingency that establishes the Kern Area 2024 LCR requirements. The LCR requirement for Category P6 (Multiple Contingency) is 454 MW including a 70 MW at peak deficiency as well as a 27 MW NQC deficiency.

Table 3.3-65 Kern Overall LCR Sub-area Requirements

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	P6	Aggregate of Sub-areas.		454 (27 NQC: 70 Peak)

Kern Overall LCR Area Hourly Profile

Refer to South Kern PP LCR area profiles.

Changes compared to last year's results

For 2024 the load forecast has decreased by 16 MW and the overall Kern resource requirements have decreased as well mostly due to decrease in NQC values, resulting in an increase of "deficiency values".

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

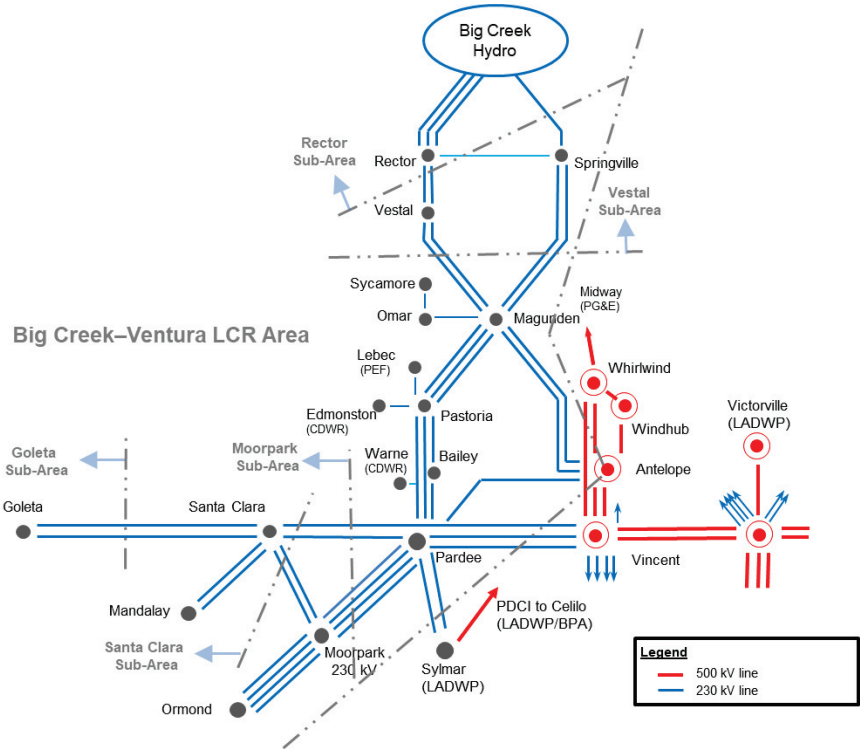
Sylmar is out Pardee is in

Vincent is out Pardee is in

Vincent is out Santa Clara is in

Big Creek/Ventura LCR Area Diagram

Figure 3.3-74 Big Creek/Ventura LCR Area



Big Creek/Ventura LCR Area Load and Resources

Table 3.3-66 provides the forecast load and resources in the Big Creek/Ventura LCR Area in 2024. The list of generators within the LCR area are provided in Attachment A.

In year 2024 the estimated time of local area peak is 5:00 PM (PDT).

At the local area peak time the estimated ISO-metered solar output is about 56%.

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

Table 3.3-66 Big Creek/Ventura LCR Area 2024 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	4149	Market/Net Seller	2607	2607
AAEE	-39	Battery	776	776
Behind the meter DG	0	MUNI/QF	406	406
Net Load	**4110**	Solar	265	265
Transmission Losses	79	Demand Response	63	63
Pumps	390	Mothballed	0	0
Load + Losses + Pumps	**4579**	**Total**	**4117**	**4117**

Approved transmission projects modeled:

- Sylmar Bank E is out of service through 2025

3.3.8.2 *Rector Sub-area*

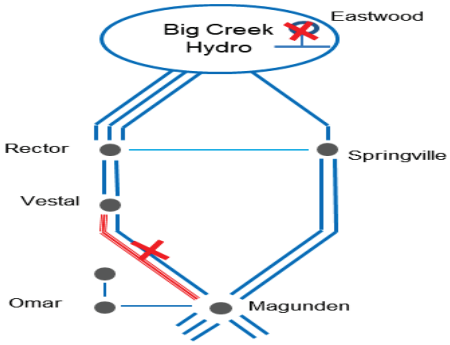
LCR need is satisfied by the need in the larger Vestal sub-area.

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 3.3-75 Vestal LCR Sub-area



Vestal LCR Sub-area Load and Resources

Table 3.3-67 provides the forecast load and resources in Vestal LCR sub-area in 2024. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-67 Vestal LCR Sub-area 2024 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	1237	Market/Net Seller	961	961
AAEE	-11	Battery	219	219
Behind the meter DG	N/A	MUNI/QF	10	10
Net Load	**1226**	Solar	67	67
Transmission Losses	18	Existing 20-minute Demand Response	41	41
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**1244**	**Total**	**1298**	**1298**

Vestal LCR Sub-area Hourly Profiles

Figure 3.3-76 illustrates the forecast 2024 annual load profile in the Vestal LCR sub-area with the Category P3 normal and emergengy load serving capabilities without local capacity resources. Figure 3.3-77 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 3.3-76 Vestal LCR Sub-area 2024 Annual Load Profile with Estimated Transmission Only Load Serving Capability

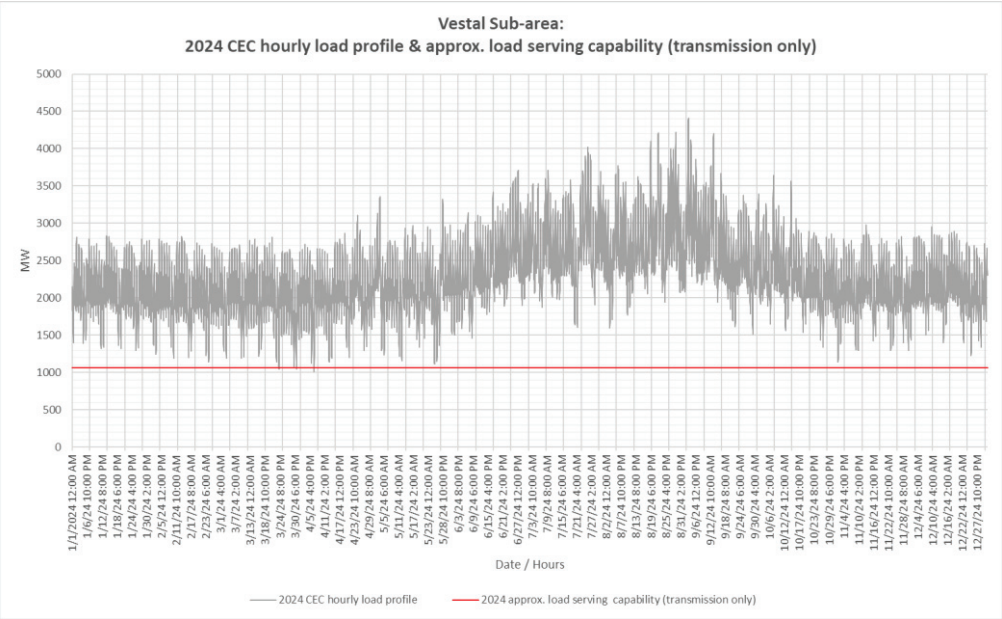
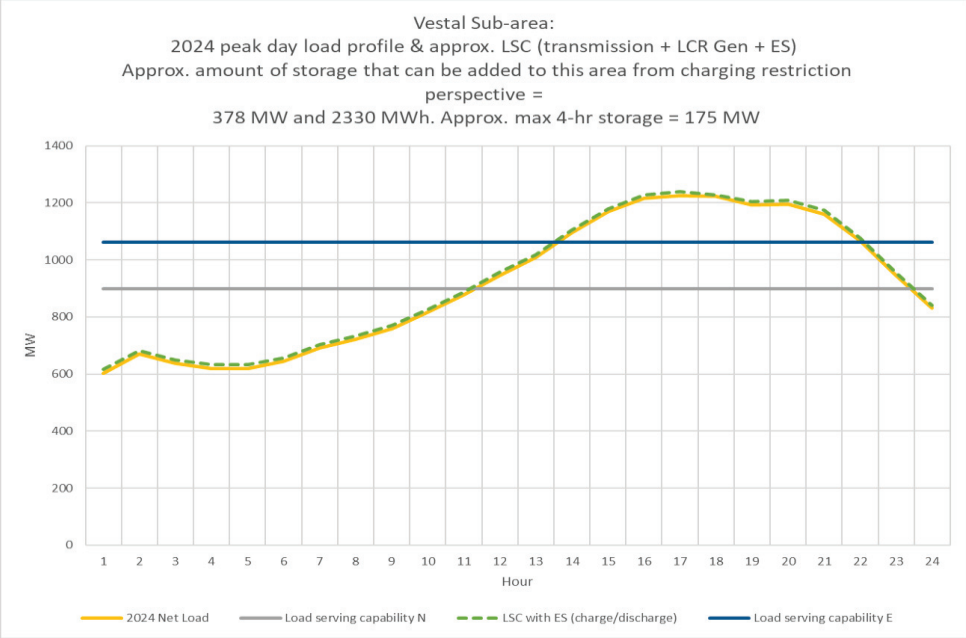


Figure 3.3-77 Vestal LCR Sub-area 2024 Load Shape and Estimated Maximum Energy Storage Capacity and Energy Based on Charging Capability Under Critical Contingency



Vestal LCR Sub-area Requirement

Table 3.3-68 identifies the sub-area LCR requirements. The LCR requirement for Category P3 contingency is 345 MW.

Table 3.3-68 Vestal LCR Sub-area Requirements

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	P3	Magunden–Vestal #1 230 kV line	Magunden–Vestal #2 230 kV line with Eastwood out of service	345

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*

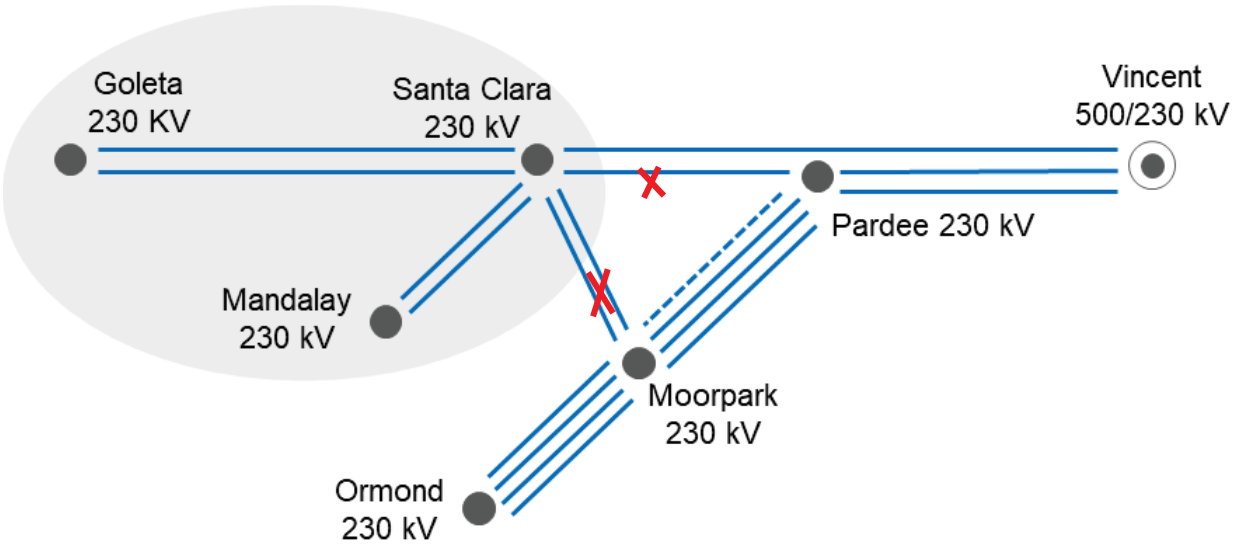
Goleta is a sub-area of the Santa Clara sub-area. LCR need in Goleta is satisfied by the need in the larger Santa Clara sub-area.

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 3.3-78 Santa Clara LCR Sub-area



Santa Clara LCR Sub-area Load and Resources

Table 3.3-69 provides the forecast load and resources in Santa Clara LCR sub-area in 2024. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-69 Santa Clara LCR Sub-area 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	775	Market/Net Seller	182	182
AAEE	7	Battery	191	191
Behind the meter DG	N/A	MUNI/QF	80	80
Net Load	**768**	Solar	0	0
Transmission Losses	4	Existing Demand Response	7	7
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**772**	**Total**	**460**	**460**

Santa Clara LCR Sub-area Hourly Profiles

Figure 3.3-79 illustrates the forecast 2024 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 3.3-80 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 3.3-79 Santa Clara LCR Sub-area 2024 Annual Load Profile with Estimated Transmission Only Load Serving Capability

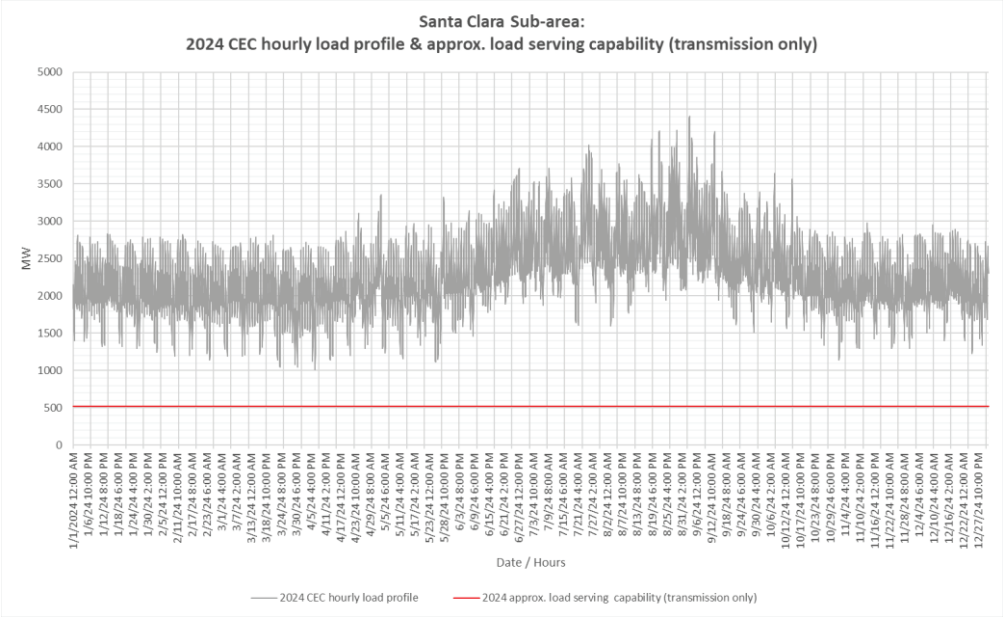
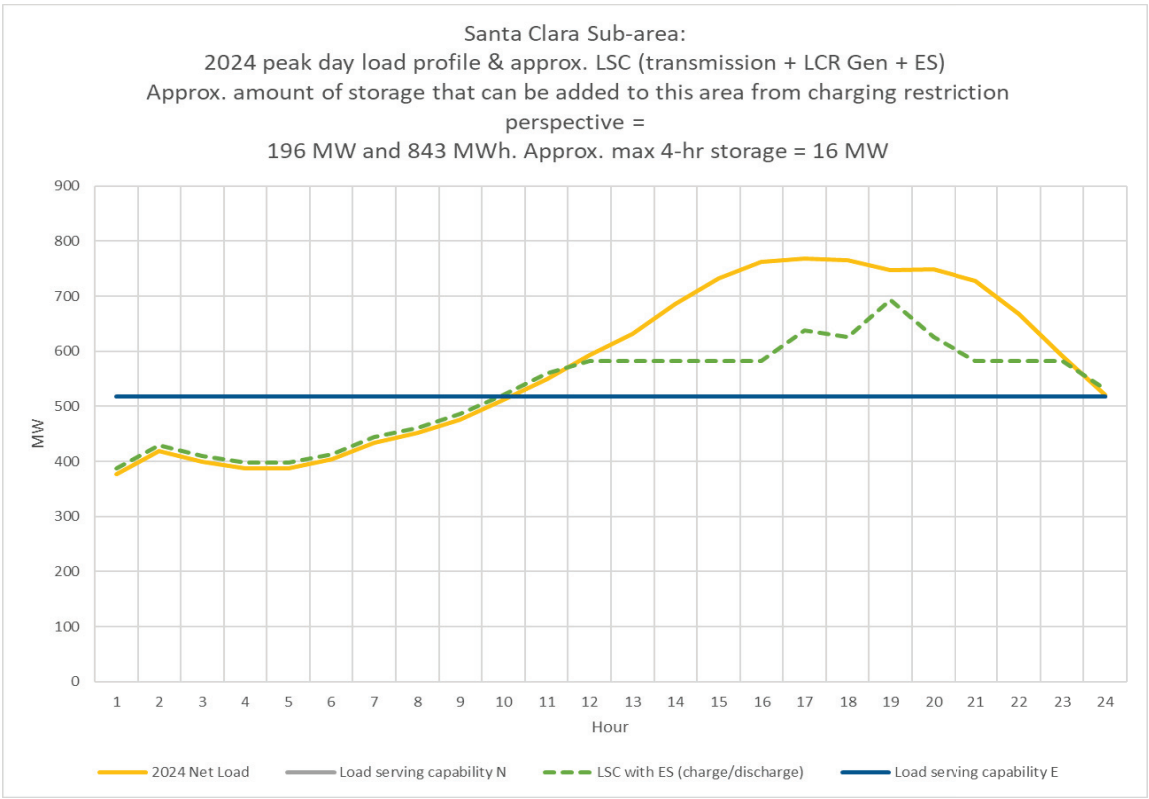


Figure 3.3-80 Santa Clara LCR Sub-area 2024 Load Shape and Estimated Maximum Energy Storage Capacity and Energy Based on Charging Capability Under Critical Contingency



Santa Clara LCR Sub-area Requirement

Table 3.3-70 identifies the sub-area requirements. The LCR requirement for Category P1 followed by P7 contingency is 199 MW.

Table 3.3-70 Santa Clara LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	First Limit	P1 + P7	Voltage collapse	Pardee - Santa Clara 230 kV followed by Moorpark - Santa Clara #1 & #2 230 kV	199

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 3.3-81 illustrates the forecast 2024 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 3.3-82 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 Big Creek/Ventura LCR area 2024 Annual Load Profile with Estimated Transmission Only Load Serving Capability

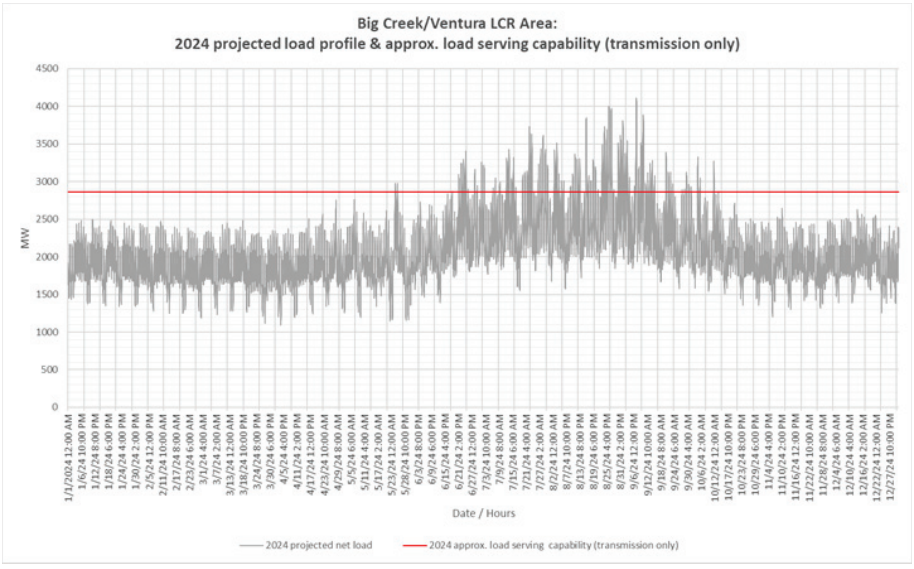
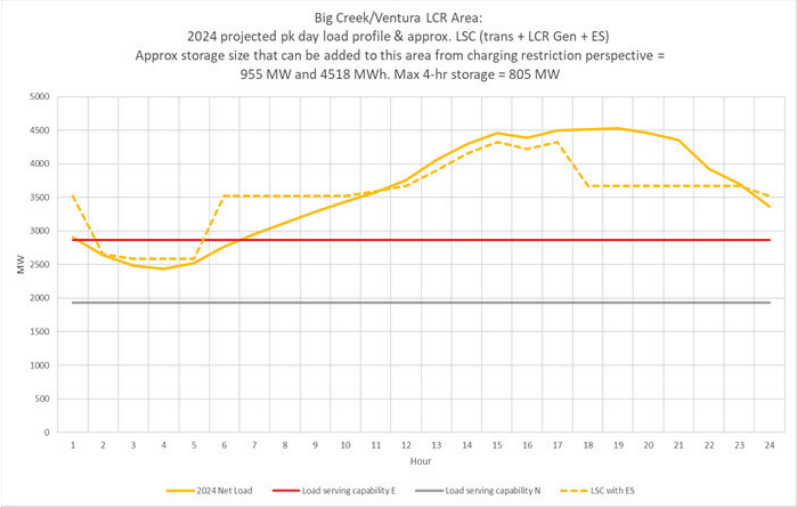


Figure 3.3-82 Big Creek/Ventura LCR area 2024 Load Shape and Estimated Maximum Energy Storage Capacity and Energy Based on Charging Capability Under Critical Contingency



Big Creek/Ventura LCR area Requirement

Table 3.3-71 identifies the area LCR requirements. The LCR requirement for Category P6 contingency is 1971 MW.

Table 3.3-71 Big Creek/Ventura LCR area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	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	1971

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 2023, the load forecast is up by 152 MW and the LCR decreased by 269 MW mainly due to the decrease in flows from Sylmar because Sylmar Bank E is out of service through 2025.

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 #1 & #2 230 kV Lines

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 # 1 230 kV Line

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

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

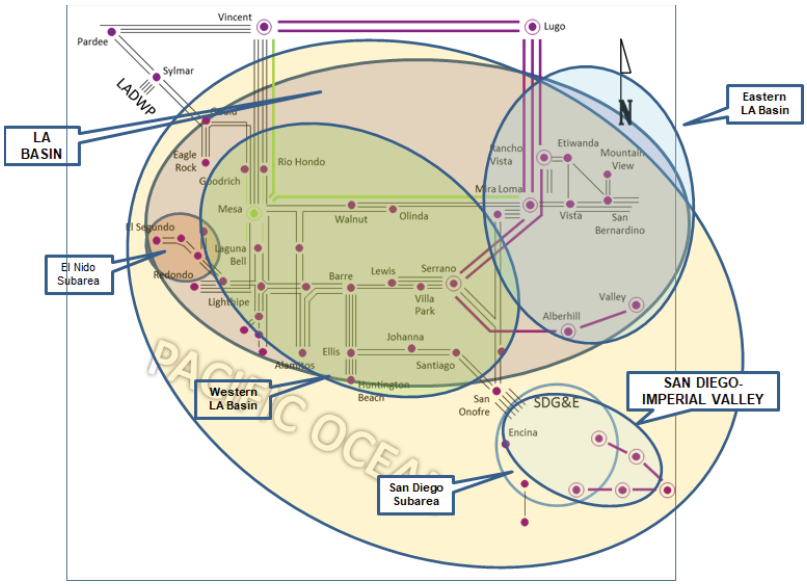
Mirage is in Coachella Valley is out

Mirage is in Ramon is out

Mirage is in Julian Hinds is out

LA Basin LCR Area Diagram

Figure 3.3-83 LA Basin LCR Area



LA Basin LCR Area Load and Resources

Table 3.3-74 provides the forecast load and resources in the LA Basin LCR Area in 2024. 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 2024 the estimated time of local area peak is 5:00 PM (PDT) based on the CEC hourly forecast for the 2022-2035 California Energy Demand Update Forecast.

At the local area peak time the estimated, ISO metered, solar output is 11%.

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

Table 3.3-72 LA Basin LCR Area 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	19943	Market/Net Seller/Wind	5783	5783
AAEE & AAFS	-165	Battery	624	624
Behind the meter DG	-431	Muni/QF	1179	1179
Net Load	**19347**	Local Capacity Preferred Resources (BTM BESS, EE, DR, PV)	175	175
Transmission Losses	290	Existing Demand Response	582	582
Pumps	0	Solar	10	10
Load + Losses + Pumps	**19637**	**Total**	**8353**	**8353**

Approved new transmission and resource projects modeled:

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

West of Devers 230 kV Upgrades

Mesa – Laguna Bell 230 kV Line Reconductoring

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

Local capacity area preferred resources in western LA Basin (BTM BESS, EE, DR, PV)

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 3.3-83 above.

El Nido LCR Sub-area Load and Resources

Table 3.3-73 provides the forecast load and resources in El Nido LCR sub-area in 2024. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-73 El Nido LCR Sub-area 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	962	Market/Net Seller	554	554
AAEE & AAFS	-9	Battery	0	0
Behind the meter DG	-31	MUNI/QF	0	0
Net Load	**922**	LTPP Preferred Resources	10	10
Transmission Losses	5	Existing Demand Response	28	28
Pumps	0	Solar	0	0
Load + Losses + Pumps	**927**	**Total**	**592**	**592**

El Nido LCR Sub-area Hourly Profiles

Figure 3.3-84 illustrates the forecast 2024 annual load profile in the El Nido LCR sub-area with the Category P7 normal and emergengy load serving capabilities without local gas resources. Figure 3.3-85 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 3.3-84 El Nido LCR Sub-area 2024 Annual Load Profile with Estimated Transmission Load Serving Capability Only

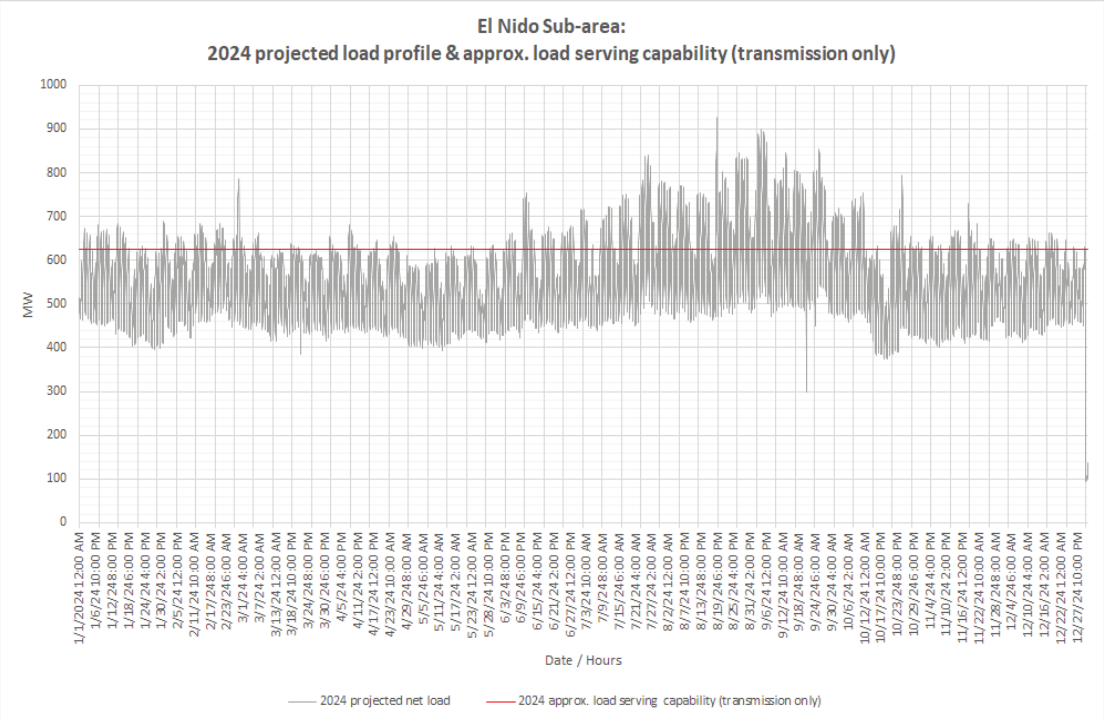
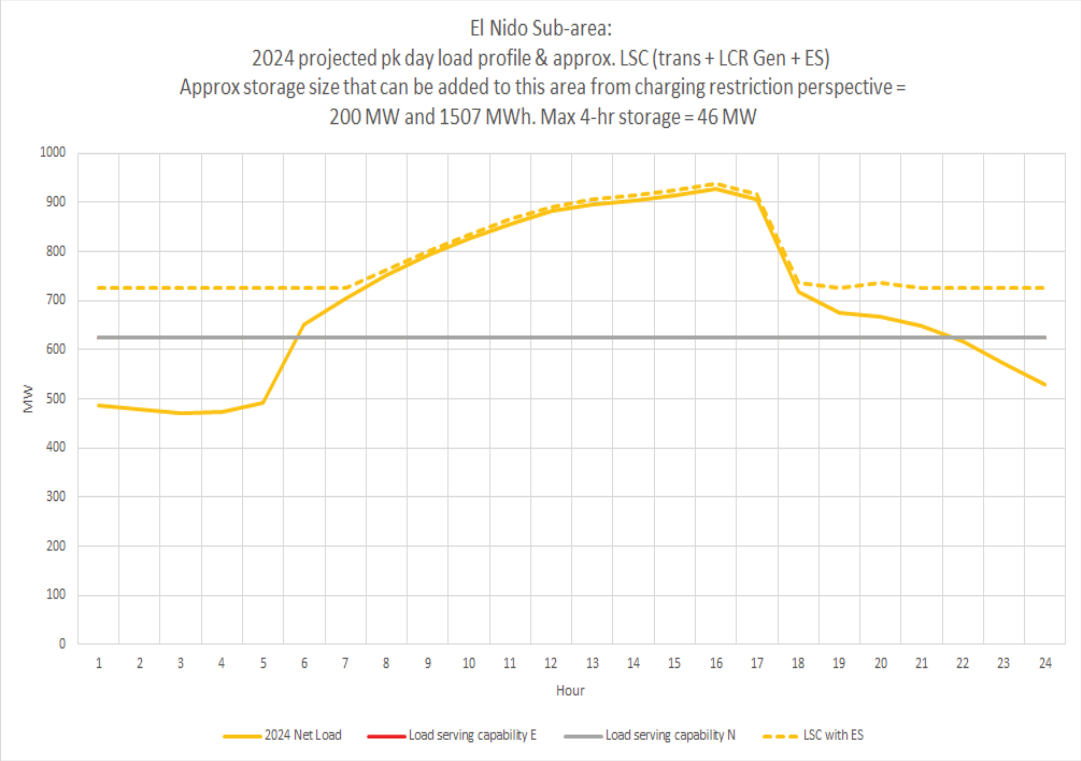


Figure 3.3-85 El Nido LCR Sub-area 2024 Load Shape and Estimated Maximum Energy Storage Capacity and Energy Based on Charging Capability Under Critical Contingency



El Nido LCR Sub-area Requirement

Table 3.3-74 identifies the sub-area requirements. The LCR requirement for Category P7 contingency is 302 MW. The LCR need increases compared to the 2023 requirements due to higher demand forecast for the sub-area.

Table 3.3-74 El Nido LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	First Limit	P7	La Fresa - La Cienega 230 kV	La Fresa – El Nido #3 & 4 230 kV lines	302

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 3.3-83 above.

Western LA Basin LCR Sub-area Load and Resources

Table 3.3-75 provides the forecast load and resources in Western LA Basin LCR sub-area in 2024. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-75 Western LA Basin Sub-area 2024 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	11985	Market/Net Seller	3345	3345
AAEE & AAFS	-101	Battery	177	177
Behind the meter DG	-259	MUNI/QF	598	598
Net Load	**11625**	LTPP Preferred Resources	151	151
Transmission Losses	174	Existing Demand Response	354	354
Pumps	0	Solar	6	6
Load + Losses + Pumps	**11799**	**Total**	**4631**	**4631**

Western LA Basin LCR Sub-area Hourly Profiles

Figure 3.3-86 illustrates the forecast 2024 annual load profile in the Western LA Basin 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 Western LA Basin LCR Sub-area 2024 Annual Load Profile with Estimated Transmission Load Serving Capability Only

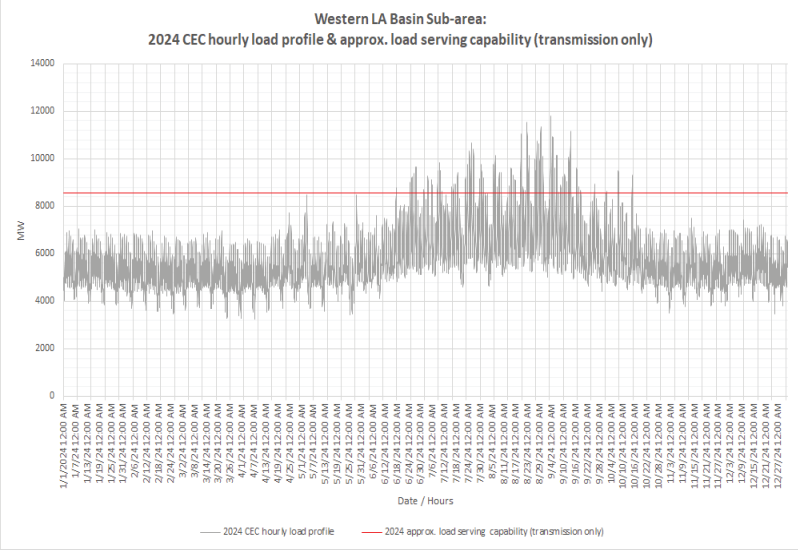
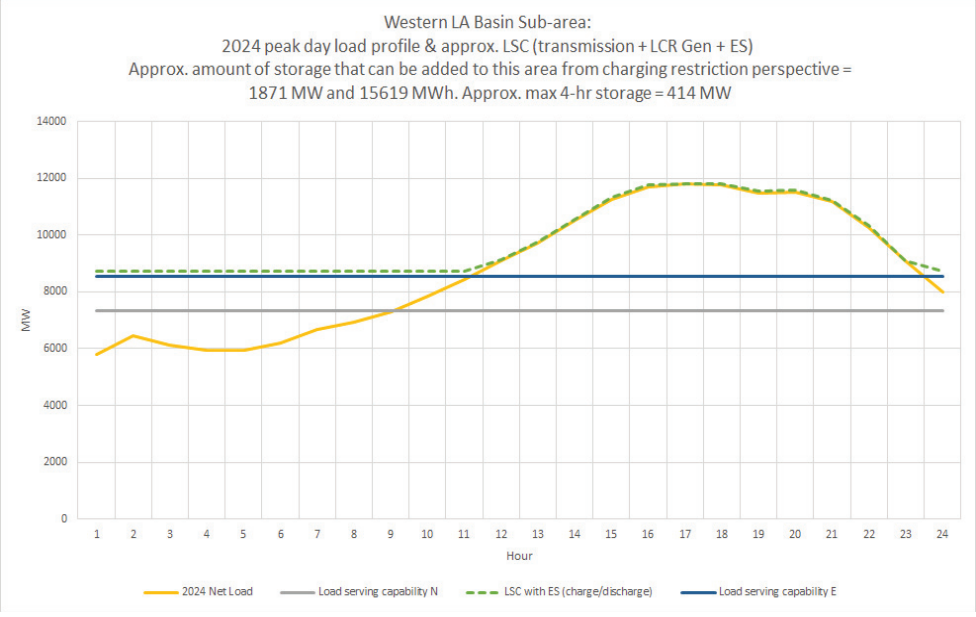


Figure 3.3-87 Western LA Basin LCR Sub-area 2024 Load Shape and Estimated Maximum Energy Storage Capacity and Energy Based on Charging Capability Under Critical Contingency



Western LA Basin LCR Sub-area Requirement

Table 3.3-76 identifies the Western LA Basin 2024 LCR sub-area requirements. The 2024 LCR need is lower than the 2023 LCR need due to the following reasons:

- The transmission constraint is different from the previous year's assessment;
- New transmission upgrade is implemented (i.e., Laguna Bell – Mesa 230kV #1 line rating increase project);
- Dispatch of energy storage resources that are either hybrid or co-located in SCE renewable resource areas outside of the LCR area to meet overall system demand.

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	First Limit	P6	Serrano 500/230kV transformer bank #2	Serrano 500/230kV transformer banks #3, following by #1 (or vice versa)	3250
Sensitivity Study Results for the Laguna Bell – Mesa #1 230kV Line Rating Increase Project Delay Scenario					
2024	First Limit	P6	Laguna Bell – Mesa #1 230kV line	Mesa – Redondo 230 kV line, followed by Mesa – Lighthipe 230 kV line, or vice versa	5054

The LCR need for the Western LA Basin sub-area is higher by an additional 1795 MW if the planned Laguna Bell – Mesa 230 kV #1 line rating increase project is delayed beyond June 1, 2024.

Effectiveness factors:

See Attachment B - Table titled LA Basin.

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. The LCT study identified that the West of Devers sub-area need is satisfied by the need in the larger Eastern LA Basin sub-area.

3.3.9.5 *Valley-Devers Sub-area*

Valley-Devers is a sub-area of the LA Basin LCR area. The LCT study identified that the Valley-Devers sub-area need is satisfied by the need in the larger Eastern LA Basin sub-area.

3.3.9.6 *Valley Sub-area*

Valley is a sub-area of the LA Basin LCR area. The LCT study identified that the Valley sub-area need is satisfied by the need in the larger Eastern LA Basin sub-area.

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 3.3-83 above.

Eastern LA Basin LCR Sub-area Load and Resources

Table 3.3-77 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 3.3-77 Eastern LA Basin Sub-area 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	7958	Market/Net Seller/Wind	2438	2438
AAEE & AAFS	-64	Battery	447	447
Behind the meter DG	-172	MUNI/QF	581	581
Net Load	**7722**	LTPP Preferred Resources	0	0
Transmission Losses	116	Existing Demand Response	228	228
Pumps	0	Solar	4	4

Load + Losses + Pumps	7838	Total	3698	3698

Eastern LA Basin LCR Sub-area Hourly Profiles

Figure 3.3-88 illustrates the forecast 2024 annual load profile in the Eastern 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 Eastern LA Basin LCR Sub-area 2024 Annual Load Profile with Estimated Transmission Load Serving Capability Only

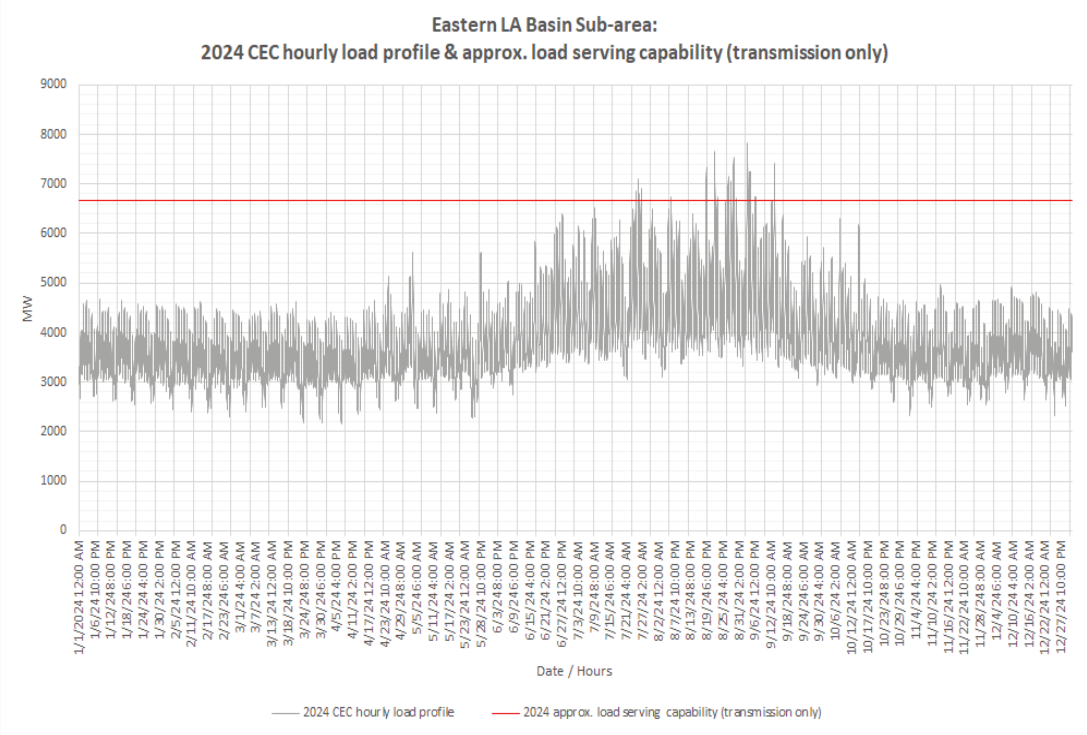
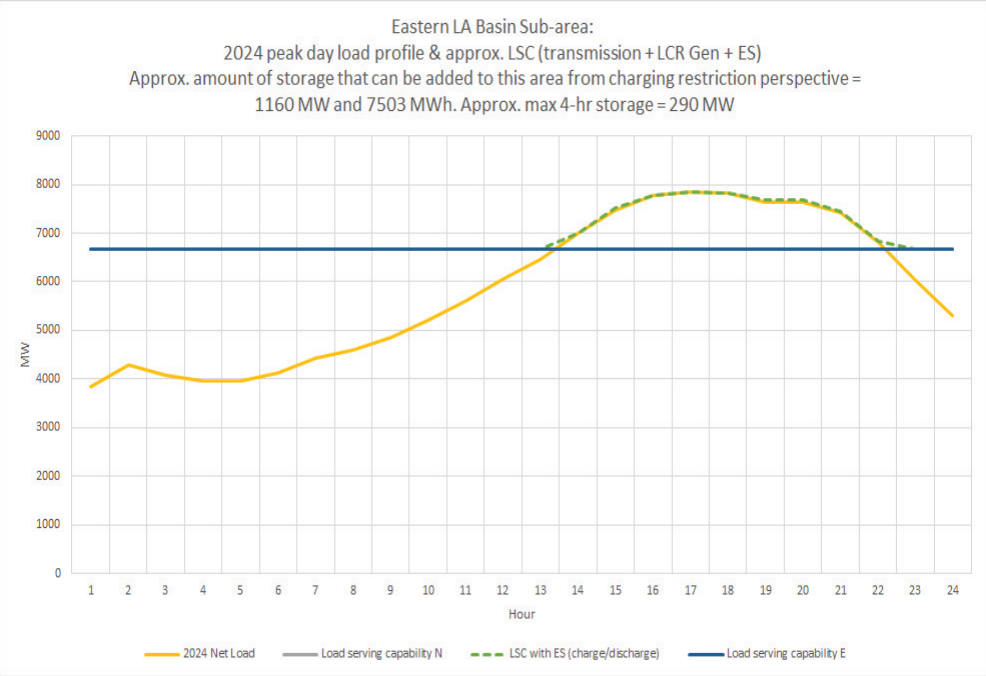


Figure 3.3-89 Eastern LA Basin LCR Sub-area 2024 Load Shape and Estimated Maximum Energy Storage Capacity and Energy Based on Charging Capability Under Critical Contingency



Eastern LA Basin LCR Sub-area Requirement

Table 3.3-78 identifies the sub-area LCR requirements. The LCR need for the Eastern LA Basin is lower than the 2023 LCR need due to the following:

- Different transmission constraint from the 2023 study results;
- New bulk transmission addition (i.e., Delaney – Colorado River 500kV line) is planned to be in-service;
- Dispatch of energy storage resources that are either hybrid or co-located in SCE renewable resource areas outside of the LCR area to meet overall system demand.

Table 3.3-78 Eastern LA Basin LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	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)	1163
Sensitivity Study Results for the TenWest Link project implementation Delay Scenario					
2024	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)	1337

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

Figure 3.3-90 illustrates the forecast 2024 annual load profile in the 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 LA Basin LCR Area 2024 Annual Load Profile with Estimated Transmission Load Serving Capability Only

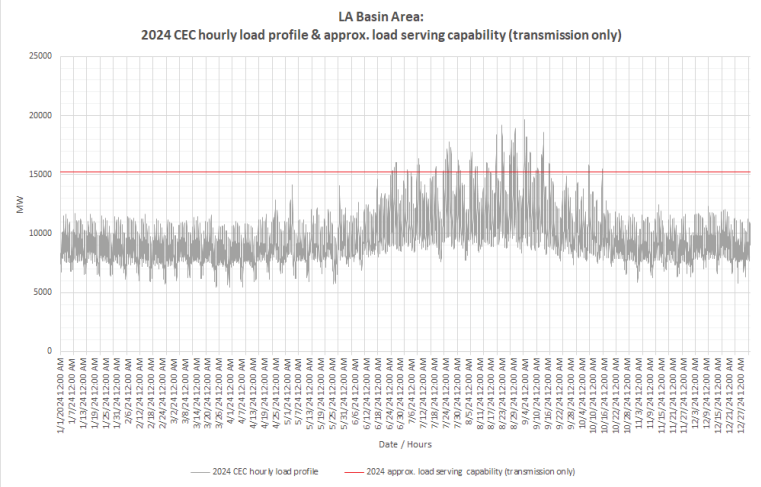
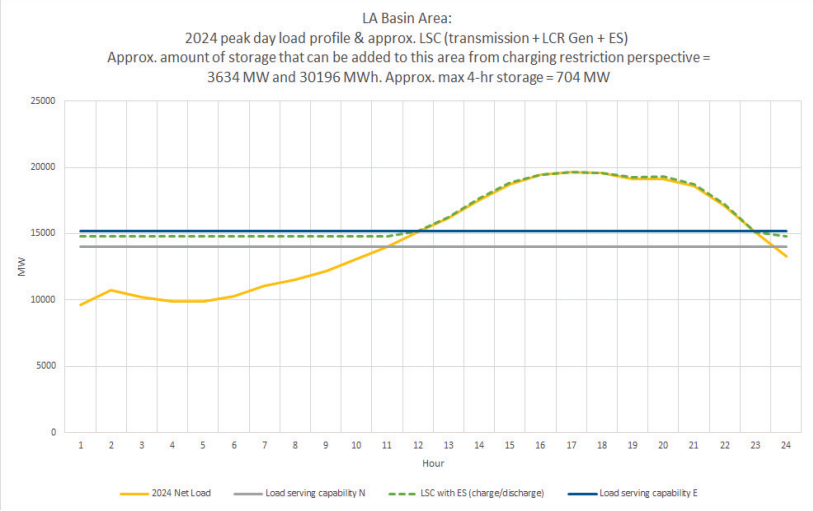


Figure 3.3-91 LA Basin LCR Area 2024 Load Shape and Estimated Maximum Energy Storage Capacity and Energy Based on Charging Capability Under Critical Contingency



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. The estimated maximum amount of storage for the LCR area is the amount listed in the last row in the table.

Table 3.3-79 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	200	1507	46
Western LA Basin sub-area	1871	15619	414
Eastern LA Basin sub-area	1160	7503	290
Overall LA Basin area	3634	30196	704

LA Basin LCR area Requirement

Table 3.3-80 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 3.3-80 LA Basin LCR area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	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	4413
Sensitivity Study Results for the TenWest Link project implementation Delay Scenario					
2024	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	4586
Sensitivity Study Results for the Laguna Bell – Mesa #1 230kV Line Rating Increase Project Delay Scenario					
2024	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	6208
Sensitivity Study Results for the TenWest Link project and Laguna Bell – Mesa #1 230kV Line Rating Increase Projects Delay Scenario					

2024	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	6381

Effectiveness factors:

See Attachment B - Table titled LA Basin.

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 2023, the demand modeled for the LA Basin is 100 MW higher and the LCR needs have decreased by 3116 MW. The decrease in the LCR need for the overall LA Basin is driven by: (a) different identified transmission constraint; (b) addition of new transmission additions to the LA Basin; (c) as well as dispatch of energy storage that is either hybrid or co-located in SCE renewable resource areas to meet system demand.

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 #1 and #2 Lines

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

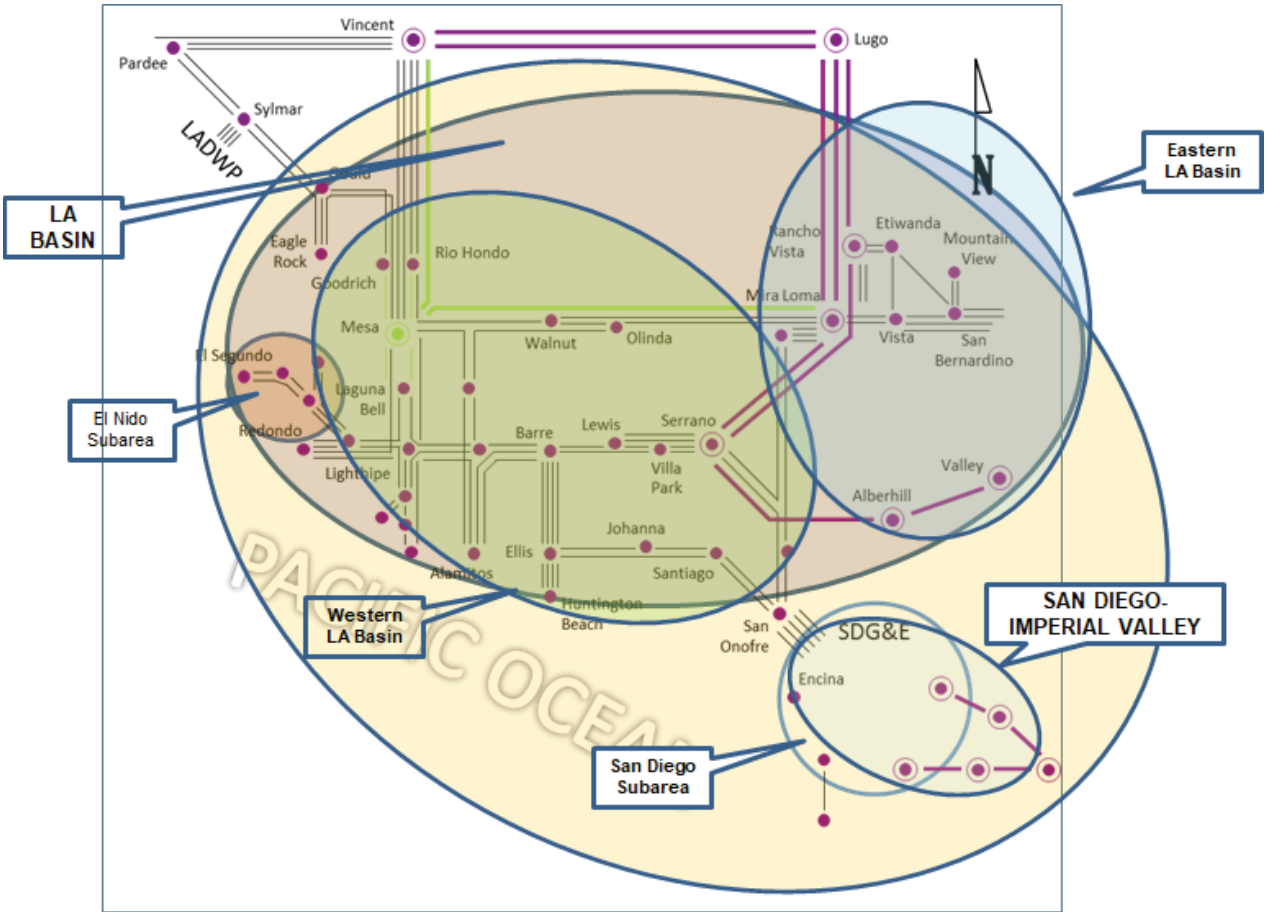
San Onofre is out Capistrano is in

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 3.3-81 provides the forecast load and resources in the San Diego-Imperial Valley LCR Area in 2024. The list of generators within the LCR area are provided in Attachment A.

In the year 2024 the estimated time of local area peak is 8:00 PM (PDT).

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 3.3-81 San Diego-Imperial Valley LCR Area 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	4855	Market/Net Seller/Wind	3753	3753
AAEE & AAFS	-52	Battery/Hybrid	1425	1425
Behind the meter DG	0	MUNI/QF	2	2
Net Load	**4803**	LTPP Preferred Resources	0	0
Transmission Losses	105	Existing Demand Response	26	26
Pumps	0	Solar	182	0
Load + Losses + Pumps	**4908**	**Total**	**5388**	**5206**

Approved transmission projects modeled:

1. TL644, South Bay-Sweetwater: Reconductor
2. Artesian 230 kV expansion with 69 kV upgrade
3. Second San Marcos–Escondido 69 kV line
4. TL674A Loop-in (Del Mar-North City West) & Removal of TL666D (Del Mar-Del Mar Tap)
5. Reconductor TL692: Japanese Mesa - Las Pulgas
6. Rose Canyon-La Jolla 69 kV T/L upgrade
7. S-Line (aka Imperial Valley – El Centro 230kV) upgrade
8. TL695B Japanese Mesa - Talega Tap Reconductor
9. Reconductor TL 605 Silvergate - Urban

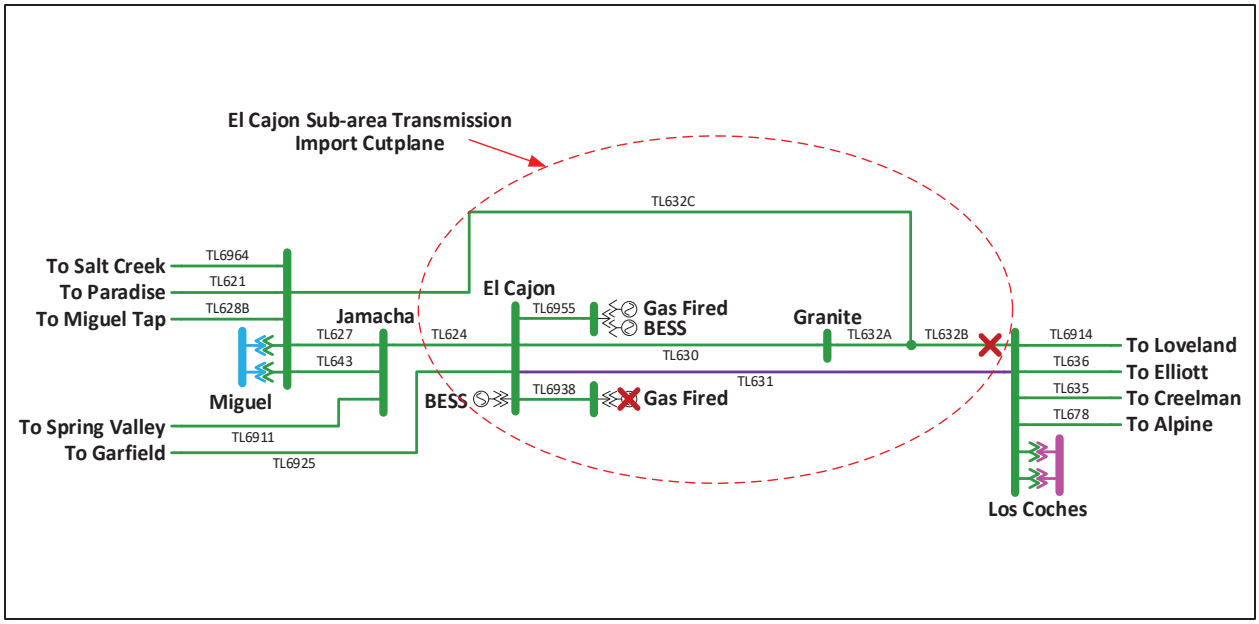
Also the 500kV line series capacitors on the on the Southwest Powerlink and Sunrise Powerlink lines are bypassed in the study case.

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 3.3-82 provides the forecast load and resources in El Cajon LCR sub-area in 2024. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-82 El Cajon LCR Sub-area 2024 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	180	Market/Net Seller	94	94
AAEE	-2	Battery/Hybrid	7	7
Behind the meter DG	0	MUNI/QF	0	0
Net Load	**178**	LTPP Preferred Resources	0	0
Transmission Losses	0	Existing 20-minute Demand Response	0	0
Pumps	0	Solar	0	0
Load + Losses + Pumps	**178**	**Total**	**101**	**101**

El Cajon LCR Sub-area Hourly Profiles

Figure 3.3-94 illustrates the forecast 2024 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 2024 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 2024 Annual Load Forecast Profiles

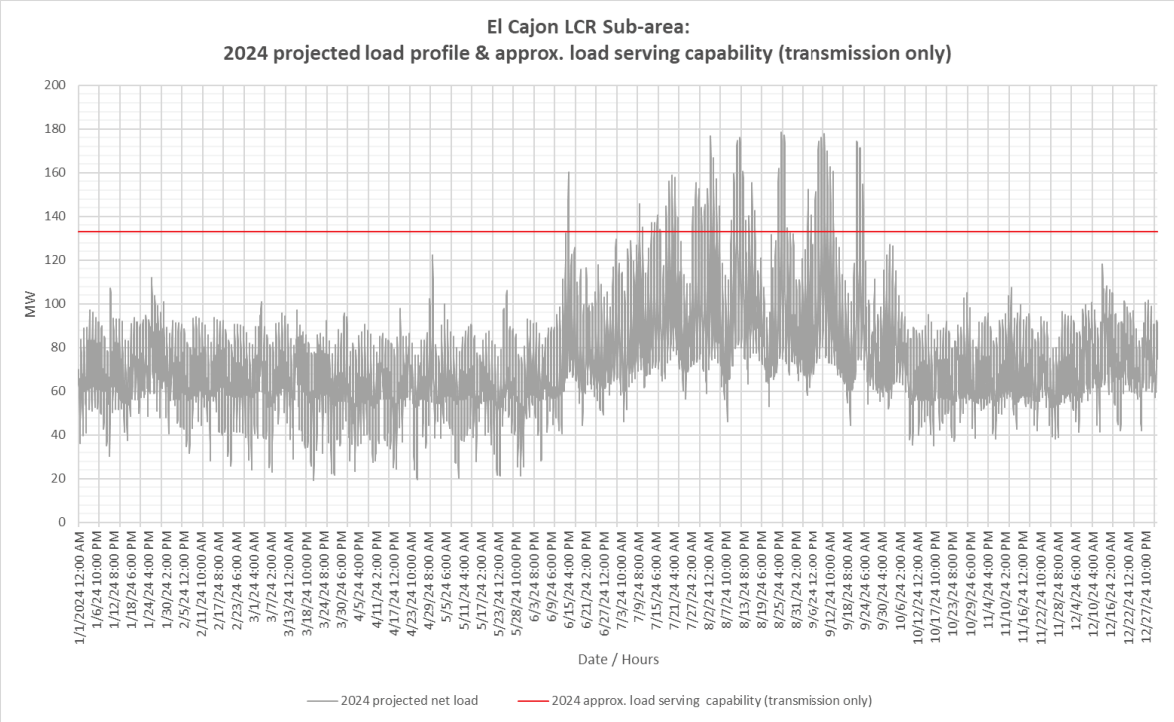
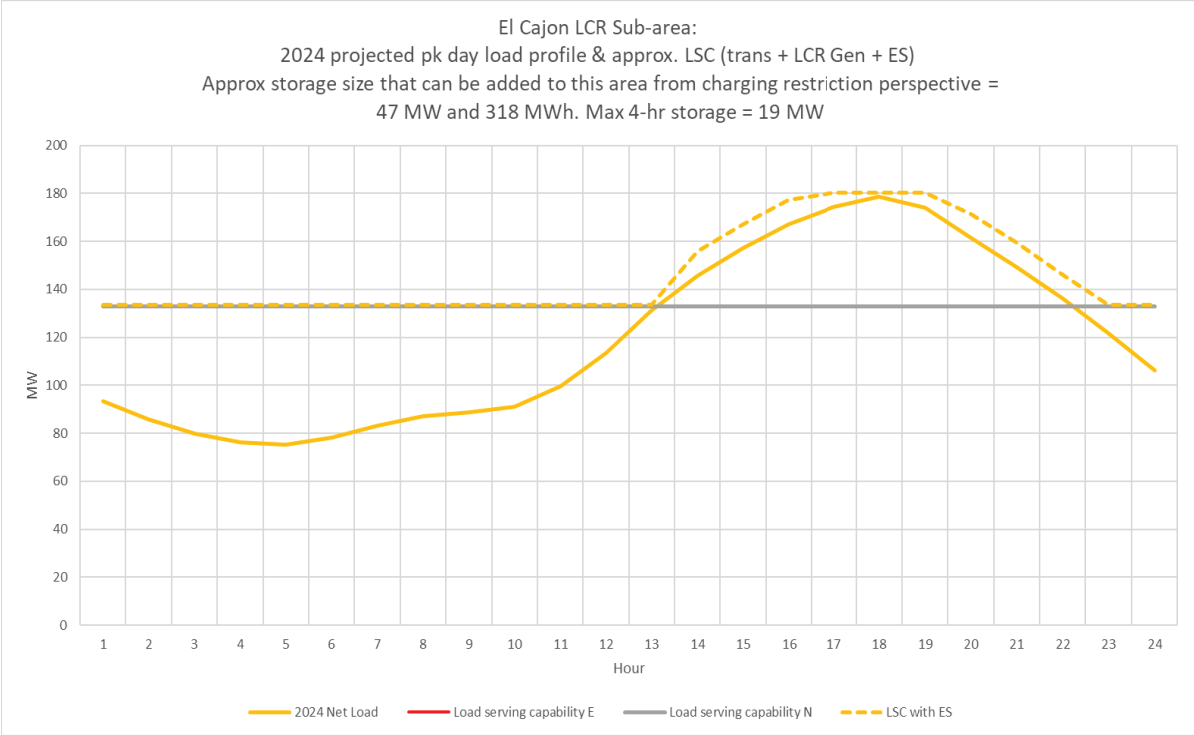


Figure 3.3-95 El Cajon LCR Sub-area 2024 Peak Day Forecast Profiles



El Cajon LCR Sub-area Requirement

Table 3.3-83 identifies the sub-area 2024 LCR requirements. The Category P3 (Single Contingency) LCR requirement is 96 MW.

Table 3.3-83 El Cajon LCR Sub-area Requirements

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	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	96

Effectiveness factors:

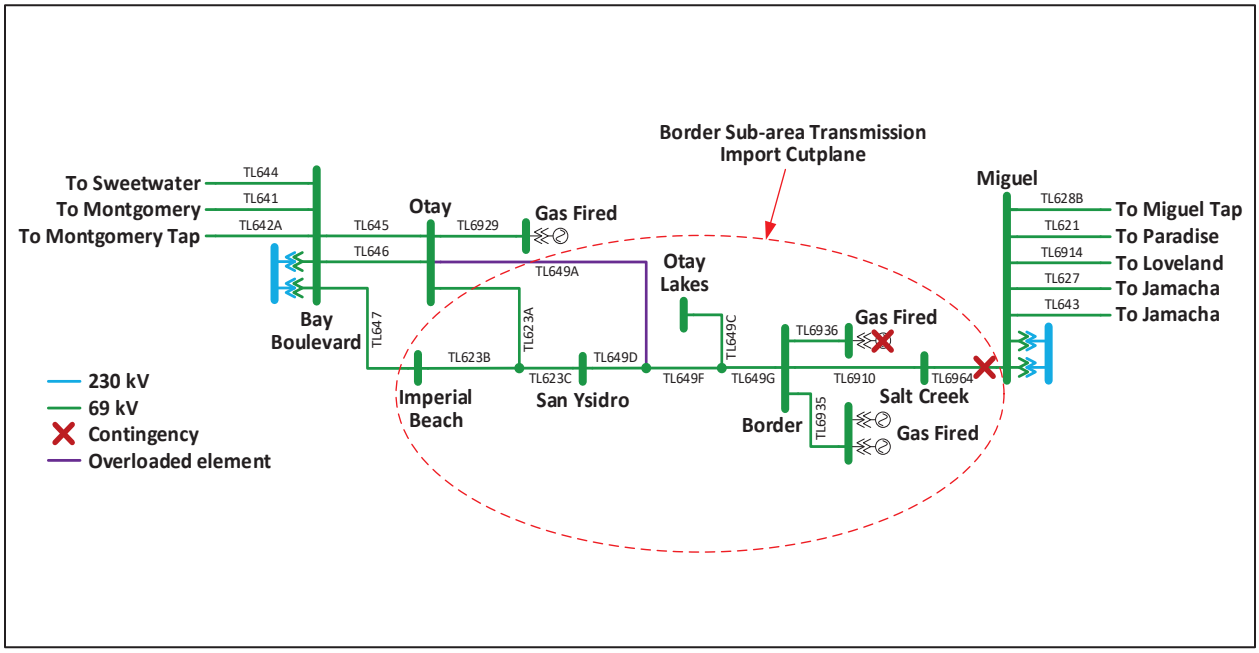
All units within the El Cajon sub-area have the same effectiveness factor.

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 3.3-84 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 3.3-84 Border Sub-area Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	153	Market/Net Seller	149	149
AAEE	-2	Battery	0	0
Behind the meter DG	0	MUNI/QF	0	0
Net Load	**151**	LTPP Preferred Resources	0	0
Transmission Losses	2	Existing 20-minute Demand Response	0	0
Pumps	0	Solar	0	0
Load + Losses + Pumps	**153**	**Total**	**149**	**149**

Border LCR Sub-area Hourly Profiles

Figure 3.3-97 illustrates the 2024 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 2024 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 Borden LCR Sub-area 2024 Annual Day Forecast Profiles

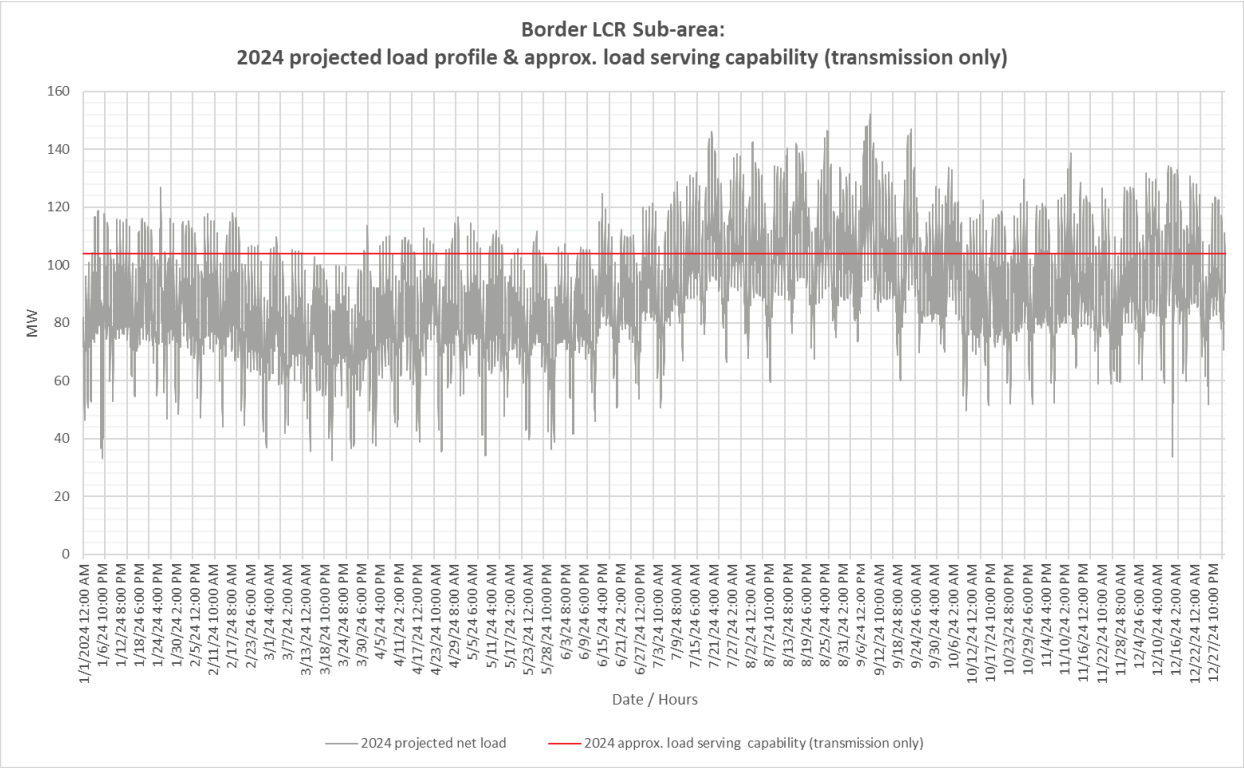
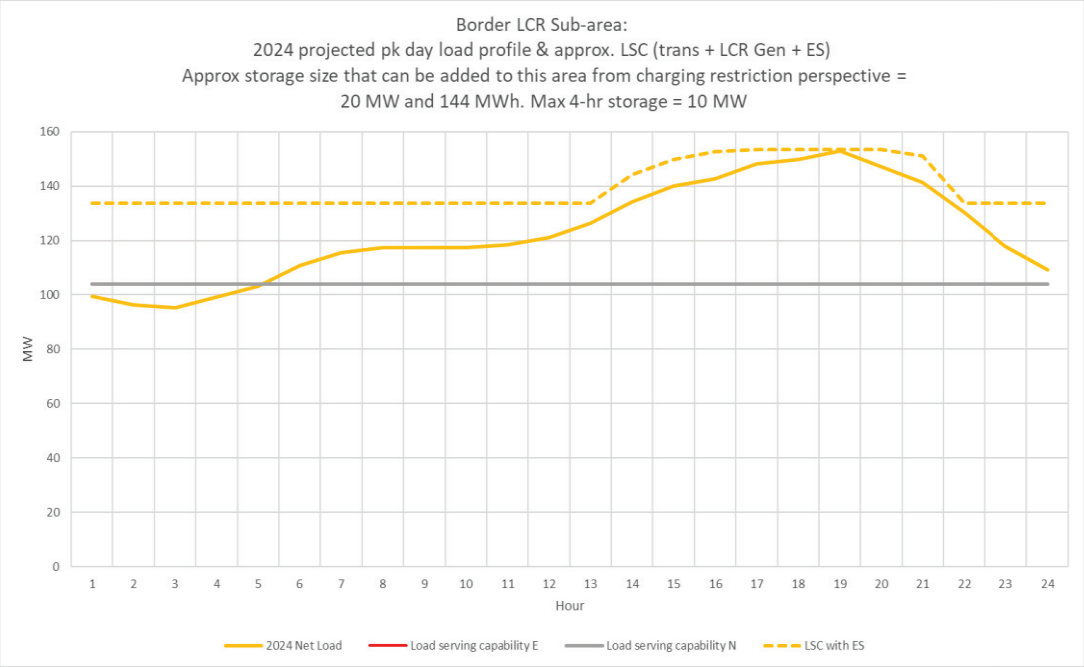


Figure 3.3-98 Border LCR Sub-area 2024 Peak Day Forecast Profiles



Border LCR sub-area requirement

Table 3.3-85 identifies the sub-area requirements. The LCR requirement for Category P3 contingency is 82 MW.

Table 3.3-85 Border LCR Sub-area Requirements

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	P3	Otay – Otay Lakes Tap 69 kV (TL649A)	Border unit out of service followed by the outage of Miguel-Salt Creek 69 kV (TL6964)	82

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 3.3-86 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 3.3-86 San Diego Sub-area 2024 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	4855	Market/Net Seller/Wind	2735	2735
AAEE & AAFS	-52	Battery/Hybrid	1211	1211
Behind the meter DG	0	MUNI/QF	2	2
Net Load	**4803**	LTPP Preferred Resources	0	0
Transmission Losses	105	Existing Demand Response	26	26
Pumps	0	Solar	7	0
Load + Losses + Pumps	**4908**	**Total**	**3981**	**3974**

San Diego LCR Sub-area Hourly Profiles

Figure 3.3-99 illustrates the forecast 2024 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 2024 Annual Load Profile with Estimated Transmission Load Serving Capability Only

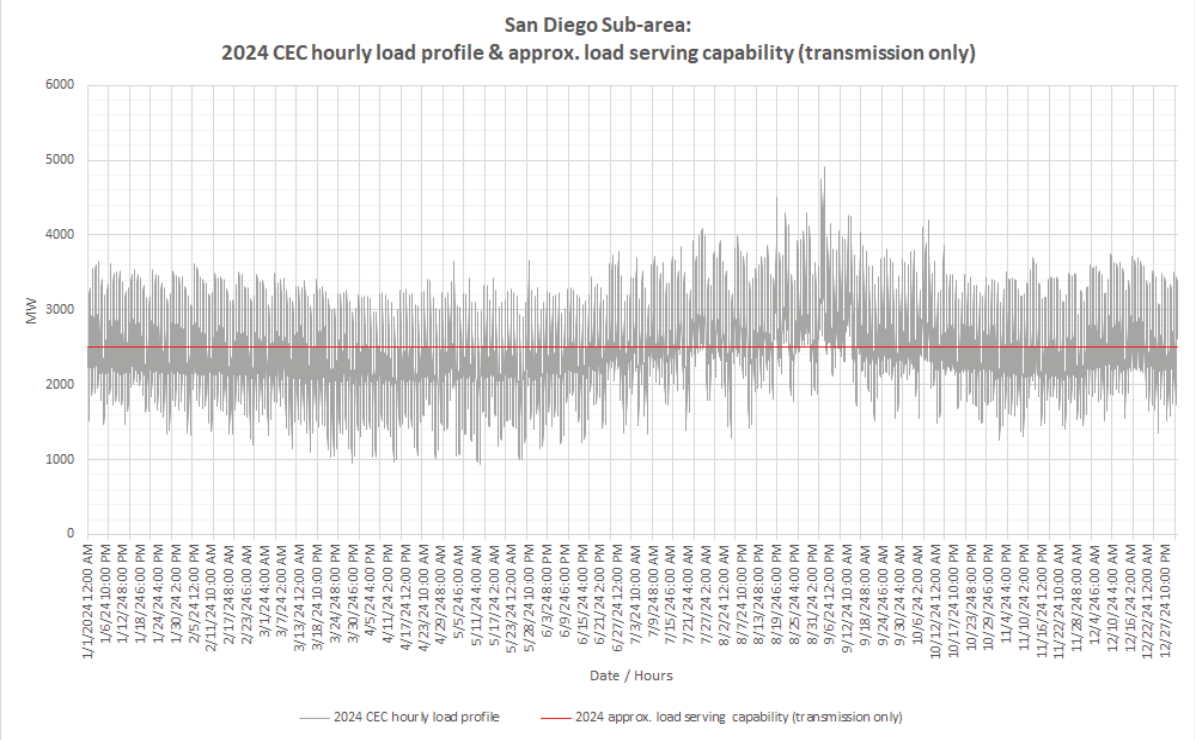
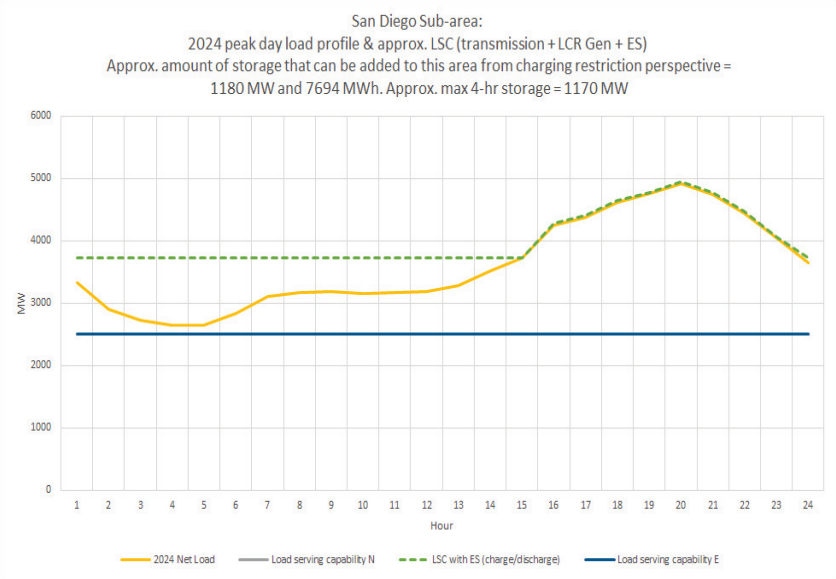


Figure 3.3-100 San Diego LCR Sub-area 2024 Load Shape and Estimated Maximum Energy Storage Capacity and Energy Based on Charging Capability Under Critical Contingency



San Diego LCR Sub-area Requirement

Table 3.3-87 identifies the sub-area LCR requirements. The Category P6 contingency LCR requirement is 2834 MW. The LCR need is higher due to higher demand forecast from the CEC for the San Diego area.

Table 3.3-87 San Diego Sub-area LCR Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	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	2834

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. The Imperial Valley area has extra generating resources.

Figure 3.3-101 illustrates the forecast 2024 annual load profile in the San Diego-Imperial LCR area with the transmission load serving capability only. Figure 3.3-102 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. Table 3.3-88 provides a summary of the estimated amount of energy storage that can be accommodated from the charging limitation perspective for the subareas and the overall LCR area.

Figure 3.3-101 San Diego-Imperial Valley LCR Area 2024 Annual Load Profile with Estimated Transmission Load Serving Capability Only

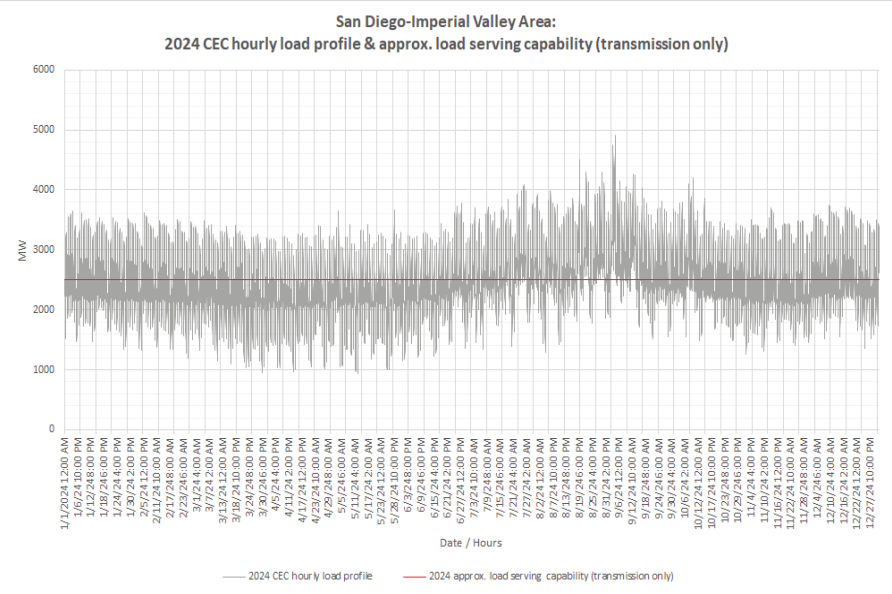
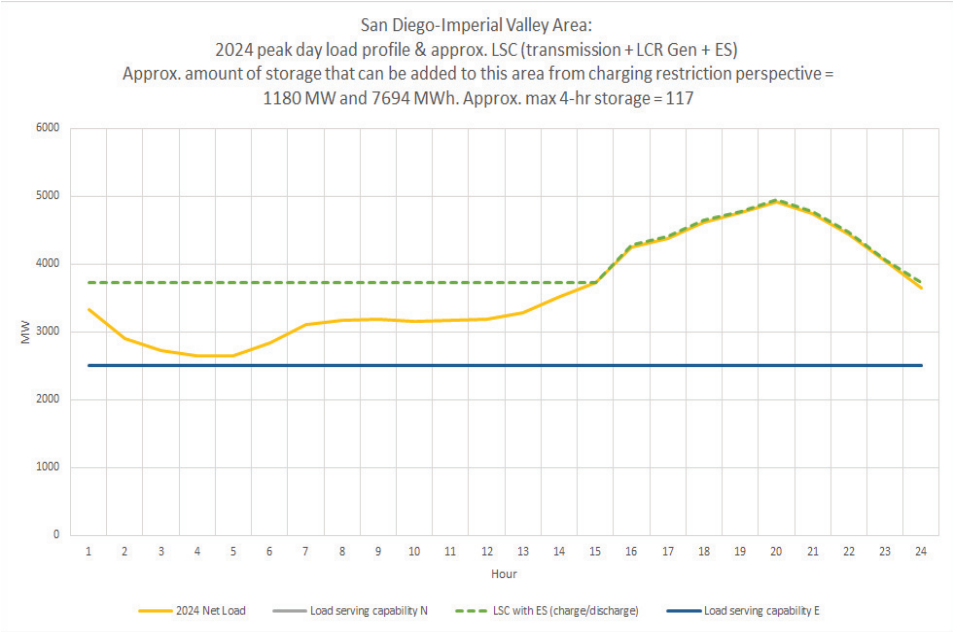


Figure 3.3-102 San Diego-Imperial Valley LCR Area 2024 Load Shape and Estimated Maximum Energy Storage Capacity and Energy Based on Charging Capability Under Critical Contingency



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. The Imperial Valley area (of the overall San Deigo-Imperial Valley) has generating resources only.

Table 3.3-88 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	47	318	19
Border sub-area	20	144	10
San Diego sub-area	1180	7694	1170
Overall San Diego-Imperial Valley Area	1180	7694	1170

San Diego-Imperial Valley LCR area Requirement

Table 3.3-89 identifies the area LCR requirements. The LCR requirement for Category P3 contingency is 2834 MW.

Table 3.3-89 San Diego-Imperial Valley LCR area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2024	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	2834

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 2023 LCT Study results, the demand forecast is higher by 140 MW. The overall LCR needs for the San Diego-Imperial Valley decreases by 498 MW due to the following:

a) Implementation of the S-line upgrade project;
b) Addition of the transmission upgrades in IID (i.e., addition of El Centro 230/92 kV Bank #2); and
c) Utilization of APS and WAPA RAS/protection schemes for the Yucca and Gila 161/69kV transformers under contingency condition.

3.3.11 Valley Electric Area

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

No generation exists in this area

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 2024 to 2028 is estimated at 2.25 MW/year.

There is no new transmission project that directly affects the LCR change from 2024 to 2028, although the Maple Creek reactive support is now rescoped to Willow Creek 60 kV substation.

There is no new resource that directly affects the LCR change from 2024 to 2028.

There is no projected change in resource contractual status that directly affects the LCR change from 2024 to 2028.

There is no resource projected to retire that directly affects the LCR change from 2024 to 2028.

The total increase for each intermediate year depends only on the load forecast and the study results for year 2024 and it is estimated at about 3.75 MW/year for Category P6.

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2025	First Limit	P6	Humboldt-Trinity 115 kV	Cottonwood-Bridgeville 115 kV & Humboldt - Humboldt Bay 115 kV	137
2026	First Limit	P6	Humboldt-Trinity 115 kV	Cottonwood-Bridgeville 115 kV & Humboldt - Humboldt Bay 115 kV	141

3.4.19.2 *North Coast/ North Bay Area*

The net peak load growth from 2024 to 2028 is estimated at about 19.25 MW/year.

There are 4 new transmission project that directly affects the LCR change from 2024 to 2028. The most important tramsmission project with LCR reduction will be in-service t the end of 2025 and will influence the LCR results starting in 2026.

There is no new resource that directly affects the LCR change from 2024 to 2028.

There is no projected change in resource contractual status that directly affects the LCR change from 2024 to 2028.

There is no resource projected to retire that directly affects the LCR change from 2024 to 2028.

The total increase for year 2025 depends on load growth and the study results for year 2024, whereas the year 2026 depends on load growth and the study results for year 2028. However in year 2025 the area will be deficient since there are only 989 MW of NQC available.

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2025	First Limit	P3	Tulucay - Vaca Dixon 230 kV Line	Vaca Dixon - Lakeville 230 kV with DEC out of service	989
2026	First Limit	P3	Eagle Rock-Fulton-Silverado 115 kV line	Vaca Dixon - Lakeville 230 kV with DEC out of service	853

3.4.19.3 *Sierra Area*

The net peak load growth from 2024 to 2028 is estimated at 21.25 MW/year.

There are 2 new transmission projects that directly affects the LCR change from 2024 to 2028.

- East Marysville 115/60 kV (Nov 2027)
- Rio Oso Area 230 kV Voltage Support (Oct 2024)

Both projects inpact year 2025 and 2026, however the impact only relates to the deficiency numbers for certain sub-areas and has no effect on the overall Sierra requirement.

There is no new resource that directly affects the LCR change from 2024 to 2028.

There is no projected change in resource contractual status that directly affects the LCR change from 2024 to 2028.

There is no resource projected to retire that directly affects the LCR change from 2024 to 2028.

The total requirement for both year 2025 and 2026 depend on the result for year 2024 only plus an estimated increase of 50.75 MW/year for Category P6.

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2025	First limit	P6	Table Mountain – Pease 60 kV	Table Mountain – Palermo 230 kV Table Mountain – Rio Oso 230 kV	1263
2026	First limit	P6	Table Mountain – Pease 60 kV	Table Mountain – Palermo 230 kV Table Mountain – Rio Oso 230 kV	1314

3.4.19.4 *Stockton Area*

The net peak load growth from 2024 to 2028 is estimated at 12.50 MW/year.

There are two new transmission project that directly affects the LCR change from 2024 to 2028. One with in-service date in 2025 that affects the Tesla-Bellota sub-area in both 2025 nad 2026 and one with in-service date in 2027 that affects Lockeford sub-area and therefore it will not impact the LCR results in 2025 and 2026.

There is one new resource that directly affects the LCR change from 2024 to 2028 and it get's added to the Tesla-Bellota sub-area in 2025 after the in-service date of the Vierra Loop-in project.

There is no projected change in resource contractual status that directly affects the LCR change from 2024 to 2028.

There is no resource projected to retire that directly affects the LCR change from 2024 to 2028.

The total increase for each intermediate year depends only on the available resources in the Lockeford and Tesla-Bellota sub-area, and since they are deficient in 2024, they will remain deficient in 2025 and 2026.

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2025	First Limit	N/A	Stockton Overall		750
2026	First Limit	N/A	Stockton Overall		750

3.4.19.5 *Bay Area*

The net peak load growth from 2024 to 2028 is estimated at 169.00 MW/year.

There are a few new transmission projects that directly affect the LCR change from 2024 to 2028.

However for both years the TPP project impact is minimal to the Bay Area overall requirement.

There are no new resources that directly affect the LCR change from 2024 to 2028.

There is no projected change in resource contractual status that directly affects the LCR change from 2024 to 2028.

There are no resources projected to retire that directly affects the LCR change from 2024 to 2028.

The total decrease for each intermediate year depends on the load increase and the study results between years 2024 and 2028 and it is estimated at about 169 MW/year for Category P6.

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2025	First limit	P6	Metcalf 500/230 kV #13 transformer	Metcalf 500/230 kV #11 & #12 transformers	7498
2026	First limit	P6	Metcalf 500/230 kV #13 transformer	Metcalf 500/230 kV #11 & #12 transformers	7667

3.4.19.6 *Fresno Area*

The net peak load growth from 2024 to 2028 is estimated at 70.75 MW/year.

There are a few new transmission projects that directly affect the LCR change from 2024 to 2028.

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 2024 to 2028.

There is no projected change in resource contractual status that directly affects the LCR change from 2024 to 2028.

There is no resource projected to retire that directly affects the LCR change from 2024 to 2028.

The total increase for each intermediate year depends on load growth and the study results between years 2024 and 2028 and it is estimated at about 175.00 MW/year for Category P6.

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2025	First limit	P6	Kingsburg-Contadina 115 kV Line	Mc Call-Helm 230 kV Line and Mc Call-Mustang 230 kV line	2203
2026	First limit	P6	Kingsburg-Contadina 115 kV Line	Mc Call-Helm 230 kV Line and Mc Call-Mustang 230 kV line	2378

3.4.19.7 *Kern Area*

The net peak load growth from 2024 to 2028 is estimated at 10.50 MW/year.

There are three new transmission projects that directly affect the LCR change from 2024 to 2028. (All with 2027 in-service dates and therefore not influencing year 2025 and 2026.)

There are no new resources that directly affect the LCR change from 2024 to 2028.

There is no projected change in resource contractual status that directly affects the LCR change from 2024 to 2028.

There is no resource projected to retire that directly affects the LCR change from 2024 to 2028.

The total requirement for each intermediate year depends on the load increase and the study results regarding South Kern PP sub-area in year 2024 and it is estimated to be an increase of about 10.50 MW/year for Category P6. However since year 2024 is already deficient the only increase is in "deficiency".

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2025	N/A	P6	Aggregate of Sub-areas.		427
2026	N/A	P6	Aggregate of Sub-areas.		427

3.4.19.8 *Big Creek/Ventura Area*

The net peak load growth from 2024 to 2028 is estimated at 35.25 MW/year.

There is one new transmission project that directly affects the LCR change from 2024 to 2028.

The Sylmar-Pardee 230 kV Rating Increase Project does influence year 2025 and 2026 as a step down decrease of LCR needs.

There are no new resources that directly affect the LCR change from 2024 to 2028.

There is no projected change in resource contractual status that directly affects the LCR change from 2024 to 2028.

There are no resources projected to retire that directly affects the LCR change from 2024 to 2028.

The total LCR requirement for year 2025 and 2026 are only dependent on year 2028 results 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)
2025	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	1110
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	1146

3.4.19.9 *LA Basin Area*

The net peak load growth from 2024 to 2028 is estimated at 178.25 MW/year.

There are no new transmission projects that directly affect the LCR change from 2024 to 2028.

There are no new resources that directly affect the LCR change from 2024 to 2028.

There is no projected change in resource contractual status that directly affects the LCR change from 2024 to 2028.

There are no resources projected to retire that directly affect the LCR change from 2024 to 2028.

The total increase for each intermediate year depends on load growth and the study results between years 2024 and 2028 and it is estimated at about 381.75 MW/year.

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2025	First Limit	N/A	Sum of Western and Eastern	See Western and Eastern	4795
2026	First Limit	N/A	Sum of Western and Eastern	See Western and Eastern	5177

3.4.19.10 *San Diego-Imperial Valley Area*

The net peak load growth from 2024 to 2028 is estimated at 78.25 MW/year.

There are a few transmission projects that directly affect the LCR change from 2024 to 2028. The projects however do not meaningfully impact the overall LCR results.

There are 18 new resources that do not directly affect the LCR change from 2024 to 2028, because they do not have TPD allocation at this time.

There is no projected change in resource contractual status that directly affects the LCR change from 2024 to 2028.

There is no resource projected to retire that directly affects the LCR change from 2024 to 2028.

The total increase for each intermediate year depends on load growth and the study results between years 2024 and 2028 and it is estimated at about 185.25 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)
2025	First Limit	P6	Remaining Sycamore – Suncrest 230 kV	Eco – Miguel 500 kV, system readjustment, followed by one of the Sycamore – Suncrest 230 kV lines	3019
2026	First Limit	P6	Remaining Sycamore – Suncrest 230 kV	Eco – Miguel 500 kV, system readjustment, followed by one of the Sycamore – Suncrest 230 kV lines	3205

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 2024 and 2028 Local Capacity Technical studies

http://www.caiso.com/InitiativeDocuments/Draft-2024-Local-Capacity-Technical-Report.pdf

Attachment A - List of physical resources accounted for in the 2024 and 2028 Local Capacity Technical studies

	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
1	PG&E	ALMEGT_1_UNIT 1	38118	ALMDACT1	13.8	23.40	1	Bay Area	Oakland		MUNI
2	PG&E	ALMEGT_1_UNIT 2	38119	ALMDACT2	13.8	23.50	1	Bay Area	Oakland		MUNI
3	PG&E	BANKPP_2_NSPIN	38820	DELTA A	13.2	11.55	1	Bay Area	Contra Costa	Pumps	MUNI
4	PG&E	BANKPP_2_NSPIN	38820	DELTA A	13.2	11.55	2	Bay Area	Contra Costa	Pumps	MUNI
5	PG&E	BANKPP_2_NSPIN	38820	DELTA A	13.2	11.55	3	Bay Area	Contra Costa	Pumps	MUNI
6	PG&E	BANKPP_2_NSPIN	38815	DELTA B	13.2	11.55	4	Bay Area	Contra Costa	Pumps	MUNI
7	PG&E	BANKPP_2_NSPIN	38815	DELTA B	13.2	11.55	5	Bay Area	Contra Costa	Pumps	MUNI
8	PG&E	BANKPP_2_NSPIN	38770	DELTA C	13.2	11.55	6	Bay Area	Contra Costa	Pumps	MUNI
9	PG&E	BANKPP_2_NSPIN	38770	DELTA C	13.2	11.55	7	Bay Area	Contra Costa	Pumps	MUNI
10	PG&E	BANKPP_2_NSPIN	38765	DELTA D	13.2	11.55	8	Bay Area	Contra Costa	Pumps	MUNI
11	PG&E	BANKPP_2_NSPIN	38765	DELTA D	13.2	11.55	9	Bay Area	Contra Costa	Pumps	MUNI
12	PG&E	BANKPP_2_NSPIN	38760	DELTA E	13.2	11.55	10	Bay Area	Contra Costa	Pumps	MUNI
13	PG&E	BANKPP_2_NSPIN	38760	DELTA E	13.2	11.55	11	Bay Area	Contra Costa	Pumps	MUNI
14	PG&E	BLKDIA_2_BDEBT1	365773	Q1111BES	0.69	200.00	1	Bay Area	Pittsburg		Battery
15	PG&E	BRDSLD_2_HIWIND	32172	HIGHWINDS	34.5	34.28	1	Bay Area	Contra Costa	Aug NQC	Wind
16	PG&E	BRDSLD_2_MTZUM2	32179	MONTEZUM	0.69	16.55	1	Bay Area	Contra Costa	Aug NQC	Wind
17	PG&E	BRDSLD_2_MTZUMA	32188	MONTEZUM	0.69	7.79	1	Bay Area	Contra Costa	Aug NQC	Wind
18	PG&E	BRDSLD_2_SHILO1	32181	SHILOH1W	34.5	31.74	1	Bay Area	Contra Costa	Aug NQC	Wind
19	PG&E	BRDSLD_2_SHILO2	365749	SHILOH2W	34.5	31.74	1	Bay Area	Contra Costa	Aug NQC	Wind
20	PG&E	BRDSLD_2_SHLO3A	32191	SHILOH3W	0.58	21.69	1	Bay Area	Contra Costa	Aug NQC	Wind
21	PG&E	BRDSLD_2_SHLO3B	32194	SHILOH4W	0.58	21.16	1	Bay Area	Contra Costa	Aug NQC	Wind
22	PG&E	CALPIN_1_AGNEW	35860	AGNEWCOG	13.8	21.71	1	Bay Area	San Jose, South Bay-Moss Landing	Aug NQC	Market
23	PG&E	CALPIN_1_AGNEW	35860	AGNEWCOG	13.8	6.85	2	Bay Area	San Jose, South Bay-Moss Landing	Aug NQC	Market
24	PG&E	CAYTNO_2_VASCO				4.30		Bay Area	Contra Costa	Aug NQC	Market
25	PG&E	CLRMTK_1_QF				0.00		Bay Area	Oakland	Not modeled	QF/Selfgen
26	PG&E	COCOPP_2_CTG1	33188	MARSHCT1	16.4	193.09	1	Bay Area	Contra Costa	Aug NQC	Market
27	PG&E	COCOPP_2_CTG2	33188	MARSHCT2	16.4	192.32	2	Bay Area	Contra Costa	Aug NQC	Market
28	PG&E	COCOPP_2_CTG3	33189	MARSHCT3	16.4	191.57	3	Bay Area	Contra Costa	Aug NQC	Market
29	PG&E	COCOPP_2_CTG4	33189	MARSHCT4	16.4	192.89	4	Bay Area	Contra Costa	Aug NQC	Market
30	PG&E	COCOSB_6_SOLAR				0.00		Bay Area	Contra Costa	Not modeled Energy Only	Solar
31	PG&E	CROKET_7_UNIT	32900	CRCKTCOG	18	222.84	1	Bay Area	Pittsburg	Aug NQC	QF/Selfgen
32	PG&E	CSCCOG_1_UNIT 1				6.00		Bay Area	San Jose, South Bay-Moss Landing		MUNI
33	PG&E	CSCGNR_1_UNIT 1	36858	Gia100	13.8	24.00	1	Bay Area	San Jose, South Bay-Moss Landing		MUNI
34	PG&E	CSCGNR_1_UNIT 2	36895	Gia200	13.8	24.00	2	Bay Area	San Jose, South Bay-Moss Landing		MUNI
35	PG&E	CUMBIA_1_SOLAR	33102	COLUMBIA	0.38	2.36	1	Bay Area	Pittsburg	Aug NQC	Solar
36	PG&E	DELTA_2_PL1X4	33107	DEC STG1	24	281.20	1	Bay Area	Pittsburg	Aug NQC	Market
37	PG&E	DELTA_2_PL1X4	33108	DEC CTG1	18	188.93	1	Bay Area	Pittsburg	Aug NQC	Market
38	PG&E	DELTA_2_PL1X4	33109	DEC CTG2	18	188.93	1	Bay Area	Pittsburg	Aug NQC	Market

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39	PG&E	DELTA_2_PL1X4	33110	DEC CTG3	18	188.93	1	Bay Area	Pittsburg	Aug NQC	Market
40	PG&E	DIXNLD_1_LNDFL				0.87		Bay Area		Not modeled Aug NQC	Market
41	PG&E	DUANE_1_PL1X3	36863	DVRaGT1	13.8	48.27	1	Bay Area	San Jose, South Bay-Moss Landing		MUNI
42	PG&E	DUANE_1_PL1X3	36864	DVRbGT2	13.8	48.27	1	Bay Area	San Jose, South Bay-Moss Landing		MUNI
43	PG&E	DUANE_1_PL1X3	36865	DVRaST3	13.8	46.96	1	Bay Area	San Jose, South Bay-Moss Landing		MUNI
44	PG&E	ELKHRN_1_EESX3	366107	Q1374BES	0.55	62.50	1	Bay Area	South Bay-Moss Landing		Battery
45	PG&E	ELKHRN_1_EESX3	366108	Q1374BES	0.55	60.00	2	Bay Area	South Bay-Moss Landing		Battery
46	PG&E	ELKHRN_1_EESX3	366109	Q1374BES	0.55	60.00	3	Bay Area	South Bay-Moss Landing		Battery
47	PG&E	GATWAY_2_PL1X3	33118	GATEWAY1	18	175.85	1	Bay Area	Contra Costa	Aug NQC	Market
48	PG&E	GATWAY_2_PL1X3	33119	GATEWAY2	18	166.50	1	Bay Area	Contra Costa	Aug NQC	Market
49	PG&E	GATWAY_2_PL1X3	33120	GATEWAY3	18	166.50	1	Bay Area	Contra Costa	Aug NQC	Market
50	PG&E	GILROY_1_UNIT	35850	GILROYEN	13.8	75.57	1	Bay Area	Llagas, San Jose, South Bay-Moss Landing	Aug NQC	Market
51	PG&E	GILROY_1_UNIT	35871	GILROYEN	13.8	39.43	2	Bay Area	Llagas, San Jose, South Bay-Moss Landing	Aug NQC	Market
52	PG&E	GILRPP_1_PL1X2	35851	GROYPKR1	13.8	47.60	1	Bay Area	Llagas, San Jose, South Bay-Moss Landing	Aug NQC	Market
53	PG&E	GILRPP_1_PL1X2	35852	GROYPKR2	13.8	47.60	1	Bay Area	Llagas, San Jose, South Bay-Moss Landing	Aug NQC	Market
54	PG&E	GILRPP_1_PL3X4	35853	GROYPKR3	13.8	46.20	1	Bay Area	Llagas, San Jose, South Bay-Moss Landing	Aug NQC	Market
55	PG&E	GRZZLY_1_BERKLY	32741	HILLSIDE	12.47	0.50	1	Bay Area		Aug NQC	Net Seller
56	PG&E	KELSO_2_UNITS	33813	MARIPCT1	13.8	49.51	1	Bay Area	Contra Costa	Aug NQC	Market
57	PG&E	KELSO_2_UNITS	33815	MARIPCT2	13.8	49.51	2	Bay Area	Contra Costa	Aug NQC	Market
58	PG&E	KELSO_2_UNITS	33817	MARIPCT3	13.8	49.51	3	Bay Area	Contra Costa	Aug NQC	Market
59	PG&E	KELSO_2_UNITS	33819	MARIPCT4	13.8	49.51	4	Bay Area	Contra Costa	Aug NQC	Market
60	PG&E	KIRKER_7_KELCYN				3.44		Bay Area	Pittsburg	Not modeled	Market
61	PG&E	LAWRNC_7_SUNYVL				0.15		Bay Area		Not modeled Aug NQC	Market
62	PG&E	LECEF_1_UNITS	35858	LECEFST1	13.8	112.13	1	Bay Area	San Jose, South Bay-Moss Landing		Market
63	PG&E	LECEF_1_UNITS	35854	LECEFGT1	13.8	46.72	1	Bay Area	San Jose, South Bay-Moss Landing	Aug NQC	Market
64	PG&E	LECEF_1_UNITS	35855	LECEFGT2	13.8	46.72	1	Bay Area	San Jose, South Bay-Moss Landing	Aug NQC	Market
65	PG&E	LECEF_1_UNITS	35856	LECEFGT3	13.8	46.72	1	Bay Area	San Jose, South Bay-Moss Landing	Aug NQC	Market
66	PG&E	LECEF_1_UNITS	35857	LECEFGT4	13.8	46.72	1	Bay Area	San Jose, South Bay-Moss Landing	Aug NQC	Market
67	PG&E	LMBEPK_2_UNITA1	32173	LAMBIE	13.8	47.50	1	Bay Area	Contra Costa	Aug NQC	Market
68	PG&E	LMBEPK_2_UNITA2	32174	GOOSEHAV	13.8	47.60	3	Bay Area	Contra Costa	Aug NQC	Market

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69	PG&E	LMBEPK_2_UNITA3	32175	CREED	13.8	47.75	2	Bay Area	Contra Costa	Aug NQC	Market
70	PG&E	LMEC_1_PL1X3	33113	LMECST1	18	246.03	1	Bay Area	Pittsburg	Aug NQC	Market
71	PG&E	LMEC_1_PL1X3	33111	LMECCT2	18	166.98	1	Bay Area	Pittsburg	Aug NQC	Market
72	PG&E	LMEC_1_PL1X3	33112	LMECCT1	18	166.98	1	Bay Area	Pittsburg	Aug NQC	Market
73	PG&E	MARTIN_1_SUNSET				0.56		Bay Area		Not modeled Aug NQC	QF/Selfgen
74	PG&E	METEC_2_PL1X3	35883	MEC STG1	18	223.24	1	Bay Area	South Bay-Moss Landing	Aug NQC	Market
75	PG&E	METEC_2_PL1X3	35881	MEC CTG1	18	186.90	1	Bay Area	South Bay-Moss Landing	Aug NQC	Market
76	PG&E	METEC_2_PL1X3	35882	MEC CTG2	18	186.90	1	Bay Area	South Bay-Moss Landing	Aug NQC	Market
77	PG&E	MISSIX_1_QF	33250	MISSON_D	12.47	0.01	1	Bay Area	Ames	Aug NQC	QF/Selfgen
78	PG&E	MLPTAS_7_QFUNTS				0.00		Bay Area	San Jose, South Bay-Moss Landing	Not modeled Aug NQC	QF/Selfgen
79	PG&E	MOSSLD_1_QF				0.04		Bay Area		Not modeled Aug NQC	Market
80	PG&E	MOSSLD_2_PSP1	36223	DUKMOSS3	18	183.60	1	Bay Area	South Bay-Moss Landing		Market
81	PG&E	MOSSLD_2_PSP1	36221	DUKMOSS1	18	163.20	1	Bay Area	South Bay-Moss Landing		Market
82	PG&E	MOSSLD_2_PSP1	36222	DUKMOSS2	18	163.20	1	Bay Area	South Bay-Moss Landing		Market
83	PG&E	MOSSLD_2_PSP2	36226	DUKMOSS6	18	183.60	1	Bay Area	South Bay-Moss Landing		Market
84	PG&E	MOSSLD_2_PSP2	36224	DUKMOSS4	18	163.20	1	Bay Area	South Bay-Moss Landing		Market
85	PG&E	MOSSLD_2_PSP2	36225	DUKMOSS5	18	163.20	1	Bay Area	South Bay-Moss Landing		Market
86	PG&E	NEWARK_1_QF				0.03		Bay Area		Not modeled Aug NQC	QF/Selfgen
87	PG&E	OAK C_1_EBMUD				1.49		Bay Area	Oakland	Not modeled Aug NQC	MUNI
88	PG&E	OAK C_7_UNIT 1	32901	OAKLND 1	13.8	55.00	1	Bay Area	Oakland	Could retire by 2025	Market
89	PG&E	OAK C_7_UNIT 3	32903	OAKLND 3	13.8	0.00	1	Bay Area	Oakland	Could retire by 2024	Market
90	PG&E	OAK L_1_GTG1				0.00		Bay Area	Oakland	Not modeled Energy Only	Market
91	PG&E	OXMTN_6_LNDFIL	33469	OX_MTN	4.16	1.47	1	Bay Area	Ames		Market
92	PG&E	OXMTN_6_LNDFIL	33469	OX_MTN	4.16	1.47	2	Bay Area	Ames		Market
93	PG&E	OXMTN_6_LNDFIL	33469	OX_MTN	4.16	1.47	3	Bay Area	Ames		Market
94	PG&E	OXMTN_6_LNDFIL	33469	OX_MTN	4.16	1.47	4	Bay Area	Ames		Market
95	PG&E	OXMTN_6_LNDFIL	33469	OX_MTN	4.16	1.47	5	Bay Area	Ames		Market
96	PG&E	OXMTN_6_LNDFIL	33469	OX_MTN	4.16	1.47	6	Bay Area	Ames		Market
97	PG&E	OXMTN_6_LNDFIL	33469	OX_MTN	4.16	1.47	7	Bay Area	Ames		Market
98	PG&E	PALALT_7_COBUG				4.50		Bay Area		Not modeled	MUNI
99	PG&E	RICHMN_1_CHVSR2				1.05		Bay Area		Not modeled Aug NQC	Solar
100	PG&E	RICHMN_1_SOLAR				0.25		Bay Area		Not modeled Aug NQC	Solar
101	PG&E	RICHMN_7_BAYENV				0.41		Bay Area		Not modeled Aug NQC	Market
102	PG&E	RUSCTY_2_UNITS	35306	RUSELST1	15	237.09	3	Bay Area	Ames	No NQC - Pmax	Market

Attachment A - List of physical resources accounted for in the 2024 and 2028 Local Capacity Technical studies

	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
103	PG&E	RUSCTY_2_UNITS	35304	RUSELCT1	15	180.15	1	Bay Area	Ames	No NQC - Pmax	Market
104	PG&E	RUSCTY_2_UNITS	35305	RUSELCT2	15	180.15	2	Bay Area	Ames	No NQC - Pmax	Market
105	PG&E	RVRVEW_1_UNITA1	33178	RVEC_GEN	13.8	47.60	1	Bay Area	Contra Costa	Aug NQC	Market
106	PG&E	SHELRF_1_UNITS	33142	SHELL 2	12.47	2.23	1	Bay Area	Pittsburg	Aug NQC	Net Seller
107	PG&E	SHELRF_1_UNITS	33143	SHELL 3	12.47	2.23	1	Bay Area	Pittsburg	Aug NQC	Net Seller
108	PG&E	SHELRF_1_UNITS	33141	SHELL 1	12.47	1.20	1	Bay Area	Pittsburg	Aug NQC	Net Seller
109	PG&E	SRINTL_6_UNIT	33468	SRI INTL	9.11	0.88	1	Bay Area		Aug NQC	QF/Selfgen
110	PG&E	STOILS_1_UNITS	32921	CHEVGEN1	13.8	1.35	1	Bay Area	Pittsburg	Aug NQC	Market
111	PG&E	STOILS_1_UNITS	32922	CHEVGEN2	13.8	1.35	1	Bay Area	Pittsburg	Aug NQC	Market
112	PG&E	STOILS_1_UNITS	32923	CHEVGEN3	13.8	0.63	3	Bay Area	Pittsburg	Aug NQC	Market
113	PG&E	TIDWTR_2_UNITS	33151	FOSTER W	12.47	19.84	1	Bay Area	Pittsburg	Aug NQC	Net Seller
114	PG&E	TIDWTR_2_UNITS	33151	FOSTER W	12.47	19.84	2	Bay Area	Pittsburg	Aug NQC	Net Seller
115	PG&E	TIDWTR_2_UNITS	33151	FOSTER W	12.47	15.09	3	Bay Area	Pittsburg	Aug NQC	Net Seller
116	PG&E	UNCHEM_1_UNIT	32920	UNION CH	9.11	13.41	1	Bay Area	Pittsburg	Aug NQC	QF/Selfgen
117	PG&E	UNOCAL_1_UNITS	32910	UNOCAL	12	0.71	1	Bay Area	Pittsburg	Aug NQC	QF/Selfgen
118	PG&E	UNOCAL_1_UNITS	32910	UNOCAL	12	0.71	2	Bay Area	Pittsburg	Aug NQC	QF/Selfgen
119	PG&E	UNOCAL_1_UNITS	32910	UNOCAL	12	0.71	3	Bay Area	Pittsburg	Aug NQC	QF/Selfgen
120	PG&E	USWNDR_2_LABWD1	365729	LABRISAW	0.57	1.90	1	Bay Area	Contra Costa	Aug NQC	Wind
121	PG&E	USWNDR_2_SMUD	365574	SOLANO2W	1	18.38	2	Bay Area	Contra Costa	Aug NQC	Wind
122	PG&E	USWNDR_2_SMUD	365566	SOLANO1W	0.69	3.24	1	Bay Area	Contra Costa	Aug NQC	Wind
123	PG&E	USWNDR_2_SMUD2	365600	SOLANO3W	1	27.04	3	Bay Area	Contra Costa	Aug NQC	Wind
124	PG&E	USWPFK_6_FRICK	365608	FRICKWIN	12	2.12	1	Bay Area	Contra Costa	Aug NQC	Wind
125	PG&E	USWPJR_2_UNITS	39233	GRNRDG	0.69	16.55	1	Bay Area	Contra Costa	Aug NQC	Wind
126	PG&E	VISTRA_5_DALBT1	366711	DALLASBESS1	34.5	100.00	1	Bay Area	South Bay-Moss Landing		Battery
127	PG&E	VISTRA_5_DALBT2	366712	DALLASBESS2	34.5	100.00	2	Bay Area	South Bay-Moss Landing		Battery
128	PG&E	VISTRA_5_DALBT3	366713	DALLASBESS3	34.5	100.00	3	Bay Area	South Bay-Moss Landing		Battery
129	PG&E	VISTRA_5_DALBT4	366715	DALLASBESS4	34.5	100.00	4	Bay Area	South Bay-Moss Landing		Battery
130	PG&E	WNDMAS_2_UNIT 1	33173	BVISTAWND	0.6	8.04	1	Bay Area	Contra Costa	Aug NQC	Wind
131	PG&E	ZOND_6_UNIT				3.62		Bay Area	Contra Costa	Not modeled Aug NQC	Wind
132	PG&E	ZZ_FLOWD1_6_ALTPP1	35318	FLOWPTR	9.11	1.80	1	Bay Area	Contra Costa	No NQC - est. data	Wind
133	PG&E	ZZ_IMHOFF_1_UNIT 1	33136	CCCSD	12.47	0.00	1	Bay Area	Pittsburg	No NQC - hist. data	QF/Selfgen
134	PG&E	ZZ_NA	35861	SJ-SCL W	4.3	0.00	1	Bay Area	San Jose, South Bay-Moss Landing	No NQC - hist. data	QF/Selfgen
135	PG&E	ZZ_NA	36209	SLD ENRG	12.47	0.00	1	Bay Area	South Bay-Moss Landing		QF/Selfgen
136	PG&E	ZZ_ZANKER_1_UNIT 1	35861	SJ-SCL W	4.3	0.00	RN	Bay Area	San Jose, South Bay-Moss Landing	No NQC - hist. data	QF/Selfgen
137	PG&E	ZZZ_New Unit	366394	Q1454B	0.69	75.00	1	Bay Area	San Jose, South Bay-Moss Landing	E-4949	Battery
138	PG&E	ZZZ_New Unit	365773	Q1111BES	0.69	70.00	1	Bay Area	Pittsburg	No NQC - Pmax	Battery
139	PG&E	ZZZ_New Unit	365617	OAKLANDES3	13.8	55.00	3	Bay Area	Oakland		Battery
140	PG&E	ZZZ_New Unit	365540	CHEVRONS	12.47	0.00	1	Bay Area		Energy Only	Market

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	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
141	PG&E	ZZZ_New Unit	32741	HILLSIDE	12.47	0.00	2	Bay Area		Energy Only	Market
142	PG&E	ZZZ_New Unit	33103	TASSAJAR	21.6	0.00	RE	Bay Area	Pittsburg	Energy Only	Solar
143	PG&E	ZZZ_New Unit	36232	CAMPEVER	21.6	0.00	RE	Bay Area	South Bay-Moss Landing	Energy Only	Solar
144	PG&E	ZZZ_New Unit	33450	FACEBOOK	12	0.00	RE	Bay Area	Ames	Energy Only	Solar
145	PG&E	ZZZ_New Unit	32741	HILLSIDE	12.47	0.00	RN	Bay Area		Energy Only	Market
146	PG&E	ZZZ_New Unit	365559	STANFORD	12.47	0.00	RN	Bay Area		Energy Only	Market
147	PG&E	ZZZ_New Unit	35302	NUMMI-LV	12.56	0.00	RN	Bay Area		Energy Only	Market
148	PG&E	ZZZ_New Unit	35859	HGST-LV	12.41	0.00	RN	Bay Area		Energy Only	Market
149	PG&E	ZZZ_New Unit	35307	A100US-L	12.56	0.00	RN	Bay Area		Energy Only	Market
150	PG&E	ADERA_1_SOLAR1	34319	ADERASLR	0.48	0.00	1	Fresno	Herndon, Panoche 115 kV, Wilson 115 kV	Energy Only	Solar
151	PG&E	ADMEST_6_SOLAR	34315	ADAMS_E	12.47	0.00	1	Fresno	Herndon	Energy Only	Solar
152	PG&E	AGRICO_6_PL3N5	34608	AGRICO	13.8	22.69	3	Fresno	Herndon		Market
153	PG&E	AGRICO_7_UNIT	34608	AGRICO	13.8	41.41	4	Fresno	Herndon		Market
154	PG&E	AGRICO_7_UNIT	34608	AGRICO	13.8	7.17	2	Fresno	Herndon		Market
155	PG&E	AKINGS_6_AMESR1	34688	AMRCNKNG	0.36	15.25	1	Fresno	Hanford	Aug NQC	Solar
156	PG&E	AVENAL_6_AVPARK	34265	AVENAL P	12	0.74	1	Fresno	Coalinga	Aug NQC	Solar
157	PG&E	AVENAL_6_AVSLR1	34691	AVENAL_D	21	0.00	1	Fresno	Coalinga	Energy Only	Solar
158	PG&E	AVENAL_6_AVSLR2	34691	AVENAL_D	21	0.00	1	Fresno	Coalinga	Energy Only	Solar
159	PG&E	AVENAL_6_SANDDG	34263	SANDDRAG	12	1.96	1	Fresno	Coalinga	Aug NQC	Solar
160	PG&E	AVENAL_6_SUNCTY	34257	SUNCTY D	12	2.48	1	Fresno	Coalinga	Aug NQC	Solar
161	PG&E	BALCHS_7_UNIT 1	34624	BALCH 1	13.2	31.00	1	Fresno	Herndon	Aug NQC	Market
162	PG&E	BALCHS_7_UNIT 2	34612	BLCH 2-3	13.8	52.50	1	Fresno	Herndon	Aug NQC	Market
163	PG&E	BALCHS_7_UNIT 3	34614	BLCH 2-3	13.8	54.18	1	Fresno	Herndon	Aug NQC	Market
164	PG&E	CABALO_2_M2BSR1	365524	MUSTANG4	0.36	6.20	2	Fresno		Aug NQC	Solar
165	PG&E	CABALO_2_M2WSR2	365523	MUSTANG3	0.36	12.40	1	Fresno		Aug NQC	Solar
166	PG&E	CANTUA_1_SOLAR	34349	CANTUA_D	12.47	1.24	1	Fresno	Panoche 115 kV	Aug NQC	Solar
167	PG&E	CANTUA_1_SOLAR	34349	CANTUA_D	12.47	1.24	2	Fresno	Panoche 115 kV	Aug NQC	Solar
168	PG&E	CHEVCO_6_UNIT 1	34652	CHV.COAL	9.11	2.71	1	Fresno	Coalinga, Panoche 115 kV	Aug NQC	QF/Selfgen
169	PG&E	CHEVCO_6_UNIT 2	34652	CHV.COAL	9.11	0.60	2	Fresno	Coalinga, Panoche 115 kV	Aug NQC	QF/Selfgen
170	PG&E	CHWCHL_1_BIOMAS	34305	CHWCHLA2	13.8	9.39	1	Fresno	Herndon, Panoche 115 kV, Wilson 115 kV	Aug NQC	Market
171	PG&E	CHWCHL_1_UNIT	34301	CHOWCOGN	13.8	48.00	1	Fresno	Herndon, Panoche 115 kV, Wilson 115 kV		Market
172	PG&E	CORCAN_1_SOLAR1	34690	CORCORAN_D3	12.47	2.48	1	Fresno	Herndon, Hanford	Aug NQC	Solar
173	PG&E	CORCAN_1_SOLAR2	34692	CORCORAN_D4	12.47	1.36	1	Fresno	Herndon, Hanford	Aug NQC	Solar
174	PG&E	CRESSY_1_PARKER	34140	CRESSEY	115	0.88		Fresno		Not modeled Aug NQC	MUNI
175	PG&E	CRNEVL_6_CRNVA	34634	CRANEVLY	12	0.00	1	Fresno	Borden	Aug NQC	Market
176	PG&E	CRNEVL_6_SJQN 2	34631	SJ2GEN	9.11	0.00	1	Fresno	Borden	Aug NQC	Market

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	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
177	PG&E	CURTIS_1_CANLCK				0.00		Fresno		Not modeled Aug NQC	Market
178	PG&E	CURTIS_1_FARFLD				0.49		Fresno		Not modeled Aug NQC	Market
179	PG&E	DAIRLD_1_MD1SL1				0.00		Fresno		Not modeled Energy Only	Solar
180	PG&E	DAIRLD_1_MD2BM1				0.00		Fresno		Not modeled Energy Only	Market
181	PG&E	EEKTMN_6_SOLAR1	34629	KETTLEMN	0.8	0.00	1	Fresno		Energy Only	Solar
182	PG&E	ELCAP_1_SOLAR				0.00		Fresno		Not Modeled Aug NQC	Solar
183	PG&E	ELNIDP_6_BIOMAS	34330	ELNIDOBM	13.8	9.24	1	Fresno	Panoche 115 kV, Wilson 115 kV	Aug NQC	Market
184	PG&E	EXCHEC_7_UNIT 1	34306	EXCHQUER	13.8	91.89	1	Fresno	Panoche 115 kV, Wilson 115 kV	Aug NQC	MUNI
185	PG&E	EXCLSG_1_SOLAR	34623	EXCLSRSL	0.5	7.44	1	Fresno	Panoche 115 kV	Aug NQC	Solar
186	PG&E	FRESHW_1_SOLAR1	34699	FRSHWTRSLR	0.385	0.00	1	Fresno	Herndon	Energy Only	Solar
187	PG&E	FRIANT_6_UNITS	34636	FRIANTDAM	6.6	6.26	2	Fresno	Borden	Aug NQC	Net Seller
188	PG&E	FRIANT_6_UNITS	34636	FRIANTDAM	6.6	3.34	3	Fresno	Borden	Aug NQC	Net Seller
189	PG&E	FRIANT_6_UNITS	34636	FRIANTDAM	6.6	0.88	4	Fresno	Borden	Aug NQC	Net Seller
190	PG&E	GIFENS_6_BUGSL1	34644	BRFRDGFNSPV	0.55	2.48	1	Fresno		Aug NQC	Solar
191	PG&E	GIFFEN_6_SOLAR	34467	GIFFEN_DIST	12.47	1.24	1	Fresno	Herndon	Aug NQC	Solar
192	PG&E	GIFFEN_6_SOLAR1				0.00		Fresno	Herndon	Not modeled Energy Only	Solar
193	PG&E	GUERNS_6_HD3BM3				0.00		Fresno		Not modeled Energy Only	Market
194	PG&E	GUERNS_6_SOLAR	34463	GUERNSEY_D2	12.47	1.24	5	Fresno		Aug NQC	Solar
195	PG&E	GUERNS_6_SOLAR	34461	GUERNSEY_D1	12.47	1.24	8	Fresno		Aug NQC	Solar
196	PG&E	GUERNS_6_VH2BM1				0.00		Fresno		Not modeled Energy Only	Market
197	PG&E	GWFPWR_1_UNITS	34431	HANFORDPPCT1	13.8	49.23	1	Fresno	Herndon, Hanford		Market
198	PG&E	GWFPWR_1_UNITS	34433	HANFORDPPCT2	13.8	49.23	1	Fresno	Herndon, Hanford		Market
199	PG&E	HAASPH_7_PL1X2	34610	HAAS	13.8	72.00	1	Fresno	Herndon	Aug NQC	Market
200	PG&E	HAASPH_7_PL1X2	34610	HAAS	13.8	72.00	2	Fresno	Herndon	Aug NQC	Market
201	PG&E	HARDWK_6_STWBM1				0.00		Fresno		Not modeled Energy Only	Market
202	PG&E	HELMPG_7_UNIT 1	34600	HELMS	18	407.00	1	Fresno		Aug NQC	Market
203	PG&E	HELMPG_7_UNIT 2	34602	HELMS	18	407.00	2	Fresno		Aug NQC	Market
204	PG&E	HELMPG_7_UNIT 3	34604	HELMS	18	404.00	3	Fresno		Aug NQC	Market
205	PG&E	HENRTA_6_HDEBT1	34654	HENRIETT	12.47	10.00	1	Fresno			Battery
206	PG&E	HENRTA_6_SOLAR1				0.19		Fresno		Not modeled Aug NQC	Solar

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	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
207	PG&E	HENRTA_6_SOLAR2				0.00		Fresno		Not modeled Energy Only	Solar
208	PG&E	HENRTA_6_UNITA1	34539	GWF_GT1	13.8	49.98	1	Fresno			Market
209	PG&E	HENRTA_6_UNITA2	34541	GWF_GT2	13.8	49.42	1	Fresno			Market
210	PG&E	HENRTS_1_SOLAR	34617	HRNTASLR	0.38	12.40	1	Fresno	Herndon	Aug NQC	Solar
211	PG&E	HURON_6_SOLAR	34557	HURON_DI	12.47	1.24	1	Fresno	Coalinga, Panoche 115 kV	Aug NQC	Solar
212	PG&E	HURON_6_SOLAR	34557	HURON_DI	12.47	1.24	2	Fresno	Coalinga, Panoche 115 kV	Aug NQC	Solar
213	PG&E	INTTRB_6_UNIT	34342	INT.TURB	9.11	3.89	1	Fresno		Aug NQC	Market
214	PG&E	JAYNE_6_WLSLR	34639	WESTLNDS	0.48	0.00	1	Fresno	Coalinga	Energy Only	Solar
215	PG&E	KANSAS_6_SOLAR	34666	KANSASS_S	12.47	0.00	F	Fresno		Energy Only	Solar
216	PG&E	KERKH2_7_UNIT 1	34308	KERCKHOF	13.8	75.60	1	Fresno	Herndon, Wilson 115 kV	Aug NQC	Market
217	PG&E	KERMAN_6_SOLAR1				0.00		Fresno		Not modeled Energy Only	Solar
218	PG&E	KERMAN_6_SOLAR2				0.00		Fresno		Not modeled Energy Only	Solar
219	PG&E	KINGCO_1_KINGBR	34642	KINGSBUR	13.8	21.74	1	Fresno	Herndon, Hanford	Aug NQC	Net Seller
220	PG&E	KINGCO_1_KINGBR	34642	KINGSBUR	13.8	12.77	2	Fresno	Herndon, Hanford	Aug NQC	Net Seller
221	PG&E	KINGRV_7_UNIT 1	34616	KINGSRIV	13.8	39.36	1	Fresno	Herndon, Reedley	Aug NQC	Market
222	PG&E	KNGBRG_1_KBSLR1				0.00		Fresno		Not modeled Energy Only	Solar
223	PG&E	KNGBRG_1_KBSLR2				0.00		Fresno		Not modeled Energy Only	Solar
224	PG&E	KNTSTH_6_SOLAR	34694	KENT_S	0.8	0.00	1	Fresno		Energy Only	Solar
225	PG&E	LEPRFD_1_KANSAS	34680	KANSAS	12.47	2.48	1	Fresno	Herndon, Hanford	Aug NQC	Solar
226	PG&E	LOTUS_6_LSFSR1	34335	LOTUSSFS	0.315	6.20	1	Fresno	Borden	Aug NQC	Solar
227	PG&E	LTBEAR_1_LB3SR3	365663	LILBEAR3	0.36	2.48	1	Fresno	Panoche 115 kV, Wilson 115 kV	Aug NQC	Solar
228	PG&E	LTBEAR_1_LB4SR4	365673	LILBEAR4	0.36	6.20	1	Fresno	Panoche 115 kV, Wilson 115 kV	Aug NQC	Solar
229	PG&E	LTBEAR_1_LB4SR5	365675	LILBEAR5	0.36	6.20	1	Fresno	Panoche 115 kV, Wilson 115 kV	Aug NQC	Solar
230	PG&E	LTBERA_1_LB1SR1	365604	Q1028Q10	0.36	4.96	1	Fresno	Panoche 115 kV, Wilson 115 kV	Aug NQC	Solar
231	PG&E	MALAGA_1_PL1X2	34671	KRCDPCT1	13.8	48.31	1	Fresno	Herndon		Market
232	PG&E	MALAGA_1_PL1X2	34672	KRCDPCT2	13.8	48.31	1	Fresno	Herndon		Market
233	PG&E	MCCALL_1_QF	34219	MCCALL 4	12.47	0.24	QF	Fresno	Herndon	Aug NQC	QF/Selfgen
234	PG&E	MCSWAN_6_UNITS	34320	MCSWAIN	9.11	8.73	1	Fresno	Panoche 115 kV, Wilson 115 kV	Aug NQC	MUNI
235	PG&E	MENBIO_6_RENEW1	34339	CALRENEW	12.5	0.62	1	Fresno	Herndon, Panoche 115 kV, Wilson 115 kV	Aug NQC	Net Seller
236	PG&E	MERCED_1_SOLAR1				0.00		Fresno		Not modeled Energy Only	Solar

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	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
237	PG&E	MERCED_1_SOLAR2				0.00		Fresno		Not modeled Energy Only	Solar
238	PG&E	MERCFL_6_UNIT	34322	MERCEDFL	9.11	3.26	1	Fresno	Panoche 115 kV, Wilson 115 kV	Aug NQC	Market
239	PG&E	MNDOTA_1_SOLAR1	34313	NORTHSTA	0.2	7.44	1	Fresno	Panoche 115 kV, Wilson 115 kV	Aug NQC	Solar
240	PG&E	MNDOTA_1_SOLAR2				0.00		Fresno		Not modeled Energy Only	Solar
241	PG&E	MSTANG_2_MTGBT1	34685	REMUSTANGBES	0.8	75.00	2	Fresno			Battery
242	PG&E	MSTANG_2_SOLAR	34683	REMUSTANGSPV	0.36	0.00	1	Fresno		Aug NQC	Solar
243	PG&E	MSTANG_2_SOLAR3	34683	REMUSTANGSPV	0.36	1.85	1	Fresno		Aug NQC	Solar
244	PG&E	MSTANG_2_SOLAR4	34683	REMUSTANGSPV	0.36	3.72	1	Fresno		Aug NQC	Solar
245	PG&E	ONLLPP_6_UNITS	34316	ONEILPMP	9.11	0.64	1	Fresno		Aug NQC	MUNI
246	PG&E	OROLOM_1_SOLAR1	34689	OROLOMA_D3	12.47	0.00	1	Fresno	Panoche 115 kV	Energy Only	Solar
247	PG&E	OROLOM_1_SOLAR2	34689	OROLOMA_D3	12.47	0.00	1	Fresno	Panoche 115 kV	Energy Only	Solar
248	PG&E	ORTGA_6_ME1SL1				0.37		Fresno		Not modeled Energy Only	Solar
249	PG&E	PAIGES_6_SOLAR	34653	PAIGESLR	0.55	0.00	1	Fresno	Coalinga, Panoche 115 kV	Energy Only	Solar
250	PG&E	PINFLT_7_UNITS	38720	PINEFLAT	13.8	33.11	1	Fresno	Herndon	Aug NQC	MUNI
251	PG&E	PINFLT_7_UNITS	38720	PINEFLAT	13.8	33.11	2	Fresno	Herndon	Aug NQC	MUNI
252	PG&E	PINFLT_7_UNITS	38720	PINEFLAT	13.8	33.11	3	Fresno	Herndon	Aug NQC	MUNI
253	PG&E	PNCHPP_1_PL1X2	34328	STRWDPNC	13.8	55.50	1	Fresno	Panoche 115 kV		Market
254	PG&E	PNCHPP_1_PL1X2	34329	STRWDPNC	13.8	55.50	2	Fresno	Panoche 115 kV		Market
255	PG&E	PNOCHE_1_PL1X2	34142	WHD_PAN2	13.8	49.97	1	Fresno	Herndon, Panoche 115 kV		Market
256	PG&E	PNOCHE_1_UNITA1	34186	CALPEAKP	13.8	52.01	1	Fresno	Panoche 115 kV		Market
257	PG&E	REEDLY_6_SOLAR				0.00		Fresno	Herndon, Reedley	Not modeled Energy Only	Solar
258	PG&E	S_RITA_6_SOLAR1				0.00		Fresno		Not modeled Energy Only	Solar
259	PG&E	SCHNDR_1_FIVPTS	34353	SCHINDLER_D	12.47	1.24	1	Fresno	Coalinga, Panoche 115 kV	Aug NQC	Solar
260	PG&E	SCHNDR_1_FIVPTS	34353	SCHINDLER_D	12.47	0.62	2	Fresno	Coalinga, Panoche 115 kV	Aug NQC	Solar
261	PG&E	SCHNDR_1_OS2BM2				0.00		Fresno	Coalinga	Energy Only	Market
262	PG&E	SCHNDR_1_WSTSDE	34353	SCHINDLER_D	12.47	1.24	3	Fresno	Coalinga, Panoche 115 kV	Aug NQC	Solar
263	PG&E	SCHNDR_1_WSTSDE	34353	SCHINDLER_D	12.47	0.62	4	Fresno	Coalinga, Panoche 115 kV	Aug NQC	Solar
264	PG&E	SGREGY_6_SANGER	34646	SANGERCG1	13.8	38.77	1	Fresno	Herndon	Aug NQC	Market

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	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
265	PG&E	SGREGY_6_SANGER	34646	SANGERCG2	13.8	9.31	2	Fresno	Herndon	Aug NQC	Market
266	PG&E	SLATE_2_SLASR1	365694	SLATESPV1	0.645	37.81	1	Fresno		Aug NQC	Hybrid
267	PG&E	SLATE_2_SLASR2	365695	SLATEBESS1	0.66	55.24	2	Fresno		Aug NQC	Hybrid
268	PG&E	SLATE_2_SLASR3				40.10		Fresno		Aug NQC	Hybrid
269	PG&E	SLATE_2_SLASR4	365698	SLATESPV2	0.645	54.81	3	Fresno		Aug NQC	Hybrid
270	PG&E	SLATE_2_SLASR5	365699	SLATEBESS2	0.66	12.62	4	Fresno		Aug NQC	Hybrid
271	PG&E	STOREY_2_MDRCH2				0.17		Fresno		Not modeled Aug NQC	Market
272	PG&E	STOREY_2_MDRCH3				0.10		Fresno		Not modeled Aug NQC	Market
273	PG&E	STOREY_2_MDRCH4				0.17		Fresno		Not modeled Aug NQC	Market
274	PG&E	STOREY_7_MDRCHW	34209	STOREY D	12.47	0.06	1	Fresno		Aug NQC	Net Seller
275	PG&E	STROUD_6_SOLAR	34563	STROUD_D	12.47	1.24	1	Fresno	Herndon	Aug NQC	Solar
276	PG&E	STROUD_6_SOLAR	34563	STROUD_D	12.47	1.24	2	Fresno	Herndon	Aug NQC	Solar
277	PG&E	STROUD_6_WWHSR1				0.00		Fresno	Herndon	Energy Only	Solar
278	PG&E	SUMWHT_6_SWSSR1				2.29		Fresno		Aug NQC	Solar
279	PG&E	TRNQL8_2_AMASR1	365514	Q1032G1	0.55	2.48	1	Fresno		Aug NQC	Solar
280	PG&E	TRNQL8_2_AZUSR1	365517	Q1032G2	0.55	2.48	2	Fresno		Aug NQC	Solar
281	PG&E	TRNQL8_2_ROJSR1	365520	Q1032G3	0.55	12.40	3	Fresno		Aug NQC	Solar
282	PG&E	TRNQL8_2_VERSR1	365520	Q1032G3	0.55	7.44	3	Fresno		Aug NQC	Solar
283	PG&E	TRNQLT_2_RETBT1	34343	Q643XBES	0.8	72.00	2	Fresno			Battery
284	PG&E	TRNQLT_2_SOLAR	34340	Q643X	0.8	20.73	1	Fresno		Aug NQC	Solar
285	PG&E	TVYVLY_6_KRSHY1				1.00		Fresno		Not modeled Aug NQC	Market
286	PG&E	ULTPFR_1_UNIT 1	34640	RIOBRVOF	12.47	19.46	1	Fresno	Herndon	Aug NQC	Market
287	PG&E	VEGA_6_SOLAR1	34314	VEGA	34.5	0.00	1	Fresno		Energy Only	Solar
288	PG&E	WAUKNA_1_SOLAR	34696	CORCORANPV_S	0.41	2.48	1	Fresno	Herndon, Hanford	Aug NQC	Solar
289	PG&E	WAUKNA_1_SOLAR2	34677	CORCORAN2SPV	0.41	2.45	1	Fresno	Herndon, Hanford	No NQC - Pmax	Solar
290	PG&E	WFRESN_1_SOLAR				0.00		Fresno		Not modeled Energy Only	Solar
291	PG&E	WHITNY_6_SOLAR	34673	WHTNYPTSPV	0.55	0.00	1	Fresno	Coalinga, Panoche 115 kV	Energy Only	Solar
292	PG&E	WISHON_6_UNITS	34658	WISHON	2.3	0.00	1	Fresno	Borden	Aug NQC	Market
293	PG&E	WISHON_6_UNITS	34658	WISHON	2.3	0.00	2	Fresno	Borden	Aug NQC	Market
294	PG&E	WISHON_6_UNITS	34658	WISHON	2.3	0.00	3	Fresno	Borden	Aug NQC	Market
295	PG&E	WISHON_6_UNITS	34658	WISHON	2.3	0.00	4	Fresno	Borden	Aug NQC	Market
296	PG&E	WISHON_6_UNITS	34658	WISHON	2.3	0.00	SJ	Fresno	Borden	Aug NQC	Market
297	PG&E	WOODWR_1_HYDRO				0.00		Fresno	Herndon	Not modeled Energy Only	Market
298	PG&E	WRGHTP_7_AMENGY	34207	WRIGHT D	12.47	0.51	QF	Fresno		Aug NQC	QF/Selfgen

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	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
299	PG&E	ZZ_BORDEN_2_QF	34253	BORDEN D	12.47	0.00	QF	Fresno		No NQC - hist. data	Net Seller
300	PG&E	ZZ_BULLRD_7_SAGNES	34213	BULLD 12	12.47	0.00	1	Fresno	Herndon	Aug NQC	QF/Selfgen
301	PG&E	ZZ_DINUBA_6_UNIT	34648	DINUBA E	13.8	0.00	MB	Fresno	Herndon, Reedley	Mothballed	Market
302	PG&E	ZZ_KERKH1_7_UNIT 2	34343	KERCK1-2	6.6	0.00	2	Fresno	Herndon, Wilson 115 kV	No NQC - hist. data	Market
303	PG&E	ZZ_NA	34485	FRESNOWW	12.5	0.00	1	Fresno		No NQC - hist. data	QF/Selfgen
304	PG&E	ZZ_NA	34485	FRESNOWW	12.5	0.00	2	Fresno		No NQC - hist. data	QF/Selfgen
305	PG&E	ZZ_NA	34485	FRESNOWW	12.5	0.00	3	Fresno		No NQC - hist. data	QF/Selfgen
306	PG&E	ZZ_NA	34651	JACALITO	0.55	0.00	RN	Fresno	Coalinga	No NQC - hist. data	Market
307	PG&E	ZZZ_New Unit	365504	SCULINS	0.55	2.34	1	Fresno		No NQC - est. data	Solar
308	PG&E	ZZZ_New Unit	365679	WALMONDS	0.63	2.28	1	Fresno		No NQC - est. data	Solar
309	PG&E	ZZZ_New Unit	34649	Q965SPV	0.36	1.74	1	Fresno	Herndon, Hanford	No NQC - est. data	Solar
310	PG&E	ZZZ_New Unit	92007	2007-RD	70	0.00	RN	Fresno	Borden	Energy Only	Market
311	PG&E	ZZZ_New Unit	34603	JGBSWLT	12.47	0.00	ST	Fresno	Herndon	Energy Only	Market
312	PG&E	BRDGVL_7_BAKER				0.00		Humboldt		Not modeled Aug NQC	Net Seller
313	PG&E	FTSWRD_6_TRFORK				0.10		Humboldt		Not modeled Aug NQC	Market
314	PG&E	FTSWRD_7_QFUNTS				0.00		Humboldt		Not modeled Aug NQC	QF/Selfgen
315	PG&E	HUMBPP_1_UNITS3	31180	HUMB_G1	13.8	16.69	3	Humboldt			Market
316	PG&E	HUMBPP_1_UNITS3	31180	HUMB_G1	13.8	16.32	1	Humboldt			Market
317	PG&E	HUMBPP_1_UNITS3	31180	HUMB_G1	13.8	16.22	4	Humboldt			Market
318	PG&E	HUMBPP_1_UNITS3	31180	HUMB_G1	13.8	15.85	2	Humboldt			Market
319	PG&E	HUMBPP_6_UNITS	31182	HUMB_G3	13.8	16.62	8	Humboldt			Market
320	PG&E	HUMBPP_6_UNITS	31181	HUMB_G2	13.8	16.33	6	Humboldt			Market
321	PG&E	HUMBPP_6_UNITS	31182	HUMB_G3	13.8	16.33	9	Humboldt			Market
322	PG&E	HUMBPP_6_UNITS	31181	HUMB_G2	13.8	16.24	7	Humboldt			Market
323	PG&E	HUMBPP_6_UNITS	31181	HUMB_G2	13.8	16.14	5	Humboldt			Market
324	PG&E	HUMBPP_6_UNITS	31182	HUMB_G3	13.8	15.95	10	Humboldt			Market
325	PG&E	KEKAWK_6_UNIT	31166	KEKAWAK	9.1	0.00	1	Humboldt		Aug NQC	Net Seller
326	PG&E	PACLUM_6_UNIT	31152	PAC.LUMB	13.8	4.96	1	Humboldt		Aug NQC	Net Seller
327	PG&E	PACLUM_6_UNIT	31152	PAC.LUMB	13.8	4.96	2	Humboldt		Aug NQC	Net Seller
328	PG&E	PACLUM_6_UNIT	31153	PAC.LUMB	2.4	2.97	3	Humboldt		Aug NQC	Net Seller
329	PG&E	ZZ_BLULKE_6_BLUELK	31156	BLUELKPP	12.5	0.00	MB	Humboldt		Mothballed	Market

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	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
330	PG&E	ZZ_FAIRHV_6_UNIT	31150	FAIRHAVN	13.8	0.00	1	Humboldt		No NQC - hist. data	Net Seller
331	PG&E	ZZ_LAPAC_6_UNIT	31158	LP SAMOA	12.5	0.00	1	Humboldt			Market
332	PG&E	7STDRD_1_SOLAR1	35065	7STNDRD_D1	21.6	2.48	1	Kern	South Kern PP, Kern Oil	Aug NQC	Solar
333	PG&E	BDGRCK_1_UNITS	35029	BADGERCK	13.8	48.08	1	Kern	South Kern PP	Aug NQC	Net Seller
334	PG&E	BEARMT_1_UNIT	35066	PSE-BEAR	13.8	49.21	1	Kern	South Kern PP, Westpark	Aug NQC	Net Seller
335	PG&E	BKRFLD_2_SOLAR1				0.17		Kern	South Kern PP	Not modeled Aug NQC	Solar
336	PG&E	DEXZEL_1_UNIT	35024	DEXZEL	13.8	16.10	1	Kern	South Kern PP, Kern Oil	Aug NQC	Net Seller
337	PG&E	DISCOV_1_CHEVRN	35062	DISCOVRY	13.8	7.23	1	Kern	South Kern PP, Kern Oil	Aug NQC	QF/Selfgen
338	PG&E	DOUBLC_1_UNITS	35023	DOUBLE C	13.8	26.12	1	Kern	South Kern PP	Aug NQC	Net Seller
339	PG&E	DOUBLC_1_UNITS	35023	DOUBLE C	13.8	26.12	2	Kern	South Kern PP	Aug NQC	Net Seller
340	PG&E	KERNFT_1_UNITS	35026	KERNFRNT	13.8	26.20	1	Kern	South Kern PP	Aug NQC	Net Seller
341	PG&E	KERNFT_1_UNITS	35026	KERNFRNT	13.8	26.20	2	Kern	South Kern PP	Aug NQC	Net Seller
342	PG&E	LAMONT_1_SOLAR1	35019	REGULUS	0.4	7.44	1	Kern	South Kern PP, Kern PWR-Tevis	Aug NQC	Solar
343	PG&E	LAMONT_1_SOLAR2	35092	REDWOODSPV	0.6	2.48	4	Kern	South Kern PP, Kern PWR-Tevis	Aug NQC	Solar
344	PG&E	LAMONT_1_SOLAR3	35087	WOODMERESPV	0.4	1.86	3	Kern	South Kern PP, Kern PWR-Tevis	Aug NQC	Solar
345	PG&E	LAMONT_1_SOLAR4	35059	HAYWORTHSPV	0.4	18.20	2	Kern	South Kern PP, Kern PWR-Tevis	Aug NQC	Solar
346	PG&E	LAMONT_1_SOLAR5	35054	REDCRESTSPV	0.4	2.07	1	Kern	South Kern PP, Kern PWR-Tevis	Aug NQC	Solar
347	PG&E	LIVOAK_1_UNIT 1	35058	PSE-LVOK	9.1	49.70	1	Kern	South Kern PP, Kern Oil	Aug NQC	Net Seller
348	PG&E	MAGUND_1_BKISR1				0.12		Kern	South Kern PP, Kern Oil	Not modeled Aug NQC	Solar
349	PG&E	MAGUND_1_BKSSR2				0.65		Kern	South Kern PP, Kern Oil	Not modeled Aug NQC	Solar
350	PG&E	MTNPOS_1_UNIT	35036	MT POSO	13.8	41.48	1	Kern	South Kern PP, Kern Oil	Aug NQC	Net Seller
351	PG&E	OLDRIV_6_BIOGAS				1.76		Kern	South Kern PP, Kern 70 kV	Not modeled Aug NQC	Market
352	PG&E	OLDRIV_6_CESDBM				0.92		Kern	South Kern PP, Kern 70 kV	Not modeled Aug NQC	Market
353	PG&E	OLDRIV_6_LKVBM1				0.92		Kern	South Kern PP, Kern 70 kV	Not modeled Aug NQC	Market
354	PG&E	OLDRV1_6_SOLAR	35091	OLD_RVR1	12.5	2.48	1	Kern	South Kern PP, Kern 70 kV	Aug NQC	Solar
355	PG&E	SIERRA_1_UNITS	35027	HISIERRA	13.8	26.22	1	Kern	South Kern PP	Aug NQC	Market
356	PG&E	SIERRA_1_UNITS	35027	HISIERRA	13.8	26.22	2	Kern	South Kern PP	Aug NQC	Market
357	PG&E	SKERN_6_SOLAR1	35089	S_KERN	0.48	2.48	1	Kern	South Kern PP, Kern 70 kV	Aug NQC	Solar
358	PG&E	SKERN_6_SOLAR2	365563	SKICSPV	0.4	1.24	1	Kern	South Kern PP, Kern 70 kV	Aug NQC	Solar

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	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
359	PG&E	VEDDER_1_SEKERN	35046	SEKR	9.11	2.37	1	Kern	South Kern PP, Kern Oil	Aug NQC	QF/Selfgen
360	PG&E	ZZZ_New Unit	365597	Q744P5G5	0.6	1.48	5	Kern	South Kern PP, Kern PWR-Tevis	No NQC - est. data	Solar
361	PG&E	ZZZ_New Unit	35058	EANDB_D1	9.1	0.00	RE	Kern	South Kern PP	No NQC - est. data	Market
362	PG&E	ADLIN_1_UNITS	31435	AIDLINGYSR1	13.8	11.00	1	NCNB	Eagle Rock, Fulton		Market
363	PG&E	ADLIN_1_UNITS	31437	AIDLINGYSR2	13.8	11.00	2	NCNB	Eagle Rock, Fulton		Market
364	PG&E	CLOVDL_1_SOLAR				0.19		NCNB	Eagle Rock, Fulton	Not modeled Aug NQC	Solar
365	PG&E	CSTOGA_6_LNDFIL				0.00		NCNB	Fulton	Not modeled Energy Only	Market
366	PG&E	FULTON_1_QF				0.04		NCNB	Fulton	Not modeled Aug NQC	QF/Selfgen
367	PG&E	GEYS11_7_UNIT11	31412	GEYSER11	13.8	68.00	1	NCNB	Eagle Rock, Fulton		Market
368	PG&E	GEYS12_7_UNIT12	31414	GEYSER12	13.8	50.00	1	NCNB	Fulton		Market
369	PG&E	GEYS13_7_UNIT13	31416	GEYSER13	13.8	56.00	1	NCNB			Market
370	PG&E	GEYS14_7_UNIT14	31418	GEYSER14	13.8	70.00	1	NCNB	Fulton		Market
371	PG&E	GEYS16_7_UNIT16	31420	GEYSER16	13.8	63.00	1	NCNB	Fulton		Market
372	PG&E	GEYS17_7_UNIT17	31422	GEYSER17	13.8	75.50	1	NCNB	Fulton		Market
373	PG&E	GEYS18_7_UNIT18	31424	GEYSER18	13.8	72.00	1	NCNB			Market
374	PG&E	GEYS20_7_UNIT20	31426	GEYSER20	13.8	50.00	1	NCNB			Market
375	PG&E	GYS5X6_7_UNITS	31406	GEYSR5-6	13.8	42.50	1	NCNB	Eagle Rock, Fulton		Market
376	PG&E	GYS5X6_7_UNITS	31406	GEYSR5-6	13.8	42.50	2	NCNB	Eagle Rock, Fulton		Market
377	PG&E	GYS7X8_7_UNITS	31408	GEYSER78	13.8	47.90	1	NCNB	Eagle Rock, Fulton		Market
378	PG&E	GYS7X8_7_UNITS	31408	GEYSER78	13.8	47.90	2	NCNB	Eagle Rock, Fulton		Market
379	PG&E	GYSRVL_7_WSPRNG				0.00		NCNB	Fulton	Not modeled Aug NQC	QF/Selfgen
380	PG&E	HILAND_7_YOLOWD				0.00		NCNB	Eagle Rock, Fulton	Not Modeled. Energy Only	Market
381	PG&E	IGNACO_1_QF				0.01		NCNB		Not modeled Aug NQC	QF/Selfgen
382	PG&E	INDVLY_1_UNITS	31436	INDIAN V	9.1	1.59	1	NCNB	Eagle Rock, Fulton	Aug NQC	Net Seller
383	PG&E	MONTPH_7_UNITS	32700	MONTICLO	9.1	3.08	1	NCNB	Fulton	Aug NQC	Market
384	PG&E	MONTPH_7_UNITS	32700	MONTICLO	9.1	3.08	2	NCNB	Fulton	Aug NQC	Market
385	PG&E	MONTPH_7_UNITS	32700	MONTICLO	9.1	0.92	3	NCNB	Fulton	Aug NQC	Market
386	PG&E	NCPA_7_GP1UN1	38106	NCPA1GY1	13.8	38.85	1	NCNB		Aug NQC	MUNI
387	PG&E	NCPA_7_GP1UN2	38108	NCPA1GY2	13.8	39.94	1	NCNB		Aug NQC	MUNI
388	PG&E	NCPA_7_GP2UN3	38110	NCPA2GY1	13.8	0.00	1	NCNB	Fulton	Aug NQC	MUNI
389	PG&E	NCPA_7_GP2UN4	38112	NCPA2GY2	13.8	52.73	1	NCNB	Fulton	Aug NQC	MUNI
390	PG&E	NOVATO_6_LNDFL				3.45		NCNB		Not modeled Aug NQC	Market
391	PG&E	POTTER_6_UNITS	31433	POTTRVLY	2.4	0.74	1	NCNB	Eagle Rock, Fulton	Aug NQC	Market
392	PG&E	POTTER_6_UNITS	31433	POTTRVLY	2.4	0.34	3	NCNB	Eagle Rock, Fulton	Aug NQC	Market
393	PG&E	POTTER_6_UNITS	31433	POTTRVLY	2.4	0.34	4	NCNB	Eagle Rock, Fulton	Aug NQC	Market

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	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
394	PG&E	POTTER_7_VECINO				0.00		NCNB	Eagle Rock, Fulton	Not modeled Aug NQC	QF/Selfgen
395	PG&E	SANTFG_7_UNITS	31400	SANTA FE	13.8	36.00	1	NCNB			Market
396	PG&E	SANTFG_7_UNITS	31401	SANTA FE	13.8	36.00	2	NCNB			Market
397	PG&E	SMUDGO_7_UNIT 1	31430	SONOMAPPGEO	13.8	47.00	1	NCNB			Market
398	PG&E	SNMALF_6_UNITS	31446	SONMA LF	9.1	3.43	1	NCNB	Fulton	Aug NQC	QF/Selfgen
399	PG&E	UKIAH_7_LAKEMN	38020	CITY UKH	115	1.21	2	NCNB	Eagle Rock, Fulton	Aug NQC	MUNI
400	PG&E	UKIAH_7_LAKEMN	38020	CITY UKH	115	0.49	1	NCNB	Eagle Rock, Fulton	Aug NQC	MUNI
401	PG&E	ZZ_GEYS17_2_BOTRCK	31421	BOTTLERK	13.8	0.00	1	NCNB	Fulton	Energy Only and Mothballed	Market
402	PG&E	ALLGNY_6_HYDRO1				0.03		Sierra		Not modeled Aug NQC	Market
403	PG&E	APLHIL_1_SFKHY1				0.00		Sierra	South of Rio Oso, South of Palermo	Not modeled Energy Only	Market
404	PG&E	BELDEN_7_UNIT 1	31784	BELDEN	13.8	88.00	1	Sierra	South of Palermo	Aug NQC	Market
405	PG&E	BIOMAS_1_UNIT 1	32156	WOODLAND	13.8	7.88	1	Sierra	Drum-Rio Oso, South of Palermo	Aug NQC	Net Seller
406	PG&E	BNNIEN_7_ALTAPH	32376	BONNIE N	60	0.66		Sierra	Placer, Gold Hill-Drum, Drum-Rio Oso, South of Rio Oso, South of Palermo	Not modeled Aug NQC	Market
407	PG&E	BOGUE_1_UNITA1	32451	FREC	13.8	47.38	1	Sierra	Bogue, Drum-Rio Oso	Aug NQC	Market
408	PG&E	BOWMN_6_HYDRO	32480	BOWMAN	9.11	2.03	1	Sierra	Drum-Rio Oso, South of Palermo	Aug NQC	MUNI
409	PG&E	BUCKCK_2_HYDRO				0.08		Sierra	South of Palermo	Not modeled Aug NQC	Market
410	PG&E	BUCKCK_7_OAKFLT				0.57		Sierra	South of Palermo	Not modeled Aug NQC	Market
411	PG&E	BUCKCK_7_PL1X2	31820	BCKS CRK	11	25.04	1	Sierra	South of Palermo	Aug NQC	Market
412	PG&E	BUCKCK_7_PL1X2	31820	BCKS CRK	11	21.76	2	Sierra	South of Palermo	Aug NQC	Market
413	PG&E	CAMPFW_7_FARWST	32470	CMP.FARW	9.11	3.70	1	Sierra		Aug NQC	MUNI
414	PG&E	CHICPK_7_UNIT 1	32462	CHI.PARK	11.5	27.20	1	Sierra	Placer, Gold Hill-Drum, Drum-Rio Oso, South of Rio Oso, South of Palermo	Aug NQC	MUNI
415	PG&E	COLGAT_7_UNIT 1	32450	COLGATE1	13.8	156.68	1	Sierra		Aug NQC	MUNI
416	PG&E	COLGAT_7_UNIT 2	32452	COLGATE2	13.8	156.68	1	Sierra		Aug NQC	MUNI
417	PG&E	CRESTA_7_PL1X2	31812	CRESTA	11.5	24.03	2	Sierra	South of Palermo	Aug NQC	Market
418	PG&E	CRESTA_7_PL1X2	31812	CRESTA	11.5	23.57	1	Sierra	South of Palermo	Aug NQC	Market
419	PG&E	DAVIS_1_SOLAR1				0.00		Sierra	Drum-Rio Oso, South of Palermo	Not modeled Energy Only	Solar
420	PG&E	DAVIS_1_SOLAR2				0.00		Sierra	Drum-Rio Oso, South of Palermo	Not modeled Aug NQC	Solar

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	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
421	PG&E	DAVIS_7_MNMETH				2.33		Sierra	Drum-Rio Oso, South of Palermo	Not modeled Aug NQC	Market
422	PG&E	DEADCK_1_UNIT	31862	DEADWOOD	9.11	0.02	1	Sierra	Drum-Rio Oso	Aug NQC	MUNI
423	PG&E	DEERCR_6_UNIT 1	32474	DEER CRK	2.4	3.14	1	Sierra	Drum-Rio Oso, South of Palermo	Aug NQC	Market
424	PG&E	DRUM_7_PL1X2	32504	DRUM 1-2	6.6	5.20	1	Sierra	Drum-Rio Oso, South of Palermo	Aug NQC	Market
425	PG&E	DRUM_7_PL1X2	32504	DRUM 1-2	6.6	5.20	2	Sierra	Drum-Rio Oso, South of Palermo	Aug NQC	Market
426	PG&E	DRUM_7_PL3X4	32506	DRUM 3-4	6.6	5.20	2	Sierra	Drum-Rio Oso, South of Palermo	Aug NQC	Market
427	PG&E	DRUM_7_PL3X4	32506	DRUM 3-4	6.6	4.40	1	Sierra	Drum-Rio Oso, South of Palermo	Aug NQC	Market
428	PG&E	DRUM_7_UNIT 5	32454	DRUM 5	13.8	47.74	1	Sierra	Drum-Rio Oso, South of Palermo	Aug NQC	Market
429	PG&E	DUTCH1_7_UNIT 1	32464	DTCHFLT1	11	19.00	1	Sierra	Placer, Gold Hill-Drum, Drum-Rio Oso, South of Rio Oso, South of Palermo	Aug NQC	Market
430	PG&E	DUTCH2_7_UNIT 1	32502	DTCHFLT2	6.9	16.76	1	Sierra	Drum-Rio Oso, South of Palermo	Aug NQC	MUNI
431	PG&E	ELDORO_7_UNIT 1	32513	ELDRADO1	21.6	2.53	1	Sierra	Gold Hill-Drum, South of Rio Oso, South of Palermo		Market
432	PG&E	ELDORO_7_UNIT 2	32514	ELDRADO2	21.6	5.18	1	Sierra	Gold Hill-Drum, South of Rio Oso, South of Palermo		Market
433	PG&E	FMEADO_6_HELLHL	32486	HELLHOLE	9.11	0.41	1	Sierra	South of Rio Oso, South of Palermo	Aug NQC	MUNI
434	PG&E	FMEADO_7_UNIT	32508	FRNCH MD	4.2	16.00	1	Sierra	South of Rio Oso, South of Palermo	Aug NQC	MUNI
435	PG&E	FORBST_7_UNIT 1	31814	FORBSTWN	11.5	37.50	1	Sierra	Drum-Rio Oso	Aug NQC	MUNI
436	PG&E	GRIDLY_6_SOLAR	38054	GRIDLEY	60	0.00	1	Sierra	Pease	Energy Only	Solar
437	PG&E	GRIZLY_1_UNIT 1	31900	GRIZZLYG	6.9	20.00	1	Sierra	South of Palermo	Aug NQC	MUNI
438	PG&E	GRNLF2_1_UNIT	32492	GRNLEAF2	13.8	49.20	1	Sierra	Pease, Drum-Rio Oso	Aug NQC	QF/Selfgen
439	PG&E	HALSEY_6_UNIT	32478	HALSEY F	6.6	5.22	1	Sierra	Placer, Gold Hill-Drum, Drum-Rio Oso, South of Rio Oso, South of Palermo	Aug NQC	Market
440	PG&E	HAYPRS_6_HAYHD1	32488	HAYPRES+	9.11	2.50	1	Sierra	Drum-Rio Oso, South of Palermo	Aug NQC	Market
441	PG&E	HAYPRS_6_HAYHD2	32488	HAYPRES+	9.11	2.89	2	Sierra	Drum-Rio Oso, South of Palermo	Aug NQC	Market
442	PG&E	HIGGNS_1_COMBIE				0.33		Sierra	Drum-Rio Oso, South of Rio Oso, South of Palermo	Not modeled Aug NQC	Market

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	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
443	PG&E	HIGGNS_7_QFUNTS				0.24		Sierra	Drum-Rio Oso, South of Rio Oso, South of Palermo	Not modeled Aug NQC	QF/Selfgen
444	PG&E	KELYRG_6_UNIT	31834	KELLYRDG	4.16	11.00	1	Sierra	Drum-Rio Oso	Aug NQC	MUNI
445	PG&E	LIVEOK_6_SOLAR				0.06		Sierra	Pease	Not modeled Aug NQC	Solar
446	PG&E	LODIEC_2_PL1X2	38123	LODIECCT	18	199.03	1	Sierra	South of Rio Oso, South of Palermo		MUNI
447	PG&E	LODIEC_2_PL1X2	38124	LODIECST	18	103.55	1	Sierra	South of Rio Oso, South of Palermo		MUNI
448	PG&E	MDFKRL_2_PROJCT	32458	RALSTON	13.8	82.13	1	Sierra	South of Rio Oso, South of Palermo	Aug NQC	MUNI
449	PG&E	MDFKRL_2_PROJCT	32456	MIDLFORK	13.8	63.94	1	Sierra	South of Rio Oso, South of Palermo	Aug NQC	MUNI
450	PG&E	MDFKRL_2_PROJCT	32456	MIDLFORK	13.8	63.94	2	Sierra	South of Rio Oso, South of Palermo	Aug NQC	MUNI
451	PG&E	NAROW1_2_UNIT	32466	NARROWS1	11	12.00	1	Sierra		Aug NQC	Market
452	PG&E	NAROW2_2_UNIT	32468	NARROWSPH2	13.8	55.00	1	Sierra		Aug NQC	MUNI
453	PG&E	NWCSTL_7_UNIT 1	32460	NEWCSTLE	13.2	0.18	1	Sierra	Placer, Gold Hill-Drum, Drum-Rio Oso, South of Rio Oso, South of Palermo	Aug NQC	Market
454	PG&E	OROVIL_6_UNIT	31888	OROVLENRG	4.16	7.50	1	Sierra	Drum-Rio Oso	Aug NQC	Market
455	PG&E	OXBOW_6_DRUM	32484	OXBOW F	9.11	3.22	1	Sierra	Drum-Rio Oso, South of Palermo	Aug NQC	MUNI
456	PG&E	PEASE_1_TBEBT1				5.00		Sierra	Pease, Drum-Rio Oso	Not modeled	Battery
457	PG&E	PLACVL_1_CHILIB	32510	CHILIBAR	4.2	2.89	1	Sierra	Gold Hill-Drum, South of Rio Oso, South of Palermo	Aug NQC	Market
458	PG&E	PLACVL_1_RCKCRE				0.00		Sierra	South of Rio Oso, South of Palermo	Not modeled Aug NQC	Market
459	PG&E	PLSNTG_7_LNCLND	32408	PLSNT GR	60	3.60		Sierra	Drum-Rio Oso, South of Rio Oso, South of Palermo	Not modeled Aug NQC	Market
460	PG&E	POEPH_7_UNIT 1	31790	POE 1	13.8	44.00	1	Sierra	South of Palermo	Aug NQC	Market
461	PG&E	POEPH_7_UNIT 2	31792	POE 2	13.8	42.64	1	Sierra	South of Palermo	Aug NQC	Market
462	PG&E	RCKCRK_7_UNIT 1	31786	ROCK CK1	13.8	30.00	1	Sierra	South of Palermo	Aug NQC	Market
463	PG&E	RCKCRK_7_UNIT 2	31788	ROCK CK2	13.8	40.00	1	Sierra	South of Palermo	Aug NQC	Market
464	PG&E	RIOOSO_1_QF				0.59		Sierra	Drum-Rio Oso, South of Palermo	Not modeled Aug NQC	QF/Selfgen
465	PG&E	ROLLIN_6_UNIT	32476	ROLLINSF	6.6	5.94	1	Sierra	Drum-Rio Oso, South of Palermo	Aug NQC	MUNI
466	PG&E	SLYCRK_1_UNIT 1	31832	SLY.CR.	6.6	13.00	1	Sierra	Drum-Rio Oso	Aug NQC	MUNI
467	PG&E	SPAULD_6_UNIT 3	32472	SPAULDG	9.11	3.76	3	Sierra	Drum-Rio Oso, South of Palermo	Aug NQC	Market

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	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
468	PG&E	SPAULD_6_UNIT12	32472	SPAULDG	9.11	2.23	1	Sierra	Drum-Rio Oso, South of Palermo	Aug NQC	Market
469	PG&E	SPAULD_6_UNIT12	32472	SPAULDG	9.11	1.40	2	Sierra	Drum-Rio Oso, South of Palermo	Aug NQC	Market
470	PG&E	SPI LI_2_UNIT 1	32498	SPILINCF	12.5	9.66	1	Sierra	Drum-Rio Oso, South of Rio Oso, South of Palermo	Aug NQC	Net Seller
471	PG&E	STIGCT_2_LODI	38114	STIG CC	13.8	49.50	1	Sierra	South of Rio Oso, South of Palermo		MUNI
472	PG&E	ULTRCK_2_UNIT	32500	RBROCKLI	12.47	23.11	1	Sierra	Drum-Rio Oso, South of Rio Oso, South of Palermo	Aug NQC	Market
473	PG&E	WDLEAF_7_UNIT 1	31794	WOODLEAF	13.8	60.00	1	Sierra	Drum-Rio Oso	Aug NQC	MUNI
474	PG&E	WHEATL_6_LNDFIL	32350	WHEATLND	60	3.55		Sierra		Not modeled Aug NQC	Market
475	PG&E	WISE_1_UNIT 1	32512	WISE	12	7.36	1	Sierra	Placer, Gold Hill-Drum, Drum-Rio Oso, South of Rio Oso, South of Palermo	Aug NQC	Market
476	PG&E	WISE_1_UNIT 2	32512	WISE	12	0.00	1	Sierra	Placer, Gold Hill-Drum, Drum-Rio Oso, South of Rio Oso, South of Palermo	Aug NQC	Market
477	PG&E	YUBACT_1_SUNSWT	32494	YUBA CTY	13.8	49.97	1	Sierra	Pease, Drum-Rio Oso	Aug NQC	Net Seller
478	PG&E	YUBACT_6_UNITA1	32496	YCEC	13.8	47.16	1	Sierra	Pease, Drum-Rio Oso		Market
479	PG&E	ZZ_GRNLF1_1_UNITS	32490	GRNLEAF1	13.8	0.00	1	Sierra	Bogue, Drum-Rio Oso	Retired	Market
480	PG&E	ZZ_GRNLF1_1_UNITS	32491	GRNLEAF1	13.8	0.00	2	Sierra	Bogue, Drum-Rio Oso	Retired	Market
481	PG&E	ZZ_NA	32162	RIV.DLTA	9.11	0.00	1	Sierra	Drum-Rio Oso, South of Palermo	No NQC - hist. data	QF/Selfgen
482	PG&E	ZZ_UCDAVS_1_UNIT	32166	UC DAVIS	9.11	0.00	RN	Sierra	Drum-Rio Oso, South of Palermo	No NQC - hist. data	QF/Selfgen
483	PG&E	ZZZ_New Unit	365936	Q653FSPV	0.12	0.00	1	Sierra	Drum-Rio Oso, South of Palermo	Energy Only	Solar
484	PG&E	ZZZ_New Unit	365940	Q653FSPV	0.12	0.00	2	Sierra	Drum-Rio Oso, South of Palermo	Energy Only	Solar
485	PG&E	ZZZ_New Unit	365938	Q653FC6B	0.48	0.00	3	Sierra	Drum-Rio Oso, South of Palermo	Energy Only	Battery
486	PG&E	BEARDS_7_UNIT 1	34074	BEARDSLY	6.9	4.80	1	Stockton	Tesla-Bellota, Stanislaus	Aug NQC	MUNI
487	PG&E	CAMCHE_1_PL1X3	33850	CAMANCHE	4.2	0.78	1	Stockton	Tesla-Bellota	Aug NQC	MUNI
488	PG&E	CAMCHE_1_PL1X3	33850	CAMANCHE	4.2	0.78	2	Stockton	Tesla-Bellota	Aug NQC	MUNI
489	PG&E	CAMCHE_1_PL1X3	33850	CAMANCHE	4.2	0.78	3	Stockton	Tesla-Bellota	Aug NQC	MUNI
490	PG&E	CENT40_1_C40SR1	365683	Q1103SPV	0.315	4.96	1	Stockton	Tesla-Bellota	Aug NQC	Solar
491	PG&E	CRWCKS_1_SOLAR1	34053	CRWCRKSLR1G	0.8	0.00	1	Stockton	Tesla-Bellota	Energy Only	Solar

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	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
492	PG&E	DONNLS_7_UNIT	34058	DONNELLS	13.8	72.00	1	Stockton	Tesla-Bellota, Stanislaus	Aug NQC	MUNI
493	PG&E	FROGTN_1_UTICAA				0.37		Stockton	Tesla-Bellota, Stanislaus	Not Modeled Aug NQC	Market
494	PG&E	FROGTN_1_UTICAM				1.51		Stockton	Tesla-Bellota, Stanislaus	Not Modeled Aug NQC	Market
495	PG&E	LOCKFD_1_BEARCK				0.19		Stockton	Tesla-Bellota	Not Modeled Aug NQC	Solar
496	PG&E	LOCKFD_1_KSOLAR				0.12		Stockton	Tesla-Bellota	Not Modeled Aug NQC	Solar
497	PG&E	LODI25_2_UNIT 1	38120	LODI25CT	13.8	23.80	1	Stockton	Lockeford		MUNI
498	PG&E	MANTEC_1_ML1SR1				0.00		Stockton	Tesla-Bellota	Not modeled Energy Only	Solar
499	PG&E	PEORIA_1_SOLAR				0.19		Stockton	Tesla-Bellota, Stanislaus	Not modeled Aug NQC	Solar
500	PG&E	PHOENX_1_UNIT				0.92		Stockton	Tesla-Bellota, Stanislaus	Not modeled Aug NQC	Market
501	PG&E	SCHLTE_1_PL1X3	33811	GWFTRCY3	13.8	149.94	1	Stockton	Tesla-Bellota		Market
502	PG&E	SCHLTE_1_PL1X3	33805	GWFTRCY1	13.8	93.05	1	Stockton	Tesla-Bellota		Market
503	PG&E	SCHLTE_1_PL1X3	33807	GWFTRCY2	13.8	93.05	1	Stockton	Tesla-Bellota		Market
504	PG&E	SNDBAR_7_UNIT 1	34060	SANDBAR	13.8	7.75	1	Stockton	Tesla-Bellota, Stanislaus	Aug NQC	MUNI
505	PG&E	SPIFBD_1_PL1X2	34055	SPISONOR	13.8	3.67	1	Stockton	Tesla-Bellota, Stanislaus	Aug NQC	Market
506	PG&E	SPRGAP_1_UNIT 1	34078	SPRNG GP	6	0.09	1	Stockton	Tesla-Bellota, Stanislaus	Aug NQC	Market
507	PG&E	STANIS_7_UNIT 1	34062	STANISLS	13.8	73.92	1	Stockton	Tesla-Bellota, Stanislaus	Aug NQC	Market
508	PG&E	STNRES_1_UNIT	34056	COVANTAS	13.8	19.60	1	Stockton	Tesla-Bellota	Aug NQC	Net Seller
509	PG&E	TULLCK_7_UNITS	34076	TULLOCH	6.9	7.52	2	Stockton	Tesla-Bellota	Aug NQC	MUNI
510	PG&E	TULLCK_7_UNITS	34076	TULLOCH	6.9	6.68	1	Stockton	Tesla-Bellota	Aug NQC	MUNI
511	PG&E	TULLCK_7_UNITS	34076	TULLOCH	6.9	4.94	3	Stockton	Tesla-Bellota	Aug NQC	MUNI
512	PG&E	ULTPCH_1_UNIT 1	34050	CHINESESTA	12.47	17.98	1	Stockton	Tesla-Bellota, Stanislaus	Aug NQC	Market
513	PG&E	VLYHOM_7_SSJID				0.54		Stockton	Tesla-Bellota, Stanislaus	Not modeled Aug NQC	MUNI
514	PG&E	ZZZ_New Unit	39343	Q1109	0.48	132.00	1	Stockton	Tesla-Bellota, Stanislaus	No NQC - est. data	Battery
515	PG&E	ZZZ_New Unit	366130	Q1350BES	0.69	10.50	1	Stockton	Tesla-Bellota	No NQC - est. data	Battery
516	PG&E	ZZZ_New Unit	365769	Q1116BES	12.5	10.00	2	Stockton	Tesla-Bellota	No NQC - est. data	Battery
517	PG&E	ZZZ_New Unit	366966	Q1350SPV	0.66	1.76	2	Stockton	Tesla-Bellota	No NQC - est. data	Solar
518	PG&E	ZZZ_New Unit	365556	SAFEWAYB	12.5	0.00	RN	Stockton	Tesla-Bellota	Energy Only	Market
519	SCE	ACACIA_6_SOLAR	29878	ACACIA_G	0.48	2.48	EQ	BC/Ventura		Aug NQC	Solar

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	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
520	SCE	ALAMO_6_UNIT	25653	ALAMO SC	13.8	13.07	1	BC/Ventura		Aug NQC	MUNI
521	SCE	BGSKYN_2_AS2SR1	29773	ANT2_EXP	0.63	13.02	EQ	BC/Ventura		Aug NQC	Solar
522	SCE	BGSKYN_2_ASPSR2	29776	ANT2_SPA	0.6	12.40	EQ	BC/Ventura		Aug NQC	Solar
523	SCE	BGSKYN_2_ASSR1B				14.00		BC/Ventura		Aug NQC	Solar
524	SCE	BGSKYN_2_ASSR3A	29745	BSKY_G_DSR3	0.6	1.86	1	BC/Ventura		Aug NQC	Solar
525	SCE	BGSKYN_2_ASSR3B	29745	BSKY_G_DSR3	0.6	0.62	1	BC/Ventura		Aug NQC	Solar
526	SCE	BGSKYN_2_BS3SR3	29774	ANTLP2_P45_G	0.44	2.48	EQ	BC/Ventura		Aug NQC	Solar
527	SCE	BIGCRK_2_EXESWD	24317	MAMOTH1G	13.8	80.45	1	BC/Ventura	Rector, Vestal	Aug NQC	Market
528	SCE	BIGCRK_2_EXESWD	24318	MAMOTH2G	13.8	80.45	2	BC/Ventura	Rector, Vestal	Aug NQC	Market
529	SCE	BIGCRK_2_EXESWD	24308	B CRK2-1	13.8	44.74	2	BC/Ventura	Rector, Vestal	Aug NQC	Market
530	SCE	BIGCRK_2_EXESWD	24308	B CRK2-1	13.8	43.71	1	BC/Ventura	Rector, Vestal	Aug NQC	Market
531	SCE	BIGCRK_2_EXESWD	24314	B CRK 4	11.5	43.54	42	BC/Ventura	Rector, Vestal	Aug NQC	Market
532	SCE	BIGCRK_2_EXESWD	24314	B CRK 4	11.5	43.37	41	BC/Ventura	Rector, Vestal	Aug NQC	Market
533	SCE	BIGCRK_2_EXESWD	24315	B CRK 8	13.8	37.86	82	BC/Ventura	Rector, Vestal	Aug NQC	Market
534	SCE	BIGCRK_2_EXESWD	24313	B CRK3-3	13.8	31.41	5	BC/Ventura	Rector, Vestal	Aug NQC	Market
535	SCE	BIGCRK_2_EXESWD	24312	B CRK3-2	13.8	30.98	4	BC/Ventura	Rector, Vestal	Aug NQC	Market
536	SCE	BIGCRK_2_EXESWD	24311	B CRK3-1	13.8	30.12	1	BC/Ventura	Rector, Vestal	Aug NQC	Market
537	SCE	BIGCRK_2_EXESWD	24312	B CRK3-2	13.8	30.12	3	BC/Ventura	Rector, Vestal	Aug NQC	Market
538	SCE	BIGCRK_2_EXESWD	24311	B CRK3-1	13.8	29.26	2	BC/Ventura	Rector, Vestal	Aug NQC	Market
539	SCE	BIGCRK_2_EXESWD	24307	B CRK1-2	13.8	26.85	4	BC/Ventura	Rector, Vestal	Aug NQC	Market
540	SCE	BIGCRK_2_EXESWD	24315	B CRK 8	13.8	21.00	81	BC/Ventura	Rector, Vestal	Aug NQC	Market
541	SCE	BIGCRK_2_EXESWD	24306	B CRK1-1	7.2	18.59	2	BC/Ventura	Rector, Vestal	Aug NQC	Market
542	SCE	BIGCRK_2_EXESWD	24307	B CRK1-2	13.8	18.59	3	BC/Ventura	Rector, Vestal	Aug NQC	Market
543	SCE	BIGCRK_2_EXESWD	24306	B CRK1-1	7.2	17.12	1	BC/Ventura	Rector, Vestal	Aug NQC	Market
544	SCE	BIGCRK_2_EXESWD	24309	B CRK2-2	7.2	16.95	4	BC/Ventura	Rector, Vestal	Aug NQC	Market
545	SCE	BIGCRK_2_EXESWD	24309	B CRK2-2	7.2	16.09	3	BC/Ventura	Rector, Vestal	Aug NQC	Market
546	SCE	BIGCRK_2_EXESWD	24310	B CRK2-3	7.2	15.92	6	BC/Ventura	Rector, Vestal	Aug NQC	Market
547	SCE	BIGCRK_2_EXESWD	24310	B CRK2-3	7.2	14.63	5	BC/Ventura	Rector, Vestal	Aug NQC	Market
548	SCE	BIGCRK_2_EXESWD	24323	PORTAL	4.8	8.26	1	BC/Ventura	Rector, Vestal	Aug NQC	Market
549	SCE	BIGCRK_7_DAM7				0.00		BC/Ventura	Rector, Vestal	Not modeled Energy Only	Market
550	SCE	BIGCRK_7_MAMRES				0.00		BC/Ventura	Rector, Vestal	Not modeled Energy Only	Market
551	SCE	BIGSKY_2_AS2BT1				127.00		BC/Ventura			Battery
552	SCE	BIGSKY_2_ASLBT2				100.00		BC/Ventura			Battery
553	SCE	BIGSKY_2_BSKSR6	29736	BSKY_G_BA	0.645	2.48	1	BC/Ventura		Aug NQC	Solar
554	SCE	BIGSKY_2_BSKSR7	29742	BSKY_G_BC	0.645	2.48	1	BC/Ventura		Aug NQC	Solar
555	SCE	BIGSKY_2_BSKSR8	29739	BSKY_G_BB	0.645	2.48	1	BC/Ventura		Aug NQC	Solar
556	SCE	BIGSKY_2_SOLAR1	29724	BSKY_G_ABSR	0.42	2.48	1	BC/Ventura		Aug NQC	Solar
557	SCE	BIGSKY_2_SOLAR2				32.62		BC/Ventura		Not modeled Aug NQC	Solar
558	SCE	BIGSKY_2_SOLAR3	29727	BSKY_G_SMR	0.42	2.48	1	BC/Ventura		Aug NQC	Solar
559	SCE	BIGSKY_2_SOLAR4	29701	BSKY_G_ESWA	0.42	16.64	1	BC/Ventura		Aug NQC	Solar
560	SCE	BIGSKY_2_SOLAR5	29733	BSKY_G_DR12	0.44	0.62	1	BC/Ventura		Aug NQC	Solar

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	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
561	SCE	BIGSKY_2_SOLAR6	29730	BSKY_G_SOLV	0.42	10.54	1	BC/Ventura		Aug NQC	Solar
562	SCE	BIGSKY_2_SOLAR7	29733	BSKY_G_DSR12	0.44	6.20	1	BC/Ventura		Aug NQC	Solar
563	SCE	CEDUCR_2_SOLAR1	25049	DUCOR1	0.385	0.00	EQ	BC/Ventura	Vestal	Energy Only	Solar
564	SCE	CEDUCR_2_SOLAR2	25052	DUCOR2	0.385	0.00	EQ	BC/Ventura	Vestal	Energy Only	Solar
565	SCE	CEDUCR_2_SOLAR3	25055	DUCOR3	0.385	0.00	EQ	BC/Ventura	Vestal	Energy Only	Solar
566	SCE	CEDUCR_2_SOLAR4	25058	DUCOR4	0.385	0.00	EQ	BC/Ventura	Vestal	Energy Only	Solar
567	SCE	CHARMN_2_PGONG1	24340	CHARMIN	13.8	19.87	1	BC/Ventura	S.Clara, Moorpark		QF/Selfgen
568	SCE	DELSUR_6_BSOLAR	25802	DEL SUR FD2	12.47	0.37	EQ	BC/Ventura		Aug NQC	Solar
569	SCE	DELSUR_6_CREST				0.00		BC/Ventura		Not modeled Energy Only	Market
570	SCE	DELSUR_6_DRYFRB	25802	DEL SUR FD2	12.47	0.62	EQ	BC/Ventura		Aug NQC	Market
571	SCE	DELSUR_6_SOLAR1	25803	DEL SUR FD3	12.47	0.81	EQ	BC/Ventura		Aug NQC	Solar
572	SCE	DELSUR_6_SOLAR4				0.00		BC/Ventura		Not modeled Energy Only	Solar
573	SCE	DELSUR_6_SOLAR5				0.00		BC/Ventura		Not modeled Energy Only	Solar
574	SCE	EASTWD_7_UNIT	24319	EASTWOOD	13.8	199.00	1	BC/Ventura	Rector, Vestal		Market
575	SCE	EDMONS_2_NSPIN	25605	EDMON1AP	14.4	16.86	1	BC/Ventura		Pumps	MUNI
576	SCE	EDMONS_2_NSPIN	25606	EDMON2AP	14.4	16.86	2	BC/Ventura		Pumps	MUNI
577	SCE	EDMONS_2_NSPIN	25607	EDMON3AP	14.4	16.86	3	BC/Ventura		Pumps	MUNI
578	SCE	EDMONS_2_NSPIN	25607	EDMON3AP	14.4	16.86	4	BC/Ventura		Pumps	MUNI
579	SCE	EDMONS_2_NSPIN	25608	EDMON4AP	14.4	16.86	5	BC/Ventura		Pumps	MUNI
580	SCE	EDMONS_2_NSPIN	25608	EDMON4AP	14.4	16.86	6	BC/Ventura		Pumps	MUNI
581	SCE	EDMONS_2_NSPIN	25609	EDMON5AP	14.4	16.86	7	BC/Ventura		Pumps	MUNI
582	SCE	EDMONS_2_NSPIN	25609	EDMON5AP	14.4	16.86	8	BC/Ventura		Pumps	MUNI
583	SCE	EDMONS_2_NSPIN	25610	EDMON6AP	14.4	16.86	9	BC/Ventura		Pumps	MUNI
584	SCE	EDMONS_2_NSPIN	25610	EDMON6AP	14.4	16.86	10	BC/Ventura		Pumps	MUNI
585	SCE	EDMONS_2_NSPIN	25611	EDMON7AP	14.4	16.86	11	BC/Ventura		Pumps	MUNI
586	SCE	EDMONS_2_NSPIN	25611	EDMON7AP	14.4	16.86	12	BC/Ventura		Pumps	MUNI
587	SCE	EDMONS_2_NSPIN	25612	EDMON8AP	14.4	16.86	13	BC/Ventura		Pumps	MUNI
588	SCE	EDMONS_2_NSPIN	25612	EDMON8AP	14.4	16.86	14	BC/Ventura		Pumps	MUNI
589	SCE	GLDFGR_6_SOLAR1	25079	PRIDE B G	0.64	2.48	1	BC/Ventura		Aug NQC	Solar
590	SCE	GLDFGR_6_SOLAR2	25169	PRIDE C G	0.64	1.41	1	BC/Ventura		Aug NQC	Solar
591	SCE	GLOW_6_SOLAR	29896	APPINV	0.42	0.00	EQ	BC/Ventura		Energy Only	Solar
592	SCE	GOLETA_2_QF	25895	GOLETA EQFD	12.47	0.10	EQ	BC/Ventura	S.Clara, Moorpark, Goleta	Aug NQC	QF/Selfgen
593	SCE	GOLETA_2_VALBT1	25726	WDT1492_G	0.6	10.00	EQ	BC/Ventura	S.Clara, Moorpark, Goleta		Battery
594	SCE	GOLETA_6_ELLWOD	29004	ELLWOOD	13.8	54.00	1	BC/Ventura	S.Clara, Moorpark, Goleta		Market
595	SCE	GOLETA_6_EXGEN	24362	EXGEN2	13.8	0.00	G1	BC/Ventura	S.Clara, Moorpark, Goleta	Aug NQC - Currently out of service	QF/Selfgen

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	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
596	SCE	GOLETA_6_EXGEN	24326	EXGEN1	13.8	0.00	S1	BC/Ventura	S.Clara, Moorpark, Goleta	Aug NQC - Currently out of service	QF/Selfgen
597	SCE	LEBECS_2_UNITS	29053	PSTRIAS1	18	176.14	S1	BC/Ventura		Aug NQC	Market
598	SCE	LEBECS_2_UNITS	29051	PSTRIAG1	18	171.10	G1	BC/Ventura		Aug NQC	Market
599	SCE	LEBECS_2_UNITS	29052	PSTRIAG2	18	171.10	G2	BC/Ventura		Aug NQC	Market
600	SCE	LEBECS_2_UNITS	29054	PSTRIAG3	18	171.10	G3	BC/Ventura		Aug NQC	Market
601	SCE	LEBECS_2_UNITS	29055	PSTRIAS2	18	85.55	S2	BC/Ventura		Aug NQC	Market
602	SCE	LITLRK_6_GBCSR1	25798	OASIS FD	12.47	0.37	EQ	BC/Ventura		Aug NQC	Solar
603	SCE	LITLRK_6_SEPV01				0.00		BC/Ventura		Not moleded Energy Only	Market
604	SCE	LITLRK_6_SOLAR1	25840	LITLRCK FD	12.47	0.62	EQ	BC/Ventura		Aug NQC	Solar
605	SCE	LITLRK_6_SOLAR2	25840	LITLRCK FD	12.47	0.25	EQ	BC/Ventura		Aug NQC	Solar
606	SCE	LITLRK_6_SOLAR3	25840	LITLRCK FD	12.47	0.25	EQ	BC/Ventura		Aug NQC	Solar
607	SCE	LITLRK_6_SOLAR4	25840	LITLRCK FD	12.47	0.37	EQ	BC/Ventura		Aug NQC	Solar
608	SCE	LNCSTR_6_CREST				0.00		BC/Ventura		Not modeled Energy Only	Market
609	SCE	LNCSTR_6_SOLAR2	25796	LANCSTR FD1	12.47	6.13	EQ	BC/Ventura		Aug NQC	Solar
610	SCE	MNDALY_6_MCGRTH	29306	MCGPKGEN	13.8	48.56	1	BC/Ventura	S.Clara, Moorpark		Market
611	SCE	MOORPK_2_ACOBT1				1.00		BC/Ventura	Moorpark	Not modeled	Battery
612	SCE	MOORPK_2_CALABS	25081	WDT251	13.8	3.98	EQ	BC/Ventura	Moorpark	Aug NQC	Market
613	SCE	MOORPK_6_QF	240111	MOORARK EQFD	16	0.32	HY	BC/Ventura	Moorpark	Aug NQC	Market
614	SCE	NEENCH_6_SOLAR	29900	ALPINE_G	0.48	8.18	EQ	BC/Ventura		Aug NQC	Solar
615	SCE	OASIS_6_CREST				0.00		BC/Ventura		Not modeled Energy Only	Market
616	SCE	OASIS_6_GBDSR4	25800	ANTLOPE EQFD	12.47	0.37	EQ	BC/Ventura		Aug NQC	Solar
617	SCE	OASIS_6_SOLAR1	25095	SOLARISG2	0.2	0.00	EQ	BC/Ventura		Energy Only	Solar
618	SCE	OASIS_6_SOLAR2	25075	SOLARISG	0.2	2.48	EQ	BC/Ventura		Aug NQC	Solar
619	SCE	OASIS_6_SOLAR3				0.00		BC/Ventura		Not modeled Energy Only	Solar
620	SCE	OMAR_2_UNIT 1	24102	OMAR 1G	13.8	72.67	1	BC/Ventura			Net Seller
621	SCE	OMAR_2_UNIT 2	24103	OMAR 2G	13.8	73.00	2	BC/Ventura			Net Seller
622	SCE	OMAR_2_UNIT 3	24104	OMAR 3G	13.8	73.00	3	BC/Ventura			Net Seller
623	SCE	OMAR_2_UNIT 4	24105	OMAR 4G	13.8	73.67	4	BC/Ventura			Net Seller
624	SCE	ORMOND_7_UNIT 1	24107	ORMOND1G	26	0.00	1	BC/Ventura	Moorpark	Retired by 2024	Market
625	SCE	ORMOND_7_UNIT 2	24108	ORMOND2G	26	0.00	2	BC/Ventura	Moorpark	Retired by 2024	Market
626	SCE	OSO_6_NSPIN	25614	OSO A P	13.2	2.25	1	BC/Ventura		Pumps	MUNI
627	SCE	OSO_6_NSPIN	25614	OSO A P	13.2	2.25	2	BC/Ventura		Pumps	MUNI
628	SCE	OSO_6_NSPIN	25614	OSO A P	13.2	2.25	3	BC/Ventura		Pumps	MUNI
629	SCE	OSO_6_NSPIN	25614	OSO A P	13.2	2.25	4	BC/Ventura		Pumps	MUNI
630	SCE	OSO_6_NSPIN	25615	OSO B P	13.2	2.25	5	BC/Ventura		Pumps	MUNI
631	SCE	OSO_6_NSPIN	25615	OSO B P	13.2	2.25	6	BC/Ventura		Pumps	MUNI
632	SCE	OSO_6_NSPIN	25615	OSO B P	13.2	2.25	7	BC/Ventura		Pumps	MUNI

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633	SCE	OSO_6_NSPIN	25615	OSO B P	13.2	2.25	8	BC/Ventura		Pumps	MUNI
634	SCE	PIUTE_6_GNBSR1	25840	LITLRCK FD	12.47	0.37	EQ	BC/Ventura		Aug NQC	Solar
635	SCE	PLAINV_6_BSOLAR	29917	SSOLAR_GRWKS	0.8	0.00	1	BC/Ventura		Energy Only	Solar
636	SCE	PLAINV_6_DSOLAR	29914	WADR_PV	0.42	1.24	1	BC/Ventura		Aug NQC	Solar
637	SCE	PLAINV_6_NLRSR1	29921	NLR_INVTR	0.42	0.00	1	BC/Ventura		Energy Only	Solar
638	SCE	PLAINV_6_SOLAR3	25089	CNTRL ANT G	0.42	0.00	1	BC/Ventura		Energy Only	Solar
639	SCE	PLAINV_6_SOLARC	25086	SIRA SOLAR G	0.8	0.00	1	BC/Ventura		Energy Only	Solar
640	SCE	PMDLET_6_SOLAR1	29926	WDT404_G	0.8	1.24	EQ	BC/Ventura		AugNQC	Solar
641	SCE	RECTOR_2_CREST				0.00		BC/Ventura	Rector, Vestal	Not modeled Energy Only	Market
642	SCE	RECTOR_2_IVANPV				0.00		BC/Ventura	Rector, Vestal	Not modeled Energy Only	Solar
643	SCE	RECTOR_2_KAWEAH	25756	KAWEAH3G	2.4	0.83	1	BC/Ventura	Rector, Vestal	Aug NQC	Market
644	SCE	RECTOR_2_KAWEAH	25755	KAWEAH1G	2.4	0.42	1	BC/Ventura	Rector, Vestal	Aug NQC	Market
645	SCE	RECTOR_2_KAWEAH	25754	KAWEAH2G	2.4	0.42	2	BC/Ventura	Rector, Vestal	Aug NQC	Market
646	SCE	RECTOR_2_KAWH 1	24370	KAWGEN	13.8	0.00	1	BC/Ventura	Rector, Vestal	Aug NQC	Market
647	SCE	RECTOR_2_QF	25855	RECTOR EQFD	12.47	0.00	EQ	BC/Ventura	Rector, Vestal	Aug NQC	Net Seller
648	SCE	RECTOR_2_TFDBM1				0.00		BC/Ventura	Rector, Vestal	Not modeled Energy Only	Market
649	SCE	RECTOR_7_TULARE				0.00		BC/Ventura	Rector, Vestal	Not modeled Aug NQC	Market
650	SCE	REDMAN_2_SOLAR	25800	ANTLOPE EQFD	12.47	0.47	EQ	BC/Ventura		Aug NQC	Solar
651	SCE	REDMAN_6_AVSSR1	25800	ANTLOPE EQFD	12.47	0.37	EQ	BC/Ventura		Aug NQC	Solar
652	SCE	ROSMND_6_SOLAR	25800	ANTLOPE EQFD	12.47	0.37	EQ	BC/Ventura		Aug NQC	Solar
653	SCE	RSMSLR_6_SOLAR1	29884	DAWNGEN	0.8	2.48	EQ	BC/Ventura		Aug NQC	Solar
654	SCE	RSMSLR_6_SOLAR2	29888	TWILGHTG	0.8	2.48	EQ	BC/Ventura		Aug NQC	Solar
655	SCE	SAUGUS_6_CREST				0.00		BC/Ventura		Not modeled Energy Only	Market
656	SCE	SAUGUS_6_MWDFTH	25721	FOOTHILL	66	7.00	EQ	BC/Ventura		Aug NQC	MUNI
657	SCE	SAUGUS_6_QF	25891	SUAGUS EQFD	12.47	0.28	EQ	BC/Ventura		Aug NQC	QF/Selfgen
658	SCE	SAUGUS_6_QF	25865	SUAGUS EQFD	12.47	0.28	EQ	BC/Ventura		Aug NQC	QF/Selfgen
659	SCE	SAUGUS_7_CHIQCN	25722	LANDFILL	66	5.35	EQ	BC/Ventura		Aug NQC	Market
660	SCE	SHUTLE_6_CREST				0.00		BC/Ventura		Not modeled Energy Only	Market
661	SCE	SNCLRA_2_HOWLNG				4.08		BC/Ventura	S.Clara, Moorpark	Not modeled Aug NQC	Market
662	SCE	SNCLRA_2_SILBT1	25899	WDT1520_G	0.48	11.00	EQ	BC/Ventura	S.Clara, Moorpark		Battery
663	SCE	SNCLRA_2_SPRHYD				0.19		BC/Ventura	S.Clara, Moorpark	Not modeled Aug NQC	Market
664	SCE	SNCLRA_2_UNIT	29952	CAMGEN	13.8	27.50	D1	BC/Ventura	S.Clara, Moorpark		Market
665	SCE	SNCLRA_2_UNIT1	24159	WILLAMET	3.8	27.80	D1	BC/Ventura	S.Clara, Moorpark	Aug NQC	Market
666	SCE	SNCLRA_2_VESBT1	29824	WDT1519	66	100.00	1	BC/Ventura	S.Clara, Moorpark		Battery
667	SCE	SNCLRA_6_OXGEN	24110	OXGEN	13.8	47.70	D1	BC/Ventura	S.Clara, Moorpark		QF/Selfgen

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668	SCE	SNCLRA_6_PROCGN	24119	PROCGEN	13.8	12.74	D1	BC/Ventura	S.Clara, Moorpark	Aug NQC	QF/Selfgen
669	SCE	SNCLRA_6_QF				0.00		BC/Ventura	S.Clara, Moorpark	Not modeled Aug NQC	QF/Selfgen
670	SCE	SPRGVL_2_CREST				0.00		BC/Ventura	Rector, Vestal	Not modeled Energy Only	Market
671	SCE	SPRGVL_2_EXETPV				0.00		BC/Ventura	Rector, Vestal	Not modeled Energy Only	Market
672	SCE	SPRGVL_2_LINDPV				0.00		BC/Ventura	Rector, Vestal	Not modeled Energy Only	Market
673	SCE	SPRGVL_2_PORTPV				0.00		BC/Ventura	Rector, Vestal	Not modeled Energy Only	Market
674	SCE	SPRGVL_2_TULESC	25714	TULE	66	0.00	EQ	BC/Ventura	Rector, Vestal	Aug NQC	Market
675	SCE	SUNSHN_2_LNDFL	29954	SUNSHINE	13.66	3.29	1	BC/Ventura		Aug NQC	Market
676	SCE	SUNSHN_2_LNDFL	29954	SUNSHINE	13.66	3.29	2	BC/Ventura		Aug NQC	Market
677	SCE	SUNSHN_2_LNDFL	29954	SUNSHINE	13.66	3.29	3	BC/Ventura		Aug NQC	Market
678	SCE	SUNSHN_2_LNDFL	29954	SUNSHINE	13.66	3.29	4	BC/Ventura		Aug NQC	Market
679	SCE	SUNSHN_2_LNDFL	29954	SUNSHINE	13.66	3.29	5	BC/Ventura		Aug NQC	Market
680	SCE	SYCAMR_2_UNIT 1	24143	SYCCYN1G	13.8	74.00	1	BC/Ventura		Aug NQC	Net Seller
681	SCE	SYCAMR_2_UNIT 2	24144	SYCCYN2G	13.8	76.00	2	BC/Ventura		Aug NQC	Net Seller
682	SCE	SYCAMR_2_UNIT 3	24145	SYCCYN3G	13.8	74.00	3	BC/Ventura		Aug NQC	Net Seller
683	SCE	SYCAMR_2_UNIT 4	24146	SYCCYN4G	13.8	76.00	4	BC/Ventura		Aug NQC	Net Seller
684	SCE	TENGEN_2_PL1X2	24148	TENNGEN1	13.8	20.10	D1	BC/Ventura		Aug NQC	Net Seller
685	SCE	TENGEN_2_PL1X2	24149	TENNGEN2	13.8	20.10	D2	BC/Ventura		Aug NQC	Net Seller
686	SCE	TULARE_2_TULBM1				0.00		BC/Ventura		Not modeled Energy Only	Market
687	SCE	VESTAL_2_KERN	24372	KR 3-1	11	5.24	1	BC/Ventura	Vestal	Aug NQC	QF/Selfgen
688	SCE	VESTAL_2_KERN	24373	KR 3-2	11	4.94	2	BC/Ventura	Vestal	Aug NQC	QF/Selfgen
689	SCE	VESTAL_2_RTS042	25874	VESTAL EQFC	12,47	0.00	EQ	BC/Ventura	Vestal	Energy Only	Market
690	SCE	VESTAL_2_SOLAR1	25064	TULRESLR_1G	0.39	2.48	EQ	BC/Ventura	Vestal	Aug NQC	Solar
691	SCE	VESTAL_2_SOLAR2	25065	TULRESLR_2G	0.39	1.74	EQ	BC/Ventura	Vestal	Aug NQC	Solar
692	SCE	VESTAL_2_TS5SR1	25874	VESTAL EQFC	12.47	6.92	PV	BC/Ventura	Vestal	Aug NQC	Solar
693	SCE	VESTAL_2_UNIT1	25874	VESTAL EQFC	12.47	2.83	SY	BC/Ventura	Vestal	Aug NQC	Market
694	SCE	VESTAL_2_WELLHD	24116	WELLGEN	13.8	49.00	1	BC/Ventura	Vestal		Market
695	SCE	VESTAL_6_QF	29008	LAKEGEN	13.8	3.66	1	BC/Ventura	Vestal	Aug NQC	Market
696	SCE	VESTAL_6_QF	29008	LAKEGEN	13.8	1.49	2	BC/Ventura	Vestal	Aug NQC	Market
697	SCE	WARNE_2_UNIT	25651	WARNE1	13.8	20.46	1	BC/Ventura		Aug NQC	MUNI
698	SCE	WARNE_2_UNIT	25652	WARNE2	13.8	20.46	2	BC/Ventura		Aug NQC	MUNI
699	SCE	ZZ_SPRGVL_2_QF	25867	SPRNGVL	12.47	0.00	EQ	BC/Ventura	Rector, Vestal	Aug NQC	QF/Selfgen
700	SCE	ZZZ_New Unit	29561	ANTLP2_P1_G1	0.63	125.00	1	BC/Ventura		No NQC - est. data	Battery
701	SCE	ZZZ_New Unit	25967	TOT896_G2ST	0.55	109.50	1	BC/Ventura	Vestal	No NQC - Pmax	Battery
702	SCE	ZZZ_New Unit	25961	TOT896_G1ST	0.55	109.50	1	BC/Ventura	Vestal	No NQC - Pmax	Battery
703	SCE	ZZZ_New Unit	29826	WDT1454	66	40.00	1	BC/Ventura	S.Clara, Moorpark	No NQC - Pmax	Battery
704	SCE	ZZZ_New Unit	29830	WDT1454	66	20.00	1	BC/Ventura	S.Clara, Moorpark	No NQC - Pmax	Battery

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	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
705	SCE	ZZZ_New Unit	25959	TOT896_G1PV	0.55	19.01	1	BC/Ventura	Vestal	No NQC - est. data	Solar
706	SCE	ZZZ_New Unit	25965	TOT896_G2PV	0.55	18.76	1	BC/Ventura	Vestal	No NQC - est. data	Solar
707	SCE	ZZZ_New Unit	240109	SAUGUS EQFD	16	17.40	EQ	BC/Ventura		No NQC - est. data	Market
708	SCE	ZZZ_New Unit	240110	GFID8045	16	13.20	SC	BC/Ventura	S.Clara, Moorpark, Goleta	No NQC - est. data	Market
709	SCE	ZZZ_New Unit	29767	ANTLP2_P7B_G	0.69	12.88	1	BC/Ventura		No NQC - est. data	Battery
710	SCE	ZZZ_New Unit	240106	ANTLOPE EQFD	16	11.00	ST	BC/Ventura		No NQC - est. data	Market
711	SCE	ZZZ_New Unit	29563	ANTLP2_P9_G2	0.69	10.23	2	BC/Ventura		No NQC - est. data	Solar
712	SCE	ZZZ_New Unit	25795	WDT1539_G	0.8	10.00	1	BC/Ventura	S.Clara, Moorpark, Goleta	No NQC - Pmax	Battery
713	SCE	ZZZ_New Unit	29566	ANTLP2_P1BG2	0.69	8.06	1	BC/Ventura		No NQC - est. data	Solar
714	SCE	ZZZ_New Unit	29782	ANTLP2_C2_G1	0.44	7.19	EQ	BC/Ventura		No NQC - est. data	Solar
715	SCE	ZZZ_New Unit	25068	WDT1490_PV	0.36	7.11	1	BC/Ventura	Vestal	No NQC - est. data	Solar
716	SCE	ZZZ_New Unit	25836	WDT1384_G	0.385	6.36	1	BC/Ventura	Vestal	No NQC - est. data	Solar
717	SCE	ZZZ_New Unit	240115	GOLETA EQFD	16	5.50	SC	BC/Ventura	S.Clara, Moorpark, Goleta	No NQC - Pmax	Market
718	SCE	ZZZ_New Unit	29771	ANT2_SPB	0.6	5.08	EQ	BC/Ventura		No NQC - est. data	Solar
719	SCE	ZZZ_New Unit	29565	ANTLP2_P10_G2	0.69	3.65	2	BC/Ventura		No NQC - est. data	Solar
720	SCE	ZZZ_New Unit	25855	RECTOR EQFD	12.47	2.42	PV	BC/Ventura	Rector, Vestal	No NQC - est. data	Solar
721	SCE	ZZZ_New Unit	29775	ANTLP2_P8_G1	0.66	2.18	1	BC/Ventura		No NQC - est. data	Solar
722	SCE	ZZZ_New Unit	240107	MOORARK EQFD	16	2.00	ST	BC/Ventura	Moorpark	No NQC - est. data	Market
723	SCE	ZZZ_New Unit	29774	ANTLP2_P4_G	0.63	1.88	1	BC/Ventura		No NQC - est. data	Solar
724	SCE	ZZZ_New Unit	25874	SPRNGVL EQFC	12.47	1.74	PV	BC/Ventura	Rector, Vestal	No NQC - est. data	Solar
725	SCE	ZZZ_New Unit	25874	SPRNGVL EQFC	12.47	1.40	HY	BC/Ventura	Rector, Vestal	No NQC - est. data	Market
726	SCE	ZZZ_New Unit	240113	GOLETA EQFD	16	1.10	HY	BC/Ventura	S.Clara, Moorpark, Goleta	No NQC - Pmax	Market
727	SCE	ZZZ_New Unit	25874	VESTAL EQFC	12.47	0.90	HY	BC/Ventura	Vestal	No NQC - est. data	Market

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	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
728	SCE	ZZZ_New Unit	25874	SPRNGVL EQFC	12.47	0.80	EN	BC/Ventura	Rector, Vestal	No NQC - est. data	Market
729	SCE	ZZZ_New Unit	29569	ANTLP2_P5_G	0.66	0.63	1	BC/Ventura		No NQC - est. data	Solar
730	SCE	ZZZ_New Unit	240100	MOORARK EQFD	16	0.37	PV	BC/Ventura	Moorpark	No NQC - est. data	Solar
731	SCE	ZZZ_New Unit	240102	NEENACH EQFD	16	0.33	PV	BC/Ventura		No NQC - est. data	Solar
732	SCE	ZZZ_New Unit	240104	S.CLARA EQFD	16	0.01	PV	BC/Ventura	S.Clara, Moorpark	No NQC - est. data	Solar
733	SCE	ZZZ_New Unit	25790	WDT1384_G_ST	0.385	0.00	1	BC/Ventura	Vestal	Energy Only	Battery
734	SCE	ZZZ_New Unit	29775	ANTLP2_P7_G1	0.44	0.00	EQ	BC/Ventura		No NQC - est. data	Solar
735	SCE	ALAMIT_2_PL1X3	24577	ALMT STG	18	251.66	S1	LA Basin	Western		Market
736	SCE	ALAMIT_2_PL1X3	24575	ALMT CTG1	18	211.52	G1	LA Basin	Western		Market
737	SCE	ALAMIT_2_PL1X3	24576	ALMT CTG2	18	211.52	G2	LA Basin	Western		Market
738	SCE	ALAMIT_7_ES1	25523	ALMITOS B1_G	0.645	100.00	1	LA Basin	Western		Battery
739	SCE	ALAMIT_7_UNIT 3	24003	ALAMT3 G	18	0.00	3	LA Basin	Western	Retired by 2024	Market
740	SCE	ALAMIT_7_UNIT 4	24004	ALAMT4 G	18	0.00	4	LA Basin	Western	Retired by 2024	Market
741	SCE	ALAMIT_7_UNIT 5	24005	ALAMT5 G	20	0.00	5	LA Basin	Western	Retired by 2024	Market
742	SCE	ALTWD_2_AT3WD3	29077	ALTWNDGEN2	0.6	1.07	1	LA Basin	Eastern, Valley-Devers	Aug NQC	Wind
743	SCE	ALTWD_2_COAWD1	29075	ALTWNDGEN1	0.65	5.49	1	LA Basin	Eastern, Valley-Devers	Aug NQC	Wind
744	SCE	ANAHM_2_CANYN1	25211	CanyonGT 1	13.8	49.21	1	LA Basin	Western		MUNI
745	SCE	ANAHM_2_CANYN2	25212	CanyonGT 2	13.8	48.04	2	LA Basin	Western		MUNI
746	SCE	ANAHM_2_CANYN3	25213	CanyonGT 3	13.8	46.49	3	LA Basin	Western		MUNI
747	SCE	ANAHM_2_CANYN4	25214	CanyonGT 4	13.8	49.80	4	LA Basin	Western		MUNI
748	SCE	ARCOGN_2_UNITS	24011	ARCO 1G	13.8	61.00	1	LA Basin	Western	Aug NQC	Net Seller
749	SCE	ARCOGN_2_UNITS	24012	ARCO 2G	13.8	61.00	2	LA Basin	Western	Aug NQC	Net Seller
750	SCE	ARCOGN_2_UNITS	24013	ARCO 3G	13.8	61.00	3	LA Basin	Western	Aug NQC	Net Seller
751	SCE	ARCOGN_2_UNITS	24014	ARCO 4G	13.8	61.00	4	LA Basin	Western	Aug NQC	Net Seller
752	SCE	ARCOGN_2_UNITS	24163	ARCO 5G	13.8	30.50	5	LA Basin	Western	Aug NQC	Net Seller
753	SCE	ARCOGN_2_UNITS	24164	ARCO 6G	13.8	30.50	6	LA Basin	Western	Aug NQC	Net Seller
754	SCE	BARRE_2_QF				0.00		LA Basin	Western	Not modeled	QF/Selfgen
755	SCE	BARRE_6_PEAKER	29309	BARPKGEN	13.8	49.00	1	LA Basin	Western		Market
756	SCE	BLAST_1_WIND	29049	BLAST_G	0.6	5.33	1	LA Basin	Eastern, Valley-Devers	Aug NQC	Wind
757	SCE	BUCKWD_1_NPALM1	240150	DEVERS FC	12.47	0.30	EQ	LA Basin	Eastern, Valley-Devers	Not modeled Aug NQC	Wind
758	SCE	BUCKWD_1_QF	25634	BUCKWIND	115	1.80	QF	LA Basin	Eastern, Valley-Devers	Aug NQC	QF/Selfgen
759	SCE	BUCKWD_7_WINTCV	25634	BUCKWIND	115	0.14	W5	LA Basin	Eastern, Valley-Devers	Aug NQC	Wind
760	SCE	CABZON_1_WINDA1	29290	CABAZON	33	4.46	1	LA Basin	Eastern, Valley-Devers	Aug NQC	Wind
761	SCE	CAPWD_1_QF	25633	CAPWIND	115	2.13	QF	LA Basin	Eastern, Valley-Devers	Aug NQC	QF/Selfgen
762	SCE	CENTER_2_RHONDO	25810	CENTER EQFD	12.47	1.91	EQ	LA Basin	Western		QF/Selfgen

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763	SCE	CENTER_2_SOLAR1				0.00		LA Basin	Western	Not modeled Energy Only	Solar
764	SCE	CENTER_2_TECNG1				0.00		LA Basin	Western	Not modeled Energy Only	Market
765	SCE	CENTER_6_PEAKER	29308	CTRPKGEN	13.8	47.30	1	LA Basin	Western		Market
766	SCE	CENTER_6_PEAKER	25187	WDT1429_BATT	0.48	0.00	1	LA Basin	Western	Start-up/Back-up	Battery
767	SCE	CENTRY_6_PL1X4	25302	CLTNCTRY	13.8	40.00	1	LA Basin	Eastern	Aug NQC	MUNI
768	SCE	CHEVMN_2_UNITS	29009	CHEVGEN 5	13.8	2.66	1	LA Basin	Western, El Nido	Aug NQC	Net Seller
769	SCE	CHEVMN_2_UNITS	24022	CHEVGEN 1	13.8	2.39	1	LA Basin	Western, El Nido	Aug NQC	Net Seller
770	SCE	CHEVMN_2_UNITS	24023	CHEVGEN 2	13.8	2.39	2	LA Basin	Western, El Nido	Aug NQC	Net Seller
771	SCE	CHEVMN_2_UNITS	29009	CHEVGEN 5	13.8	0.48	2	LA Basin	Western, El Nido	Aug NQC	Net Seller
772	SCE	CHINO_2_APEBT1	25180	WDT1250BESS_	0.48	20.00	1	LA Basin	Eastern	Aug NQC	Battery
773	SCE	CHINO_2_JURUPA				0.00		LA Basin	Eastern	Not modeled Energy Only	Market
774	SCE	CHINO_2_QF	25812	CHINO EQFC	12.47	0.00	EQ	LA Basin	Eastern	Aug NQC	QF/Selfgen
775	SCE	CHINO_2_SASOLR				0.00		LA Basin	Eastern	Not modeled Energy Only	Solar
776	SCE	CHINO_2_SOLAR	25812	CHINO EQFC	12.47	0.12	EQ	LA Basin	Eastern		Solar
777	SCE	CHINO_2_SOLAR2				0.00		LA Basin	Eastern	Not modeled Energy Only	Solar
778	SCE	CHINO_6_CIMGEN	24026	CIMGEN	13.8	26.00	D1	LA Basin	Eastern	Aug NQC	QF/Selfgen
779	SCE	COLTON_6_AGUAM1	25303	CLTNAGUA	13.8	43.00	1	LA Basin	Eastern	Aug NQC	MUNI
780	SCE	CORONS_2_SOLAR				0.00		LA Basin	Eastern	Not modeled Energy Only	Solar
781	SCE	CORONS_6_CLRWTR	29338	CLRWTRCT	13.8	20.72	G1	LA Basin	Eastern		MUNI
782	SCE	CORONS_6_CLRWTR	29340	CLRWTRST	13.8	7.28	S1	LA Basin	Eastern		MUNI
783	SCE	DELAMO_2_SOLAR1	25818	DELAMO EQFD	12.47	0.19	EQ	LA Basin	Western	Aug NQC	Solar
784	SCE	DELAMO_2_SOLAR2	25818	DELAMO EQFD	12.47	0.22	EQ	LA Basin	Western	Aug NQC	Solar
785	SCE	DELAMO_2_SOLAR3	25818	DELAMO EQFD	12.47	0.16	EQ	LA Basin	Western	Aug NQC	Solar
786	SCE	DELAMO_2_SOLAR4	25818	DELAMO EQFD	12.47	0.16	EQ	LA Basin	Western	Aug NQC	Solar
787	SCE	DELAMO_2_SOLAR5	25818	DELAMO EQFD	12.47	0.12	EQ	LA Basin	Western	Aug NQC	Solar
788	SCE	DELAMO_2_SOLAR6	25818	DELAMO EQFD	12.47	0.25	EQ	LA Basin	Western	Aug NQC	Solar
789	SCE	DELAMO_2_SOLRC1				0.00		LA Basin	Western	Not modeled Energy Only	Solar
790	SCE	DELAMO_2_SOLRD				0.00		LA Basin	Western	Not modeled Energy Only	Solar
791	SCE	DEVERS_1_SEPV05				0.00		LA Basin	Eastern, Valley-Devers	Not modeled Energy Only	Market
792	SCE	DEVERS_1_SOLAR				0.00		LA Basin	Eastern, Valley-Devers	Not modeled Energy Only	Solar
793	SCE	DEVERS_1_SOLAR1				0.00		LA Basin	Eastern, Valley-Devers	Not modeled Energy Only	Solar
794	SCE	DEVERS_1_SOLAR2				0.00		LA Basin	Eastern, Valley-Devers	Not modeled Energy Only	Solar

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795	SCE	DEVERS_2_CS2SR4				0.00		LA Basin	Eastern, Valley-Devers	Not modeled Energy Only	Solar
796	SCE	DEVERS_2_DHSPG2				0.00		LA Basin	Eastern, Valley-Devers	Not modeled Energy Only	Market
797	SCE	DMDVLY_1_UNITS	25424	ESRP P1	6.9	0.34	2	LA Basin	Eastern	Aug NQC	QF/Selfgen
798	SCE	DMDVLY_1_UNITS	25424	ESRP P1	6.9	0.34	3	LA Basin	Eastern	Aug NQC	QF/Selfgen
799	SCE	DMDVLY_1_UNITS	25424	ESRP P1	6.9	0.34	4	LA Basin	Eastern	Aug NQC	QF/Selfgen
800	SCE	DMDVLY_1_UNITS	25425	ESRP P2	6.9	0.34	6	LA Basin	Eastern	Aug NQC	QF/Selfgen
801	SCE	DMDVLY_1_UNITS	25425	ESRP P2	6.9	0.34	7	LA Basin	Eastern	Aug NQC	QF/Selfgen
802	SCE	DMDVLY_1_UNITS	25425	ESRP P2	6.9	0.34	8	LA Basin	Eastern	Aug NQC	QF/Selfgen
803	SCE	DMDVLY_1_UNITS	25426	ESRP P3	6.9	0.34	10	LA Basin	Eastern	Aug NQC	QF/Selfgen
804	SCE	DMDVLY_1_UNITS	25425	ESRP P3	6.9	0.34	11	LA Basin	Eastern	Aug NQC	QF/Selfgen
805	SCE	DMDVLY_1_UNITS	25425	ESRP P3	6.9	0.34	12	LA Basin	Eastern	Aug NQC	QF/Selfgen
806	SCE	DREWS_6_PL1X4	25301	CLTNDREW	13.8	40.00	1	LA Basin	Eastern	Aug NQC	MUNI
807	SCE	DVLCYN_1_UNITS	25603	DVLCYN3G	13.8	42.32	3	LA Basin	Eastern	Aug NQC	MUNI
808	SCE	DVLCYN_1_UNITS	25604	DVLCYN4G	13.8	42.32	4	LA Basin	Eastern	Aug NQC	MUNI
809	SCE	DVLCYN_1_UNITS	25648	DVLCYN1G	13.8	31.74	1	LA Basin	Eastern	Aug NQC	MUNI
810	SCE	DVLCYN_1_UNITS	25649	DVLCYN2G	13.8	31.74	2	LA Basin	Eastern	Aug NQC	MUNI
811	SCE	ELLIS_2_QF	24325	ORCOGEN	13.8	0.55	1	LA Basin	Western	Aug NQC	QF/Selfgen
812	SCE	ELSEGN_2_UN1011	29904	ELSEG5GT	16.5	137.16	5	LA Basin	Western, El Nido	Aug NQC	Market
813	SCE	ELSEGN_2_UN1011	29903	ELSEG6ST	13.8	137.16	6	LA Basin	Western, El Nido	Aug NQC	Market
814	SCE	ELSEGN_2_UN2021	29902	ELSEG7GT	16.5	135.87	7	LA Basin	Western, El Nido	Aug NQC	Market
815	SCE	ELSEGN_2_UN2021	29901	ELSEG8ST	13.8	135.87	8	LA Basin	Western, El Nido	Aug NQC	Market
816	SCE	ESNHWR_2_WC1BT1	25632	WDT1549	12.47	1.50	EQ	LA Basin	Eastern, Valley-Devers		Battery
817	SCE	ETIWND_2_CHMPNE				0.00		LA Basin	Eastern	Not modeled Energy Only	Market
818	SCE	ETIWND_2_FONTNA	25822	ETIWANDA EQFD	12.47	0.65	EQ	LA Basin	Eastern	Aug NQC	QF/Selfgen
819	SCE	ETIWND_2_RTS010	25822	ETIWANDA EQFD	12.47	0.19	EQ	LA Basin	Eastern	Aug NQC	Market
820	SCE	ETIWND_2_RTS015	25822	ETIWANDA EQFD	12.47	0.37	EQ	LA Basin	Eastern	Aug NQC	Market
821	SCE	ETIWND_2_RTS017	25822	ETIWANDA EQFD	12.47	0.43	EQ	LA Basin	Eastern	Aug NQC	Market
822	SCE	ETIWND_2_RTS018	25822	ETIWANDA EQFD	12.47	0.19	EQ	LA Basin	Eastern	Aug NQC	Market
823	SCE	ETIWND_2_RTS023	25822	ETIWANDA EQFD	12.47	0.31	EQ	LA Basin	Eastern	Aug NQC	Market
824	SCE	ETIWND_2_RTS026	25822	ETIWANDA EQFD	12.47	0.74	EQ	LA Basin	Eastern	Aug NQC	Market
825	SCE	ETIWND_2_RTS027	25822	ETIWANDA EQFD	12.47	0.25	EQ	LA Basin	Eastern	Aug NQC	Market
826	SCE	ETIWND_2_SOLAR1	25822	ETIWANDA EQFD	12.47	0.12	EQ	LA Basin	Eastern	Aug NQC	Solar

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827	SCE	ETIWND_2_SOLAR2				0.00		LA Basin	Eastern	Not modeled Energy Only	Solar
828	SCE	ETIWND_2_SOLAR5				0.00		LA Basin	Eastern	Not modeled Energy Only	Solar
829	SCE	ETIWND_2_UNIT1	24071	INLAND	13.8	33.60	1	LA Basin	Eastern	Aug NQC	QF/Selfgen
830	SCE	ETIWND_6_GRPLND	29305	ETWPKGEN	13.8	45.64	1	LA Basin	Eastern		Market
831	SCE	ETIWND_6_GRPLND	25188	WDT1430_BESS	13.8	0.00	1	LA Basin	Eastern	Start-up/Back-up	Battery
832	SCE	ETIWND_6_MWDETI	25422	ETI MWDG	13.8	2.45	1	LA Basin	Eastern	Aug NQC	Market
833	SCE	GARNET_1_SOLAR				0.00		LA Basin	Eastern, Valley-Devers	Not modeled Energy Only	Solar
834	SCE	GARNET_1_SOLAR2	25827	GARNET FD	34.5	0.50	EQ	LA Basin	Eastern, Valley-Devers	Aug NQC	Solar
835	SCE	GARNET_1_WIND	24815	GARNET	115	0.71	W3	LA Basin	Eastern, Valley-Devers	Aug NQC	Wind
836	SCE	GARNET_1_WINDS	24815	GARNET	115	2.45	W2	LA Basin	Eastern, Valley-Devers	Aug NQC	Wind
837	SCE	GARNET_1_WT3WND				0.00		LA Basin	Eastern, Valley-Devers	Not modeled Energy Only	Market
838	SCE	GARNET_2_COAWD2	24815	GARNET	115	1.18	QF	LA Basin	Eastern, Valley-Devers	Aug NQC	Wind
839	SCE	GARNET_2_HYDRO	24815	GARNET	115	0.30	PC	LA Basin	Eastern, Valley-Devers	Aug NQC	Market
840	SCE	GARNET_2_WIND1	24815	GARNET	115	1.22	QF	LA Basin	Eastern, Valley-Devers	Aug NQC	Wind
841	SCE	GARNET_2_WIND2	24815	GARNET	115	1.27	QF	LA Basin	Eastern, Valley-Devers	Aug NQC	Wind
842	SCE	GARNET_2_WIND3	24815	GARNET	115	1.37	QF	LA Basin	Eastern, Valley-Devers	Aug NQC	Wind
843	SCE	GARNET_2_WIND4	24815	GARNET	115	1.07	QF	LA Basin	Eastern, Valley-Devers	Aug NQC	Wind
844	SCE	GARNET_2_WIND5	24815	GARNET	115	0.33	QF	LA Basin	Eastern, Valley-Devers	Aug NQC	Wind
845	SCE	GLNARM_2_UNIT 5	29013	GLENARM5_CT	13.8	50.00	CT	LA Basin	Western		MUNI
846	SCE	GLNARM_2_UNIT 5	29014	GLENARM5_ST	13.8	15.00	ST	LA Basin	Western		MUNI
847	SCE	GLNARM_7_UNIT 1	29005	PASADNA1	13.8	22.13	1	LA Basin	Western		MUNI
848	SCE	GLNARM_7_UNIT 2	29006	PASADNA2	13.8	22.38	1	LA Basin	Western		MUNI
849	SCE	GLNARM_7_UNIT 3	25042	PASADNA3	13.8	44.83	1	LA Basin	Western		MUNI
850	SCE	GLNARM_7_UNIT 4	25043	PASADNA4	13.8	42.42	1	LA Basin	Western		MUNI
851	SCE	HARBGN_7_UNITS	24062	HARBOR G	13.8	76.27	1	LA Basin	Western		Market
852	SCE	HARBGN_7_UNITS	24062	HARBOR G	13.8	11.86	HP	LA Basin	Western		Market
853	SCE	HARBGN_7_UNITS	25510	HARBORG4	4.16	11.86	LP	LA Basin	Western		Market
854	SCE	HINSON_6_LBECH1	24170	LBEACH12	13.8	63.00	1	LA Basin	Western		Market
855	SCE	HINSON_6_LBECH2	24170	LBEACH12	13.8	63.00	2	LA Basin	Western		Market
856	SCE	HINSON_6_LBECH3	24171	LBEACH34	13.8	63.00	3	LA Basin	Western		Market
857	SCE	HINSON_6_LBECH4	24171	LBEACH34	13.8	63.00	4	LA Basin	Western		Market
858	SCE	HINSON_6_SERRGN	24139	SERRFGEN	13.8	34.00	D1	LA Basin	Western	Aug NQC	Market
859	SCE	HNTGBH_2_PL1X3	24582	HUNTBCH STG	18	251.34	S1	LA Basin	Western		Market
860	SCE	HNTGBH_2_PL1X3	24580	HUNTBCH CTG1	18	211.23	G1	LA Basin	Western		Market
861	SCE	HNTGBH_2_PL1X3	24581	HUNTBCH CTG2	18	211.23	G2	LA Basin	Western		Market
862	SCE	HNTGBH_7_UNIT 2	24067	HUNT2 G	13.8	0.00	2	LA Basin	Western	Retired by 2024	Market
863	SCE	INDIGO_1_UNIT 1	29190	INDIGO G4	13.8	45.30	4	LA Basin	Eastern, Valley-Devers		Market

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864	SCE	INDIGO_1_UNIT 2	29191	INDIGO G5	13.8	45.30	5	LA Basin	Eastern, Valley-Devers		Market
865	SCE	INDIGO_1_UNIT 3	29180	INDIGO G3	13.8	45.30	3	LA Basin	Eastern, Valley-Devers		Market
866	SCE	JOANEC_2_STABT1	25663	WDT1396_G	12.47	20.00	1	LA Basin	Western		Battery
867	SCE	JOANEC_2_STABT2	25663	WDT1396_G	12.47	20.00	1	LA Basin	Western		Battery
868	SCE	JOHANN_2_JOSBT1	698403	JOHANNA_PRP	66	10.00	EQ	LA Basin	Western		Battery
869	SCE	JOHANN_2_JOSBT2	698403	JOHANNA_PRP	66	10.00	EQ	LA Basin	Western		Battery
870	SCE	JOHANN_2_OCEBT2	698403	JOHANNA_PRP	66	9.00	EQ	LA Basin	Western		Battery
871	SCE	JOHANN_2_OCEBT3	698403	JOHANNA_PRP	66	6.00	EQ	LA Basin	Western		Battery
872	SCE	LACIEN_2_VENICE	24337	VENICE	13.8	0.00	1	LA Basin	Western, El Nido	Aug NQC	MUNI
873	SCE	LGHTHP_6_ICEGEN	24070	ICEGEN	13.8	37.80	GT	LA Basin	Western	Aug NQC	QF/Selfgen
874	SCE	LGHTHP_6_ICEGEN	24070	ICEGEN	13.8	10.20	ST	LA Basin	Western	Aug NQC	QF/Selfgen
875	SCE	MIRLOM_2_CORONA	25844	MIRALOMA EQFD	12.47	0.64	EQ	LA Basin	Eastern	Aug NQC	QF/Selfgen
876	SCE	MIRLOM_2_CREST	25844	MIRALOMA EQFD	12.47	0.00	EQ	LA Basin	Eastern	Aug NQC	Market
877	SCE	MIRLOM_2_LNDFL	25844	MIRALOMA EQFD	12.47	0.37	EQ	LA Basin	Eastern	Aug NQC	Market
878	SCE	MIRLOM_2_MLBBTA	25185	WDT1425_G1	0.48	10.00	1	LA Basin	Eastern	Aug NQC	Battery
879	SCE	MIRLOM_2_MLBBTB	25186	WDT1426_G2	0.48	10.00	1	LA Basin	Eastern	Aug NQC	Battery
880	SCE	MIRLOM_2_ONTARO	25844	MIRALOMA EQFD	12.47	0.68	EQ	LA Basin	Eastern	Aug NQC	Market
881	SCE	MIRLOM_2_RTS032	25844	MIRALOMA EQFD	12.47	0.19	EQ	LA Basin	Eastern	Aug NQC	Market
882	SCE	MIRLOM_2_RTS033	25844	MIRALOMA EQFD	12.47	0.12	EQ	LA Basin	Eastern	Aug NQC	Market
883	SCE	MIRLOM_2_TEMESC	25844	MIRALOMA EQFD	12.47	0.77	EQ	LA Basin	Eastern	Aug NQC	QF/Selfgen
884	SCE	MIRLOM_6_PEAKER	29307	MRLPKGEN	13.8	47.18	1	LA Basin	Eastern		Market
885	SCE	MIRLOM_7_MWDLKM	24210	MIRALOMA	66	3.90		LA Basin	Eastern	Not modeled Aug NQC	MUNI
886	SCE	MOJAVE_1_SIPHON	25657	MJVSPHN1	13.8	3.58	1	LA Basin	Eastern	Aug NQC	Market
887	SCE	MOJAVE_1_SIPHON	25658	MJVSPHN1	13.8	3.58	2	LA Basin	Eastern	Aug NQC	Market
888	SCE	MOJAVE_1_SIPHON	25659	MJVSPHN1	13.8	3.58	3	LA Basin	Eastern	Aug NQC	Market
889	SCE	MTWIND_1_MVPWD1	29064	MOUNTWND_1G	0.6	7.25	1	LA Basin	Eastern, Valley-Devers	Aug NQC	Wind
890	SCE	MTWIND_1_UNIT 3	29069	MOUNTWND_3G	0.6	2.44	1	LA Basin	Eastern, Valley-Devers	Aug NQC	Wind
891	SCE	OLINDA_2_COYCRK				3.13		LA Basin	Western	Not modeled	QF/Selfgen
892	SCE	OLINDA_2_LNDFL2	29011	BREAPWR2	13.8	7.67	S1	LA Basin	Western	Aug NQC	Market
893	SCE	OLINDA_2_LNDFL2	29011	BREAPWR2	13.8	4.29	C1	LA Basin	Western	Aug NQC	Market
894	SCE	OLINDA_2_LNDFL2	29011	BREAPWR2	13.8	4.29	C2	LA Basin	Western	Aug NQC	Market
895	SCE	OLINDA_2_LNDFL2	29011	BREAPWR2	13.8	4.29	C3	LA Basin	Western	Aug NQC	Market
896	SCE	OLINDA_2_LNDFL2	29011	BREAPWR2	13.8	4.29	C4	LA Basin	Western	Aug NQC	Market
897	SCE	OLINDA_7_BLKSND				0.25		LA Basin	Western	Not modeled Aug NQC	Market

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	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
898	SCE	PADUA_2_ONTARO	25851	PADUA EQFC	12.47	0.82	EQ	LA Basin	Eastern	Aug NQC	QF/Selfgen
899	SCE	PADUA_2_SOLAR1				0.00		LA Basin	Eastern	Not modeled Energy Only	Solar
900	SCE	PADUA_6_MWDSDM	25851	PADUA EQFC	12.47	0.00	EQ	LA Basin	Eastern	Aug NQC	MUNI
901	SCE	PADUA_6_QF	25851	PADUA EQFC	12.47	0.43	EQ	LA Basin	Eastern	Aug NQC	QF/Selfgen
902	SCE	PADUA_7_SDIMAS	25851	PADUA EQFC	12.47	1.05	EQ	LA Basin	Eastern	Aug NQC	Market
903	SCE	PWEST_1_UNIT	24815	GARNET	115	0.23	PC	LA Basin	Western	Aug NQC	Market
904	SCE	REDOND_7_UNIT 5	24121	REDON5 G	18	0.00	5	LA Basin	Western	Retired by 2024	Market
905	SCE	REDOND_7_UNIT 6	24122	REDON6 G	18	0.00	6	LA Basin	Western	Retired by 2024	Market
906	SCE	REDOND_7_UNIT 8	24124	REDON8 G	20	0.00	8	LA Basin	Western	Retired by 2024	Market
907	SCE	RENWD_1_QF	25636	RENWIND	115	0.55	Q1	LA Basin	Eastern, Valley-Devers	Aug NQC	QF/Selfgen
908	SCE	RENWD_1_QF	25636	RENWIND	115	0.55	Q2	LA Basin	Eastern, Valley-Devers	Aug NQC	QF/Selfgen
909	SCE	RVSIDE_2_RERCU3	24299	RERC2G3	13.8	49.00	1	LA Basin	Eastern		MUNI
910	SCE	RVSIDE_2_RERCU4	24300	RERC2G4	13.8	49.00	1	LA Basin	Eastern		MUNI
911	SCE	RVSIDE_6_RERCU1	24242	RERC1G	13.8	48.35	1	LA Basin	Eastern		MUNI
912	SCE	RVSIDE_6_RERCU2	24243	RERC2G	13.8	48.50	1	LA Basin	Eastern		MUNI
913	SCE	RVSIDE_6_SOLAR1				0.93		LA Basin	Eastern	Not modeled Aug NQC	Solar
914	SCE	RVSIDE_6_SPRING	24240	SPRINGS1	13.8	9.00	1	LA Basin	Eastern		Market
915	SCE	RVSIDE_6_SPRING	24241	SPRINGS3	13.8	9.00	1	LA Basin	Eastern		Market
916	SCE	RVSIDE_6_SPRING	24240	SPRINGS1	13.8	9.00	2	LA Basin	Eastern		Market
917	SCE	RVSIDE_6_SPRING	24241	SPRINGS3	13.8	9.00	2	LA Basin	Eastern		Market
918	SCE	SANITR_6_UNITS	24324	SANIGEN	13.8	1.52	D1	LA Basin	Eastern	Aug NQC	QF/Selfgen
919	SCE	SANTGO_2_LNDFL1	24341	COYGEN	13.8	18.55	1	LA Basin	Western	Aug NQC	Market
920	SCE	SANTGO_2_MABBT1	25192	WDT1406_G	0.48	2.00	1	LA Basin	Western	Aug NQC	Battery
921	SCE	SANWD_1_QF	29072	SANWIND_G	0.48	3.37	1	LA Basin	Eastern, Valley-Devers	Aug NQC	Wind
922	SCE	SBERDO_2_PSP3	24923	MNTV-ST3	18	257.82	1	LA Basin	Eastern, West of Devers		Market
923	SCE	SBERDO_2_PSP3	24921	MNTV-G3A	18	148.59	1	LA Basin	Eastern, West of Devers		Market
924	SCE	SBERDO_2_PSP3	24922	MNTV-G3B	18	148.59	1	LA Basin	Eastern, West of Devers		Market
925	SCE	SBERDO_2_PSP4	24926	MNTV-ST4	18	257.82	1	LA Basin	Eastern, West of Devers		Market
926	SCE	SBERDO_2_PSP4	24924	MNTV-G4A	18	148.59	1	LA Basin	Eastern, West of Devers		Market
927	SCE	SBERDO_2_PSP4	24925	MNTV-G4B	18	148.59	1	LA Basin	Eastern, West of Devers		Market
928	SCE	SBERDO_2_REDLND	25863	SNBRDNO FD1	12.47	0.25	EQ	LA Basin	Eastern, West of Devers	Aug NQC	Market
929	SCE	SBERDO_2_RTS005	25863	SNBRDNO FD1	12.47	0.31	EQ	LA Basin	Eastern, West of Devers	Aug NQC	Market
930	SCE	SBERDO_2_RTS007	25863	SNBRDNO FD1	12.47	0.31	EQ	LA Basin	Eastern, West of Devers	Aug NQC	Market
931	SCE	SBERDO_2_RTS011	25863	SNBRDNO FD1	12.47	0.43	EQ	LA Basin	Eastern, West of Devers	Aug NQC	Market
932	SCE	SBERDO_2_RTS013	25863	SNBRDNO FD1	12.47	0.43	EQ	LA Basin	Eastern, West of Devers	Aug NQC	Market
933	SCE	SBERDO_2_RTS016	25863	SNBRDNO FD1	12.47	0.19	EQ	LA Basin	Eastern, West of Devers	Aug NQC	Market
934	SCE	SBERDO_2_RTS048	25863	SNBRDNO FD1	12.47	0.00	EQ	LA Basin	Eastern, West of Devers	Aug NQC	Market
935	SCE	SBERDO_2_SNTANA	25861	SNBRDNO FD	12.47	0.27	EQ	LA Basin	Eastern, West of Devers	Aug NQC	QF/Selfgen
936	SCE	SBERDO_6_MILLCK	25861	SNBRDNO FD	12.47	1.37	EQ	LA Basin	Eastern, West of Devers	Aug NQC	QF/Selfgen
937	SCE	SENTNL_2_CTG1	29101	SENTINEL_G1	13.8	107.68	1	LA Basin	Eastern, Valley-Devers		Market
938	SCE	SENTNL_2_CTG2	29102	SENTINEL_G2	13.8	103.98	1	LA Basin	Eastern, Valley-Devers		Market
939	SCE	SENTNL_2_CTG3	29103	SENTINEL_G3	13.8	105.69	1	LA Basin	Eastern, Valley-Devers		Market

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	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
940	SCE	SENTNL_2_CTG4	29104	SENTINEL_G4	13.8	106.55	1	LA Basin	Eastern, Valley-Devers		Market
941	SCE	SENTNL_2_CTG5	29105	SENTINEL_G5	13.8	107.52	1	LA Basin	Eastern, Valley-Devers		Market
942	SCE	SENTNL_2_CTG6	29106	SENTINEL_G6	13.8	105.00	1	LA Basin	Eastern, Valley-Devers		Market
943	SCE	SENTNL_2_CTG7	29107	SENTINEL_G7	13.8	106.73	1	LA Basin	Eastern, Valley-Devers		Market
944	SCE	SENTNL_2_CTG8	29108	SENTINEL_G8	13.8	106.85	1	LA Basin	Eastern, Valley-Devers		Market
945	SCE	STANTN_2_STAGT1	25670	WH_STN_1	13.8	49.65	1	LA Basin	Western		Market
946	SCE	STANTN_2_STAGT2	25671	WH_STN_2	13.8	49.65	1	LA Basin	Western		Market
947	SCE	TIFFNY_1_DILLON	29021	WINTEC6	115	4.90	1	LA Basin	Eastern, Valley-Devers	Aug NQC	Wind
948	SCE	TRNSWD_1_QF	25746	TRANWND_1G	0.4	2.12	QF	LA Basin	Eastern, Valley-Devers	Aug NQC	Wind
949	SCE	TRNSWD_1_QF	25749	TRANWND_2G	0.4	2.12	QF	LA Basin	Eastern, Valley-Devers	Aug NQC	Wind
950	SCE	TULEWD_1_TULWD1				14.21		LA Basin	Eastern, Valley-Devers	Not modeled Aug NQC	Wind
951	SCE	VALLEY_5_PERRIS	25872	VALLEYS EQFD	12.47	7.94	EQ	LA Basin	Eastern, Valley, Valley-Devers	Not modeled Aug NQC	QF/Selfgen
952	SCE	VALLEY_5_REDMTN	25872	VALLEYS EQFD	12.47	1.21	EQ	LA Basin	Eastern, Valley, Valley-Devers	Not modeled Aug NQC	QF/Selfgen
953	SCE	VALLEY_5_SOLAR1				0.00		LA Basin	Eastern, Valley, Valley-Devers	Not modeled Energy Only	Solar
954	SCE	VALLEY_5_SOLAR2	25846	WDT786G	34.5	2.48	EQ	LA Basin	Eastern, Valley, Valley-Devers	Aug NQC	Solar
955	SCE	VENWD_1_WIND3	25645	VENWIND	115	4.85	EU	LA Basin	Eastern, Valley-Devers	Aug NQC	Wind
956	SCE	VERNON_6_GONZL1				5.75		LA Basin	Western	Not modeled	MUNI
957	SCE	VERNON_6_GONZL2				5.75		LA Basin	Western	Not modeled	MUNI
958	SCE	VERNON_6_MALBRG	24241	MALBRG3G	13.8	49.26	S3	LA Basin	Western		MUNI
959	SCE	VERNON_6_MALBRG	24239	MALBRG1G	13.8	42.37	C1	LA Basin	Western		MUNI
960	SCE	VERNON_6_MALBRG	24240	MALBRG2G	13.8	42.37	C2	LA Basin	Western		MUNI
961	SCE	VILLPK_2_VALLYV				4.10		LA Basin	Western	Not modeled Aug NQC	QF/Selfgen
962	SCE	VILLPK_6_MWDYOR				4.00		LA Basin	Western	Not modeled Aug NQC	MUNI
963	SCE	VISTA_2_RIALTO	25885	VSTA EQFD	12.47	0.12	EQ	LA Basin	Eastern	Not modeled	Market
964	SCE	VISTA_2_RTS028	25885	VSTA EQFD	12.47	0.43	EQ	LA Basin	Eastern	Not modeled Aug NQC	Market
965	SCE	VISTA_6_QF	25887	VSTA_EQFD	12.47	0.11	EQ	LA Basin	Eastern	Not modeled Aug NQC	QF/Selfgen
966	SCE	WALCRK_2_CTG1	29201	WALCRKG1	13.8	96.43	1	LA Basin	Western		Market
967	SCE	WALCRK_2_CTG2	29202	WALCRKG2	13.8	96.91	1	LA Basin	Western		Market
968	SCE	WALCRK_2_CTG3	29203	WALCRKG3	13.8	96.65	1	LA Basin	Western		Market
969	SCE	WALCRK_2_CTG4	29204	WALCRKG4	13.8	96.49	1	LA Basin	Western		Market
970	SCE	WALCRK_2_CTG5	29205	WALCRKG5	13.8	96.65	1	LA Basin	Western		Market
971	SCE	WALNUT_2_SOLAR				0.00		LA Basin	Western	Not modeled Energy Only	Solar
972	SCE	WALNUT_6_HILLGEN				23.67		LA Basin	Western	Not modeled Aug NQC	Net Seller

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	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
973	SCE	WALNUT_7_WCOVST				5.22		LA Basin	Western	Not modeled Aug NQC	Market
974	SCE	WHTWTR_1_WINDA1	29061	WHITEWTR	33	6.69	1	LA Basin	Eastern, Valley-Devers	Aug NQC	Wind
975	SCE	ZZ_DEVERS_1_QF	25632	TERAWND	115	0.00	QF	LA Basin	Eastern, Valley-Devers	Mothballed	QF/Selfgen
976	SCE	ZZ_DEVERS_1_QF	25639	SEAWIND	115	0.00	QF	LA Basin	Eastern, Valley-Devers	Mothballed	QF/Selfgen
977	SCE	ZZ_GARNET_1_UNITS	24815	GARNET	115	0.00	QF	LA Basin	Eastern, Valley-Devers	Mothballed	Market
978	SCE	ZZ_GARNET_1_UNITS	24815	GARNET	115	0.00	QF	LA Basin	Eastern, Valley-Devers	Mothballed	Market
979	SCE	ZZ_GARNET_1_UNITS	24815	GARNET	115	0.00	QF	LA Basin	Eastern, Valley-Devers	Mothballed	Market
980	SCE	ZZ_MOBGEN_6_UNIT 1	24094	MOBGEN1	13.8	0.00	1	LA Basin	Western, El Nido	No NQC - hist. data	QF/Selfgen
981	SCE	ZZ_MOBGEN_6_UNIT 1	24094	MOBGEN2	13.8	0.00	1	LA Basin	Western, El Nido	No NQC - hist. data	QF/Selfgen
982	SCE	ZZ_MTWIND_1_UNIT 2	29069	MOUNTWND_2G	0.6	0.00	1	LA Basin	Eastern, Valley-Devers	Mothballed	Wind
983	SCE	ZZ_NA	25849	NEWARK FD1	16	4.39	EQ	LA Basin	Western	No NQC - est. data	Solar
984	SCE	ZZ_NA	25857	RIOHNDO EQFD	12.47	0.20	EQ	LA Basin	Western	No NQC - est. data	Solar
985	SCE	ZZ_NA	25889	WALNUT EQFD	12.47	0.20	EQ	LA Basin	Western	No NQC - est. data	Solar
986	SCE	ZZ_NA	25883	VILLAPK EQFD	12.47	0.14	EQ	LA Basin	Western	No NQC - est. data	Solar
987	SCE	ZZ_NA	25820	EL NIDO EQFD	16	0.09	EQ	LA Basin	Western, El Nido	No NQC - est. data	Solar
988	SCE	ZZ_NA	25838	LA FRSA EQFD	16	0.07	EQ	LA Basin	Western	No NQC - est. data	Solar
989	SCE	ZZ_NA	25842	MESACAL EQFD	16	0.01	EQ	LA Basin	Western	No NQC - est. data	Solar
990	SCE	ZZ_NA	24327	THUMSGEN	13.8	0.00	1	LA Basin	Western	No NQC - hist. data	QF/Selfgen
991	SCE	ZZ_NA	24330	OUTFALL1	13.8	0.00	1	LA Basin	Western, El Nido	No NQC - hist. data	QF/Selfgen
992	SCE	ZZ_NA	24331	OUTFALL2	13.8	0.00	1	LA Basin	Western, El Nido	No NQC - hist. data	QF/Selfgen
993	SCE	ZZ_NA	29260	ALTAMSA4	115	0.00	1	LA Basin	Eastern, Valley-Devers	No NQC - hist. data	Wind
994	SCE	ZZ_PANSEA_1_PANARO	25640	PANAERO	115	3.40	QF	LA Basin	Eastern, Valley-Devers		Wind
995	SCE	ZZ_VENWD_1_WIND1	25645	VENWIND	115	0.00	Q1	LA Basin	Eastern, Valley-Devers	Mothballed	QF/Selfgen
996	SCE	ZZ_VENWD_1_WIND2	25645	VENWIND	115	0.00	Q2	LA Basin	Eastern, Valley-Devers	Mothballed	QF/Selfgen
997	SCE	ZZZ_New Unit	97589	TOT789_G1	0.48	202.50	1	LA Basin	Eastern, Valley-Devers		Battery
998	SCE	ZZZ_New Unit	97591	TOT789_G2	0.48	202.50	1	LA Basin	Eastern, Valley-Devers		Battery
999	SCE	ZZZ_New Unit	100713	CABAZON_STG	0.48	92.30	1	LA Basin	Eastern, Valley-Devers		Market

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	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
1000	SCE	ZZZ_New Unit	240156	VALIEYS HYD	12.47	7.00	EQ	LA Basin	Eastern, Valley, Valley-Devers		Market
1001	SCE	ZZZ_New Unit	100712	CABAZON_WND	0.65	6.66	1	LA Basin	Eastern, Valley-Devers		Wind
1002	SCE	ZZZ_New Unit	25832	WDT334G	0.2	2.10	EQ	LA Basin	Eastern, Valley-Devers		Market
1003	SCE	ZZZ_New Unit	25833	WDT458G	0.2	1.30	EQ	LA Basin	Eastern, Valley-Devers		Market
1004	SCE	ZZZ_New Unit	25834	HI DSRT	34.5	1.20	EQ	LA Basin	Eastern, Valley-Devers		Market
1005	SCE	ZZZ_New Unit	240155	UNIMDGEN	12	1.00	1	LA Basin	Eastern, West of Devers		Market
1006	SCE	ZZZ_New Unit	240157	VALLEYS GAS	12.47	1.00	EQ	LA Basin	Eastern, Valley, Valley-Devers		Market
1007	SCE	ZZZ_New Unit	240158	VSTA BIO	12.47	1.00	EQ	LA Basin	Eastern		Market
1008	SCE	ZZZ_New Unit	240159	VSTA GAS	12.47	1.00	EQ	LA Basin	Eastern		Market
1009	SCE	ZZZ_New Unit	240153	BOTTLE	34.5	0.60	W1	LA Basin	Eastern, Valley-Devers		Wind
1010	SCE	ZZZ_New Unit	25675	WH_STN_5	0.55	0.00	1	LA Basin	Western	No NQC - est. data	Battery
1011	SCE	ZZZ_New Unit	25677	WH_STN_7	0.55	0.00	1	LA Basin	Western	No NQC - est. data	Battery
1012	SDG&E	BORDER_6_UNITA1	22149	CALPK_BD	13.8	51.25	1	SD-IV	San Diego, Border		Market
1013	SDG&E	BREGGO_6_DEGRSL	22085	BORREGO	12.5	0.78	6	SD-IV	San Diego	Aug NQC	Solar
1014	SDG&E	BREGGO_6_SOLAR	22082	BR GEN1	0.21	3.22	1	SD-IV	San Diego	Aug NQC	Solar
1015	SDG&E	CARLS1_2_CARCT1	22783	EA GEN1 U8	13.8	105.50	1	SD-IV	San Diego	Aug NQC	Market
1016	SDG&E	CARLS1_2_CARCT1	22784	EA GEN1 U9	13.8	105.50	1	SD-IV	San Diego	Aug NQC	Market
1017	SDG&E	CARLS1_2_CARCT1	22786	EA GEN1 U6	13.8	105.50	1	SD-IV	San Diego	Aug NQC	Market
1018	SDG&E	CARLS1_2_CARCT1	22787	EA GEN1 U7	13.8	105.50	1	SD-IV	San Diego	Aug NQC	Market
1019	SDG&E	CARLS2_1_CARCT1	22789	EA GEN1 U10	13.8	105.50	1	SD-IV	San Diego	Aug NQC	Market
1020	SDG&E	CHILLS_1_SYCENG	22120	CARLTNHS	138	0.88	1	SD-IV	San Diego	Aug NQC	QF/Selfgen
1021	SDG&E	CHILLS_7_UNITA1	22120	CARLTNHS	138	1.52	2	SD-IV	San Diego	Aug NQC	QF/Selfgen
1022	SDG&E	CNTNLA_2_SOLAR1	23401	DW GEN3 G1	0.33	15.50	1	SD-IV		Aug NQC	Solar
1023	SDG&E	CNTNLA_2_SOLAR2	23402	DW GEN3 G2	0.33	5.65	2	SD-IV		Aug NQC	Solar
1024	SDG&E	CPVERD_2_SOLAR	23309	IV GEN3 G1	0.31	9.58	1	SD-IV		Aug NQC	Solar
1025	SDG&E	CPVERD_2_SOLAR	23301	IV GEN3 G2	0.31	7.66	1	SD-IV		Aug NQC	Solar
1026	SDG&E	CRELMN_6_RAMON1	22152	CREELMAN	69	0.25	27	SD-IV	San Diego	Aug NQC	Solar
1027	SDG&E	CRELMN_6_RAMON2	22152	CREELMAN	69	0.62	27	SD-IV	San Diego	Aug NQC	Solar
1028	SDG&E	CRELMN_6_RAMSR3	22152	CREELMAN	69	0.43	35	SD-IV	San Diego	Aug NQC	Solar
1029	SDG&E	CRSTWD_6_KUMYAY	22915	KUMEYAAY	0.69	5.44	1	SD-IV	San Diego	Aug NQC	Wind
1030	SDG&E	CSLR4S_2_SOLAR	23298	DW GEN1 G1	0.315	8.06	1	SD-IV		Aug NQC	Solar
1031	SDG&E	CSLR4S_2_SOLAR	23299	DW GEN1 G2	0.315	8.06	1	SD-IV		Aug NQC	Solar
1032	SDG&E	ELCAJN_6_EB1BT1	22208	EL CAJON	69	7.50	1	SD-IV	San Diego, El Cajon		Battery
1033	SDG&E	ELCAJN_6_LM6K	23320	EC GEN2	13.8	48.10	1	SD-IV	San Diego, El Cajon		Market
1034	SDG&E	ELCAJN_6_UNITA1	22150	EC GEN1	13.8	45.42	1	SD-IV	San Diego, El Cajon		Market
1035	SDG&E	ENERSJ_2_WIND	23100	ECO GEN1 G1	0.69	16.44	G1	SD-IV		Aug NQC	Wind
1036	SDG&E	ENERSJ_5_ESJWD2				11.43		SD-IV		Aug NQC	Wind
1037	SDG&E	ESCNDO_6_EB1BT1	22256	ESCNDIDO	69	10.00	10	SD-IV	San Diego		Battery
1038	SDG&E	ESCNDO_6_EB2BT2	22256	ESCNDIDO	69	10.00	11	SD-IV	San Diego		Battery
1039	SDG&E	ESCNDO_6_EB3BT3	22256	ESCNDIDO	69	10.00	12	SD-IV	San Diego		Battery

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	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
1040	SDG&E	ESCNDO_6_PL1X2	22257	ES GEN	13.8	48.71	1	SD-IV	San Diego		Market
1041	SDG&E	ESCNDO_6_UNITB1	22153	CALPK_ES	13.8	48.04	1	SD-IV	San Diego		Market
1042	SDG&E	ESCO_6_GLMQF	22333	GOALLINE	13.8	41.15	1	SD-IV	San Diego	Aug NQC	Net Seller
1043	SDG&E	ESCO_6_GLMQF	22333	GOALLINE	13.8	8.75	2	SD-IV	San Diego	Aug NQC	Net Seller
1044	SDG&E	GATEWY_2_GESBT1	23710	OM GEN4_BESS	0.508	175.00	1	SD-IV	San Diego		Battery
1045	SDG&E	IVSLR2_2_SM2SR1	23441	DW GEN6	0.42	18.60	1	SD-IV		Aug NQC	Solar
1046	SDG&E	IVSLRP_2_SOLAR1	23440	DW GEN2	0.36	24.80	1	SD-IV		Aug NQC	Solar
1047	SDG&E	IVWEST_2_SOLAR1	23155	DU GEN1 G1	0.2	10.06	1	SD-IV		Aug NQC	Solar
1048	SDG&E	IVWEST_2_SOLAR1	23156	DU GEN1 G2	0.2	8.54	1	SD-IV		Aug NQC	Solar
1049	SDG&E	JACMSR_1_JACSR1	23352	ECO GEN2	0.55	2.48	1	SD-IV		Aug NQC	Solar
1050	SDG&E	KEARNY_6_NESBT1				10.00		SD-IV	San Diego		Battery
1051	SDG&E	KEARNY_6_SESBT2				10.00		SD-IV	San Diego		Battery
1052	SDG&E	KYCORA_6_KMSBT1				0.00		SD-IV	San Diego	Not modeled Energy Only	Battery
1053	SDG&E	LAKHDG_6_UNIT 1	22625	LKHODG1	13.8	20.00	1	SD-IV	San Diego		Market
1054	SDG&E	LAKHDG_6_UNIT 2	22626	LKHODG2	13.8	20.00	2	SD-IV	San Diego		Market
1055	SDG&E	LARKSP_6_UNIT 1	22074	LRKSPBD1	13.8	49.00	1	SD-IV	San Diego, Border		Market
1056	SDG&E	LARKSP_6_UNIT 2	22075	LRKSPBD2	13.8	49.00	1	SD-IV	San Diego, Border		Market
1057	SDG&E	LAROA2_2_UNITA1	22997	INTBCT	16	176.81	1	SD-IV			Market
1058	SDG&E	LAROA2_2_UNITA1	22996	INTBST	18	145.19	1	SD-IV			Market
1059	SDG&E	LECONT_2_LESBT1	23597	Q1175_BESS	0.48	40.00	1	SD-IV		PCDS	Battery
1060	SDG&E	LILIAC_6_SOLAR	22404	LILIAC	69	0.37	67	SD-IV	San Diego		Solar
1061	SDG&E	MRGT_6_MEF2	22487	MEF MR2	13.8	44.00	1	SD-IV	San Diego		Market
1062	SDG&E	MRGT_6_MMAREF	22486	MEF MR1	13.8	45.00	1	SD-IV	San Diego		Market
1063	SDG&E	MRGT_6_TGEBT1	23412	MRGT GEN	0.64	30.00	1	SD-IV	San Diego		Battery
1064	SDG&E	MSHGTS_6_MMARLF	22448	MESAHGTS	69	3.70	1	SD-IV	San Diego	Aug NQC	Market
1065	SDG&E	MSSION_2_QF	22496	MISSION	69	0.32	1	SD-IV	San Diego	Aug NQC	Market
1066	SDG&E	MURRAY_6_UNIT	22532	MURRAY	69	0.00		SD-IV	San Diego	Not modeled Energy Only	Market
1067	SDG&E	OCTILO_5_WIND	23314	OCO GEN G1	0.69	14.43	1	SD-IV		Aug NQC	Wind
1068	SDG&E	OCTILO_5_WIND	23318	OCO GEN G2	0.69	14.43	1	SD-IV		Aug NQC	Wind
1069	SDG&E	OGROVE_6_PL1X2	22628	PA GEN1	13.8	48.00	1	SD-IV	San Diego		Market
1070	SDG&E	OGROVE_6_PL1X2	22629	PA GEN2	13.8	48.00	1	SD-IV	San Diego		Market
1071	SDG&E	OTAY_6_PL1X2	22617	OY GEN	13.8	37.20	1	SD-IV	San Diego		Market
1072	SDG&E	OTMESA_2_PL1X3	22607	OTAYMST1	16	272.27	1	SD-IV	San Diego		Market
1073	SDG&E	OTMESA_2_PL1X3	22606	OTAYMGT2	18	166.17	1	SD-IV	San Diego		Market
1074	SDG&E	OTMESA_2_PL1X3	22605	OTAYMGT1	18	165.16	1	SD-IV	San Diego		Market
1075	SDG&E	PALOMR_2_PL1X3	22265	PEN_ST	18	234.24	1	SD-IV	San Diego		Market
1076	SDG&E	PALOMR_2_PL1X3	22262	PEN_CT1	18	176.98	1	SD-IV	San Diego		Market
1077	SDG&E	PALOMR_2_PL1X3	22263	PEN_CT2	18	176.98	1	SD-IV	San Diego		Market
1078	SDG&E	PIOPIC_2_CTG1	23162	PIO PICO CT1	13.8	111.30	1	SD-IV	San Diego	No NQC - Pmax	Market
1079	SDG&E	PIOPIC_2_CTG2	23163	PIO PICO CT2	13.8	112.70	1	SD-IV	San Diego	No NQC - Pmax	Market
1080	SDG&E	PIOPIC_2_CTG3	23164	PIO PICO CT3	13.8	112.00	1	SD-IV	San Diego	No NQC - Pmax	Market

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	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
1081	SDG&E	PRCTVY_1_MIGBT1	22672	PRCTRVLY	138	0.00	4	SD-IV	San Diego	Aug NQC	Battery
1082	SDG&E	SAMPSN_6_KELCO1	22704	SAMPSON	12.5	1.51	1	SD-IV	San Diego	Aug NQC	Net Seller
1083	SDG&E	SLRMS3_2_SRMSR1	23442	DW GEN4 G1	0.6	18.60	1	SD-IV		Aug NQC	Solar
1084	SDG&E	SLRMS3_2_SRMSR1	23443	DW GEN4 G2	0.6	12.40	1	SD-IV		Aug NQC	Solar
1085	SDG&E	SMRCOS_6_LNDFIL	22724	SANMRCOS	69	1.50	1	SD-IV	San Diego	Aug NQC	Market
1086	SDG&E	TERMEX_2_PL1X3	22981	IV GEN1 STG	21	280.13	1	SD-IV			Market
1087	SDG&E	TERMEX_2_PL1X3	22982	IV GEN1 CTG2	18	156.44	1	SD-IV			Market
1088	SDG&E	TERMEX_2_PL1X3	22983	IV GEN1 CTG3	18	156.44	1	SD-IV			Market
1089	SDG&E	VLCNTR_6_VCEBT1	23627	VC GEN1_GEN1	34.5	54.00	1	SD-IV	San Diego		Battery
1090	SDG&E	VLCNTR_6_VCEBT2	23628	VC GEN1_GEN2	34.5	50.00	1	SD-IV	San Diego		Battery
1091	SDG&E	VLCNTR_6_VCSLR	22870	VALCNTR	69	0.29	59	SD-IV	San Diego	Aug NQC	Solar
1092	SDG&E	VLCNTR_6_VCSLR1	22870	VALCNTR	69	0.31	28	SD-IV	San Diego	Aug NQC	Solar
1093	SDG&E	VLCNTR_6_VCSLR2	22870	VALCNTR	69	0.62	28	SD-IV	San Diego	Aug NQC	Solar
1094	SDG&E	VSTAES_6_VESBT1	23541	ME GEN 1_BS1	0.64	5.00	1	SD-IV	San Diego		Battery
1095	SDG&E	VSTAES_6_VESBT1	23216	ME GEN 1_BS2	0.48	5.00	1	SD-IV	San Diego		Battery
1096	SDG&E	WISTRA_2_WRSSR1	23287	DW GEN5 G1	0.418	12.40	1	SD-IV		Aug NQC	Solar
1097	SDG&E	ZZ_CBRLLO_6_PLSTP1	22092	CABRILLO	69	2.70	1	SD-IV	San Diego		Market
1098	SDG&E	ZZ_CCRITA_7_RPPCHF	22124	CHCARITA	138	2.00	1	SD-IV	San Diego		Market
1099	SDG&E	ZZ_LAROA1_2_UNITA1	20187	LRP-U1	16	0.00	1	SD-IV		Connect to CENACE/CFE grid for the summer – not available for ISO BAA RA purpose	Market
1100	SDG&E	ZZ_NA	22604	OTAY	69	2.80	1	SD-IV	San Diego	No NQC - hist. data	Market
1101	SDG&E	ZZ_NA	22604	OTAY	69	2.20	3	SD-IV	San Diego	No NQC - hist. data	Market
1102	SDG&E	ZZ_NA	22204	EASTGATE	69	0.20	1	SD-IV	San Diego	No NQC - hist. data	Market
1103	SDG&E	ZZ_NA	22916	PFC-AVC	0.6	0.00	1	SD-IV	San Diego	No NQC - hist. data	QF/Selfgen
1104	SDG&E	ZZZ_New Unit	23959	Q1673_ES1	0.6	300.00	12	SD-IV	San Diego	No NQC - Pmax	Battery
1105	SDG&E	ZZZ_New Unit	23933	Q1670_ES	0.6	200.00	12	SD-IV	San Diego	No NQC - Pmax	Battery
1106	SDG&E	ZZZ_New Unit	23841	Q1657_ES	0.6	100.00	12	SD-IV	San Diego	No NQC - PCDS	Battery
1107	SDG&E	ZZZ_New Unit	23398	Q1166_PV	0.41	87.00	1	SD-IV		No NQC - PCDS	Hybrid
1108	SDG&E	ZZZ_New Unit	23434	Q1166_ES	0.41	87.00	1	SD-IV		No NQC - PCDS	Hybrid
1109	SDG&E	ZZZ_New Unit	23710	Q1170_BESS	0.508	75.00	1	SD-IV	San Diego	No NQC - Pmax	Battery
1110	SDG&E	ZZZ_New Unit	22969	Q1532_GEN	34.5	45.00	ES	SD-IV	San Diego	No NQC - Pmax	Hybrid
1111	SDG&E	ZZZ_New Unit	22969	Q1532_GEN	34.5	45.00	PV	SD-IV	San Diego	No NQC - Pmax	Hybrid
1112	SDG&E	ZZZ_New Unit	23544	Q1169_BESS1	0.4	34.80	1	SD-IV	San Diego	No NQC - Pmax	Battery
1113	SDG&E	ZZZ_New Unit	23519	Q1169_BESS2	0.4	34.80	1	SD-IV	San Diego	No NQC - Pmax	Battery

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	PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME	NQC Comments	CAISO Tag
1114	SDG&E	ZZZ_New Unit	23585	Q838_G1	0.6	12.40	1	SD-IV		No NQC - est. data	Solar
1115	SDG&E	ZZZ_New Unit	22942	BUE GEN 1_G1	0.69	11.60	1	SD-IV		No NQC - est. data	Wind
1116	SDG&E	ZZZ_New Unit	22945	BUE GEN 1_G2	0.69	11.60	1	SD-IV		No NQC - est. data	Wind
1117	SDG&E	ZZZ_New Unit	22947	BUE GEN 1_G3	0.69	11.60	1	SD-IV		No NQC - est. data	Wind
1118	SDG&E	ZZZ_New Unit	23108	Q159A_GE	0.72	9.14	2	SD-IV		No NQC - est. data	Wind
1119	SDG&E	ZZZ_New Unit	22112	CAPSTRNO	138	5.65	1	SD-IV	San Diego	No NQC - Pmax	Market
1120	SDG&E	ZZZ_New Unit	23108	Q159A_GE	0.72	2.61	3	SD-IV		No NQC - est. data	Wind
1121	SDG&E	ZZZ_New Unit	22949	BUE GEN 1_G4	0.69	0.00	1	SD-IV		Energy Only	Wind
1122	SDG&E	ZZZ_New Unit	23560	Q1047_BESS	0.48	0.00	1	SD-IV	San Diego, El Cajon	Energy Only	Battery
1123	SDG&E	ZZZ_New Unit	23575	Q789_G1	0.55	0.00	1	SD-IV		Energy Only	Solar
1124	SDG&E	ZZZ_New Unit	23421	Q1531_ES1	0.55	0.00	1	SD-IV		Energy Only	Battery
1125	SDG&E	ZZZ_New Unit	23425	Q1531_ES2	0.55	0.00	1	SD-IV		Energy Only	Battery
1126	SDG&E	ZZZ_New Unit	23685	Q1045_GEN	0.55	0.00	1	SD-IV	San Diego	Energy Only	Battery
1127	SDG&E	ZZZ_New Unit	23557	Q1048_BESS	0.55	0.00	C7	SD-IV	San Diego	Energy Only	Battery

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

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

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	12	22
22208	EL CAJON	1	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