BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Oversee the Resource Adequacy Program, Consider Program Refinements, and Establish Forward Resource Adequacy Procurement Obligations.	Rulemaking 19-11-009 (Filed November 7, 2019)

CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION DRAFT 2022 LOCAL CAPACITY TECHNICAL ANALYSIS AND UPDATE REGARDING DRAFT 2022 FLEXIBLE CAPACITY NEEDS ASSESSMENT

The California Independent System Operator Corporation (CAISO) hereby provides its Draft Local Capacity Technical Analysis for 2022. The CAISO is providing the draft local study as requested in the December 11, 2020 Assigned Commissioner's Amended Track 3B and Track 4 Scoping Memo and Ruling (Scoping Memo). Because the Local Capacity Technical Study remains a draft, the final results are subject to change based on feedback received in the CAISO's stakeholder processes or the CAISO's own internal review. The CAISO will provide the final Local Capacity Technical Study by April 30, 2021, as provided in the Scoping Memo. The Draft Local Capacity Technical Analysis is included as Attachment A to and can be found at: http://www.caiso.com/InitiativeDocuments/Draft2022LocalCapacityTechnicalReport.pdf.

The Scoping Memo also requested the CAISO file the draft 2022 flexible resource adequacy requirements by April 2, 2021. However, the CAISO is unable to provide the draft 2022 flexible resource adequacy requirements at this time due to information delays outside the CAISO's control. The CAISO's 2022 flexible capacity study process has been delayed due to the late receipt of 2022 demand forecast data, which is a necessary input in the study process. The CAISO is currently planning to produce 2022 draft flexible capacity requirements during the week of April 19, 2021. The CAISO will file the draft 2022 flexible capacity requirements with the Commission as soon as they are available.

The CAISO plans to file the final 2022 Local Capacity Technical Analysis by April 30, 2021, as requested in the Scoping Memo. The 2022 Flexible Capacity Needs Assessment, however, will not be finalized by April 30, 2021. The CAISO currently plans to finalize the 2022 Flexible Capacity Needs Assessment by May 14, 2021. The CAISO will file the final 2022

Flexible Capacity Needs Assessment with the Commission as soon as possible after finalizing.

Respectfully submitted,

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Dated: April 2, 2021

ATTACHMENT A

2022 Local Capacity Technical Study

Draft Report and Study Results

2022 LOCAL CAPACITY TECHNICAL STUDY

DRAFT REPORT

AND STUDY RESULTS

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Executive Summary

This Report documents the results and recommendations of the 2022 Local Capacity Technical (LCT) Study. The LCT Study assumptions, processes, and criteria were discussed and recommended through the 2022 Local Capacity Technical Study Criteria, Methodology and Assumptions Stakeholder Meeting held on November 3, 2020. On balance, the assumptions, and processes used for the 2022 LCT Study mirror those used in the 2007-2021 LCT Studies.

Overall, the capacity needed for LCR has increased by about 953 MW or about 3.9% from 2021 to 2022.

The LCR needs have decreased in the following areas: Humboldt, Kern and Big Creek/Ventura due to load forecast decrease, Sierra due to load forecast decrease and new transmission projects.

The LCR needs have increased in the following areas: North Coast/North Bay and Fresno due to load forecast increase, Bay Area due to load increase in San Jose (SVP), San Diego-Imperial Valley due to load forecast increase and higher imports from IID area, Stockton due to lower rating for the limiting equipment, and the LA Basin due to splitting the Mesa 230 kV bus for fault duty mitigation. With the final phase of the Mesa 500 kV Substation project completed, the 2026 LA Basin needs decreased compared to the 2020 requirements by more than 1000 MW. However, the 2021 and 2022 LA Basin needs reflect temporary fluctuations as described in the corresponding reports.

The 2022 LCT study results are provided to the CPUC for consideration in its 2022 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 Forecast Update 2020-2030, developed by the CEC; namely the load-serving entity (LSE) and balancing authority (BA) mid baseline demand with low additional achievable energy efficiency and photo voltaic (AAEE-AAPV), posted in March 2021: https://urlisolation.com/browser?url=https%3A%2F%2Fefiling.energy.ca.gov%2Fgetdocument.aspx%3Ftn%3D237320&traceToken=1617047779;caiso_production2;https:/www.energy.ca.gov/data-re&clickId=47351499-79A3-4436-9F5D-AECCB72A13A4.

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 2022 are provided below and 2026 LCR needs are provided for comparison:

2022 Local Capacity Needs

	August Qualifying Capacity				Capacity Available at Peak	2022 LCR Need
Local Area Name	**QF/ Muni (MW)**	**Non-Solar (MW)**	**Solar (MW)**	**Total (MW)**	**Total (MW)**	**Capacity Needed**
Humboldt	0	181	0	**181**	**181**	**111**
North Coast/ North Bay	119	715	0	**834**	**834**	**834***
Sierra	1193	894	5	**2092**	**2087**	**1220***
Stockton	129	445	12	**586**	**574**	**562***
Greater Bay	611	7129	8	**7748**	**7748**	**7231***
Greater Fresno	194	2819	357	**3370**	**3172**	**1987***
Kern	4	333	81	**418**	**337**	**356***
Big Creek/ Ventura	424	4853	369	**5646**	**5646**	**2173**
LA Basin	1160	7603	11	**8774**	**8774**	**6646**
San Diego/ Imperial Valley	8	3985	369	**4362**	**3993**	**3993**
Total	3842	28957	1212	**34011**	**33346**	**25113**

2026 Local Capacity Needs

	August Qualifying Capacity				Capacity Available at Peak	2026 LCR Need
Local Area Name	**QF/ Muni (MW)**	**Non-Solar (MW)**	**Solar (MW)**	**Total (MW)**	**Total (MW)**	**Capacity Needed**
Humboldt	0	181	0	**181**	**181**	**128**
North Coast/ North Bay	119	715	0	**834**	**834**	**834***
Sierra	1193	894	5	**2092**	**2087**	**1690***
Stockton	129	445	12	**586**	**574**	**586***
Greater Bay	611	7055	8	**7674**	**7674**	**7674***
Greater Fresno	194	2819	357	**3370**	**3172**	**2314***
Kern	4	333	81	**418**	**337**	**418***
Big Creek/ Ventura	424	3362	369	**4155**	**4155**	**982**
LA Basin	1159	6223	11	**7393**	**7393**	**6359**
San Diego/ Imperial Valley	8	4676	391	**5075**	**4684**	**3394**
Total	**3841**	**26703**	**1234**	**31778**	**31091**	**24379**

* 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 2023 and 2024 LCR needs are provided below:

2023 Estimated Local Capacity Needs (No technical studies conducted)

	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	181	0	**181**	**181**	**115**
North Coast/ North Bay	119	715	0	**834**	**834**	**834***
Sierra	1193	894	5	**2092**	**2087**	**1338***
Stockton	129	445	12	**586**	**574**	**562***
Greater Bay	611	7055	8	**7674**	**7674**	**7418***
Greater Fresno	194	2819	357	**3370**	**3172**	**2069***
Kern	4	333	81	**418**	**337**	**375***
Big Creek/ Ventura	424	4853	369	**5646**	**5646**	**935**
LA Basin	1160	7603	11	**8774**	**8774**	**6196**
San Diego/ Imperial Valley	8	4071	383	**4462**	**4079**	**3540**
Total	**3842**	**28969**	**1226**	**34037**	**33358**	**23382**

2024 Estimated Local Capacity Needs (No technical studies conducted)

	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	181	0	**181**	**181**	**120**
North Coast/ North Bay	119	715	0	**834**	**834**	**834***
Sierra	1193	894	5	**2092**	**2087**	**1455***
Stockton	129	445	12	**586**	**574**	**562***
Greater Bay	611	7055	8	**7674**	**7674**	**7605***
Greater Fresno	194	2819	357	**3370**	**3172**	**2151***
Kern	4	333	81	**418**	**337**	**394***
Big Creek/ Ventura	424	3362	369	**4155**	**4155**	**951**
LA Basin	1159	6223	11	**7393**	**7393**	**6251**
San Diego/ Imperial Valley	8	4676	391	**5075**	**4684**	**3330**
Total	**3841**	**26703**	**1234**	**31778**	**31091**	**23653**

* 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 2021 LCR needs are provided below for comparison:

2021 Local Capacity Needs

	August Qualifying Capacity				Capacity Available at Peak	2021 LCR Need
Local Area Name	**QF/ Muni (MW)**	**Non-Solar (MW)**	**Solar (MW)**	**Total (MW)**	**Total (MW)**	**Capacity Needed**
Humboldt	0	191	0	**191**	**191**	**130**
North Coast/ North Bay	119	723	0	**842**	**842**	**842***
Sierra	1183	920	5	**2108**	**2103**	**1821***
Stockton	139	445	12	**596**	**584**	**596***
Greater Bay	604	6806	8	**7418**	**7418**	**6353**
Greater Fresno	216	2815	361	**3392**	**3191**	**1694***
Kern	5	330	78	**413**	**335**	**413***
Big Creek/ Ventura	424	4454	250	**5128**	**5128**	**2296**
LA Basin	1197	8456	11	**9664**	**9664**	**6127**
San Diego/ Imperial Valley	2	4003	356	**4361**	**4005**	**3888**
Total	**3889**	**29143**	**1081**	**34113**	**33461**	**24160**

* 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 2021 and 2022 LCT study results.

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

1.1 Objectives

The intent of the 2022 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 2022 LCT Study Criteria, Methodology and Assumptions Stakeholder Meeting held on November 3, 2020. 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 2022 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 2022 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

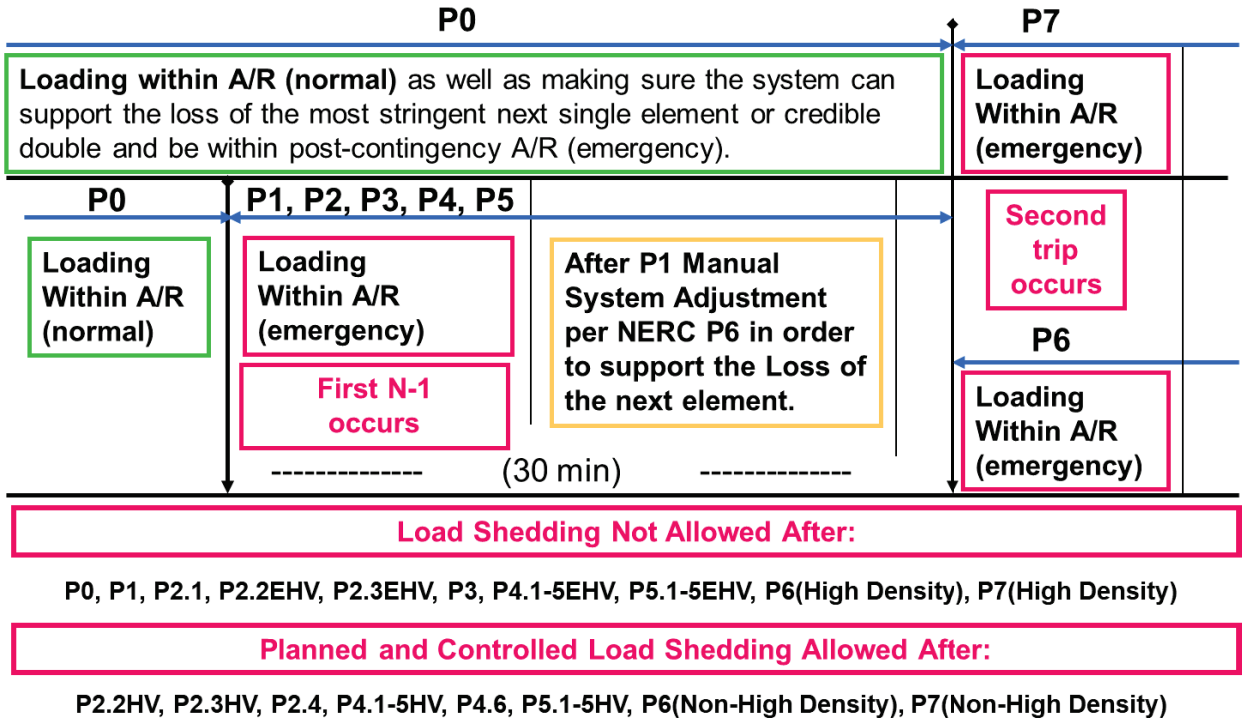
[3] A Special Protection Scheme is typically proposed as an operational solution that does not require additional generation and permits operators to effectively prepare for the next event as well as ensure security should the next event occur. However, these systems have their own risks, which limit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

2.1.1 Power Flow Assessment:

Table 2.1-3 Power flow criteria

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

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

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

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

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

2.1.2 Post Transient Load Flow Assessment:

Table 2.1-4 Post transient load flow criteria

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

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

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

2.1.3 Stability Assessment:

Table 2.1-5 Stability criteria

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

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

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

2.1.4 Engineering Estimate for Intermediate Years:

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

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

2.1.4.1 *Net Peak Load Growth driven estimate*

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

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

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

2.1.4.2 *Single New Transmission driven estimate*

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

2.1.4.3 *Single New Resource driven estimate*

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

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

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

Priority dispatch order (from LCR study manual):

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

2.1.4.4 *Single Change in Resource contractual status driven estimate*

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

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

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

2.1.4.5 *Single Known Resource Retirement driven estimate*

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

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

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

2.1.4.6 *Multi Reason Change driven estimate*

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

a) Net peak load growth

b) New transmission project(s)

c) New resource(s)

d) Change in resource contractual status

e) Known resource retirement(s)

2.2 Load Forecast

2.2.1 System Forecast

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

2.2.2 Base Case Load Development Method

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

2.2.2.1 *PTO Loads in Base Case*

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

a. Determination of division loads

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

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

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

b. Allocation of division load to transmission bus level

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

2.2.2.2 *Municipal Loads in Base Case*

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

2.3 Power Flow Program Used in the LCR analysis

The technical studies were conducted using General Electric's Power System Load Flow (GE PSLF) program version 21.0_07 and PowerGem's Transmission Adequacy and Reliability Assessment (TARA) program version 2002_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 2022 Local Capacity Needs vs. Peak Load and Local Area Resources

	2022 Total LCR (MW)	Peak Load (1 in10) (MW)	2022 LCR as % of Peak Load	Total NQC Local Area Resources (MW)	2022 LCR as % of Total NQC
Humboldt	111	144	77%	181	61%
North Coast/North Bay	834	1509	55%	834	100%**
Sierra	1220	1618	75%	2092	58%**
Stockton	562	1027	55%	586	96%**
Greater Bay	7231	10746	67%	7748	93%**
Greater Fresno	1987	3435	58%	3370	59%**
Kern	356	1029	35%	418	85%**
Big Creek/Ventura	2173	4394	49%	5646	38%
LA Basin	6646	18929	35%	8774	76%
San Diego/Imperial Valley	3993	4580	87%	4362	92%
Total*	25113	47411	53%	34011	74%

Table 3.1-2 2021 Local Capacity Needs vs. Peak Load and Local Area Resources

	2021 Total LCR (MW)	Peak Load (1 in10) (MW)	2021 LCR as % of Peak Load	Total Dependable Local Area Resources (MW)	2021 LCR as % of Total Area Resources
Humboldt	130	153	85%	191	68%
North Coast/North Bay	842	1456	58%	842	100%**
Sierra	1821	1865	98%	2108	86%**
Stockton	596	1113	54%	596	100%**
Greater Bay	6353	10780	59%	7418	86
Greater Fresno	1694	3189	53%	3392	50%**
Kern	413	1285	32%	413	100%**
LA Basin	2296	4451	52%	5128	45%
Big Creek/Ventura	6127	18930	32%	9664	63%
San Diego/Imperial Valley	3888	4523	86%	4361	89%
Total*	**24160**	**47745**	**51%**	**34113**	**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 2022 have been included in this 2022 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 2022 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	28	106	9	26	gas	
North Coast/North Bay Overall	410	2141	10	55	geothermal	
Eagle Rock	38	247	9	15	geothermal	
Fulton	402	824	8	205	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	59	472	9	24	hydro	
Pease	51	408	9	30	gas	Need to be eliminated
Gold Hill-Drum	187	1496	9	83	hydro	
Stockton	-	-	-	-	-	Sum of sub-areas
Lockeford	0	0	0	0	gas	Need to be eliminated
Tesla-Bellota	440	3080	8	195	gas	
Greater Bay Overall	2100	14578	11	900	gas	
Llagas	21	89	7	17	gas	
San Jose	375	2757	12	190	gas	
South Bay-Moss Landing	450	3042	16	250	gas	
Oakland	22	181	10	11	distillate	
Greater Fresno Overall	710	4811	12	400	hydro	
Panoche	85	422	11	85	gas	
Herndon	475	1114	11	280	hydro	
Hanford	70	382	8	65	gas	
Coalinga	48	356	13	25	solar	
Borden	22	80	7	12	gas	
Reedley	25	185	12	10	hydro	
Kern Overall	-	-	-	-	-	N/A
Westpark	9	36	6	9	gas	
Kern Power-Tevis	45	280	8	25	solar	
Kern Oil	96	578	10	63	gas	
South Kern PP	395	2904	12	152	gas	
Big Creek/Ventura Overall	1181	8140	17	390	gas	
Vestal	163	1293	13	50	gas	
Santa Clara	185	1442	12	37	gas	
LA Basin Overall	3612	29332	11	1020	gas	
Eastern	1834	13584	11	690	gas	
Western	1840	15148	11	580	gas	
El Nido	238	1591	11	106	gas	
San Diego/Imperial Valley Overall	1165	6690	9	670	gas	
San Diego	1165	6697	9	670	gas	
El Cajon	40	202	8	40	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	110	7	17	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	27474	4121	-7594	-3750	**20251**
NP26=NP15+ZP26	20403	3060	-3451	-3000	**17012**

Where:

Load Forecast is the most recent 1 in 2 CEC forecast for year 2022 - California Energy Demand Update 2020-2030 , Mid Demand Baseline, Mid AAEE Savings updated in March, 2021.

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

Allocated Imports are the actual 2021 Available Import Capability for loads in the CAISO control area numbers that are not expected to change much by 2022, 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 300 MW while Southern California stayed about the same.

The Import Allocations went up in Southern California by about 500 MW and down in Northern California by about 200 MW.

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

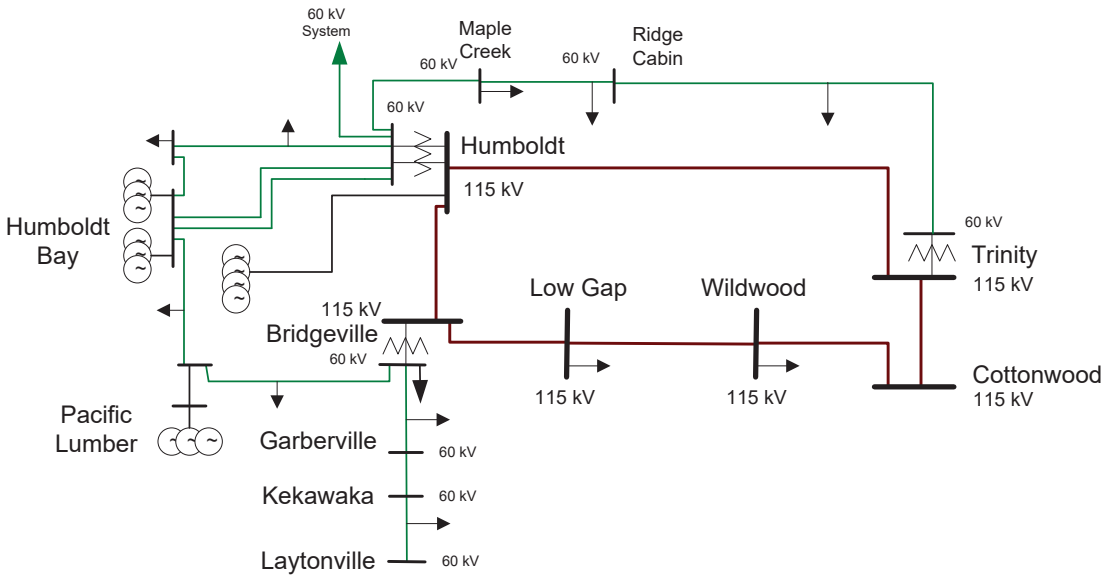
Humboldt is in, Trinity is out

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 2022 the estimated time of local area peak is 18:00 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 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	132	Market and Net Seller	181	181
AAEE	-1	MUNI	0	0
Behind the meter DG	0	QF	0	0
Net Load	**131**	LTPP Preferred Resources	0	0
Transmission Losses	13	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**144**	**Total**	**181**	**181**

Humboldt LCR Area Hourly Profiles

Figure 3.3-2 illustrates the forecast 2022 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 2022 hourly profile for Humboldt LCR area with the Category P6 transmission capability without resources.

Figure 3.3-2 Humboldt 2022 Peak Day Forecast Profiles

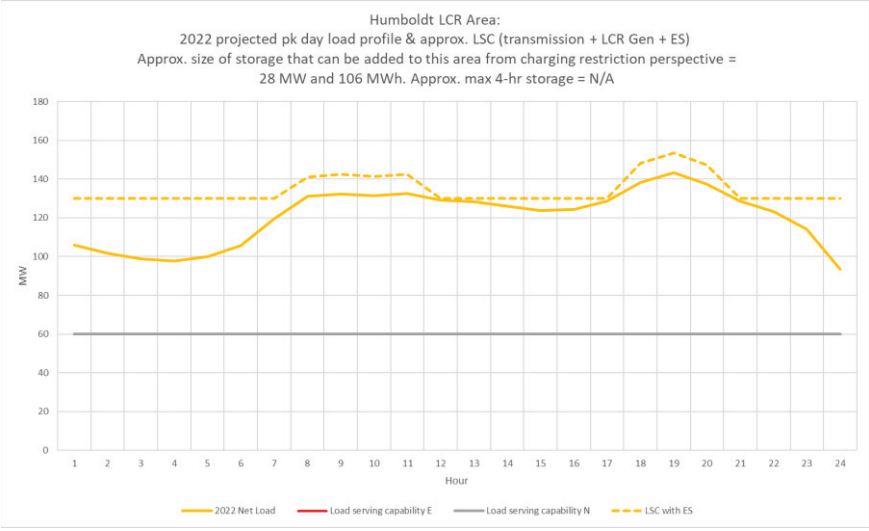
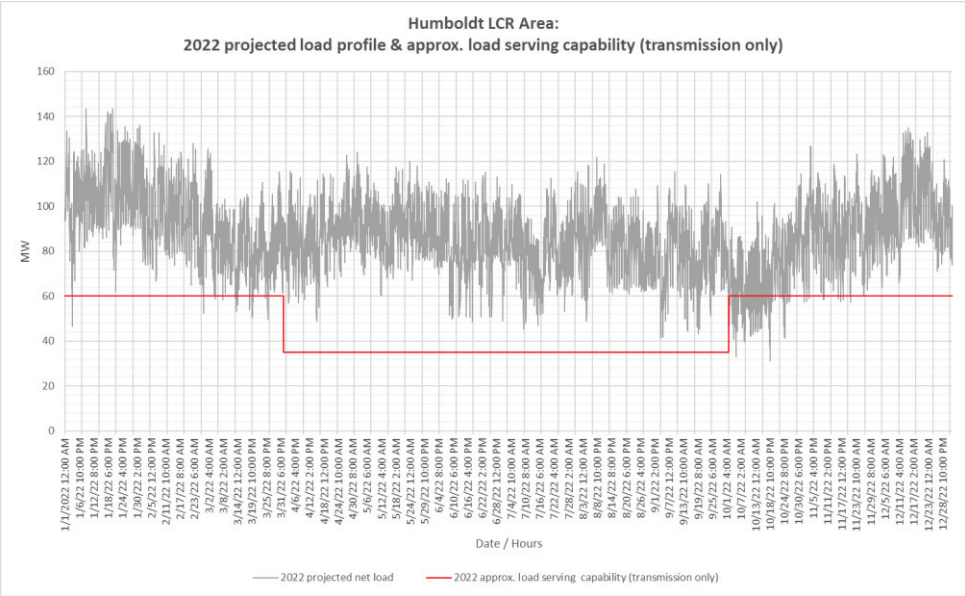


Figure 3.3-3 Humboldt 2022 Forecast Hourly Profile



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 111 MW.

Table 3.3-2 Humboldt LCR Area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First Limit	P6	Humboldt-Trinity 115 kV	Cottonwood-Bridgeville 115 kV & Humboldt - Humboldt Bay 115 kV	111

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 2021 the load forecast is down by 9 MW and the total LCR is down by 19 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

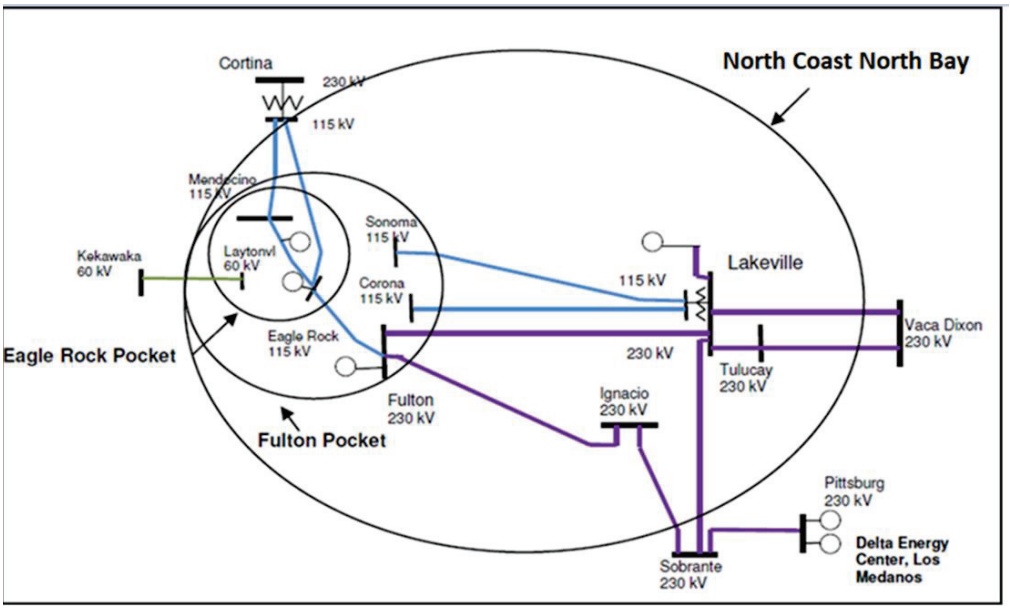
Tulucay is in, Vaca Dixon is out

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 2022 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 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	1485	Market and Net Seller	715	715
AAEE	-19	MUNI	114	114
Behind the meter DG	0	QF	5	5
Net Load	**1466**	Wind	0	0
Transmission Losses	43	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**1509**	**Total**	**834**	**834**

North Coast and North Bay LCR Area Hourly Profiles

Figure 3.3-5 5 illustrates the forecast 2022 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 2022 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 2022 Peak Day Forecast Profiles

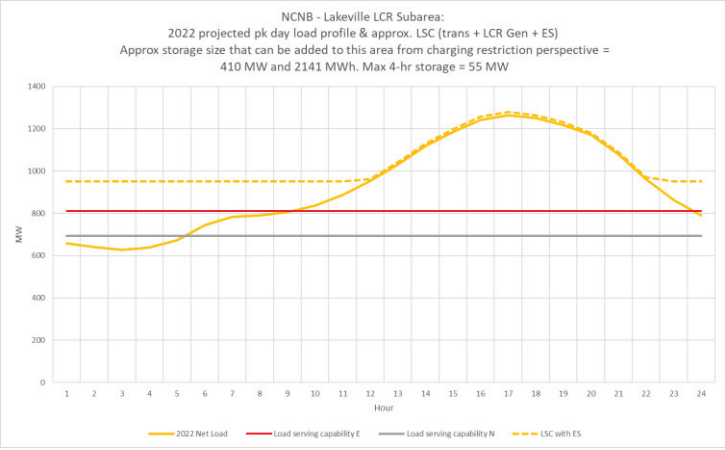
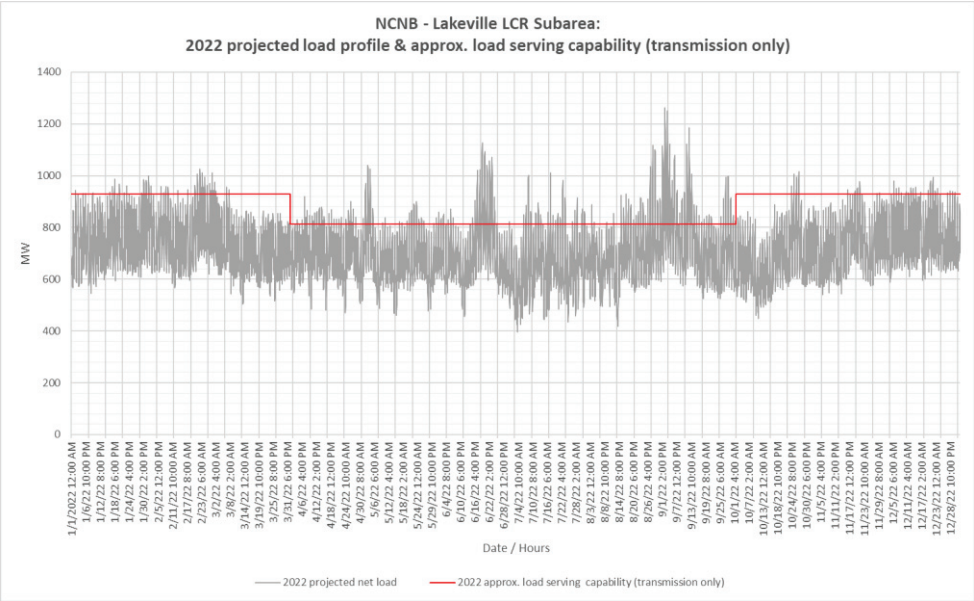


Figure 3.3-6 North Coast and North Bay 2022 Forecast Hourly Profile



Approved transmission projects modeled in base cases

Lakeville 60 kV Area System Reinforcement

Clear Lake 60 kV System Reinforcement

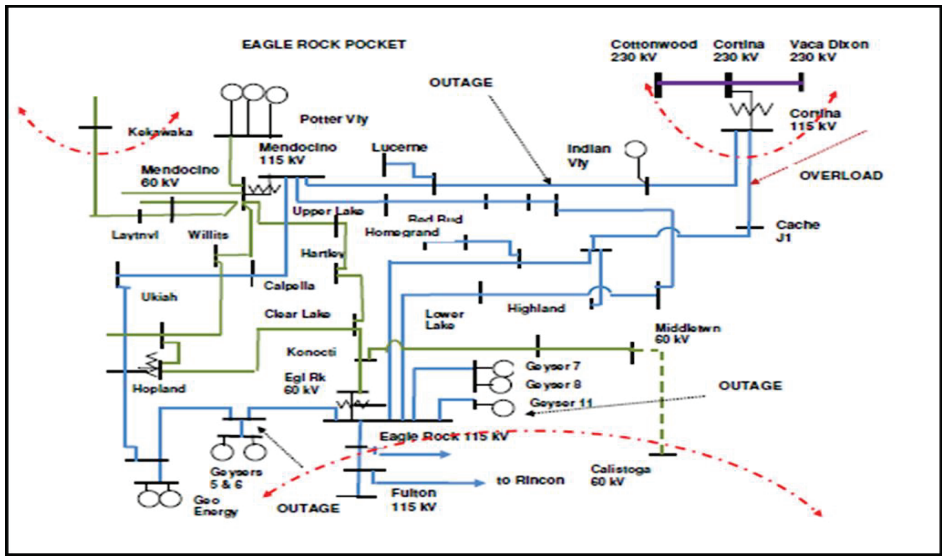
Ignacio Area Upgrade

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 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	253	Market and Net Seller	249	249
AAEE	-3	MUNI	2	2
Behind the meter DG	0	QF	0	0
Net Load	**250**	Solar	0	0
Transmission Losses	14	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**264**	**Total**	**251**	**251**

Eagle Rock LCR Sub-area Hourly Profiles

Figure 3.3-8 illustrates the forecast 2022 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 2022 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 2022 Peak Day Forecast Profiles

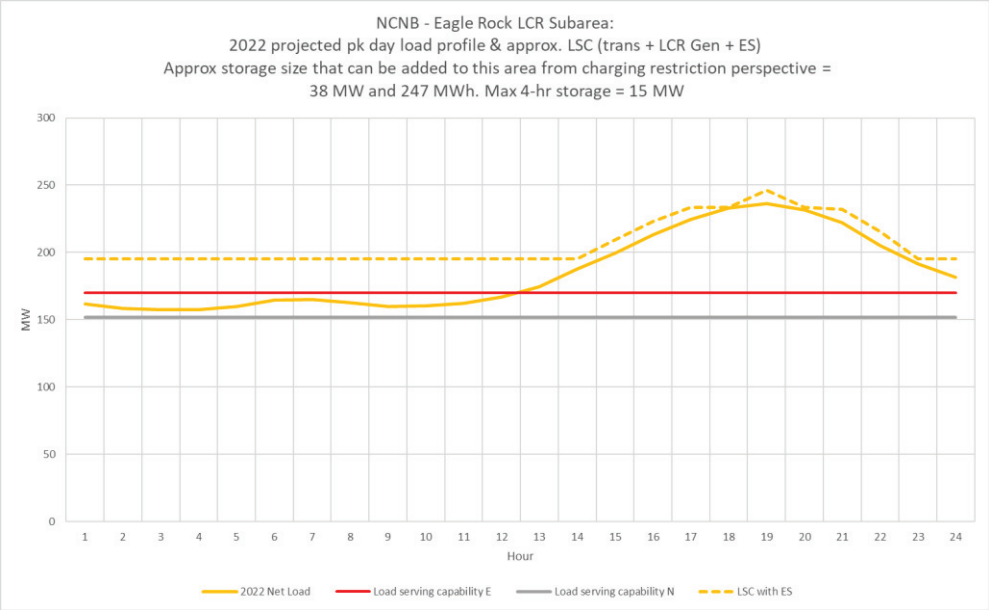
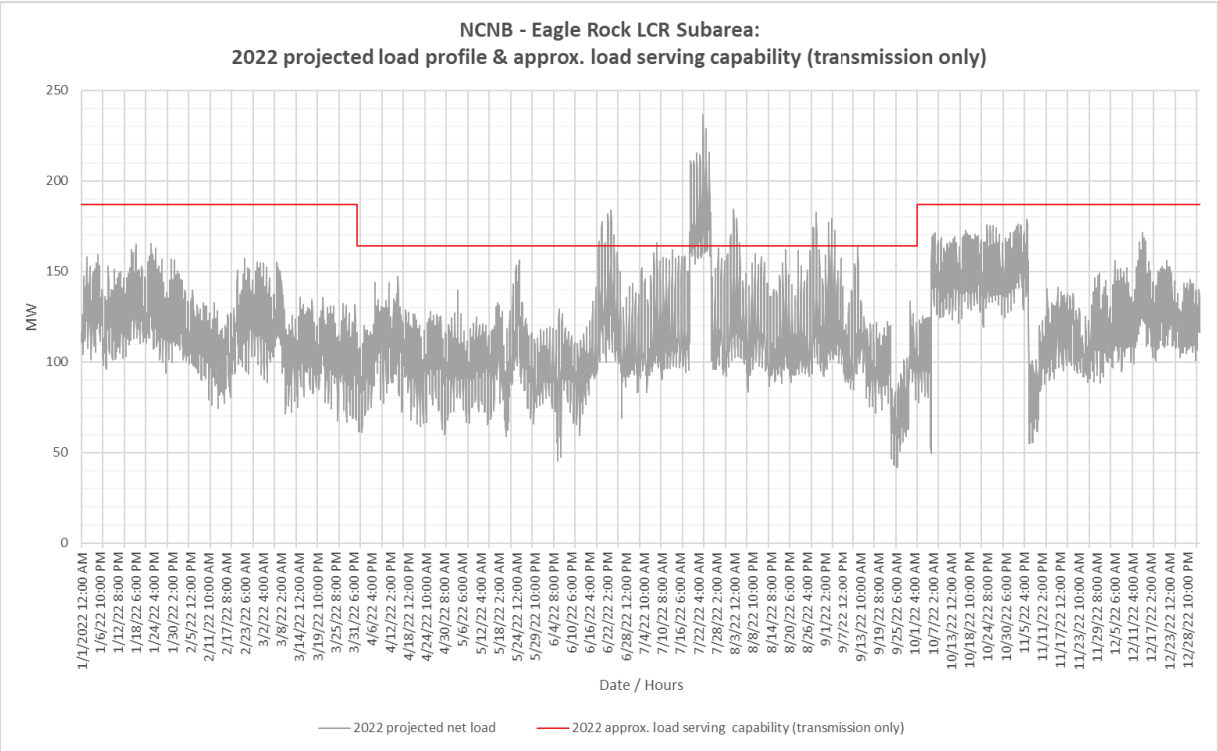


Figure 3.3-9 Eagle Rock LCR Sub-area 2022 Forecast Hourly Profiles



Eagle Rock LCR Sub-area Requirement

Table 3.3-5 identifies the sub-area LCR requirements. The LCR requirement for Category P3 contingency is 213 MW.

Table 3.3-5 Eagle Rock LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First Limit	P3	Eagle Rock-Cortina 115 kV line	Cortina-Mendocino 115 kV with Geyser #11 unit out	213

Effectiveness factors

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

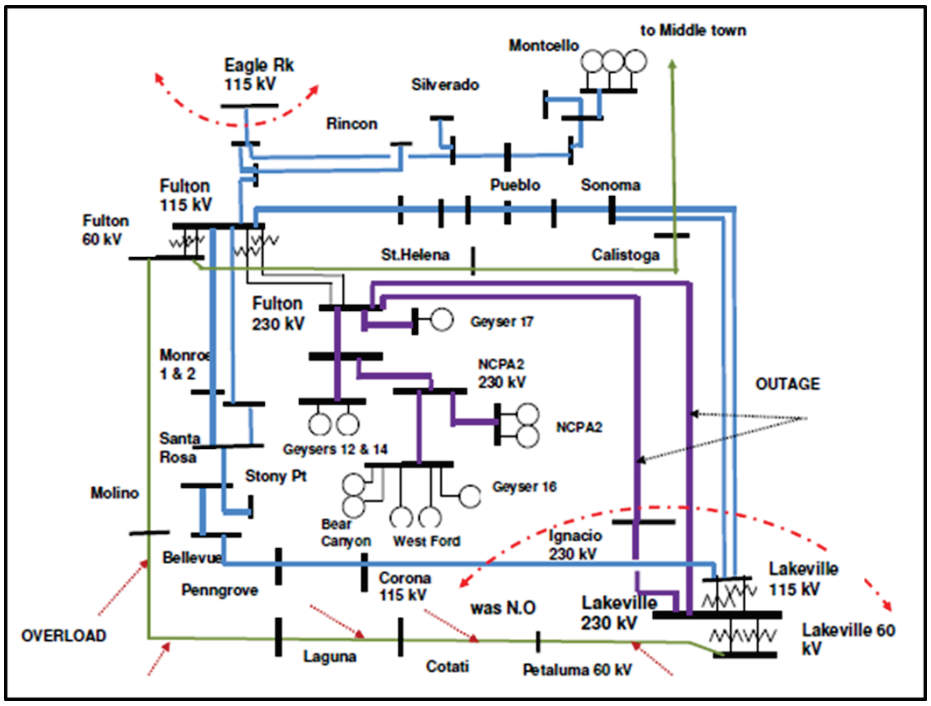
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7120 posted at: http://www.caiso.com/Documents/2210Z.pdf

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 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	895	Market	462	462
AAEE	-11	MUNI	54	54
Behind the meter DG	0	QF	5	5
Net Load	**884**	Solar	0	0
Transmission Losses	25	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**909**	**Total**	**521**	**521**

Fulton LCR Sub-area Hourly Profiles

Figure 3.3-11 illustrates the forecast 2022 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 2022 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 2022 Peak Day Forecast Profiles

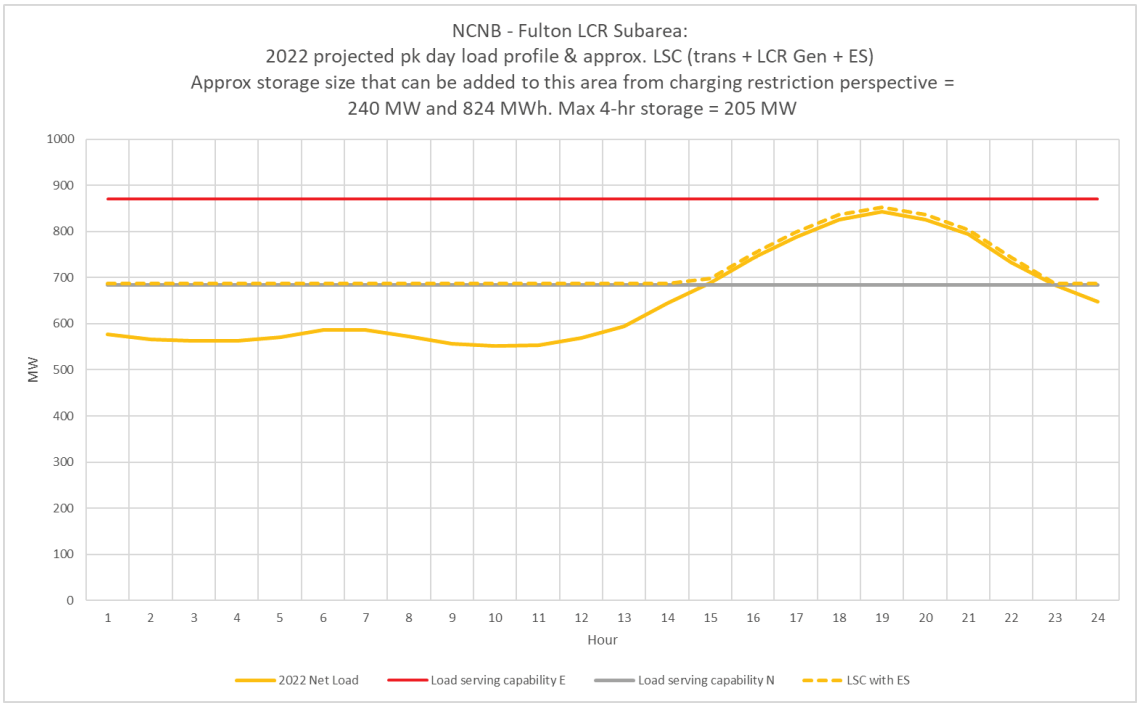
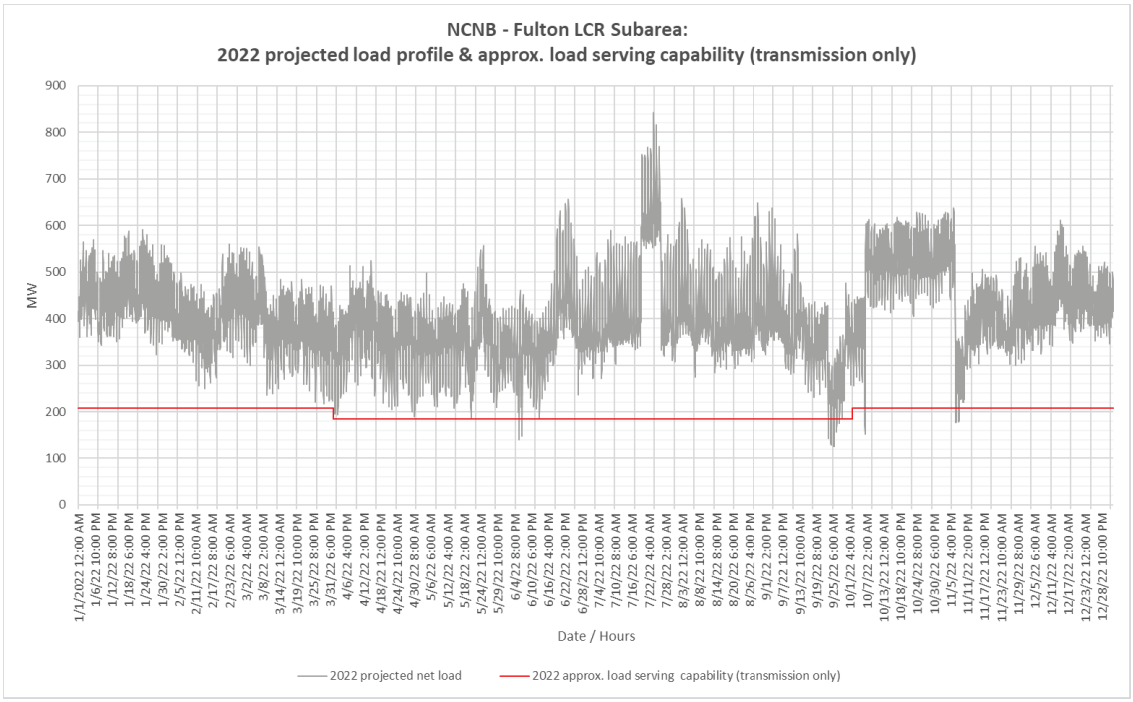


Figure 3.3-12 Fulton LCR Sub-area 2022 Forecast Hourly Profiles



Fulton LCR Sub-area Requirement

Table 3.3-7 identifies the sub-area LCR requirements. The LCR requirement for Category P6 contingency is 243 MW.

Table 3.3-7 Fulton LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First Limit	P6	Thermal overload on Sonoma-Pueblo 115 kV Line	Fulton-Lakeville #1 230 kV & Fulton-Ignacio #1 230 kV	243

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 868 MW including 34 MW of deficincy.

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First Limit	P3	Tulucay - Vaca Dixon 230 kV Line	Vaca Dixon-Tulucay 230 kV with DEC power plant out of service	868 (34)

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 2021 load forecast went up by 53 MW; and, the total LCR need went up by 25 MW due to load forecast increase.

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 is out

Drum is in Summit is out

Spaulding is in Summit is out

Brighton is in Bellota is out

Rio Oso is in Lockeford is out

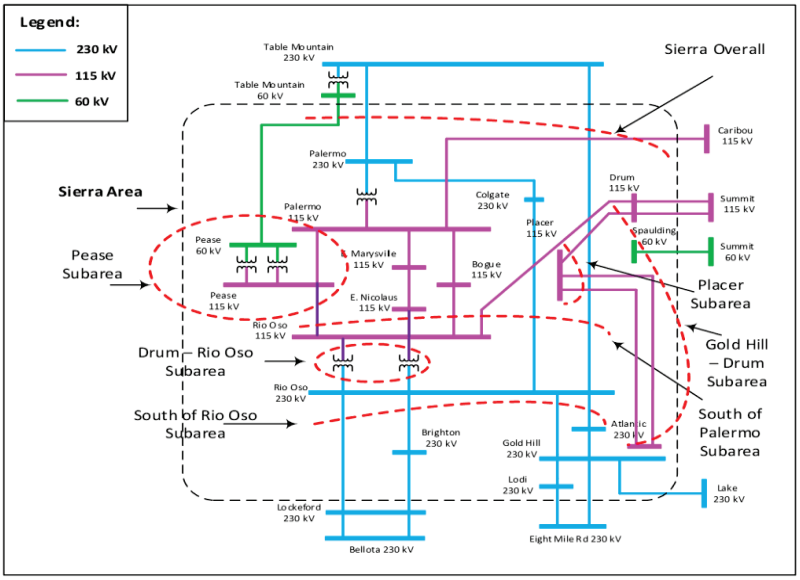
Gold Hill is in Eight Mile is out

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 2022 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 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	1564	Market and Net Seller	894	894
AAEE	-13	MUNI	1142	1142
Behind the meter DG	0	QF	51	51
Net Load	**1551**	Solar	5	0
Transmission Losses	68	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**1619**	**Total**	**2092**	**2087**

Approved transmission projects modeled:

South of Palermo 115 kV Reinforcement Project (Pease to Palermo Line)

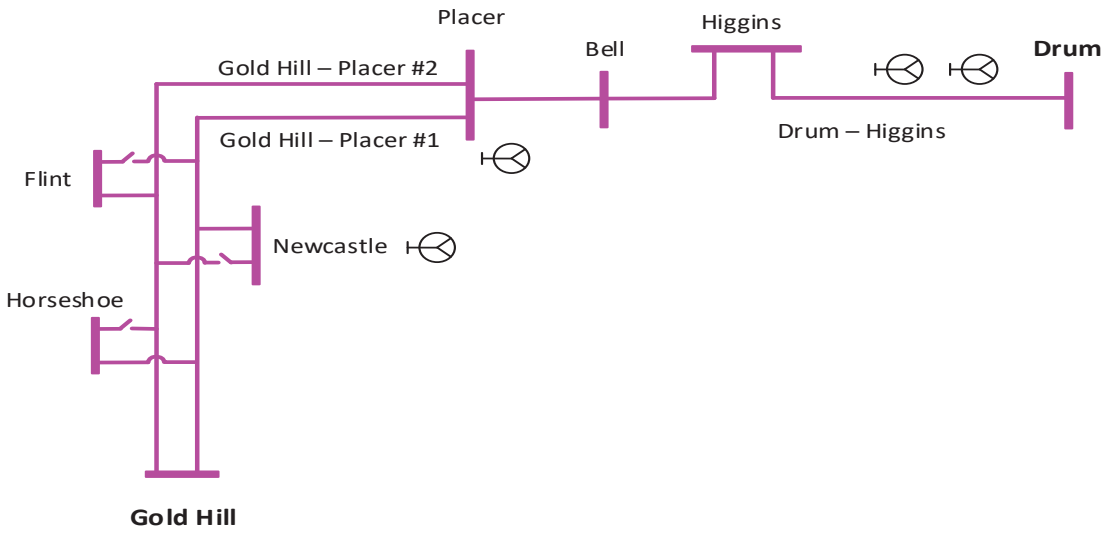
Pease 115/60 kV transformer addition

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 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	158	Market and Net Seller	55	55
AAEE	-1	MUNI	42	42
Behind the meter DG	0	QF	0	0
Net Load	**157**	Solar	0	0
Transmission Losses	3	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**160**	**Total**	**97**	**97**

Placer LCR Sub-area Hourly Profiles

Figure 3.3-15 illustrates the forecast 2022 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 2022 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 2022 Peak Day Forecast Profiles

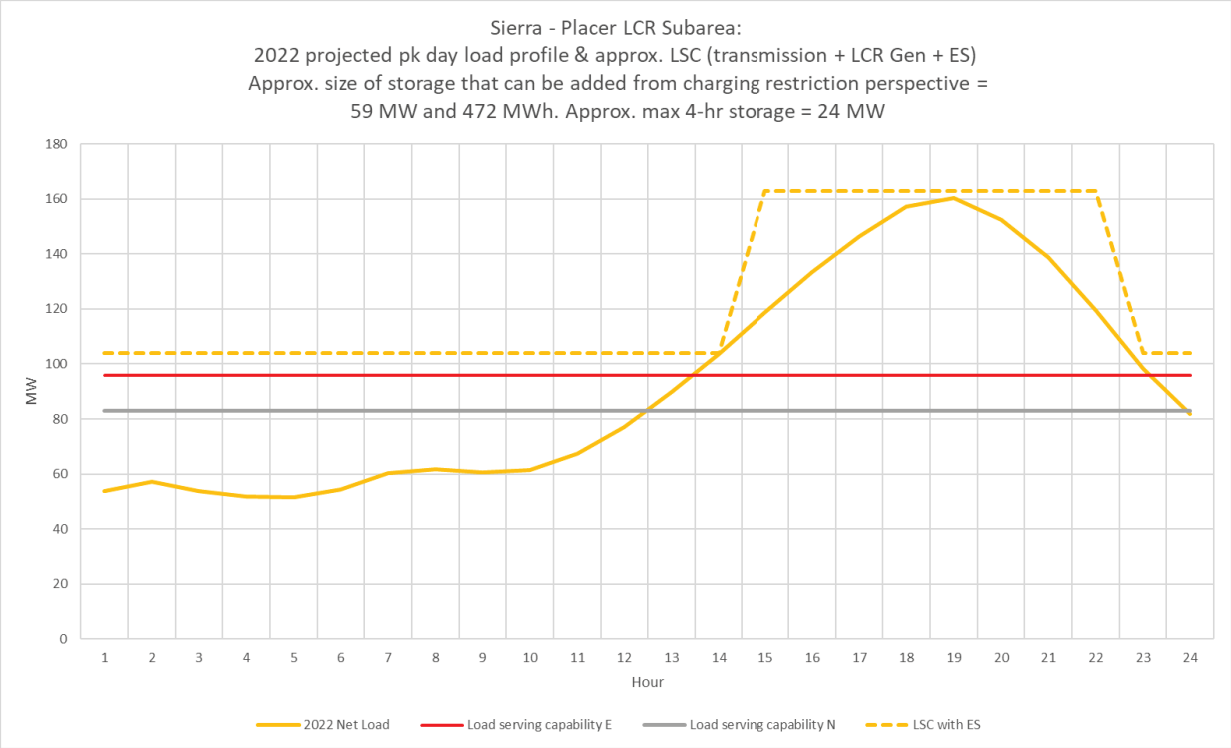
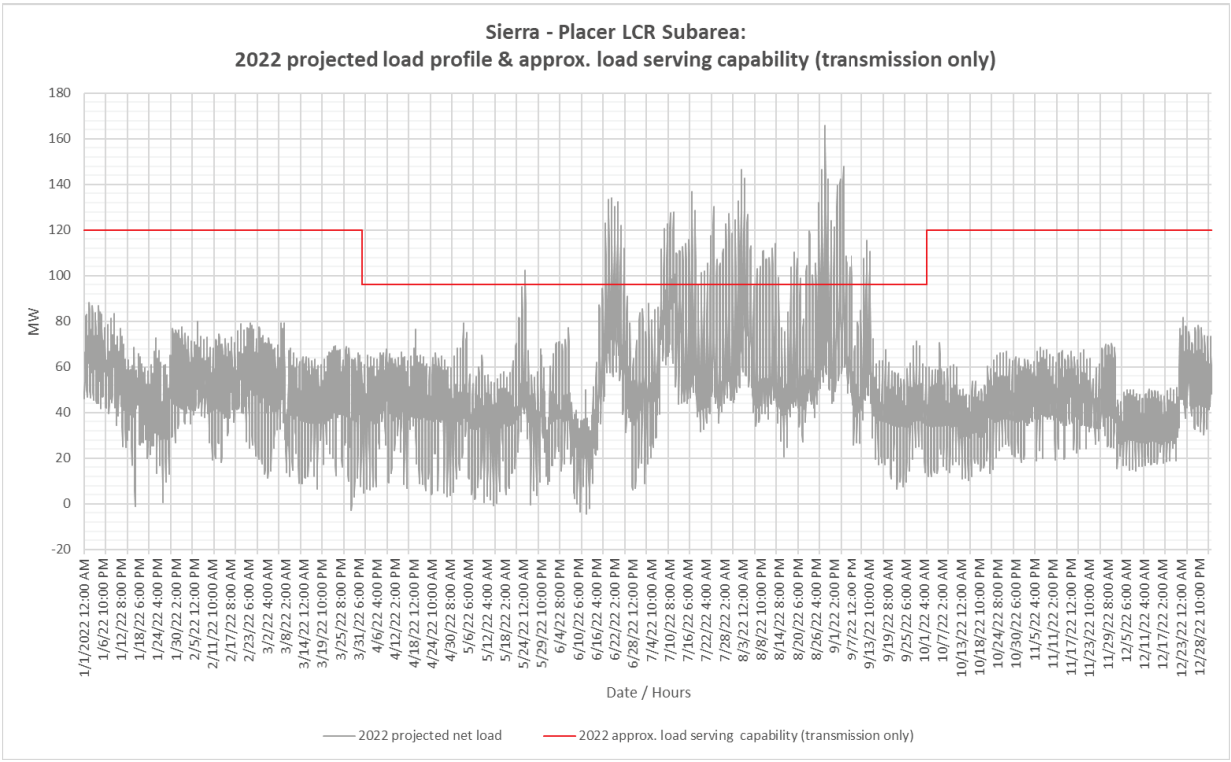


Figure 3.3-16 Placer LCR Sub-area 2022 Forecast Hourly Profiles



Placer LCR Sub-area Requirement

Table 3.3-11 identifies the sub-area requirements. The Category P6 LCR requirement is 80 MW.

Table 3.3-11 Placer LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First Limit	P6	Drum–Higgins 115 kV	Gold Hill-Placer #1 115 kV & Gold Hill-Placer #2 115 kV	80

Effectiveness factors

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

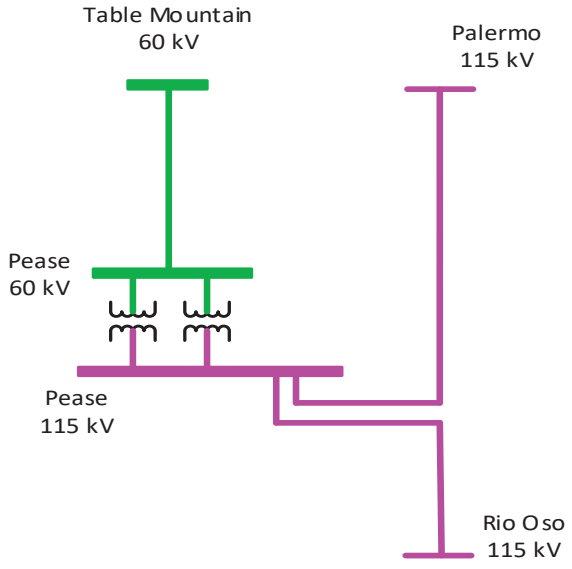
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7240 posted at: http://www.caiso.com/Documents/2210Z.pdf

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 2022 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	133	Market and Net Seller	98	98
AAEE	-1	MUNI	0	0
Behind the meter DG	0	QF	49	49
Net Load	**132**	Solar	0	0
Transmission Losses	2	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**134**	**Total**	**147**	**147**

Pease LCR Sub-area Hourly Profiles

Figure 3.3-18 illustrates the forecast 2022 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 2022 hourly profile for Pease sub-area with the Category P6 load serving capability without local resources.

Figure 3.3-18 Pease LCR Sub-area 2022 Peak Day Forecast Profiles

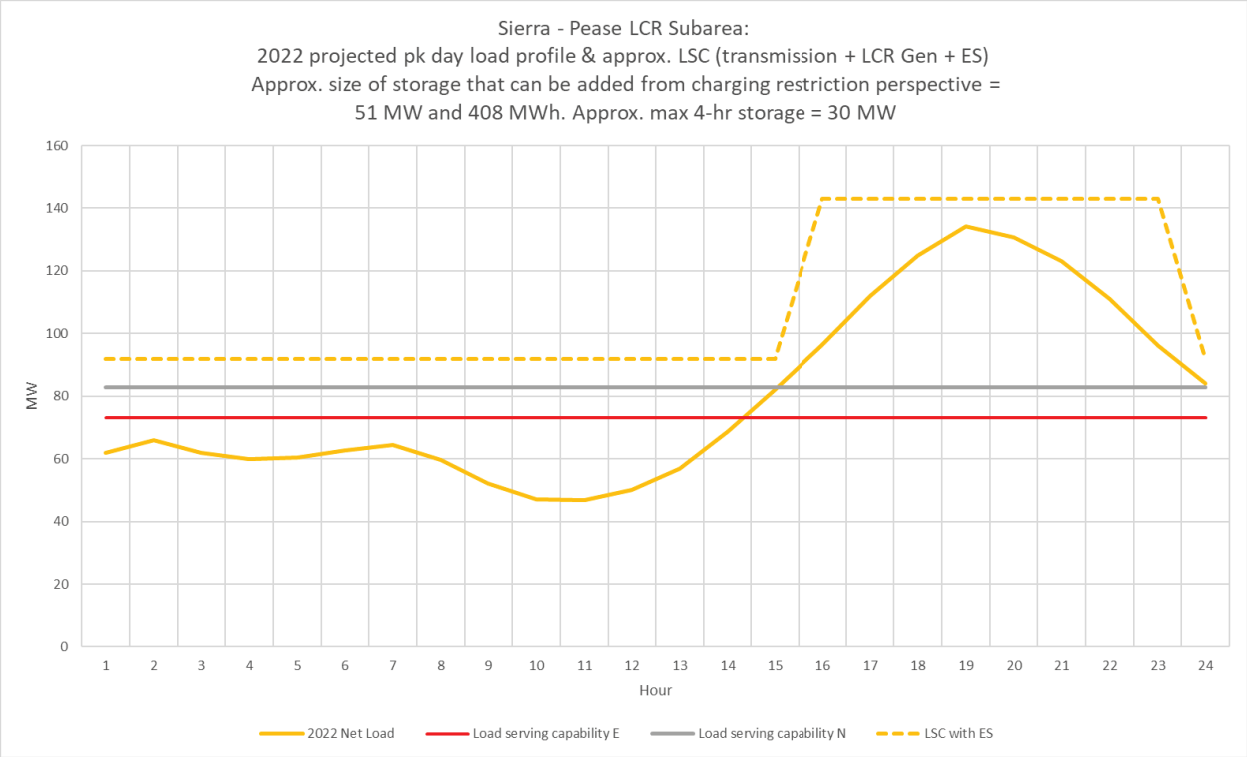
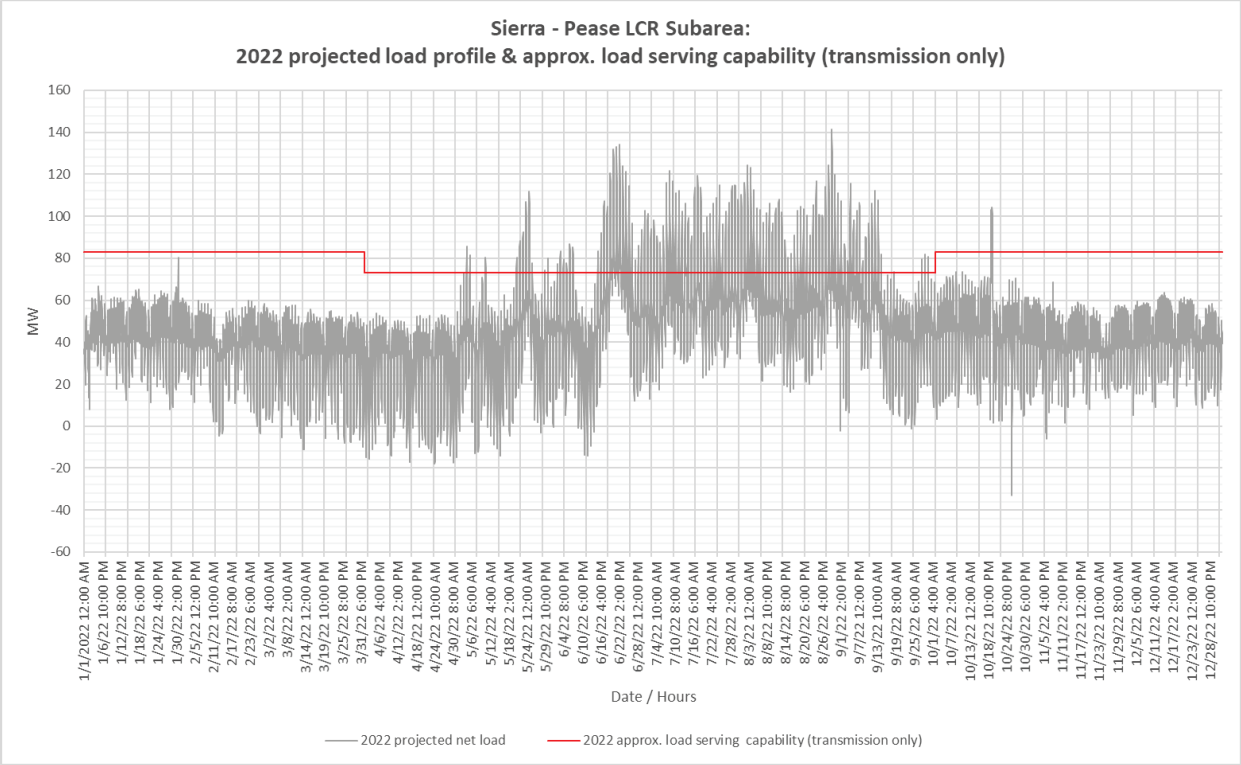


Figure 3.3-19 Pease LCR Sub-area 2022 Forecast Hourly Profiles



Pease LCR Sub-area Requirement

Table 3.3-13 identifies the sub-area LCR requirements. The Category P6 LCR requirement is 60 MW.

Table 3.3-13 Pease LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First Limit	P6	Table Mountain – Pease 60 kV	Palermo – Pease 115 kV and Pease – Rio Oso 115 kV lines	60

Effectiveness factors:

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

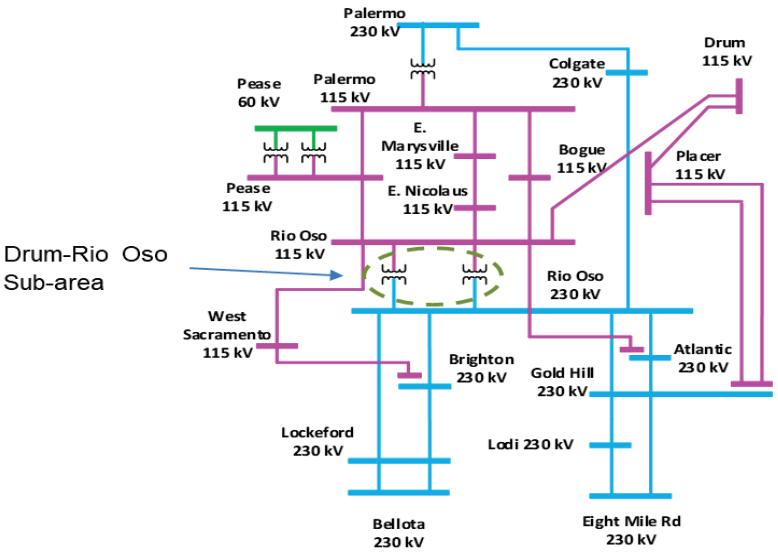
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7230 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.3.4 *Drum-Rio Oso Sub-area*

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

Drum-Rio Oso LCR Sub-area Diagram

Figure 3.3-20 Drum-Rio Oso LCR Sub-area



Drum-Rio Oso LCR Sub-area Load and Resources

The Drum-Rio Oso sub-area does not have a defined load pocket with the limits based upon power flow through the area. Table 3.3-14 provides the forecasted resources in the sub-area. The list of generators within the LCR area are provided in Attachment A.

Table 3.3-14 Drum-Rio Oso LCR Sub-area 2022 Forecast Load and Resources

Load (MW)	Generation (MW)	Aug NQC	At Peak
The Drum-Rio Oso Sub-area does not have a defined load pocket with the limits based upon power flow through the area.	Market and Net Seller	374	374
	MUNI	199	199
	QF	51	51
	Solar	5	0
	Existing 20-minute Demand Response	0	0
	Mothballed	0	0
	Total	**629**	**624**

Drum-Rio Oso LCR Sub-area Hourly Profiles

The Drum-Rio Oso 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.

Drum-Rio Oso LCR Sub-area Requirement

Table 3.3-15 identifies the sub-area LCR requirements. The Category P6 LCR requirement is 748 MW including 192 MW of NQC deficiency or 187 MW of at peak deficiency.

Table 3.3-15 Drum-Rio Oso LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First Limit	P6	Rio Oso #1 230/115 kV Tx	Rio Oso #2 230/115 kV & Palermo #2 230/115 kV Txrs	748 (192 NQC/ 187 Peak)

Effectiveness factors

All units within the Drum-Rio Oso sub-area have the same effectiveness factor.

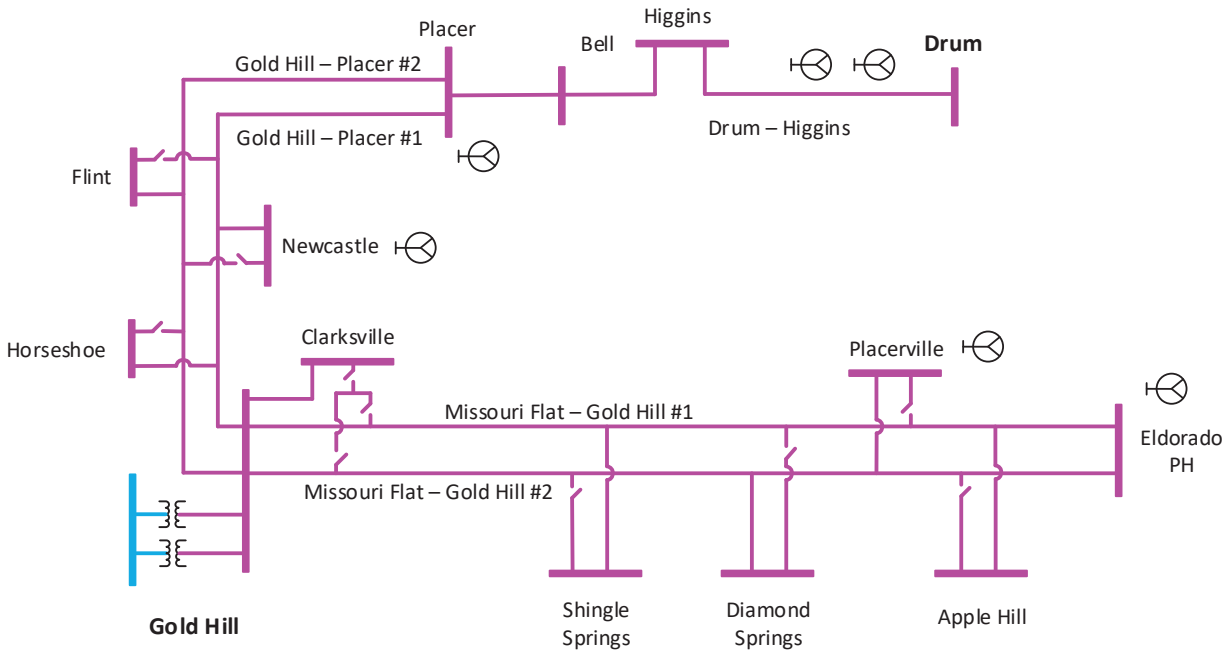
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7240 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.3.5 *Gold Hill-Drum Sub-area*

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

Gold Hill-Drum LCR Sub-area Diagram

Figure 3.3-21 Gold Hill-Drum LCR Sub-area



Gold Hill-Drum LCR Sub-area Load and Resources

Table 3.3-16 provides the forecasted load and resources. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-16 Gold Hill-Drum LCR Sub-area 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	441	Market and Net Seller	77	77
AAEE	-4	MUNI	42	42
Behind the meter DG	0	QF	0	0
Net Load	**437**	Solar	0	0
Transmission Losses	7	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**444**	**Total**	**119**	**119**

Gold Hill-Drum LCR Sub-area Hourly Profiles

Figure 3.3-22 illustrates the forecast 2022 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 3.3-23 illustrates the forecast 2022 hourly profile for Gold Hill-Drum sub-area with the Category P6 load serving capability without local resources.

Figure 3.3-22 Gold Hill-Drum LCR Sub-area 2022 Peak Day Forecast Profiles

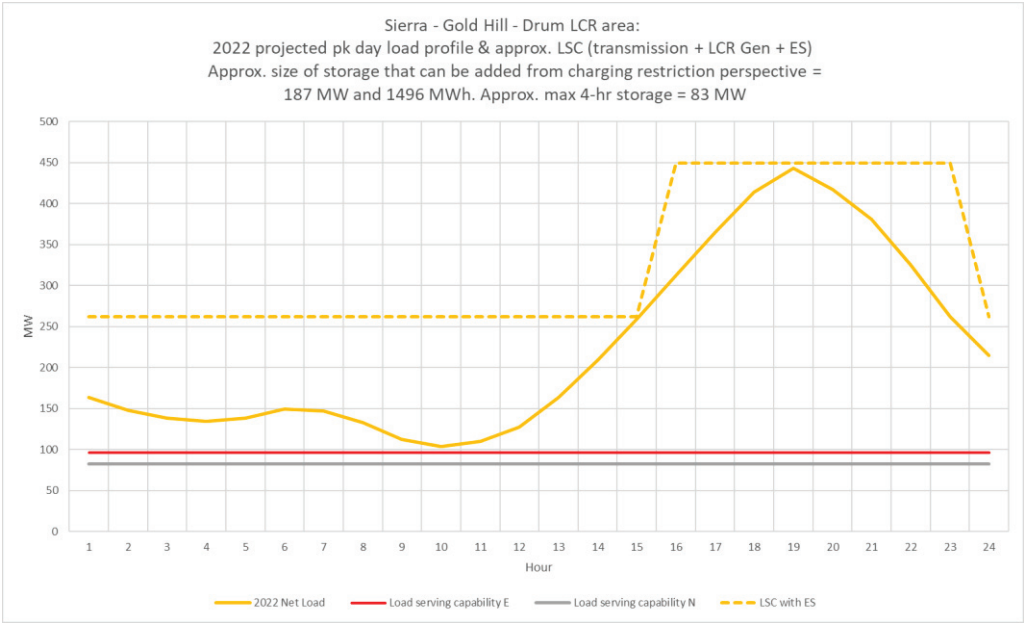
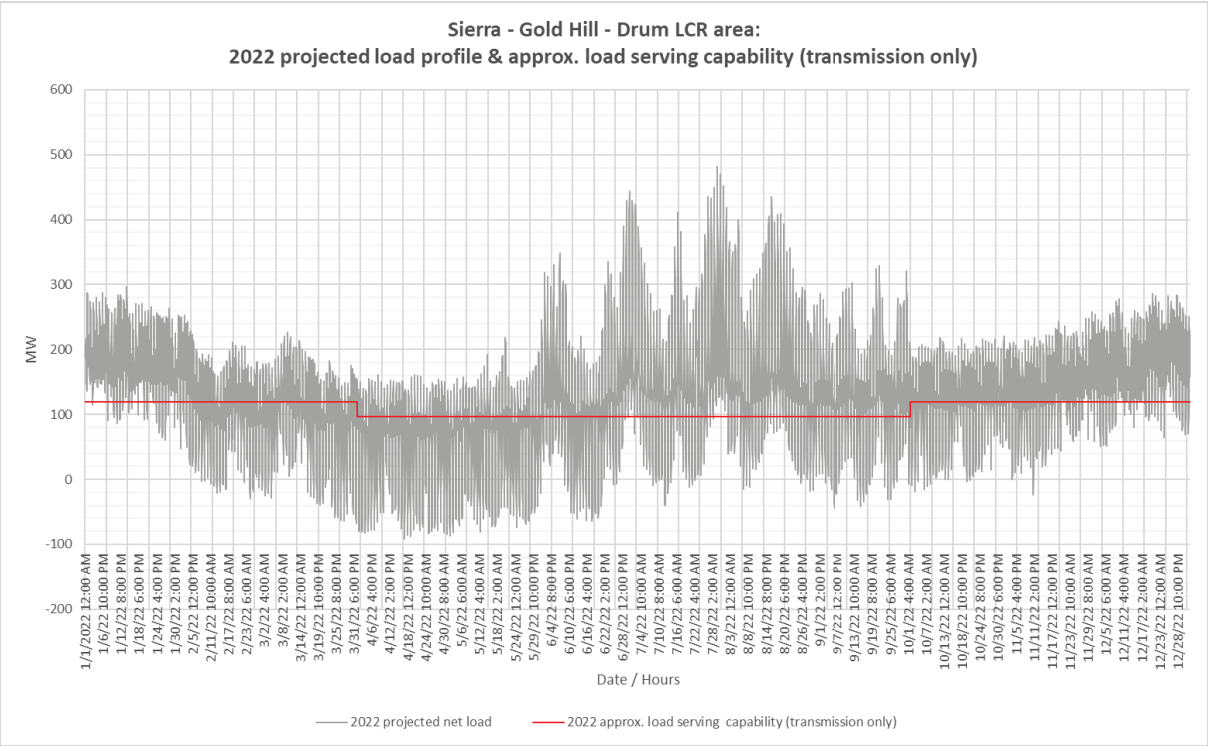


Figure 3.3-23 Gold Hill-Drum LCR Sub-area 2022 Forecast Hourly Profiles



Gold Hill-Drum LCR Sub-area Requirement

Table 3.3-17 identifies the sub-area LCR requirements. The Category P6 LCR requirement is 366 MW including 276 MW of NQC and peak deficiency.

Table 3.3-17 Gold Hill-Drum LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First Limit	P6	Drum – Higgins 115 kV	Gold Hill 230/115 kV #1 and Gold Hill 230/115 kV #2 Txrs	366 (276)

Effectiveness factors:

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

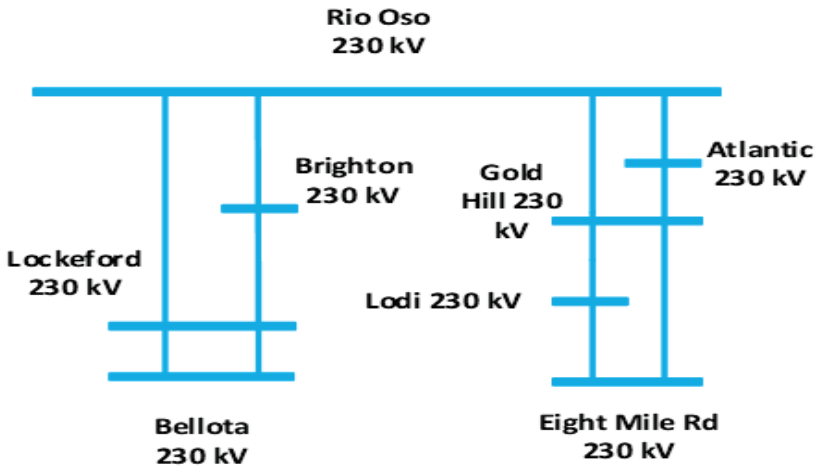
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7230 and 7240 posted at: http://www.caiso.com/Documents/2210Z.pdf

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 3.3-24 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 3.3-18 provides the forecasted resources in the sub-area. The list of generators within the LCR area are provided in Attachment A.

Table 3.3-18 South of Rio Oso LCR Sub-area 2022 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 and Net Seller	114	114
	MUNI	619	619
	QF	0	0
	Solar	0	0
	Existing 20-minute Demand Response	0	0
	Mothballed	0	0
	Total	**733**	**733**

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 3.3-19 identifies the sub-area LCR requirements. The LCR requirement for Category P6 is 256 MW.

Table 3.3-19 South of Rio Oso LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First limit	P6	Rio Oso – Atlantic 230 kV	Rio Oso – Gold Hill 230 kV Rio Oso – Brighton 230 kV	256

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 *South of Palermo Sub-area*

South of Palermo is a sub-area of the Sierra LCR area.

South of Palermo sub-area will be eliminated due to the South of Palermo transmission project.

3.3.3.8 *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 3.3-20 identifies the area requirements. The LCR requirement for Category P6 is 1220 MW.

Table 3.3-20 Sierra LCR Area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First limit	P6	Table Mountain – Pease 60 kV	Table Mountain – Palermo 230 kV Table Mountain – Rio Oso 230 kV	1220

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 246 MW, the total LCR need has decreased by 558 MW and the total existing capacity required has decreased by 601 MW mostly due to lower load forecast and implementation of the South of Palermo transmission project.

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 3.3-21 provides the forecast load and resources in the area. The list of generators within the LCR area are provided in Attachment A.

In year 2022 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 3.3-21 Stockton LCR Area 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	1015	Market and Net Seller	445	445
AAEE	-7	MUNI	129	129
Behind the meter DG	0	QF	0	0
Net Load	**1008**	Solar	12	0
Transmission Losses	19	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**1027**	**Total**	**586**	**574**

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

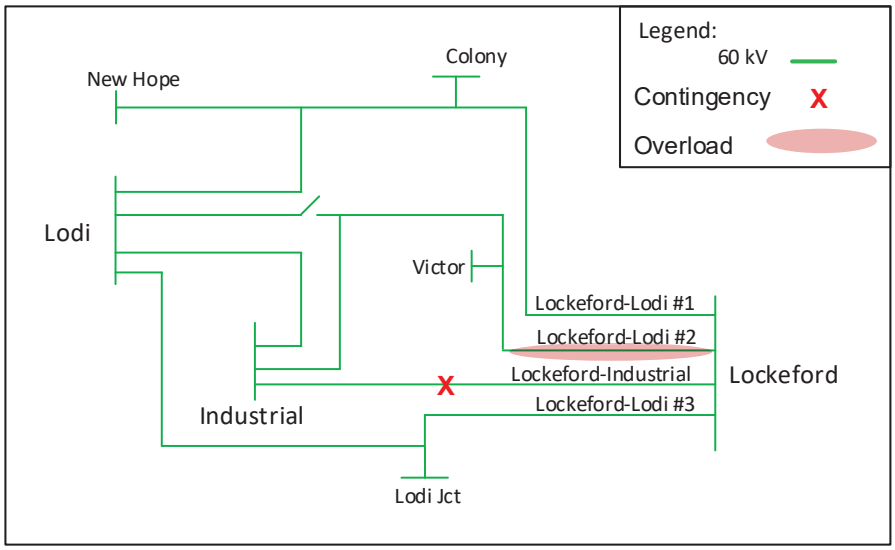
There are no new transmission project that goes into service in this area by year 2022.

3.3.4.2 *Lockeford Sub-area*

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

Lockeford LCR Sub-area Diagram

Figure 3.3-25 Lockeford LCR Sub-area



Lockeford LCR Sub-area Load and Resources

Table 3.3-22 provides the forecasted load and resources. The list of generators within the LCR Sub-area are provided in Attachment A.

Table 3.3-22 Lockeford LCR Sub-area 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	174	Market	0	0
AAEE	-1	MUNI	24	24
Behind the meter DG	0	QF	0	0
Net Load	**173**	Solar	0	0
Transmission Losses	1	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**174**	**Total**	**24**	**24**

Lockeford LCR Sub-area Hourly Profiles

Figure 3.3-26 illustrates the forecast 2022 profile for the peak day for the Lockeford sub-area with the Category P3 normal and emergency load serving capabilities without local resources. Figure

3.3-27 illustrates the forecast 2022 hourly profile for Lockeford sub-area with the Category P3 load serving capability without local resources.

Figure 3.3-26 Lockeford LCR Sub-area 2022 Peak Day Forecast Profiles

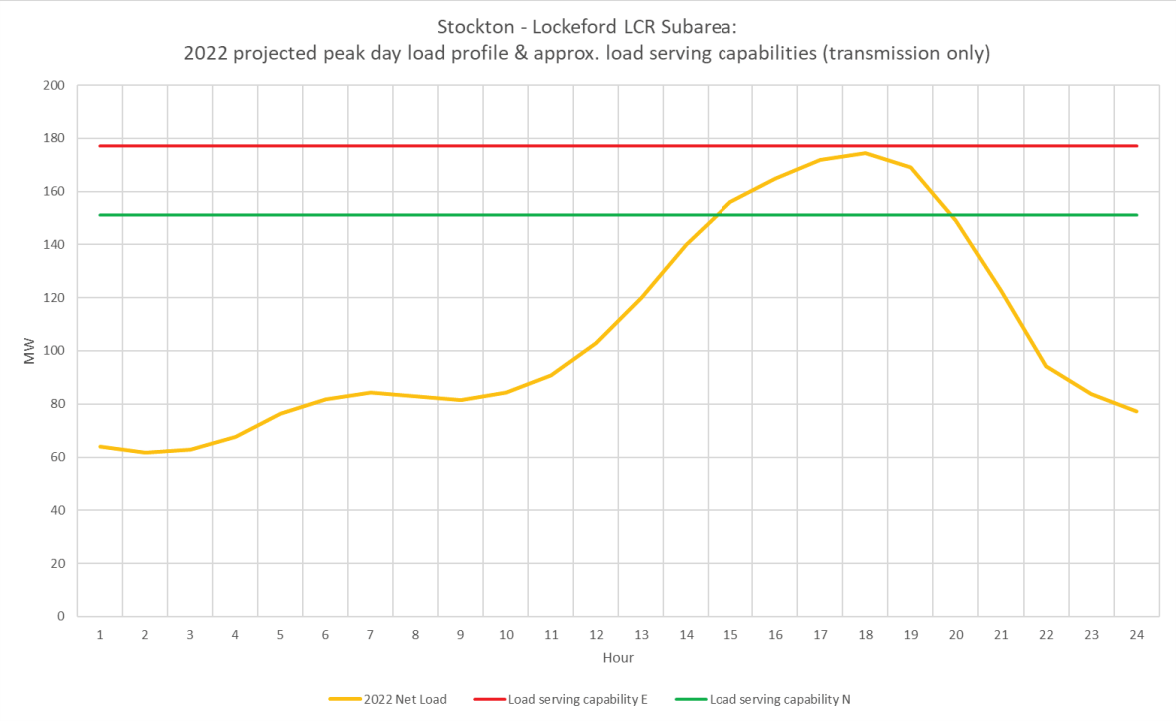
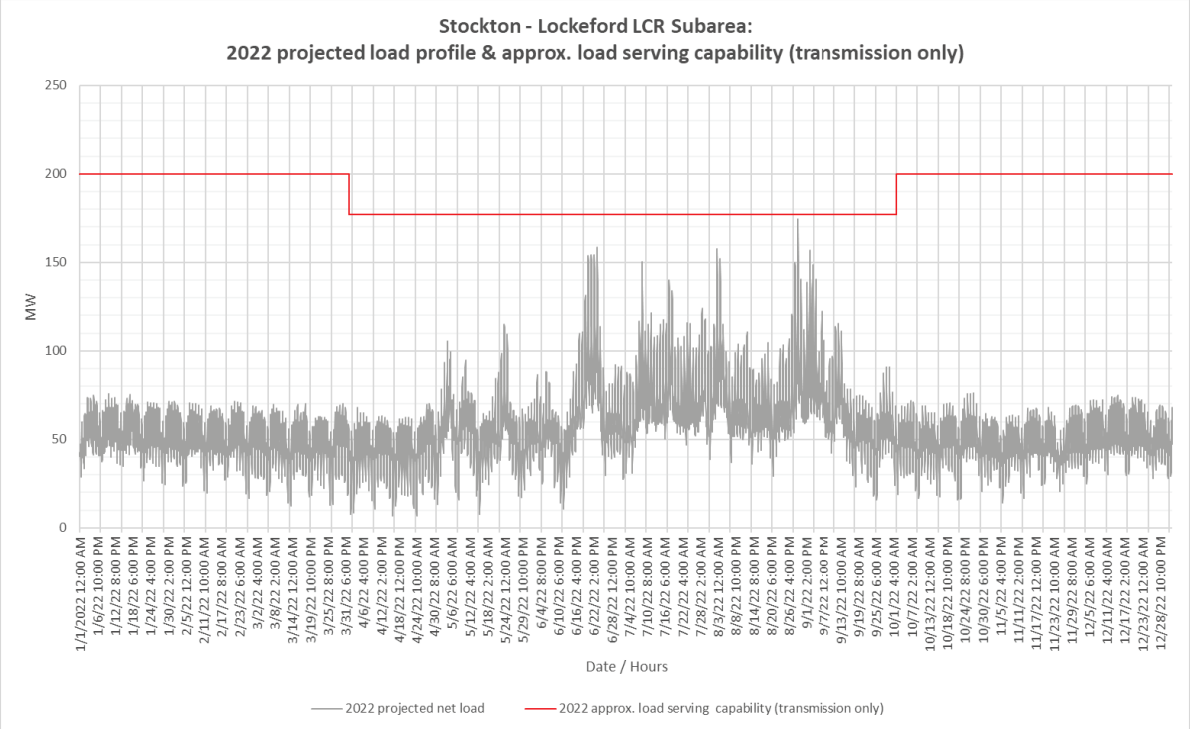


Figure 3.3-27 Lockeford LCR Sub-area 2022 Forecast Hourly Profiles



Lockeford LCR Sub-area Requirement

Table 3.3-23 identifies the sub-area requirements. Typically the LCR requirement for for this area is based on the Category P3 contingency. However no LCR requirements were identified in this year's study due to lower load forecast.

Table 3.3-23 Lockeford LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First Limit	P3	Lockeford-Lodi #2 60 kV	Lockeford-Industrial 60 kV & Lodi CT	No requirement

Effectiveness factors:

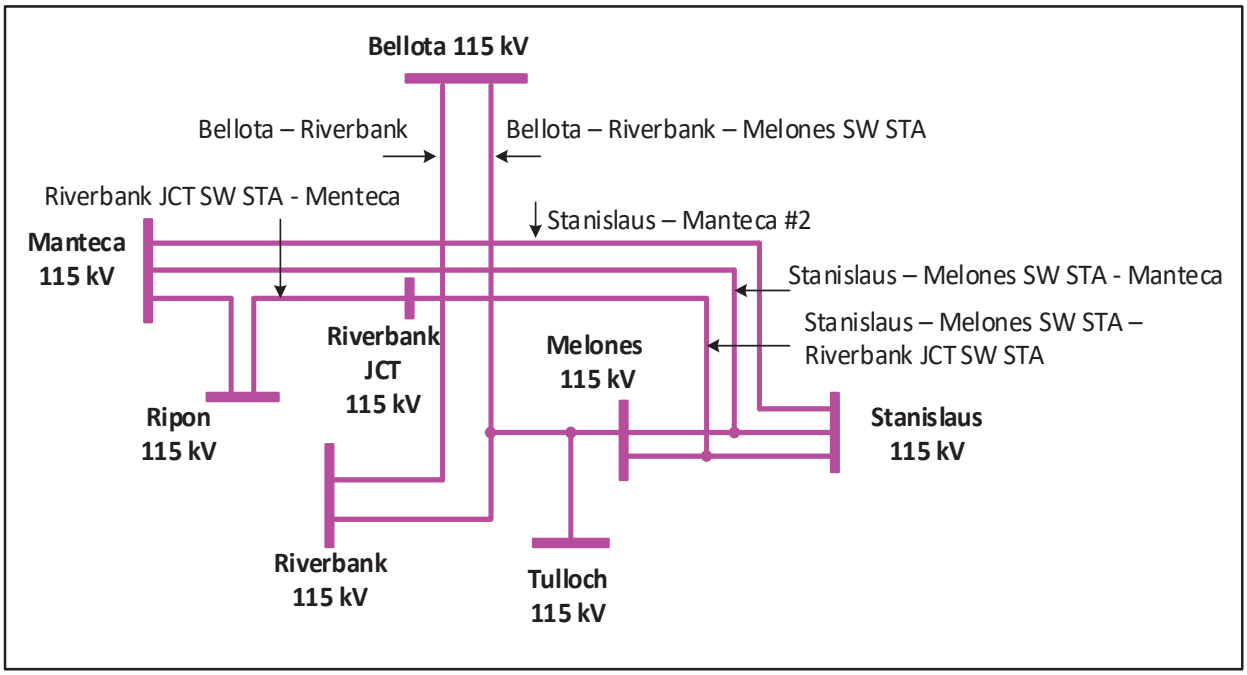
No effectiveness factor is required.

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 3.3-28 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 3.3-24 provides the forecasted resources in the sub-area. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-24 Stanislaus LCR Sub-area 2022 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 and Net Seller	118	118
	MUNI	81	81
	QF	0	0
	Solar	0	0
	Existing 20-minute Demand Response	0	0
	Mothballed	0	0
	Total	**199**	**199**

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 3.3-25 identifies the sub-area requirements. The LCR requirement for Category P3 contingency is 196 MW.

Table 3.3-25 Stanislaus LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First limit	P3	Ripon – Manteca 115 kV	Bellota-Riverbank-Melones 115 kV and Stanislaus PH	196

Effectiveness factors:

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

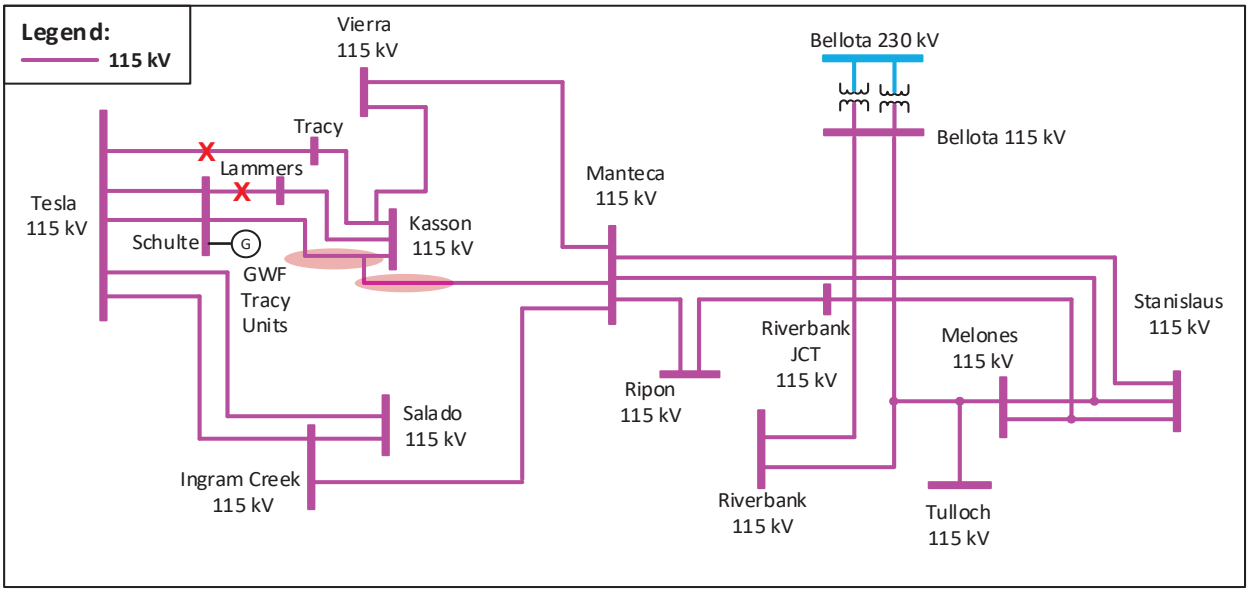
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7410 posted at: http://www.caiso.com/Documents/2210Z.pdf

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 3.3-29 Tesla-Bellota LCR Sub-area



Tesla Bellota LCR Sub-area Load and Resources

Table 3.3-26 provides the forecasted load and resources. The list of generators within the LCR Sub-area are provided in Attachment A.

Table 3.3-26 Tesla-Bellota LCR Sub-area 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	842	Market and Net Seller	445	445
AAEE	-5	MUNI	105	105
Behind the meter DG	0	QF	0	0
Net Load	**835**	Solar	12	0
Transmission Losses	18	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**853**	**Total**	**562**	**550**

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 3.3-30 illustrates the forecast 2022 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 3.3-31 illustrates the forecast 2022 hourly

profile for Tesla-Bellota sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-30 Tesla-Bellota LCR Sub-area 2022 Peak Day Forecast Profiles

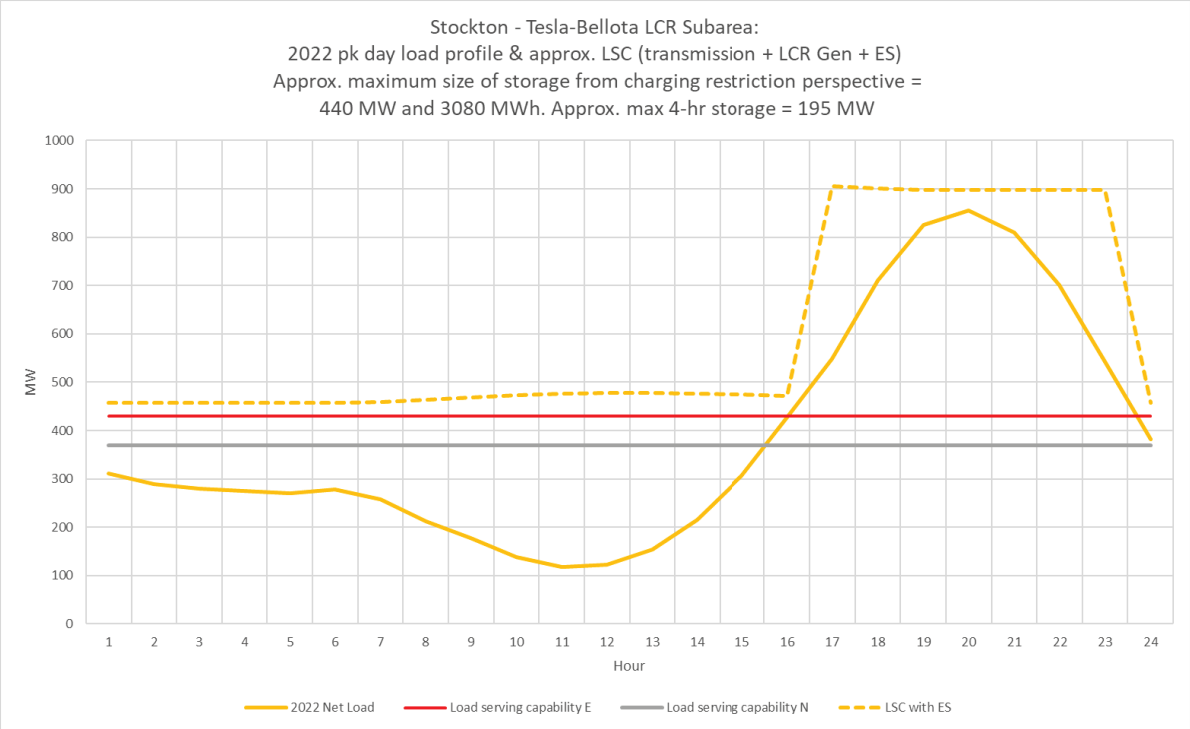
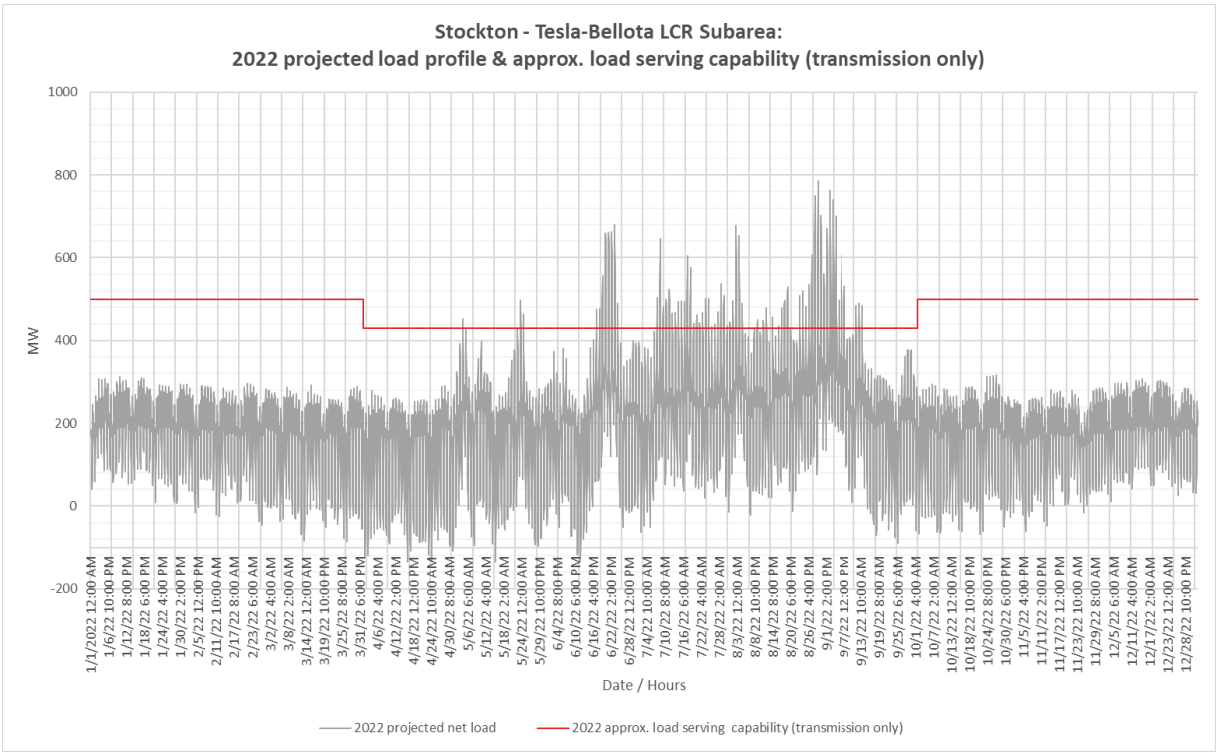


Figure 3.3-31 Tesla-Bellota LCR Sub-area 2022 Forecast Hourly Profiles



Tesla-Bellota LCR Sub-area Requirement

Table 3.3-27 identifies the sub-area requirements. The LCR requirement for Category P6 contingency is 1373 MW including a 801 MW NQC and 813 MW at peak deficiency.

Table 3.3-27 Tesla-Bellota LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First limit	P6	Schulte-Kasson-Manteca 115 kV	Schulte – Lammers 115 kV & Tesla – Tracy 115 kV	1063 (801 NQC/ 813 Peak)
2022	First limit	P2-4	Stanislaus – Melones – Riverbank Jct 115 kV	Tesla 115 kV bus	642 (70 NQC/ 82 Peak)
Total LCR Need for Tesla – Bellota Sub-area in 2022					1373 (801 NQC/ 813 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 3.3-28 identifies the area requirements. The LCR requirement is 1373 MW with a 801 MW NQC deficiency or 813 MW at peak deficiency.

Table 3.3-28 Stockton LCR Area Overall Requirements

Year	LCR (MW) (Deficiency)
2022	1373 (801 NQC/ 813 Peak)

Changes compared to last year's LCT study

The load forecast went down by 86 MW and the total LCR need has increased by 118 MW due to lower line rating for Shulte-Kasson-Manteca 115 kV line.

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

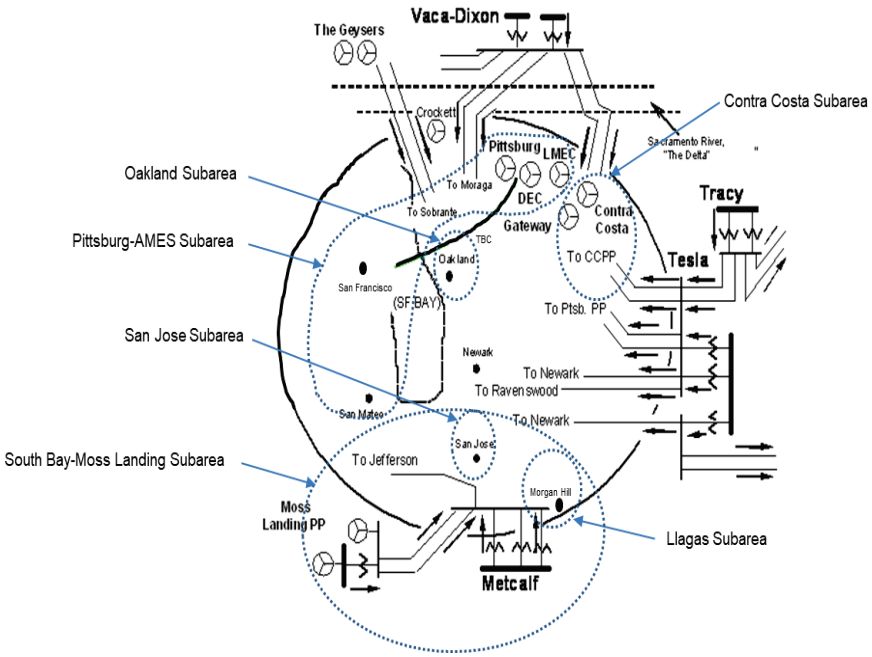
Las Aquilas is out Moss Landing is in

Oakdale TID is out Newark is in

Oakdale TID is out Newark is in

Greater Bay LCR Area Diagram

Figure 3.3-32 Greater Bay LCR Area



Greater Bay LCR Area Load and Resources

Table 3.3-29 provides the forecasted load and resources. The list of generators within the LCR area are provided in Attachment A.

In year 2022 the estimated time of local area peak is 17:50 PM.

At the local area peak time the estimated, ISO metered, solar output is 44.00%.

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

Table 3.3-29 Greater Bay Area LCR Area 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	10611	Market, Net Seller, Wind, Battery	6263	6263
AAEE	-75	MUNI	373	373
Behind the meter DG	-271	QF	238	238
Net Load	10264	Solar	8	8
Transmission Losses	217	Existing 20-minute Demand Response	0	0
Pumps	264	Future preferred resource and energy storage	866	866
Load + Losses + Pumps	10746	**Total**	**7748**	**7748**

Approved transmission projects modeled

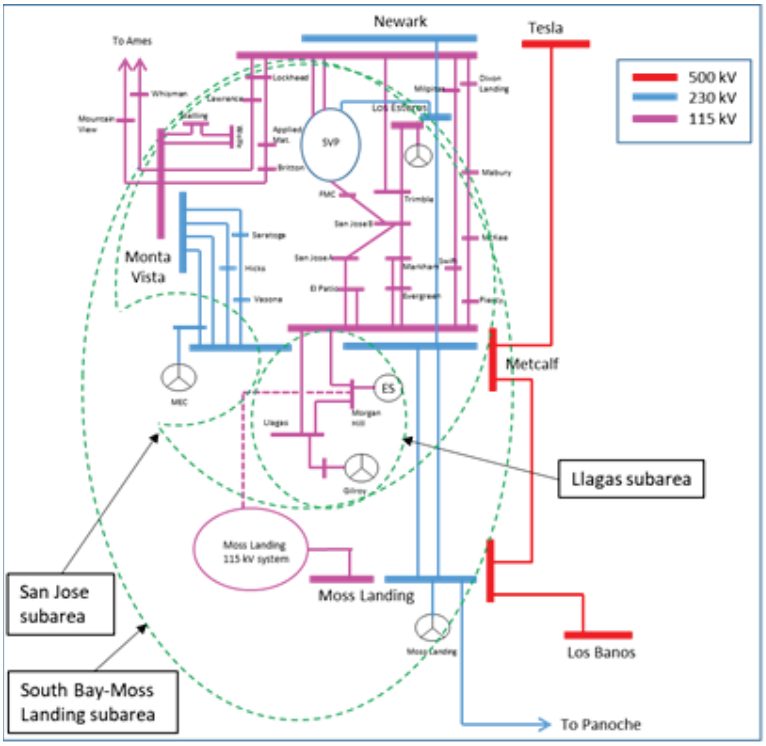
EastShore-Oakland J Reconductor Project

3.3.5.2 *Llagas Sub-area*

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

Llagas LCR Sub-area Diagram

Figure 3.3-33 Llagas LCR Sub-area



Llagas LCR Sub-area Load and Resources

Table 3.3-30 provides the forecasted load and resources. The list of generators within the LCR Sub-area are provided in Attachment A.

Table 3.3-30 Llagas LCR Sub-area 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	200	Market	246	246
AAEE	-2	MUNI	0	0
Behind the meter DG	-11	QF	0	0
Net Load	187	LTPP Preferred Resources	0	0
Transmission Losses	1	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**188**	**Total**	**246**	**246**

Llagas LCR Sub-area Hourly Profiles

Figure 3.3-34 illustrates the forecast 2022 profile for the peak day for the Llagas 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 3.3-35 illustrates the forecast 2022 hourly profile for Llagas LCR sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-34 Llagas LCR Sub-area 2022 Peak Day Forecast Profiles

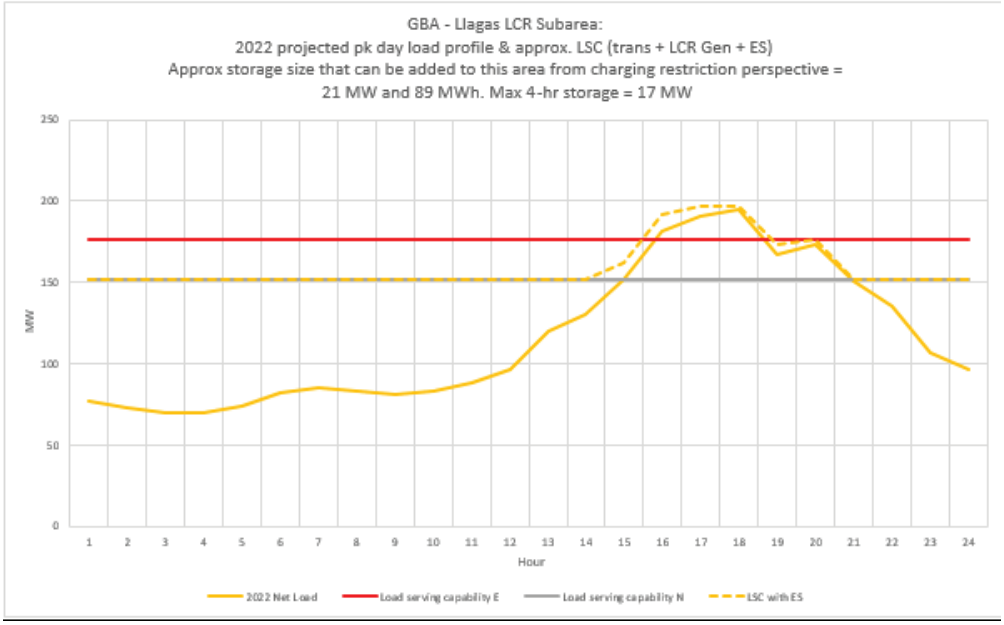
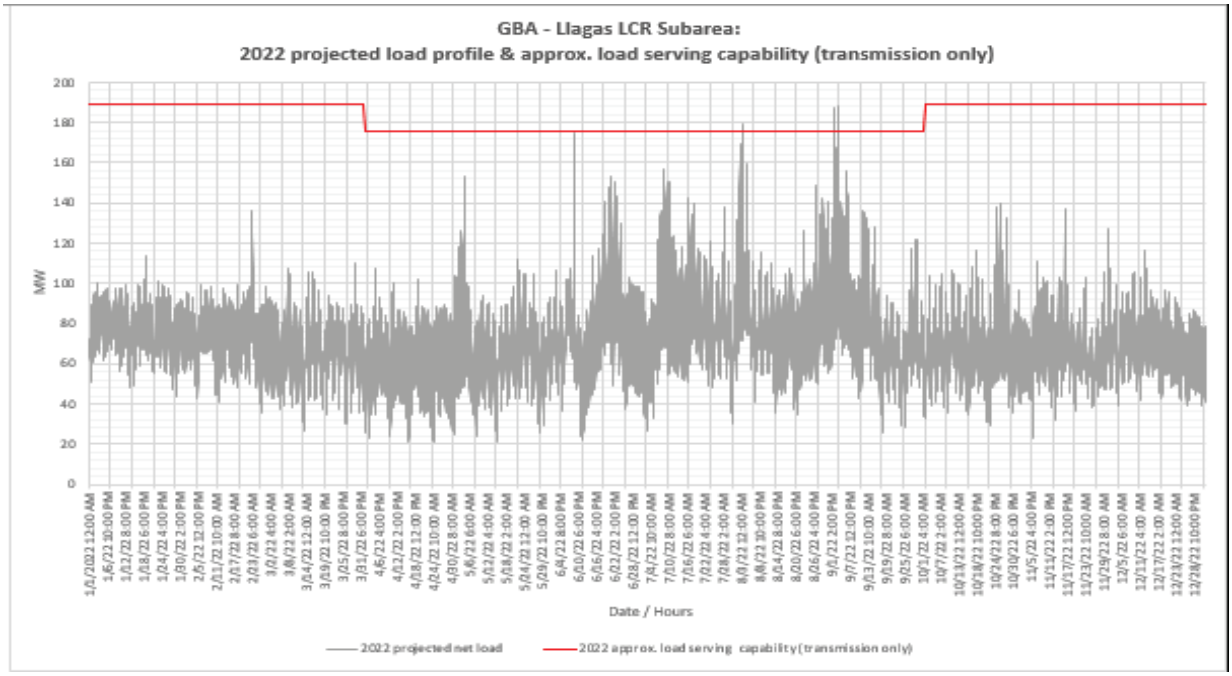


Figure 3.3-35 Llagas LCR Sub-area 2022 Forecast Hourly Profiles



Llagas LCR Sub-area Requirement

Table 3.3-31 identifies the sub-area requirements. The LCR requirement for the worst contingency is 20 MW.

Table 3.3-31 Llagas LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First limit	P6	Metcalf-Llagas 115 kV	Metcalf-Morgan Hill 115 kV & Morgan Hill-Green Valley 115 kV	20

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 3.3-33.

San Jose LCR Sub-area Load and Resources

Table 3.3-32 provides the forecast load and resources in San Jose LCR sub-area in 2022. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-32 San Jose LCR Sub-area 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	2664	Market, Net Seller, Battery	575	575
AAEE	-21	MUNI	198	198
Behind the meter DG	-56	QF	0	0
Net Load	2587	LTPP Preferred Resources	75	75
Transmission Losses	95	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	2682	**Total**	**848**	**848**

San Jose LCR Sub-area Hourly Profiles

Figure 3.3-36 illustrates the forecast 2022 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 3.3-37 illustrates the forecast 2022 hourly profile for San Jose LCR sub-area with the Category P2 emergency load serving capability without local resources.

Figure 3.3-36 San Jose LCR Sub-area 2022 Peak Day Forecast Profiles

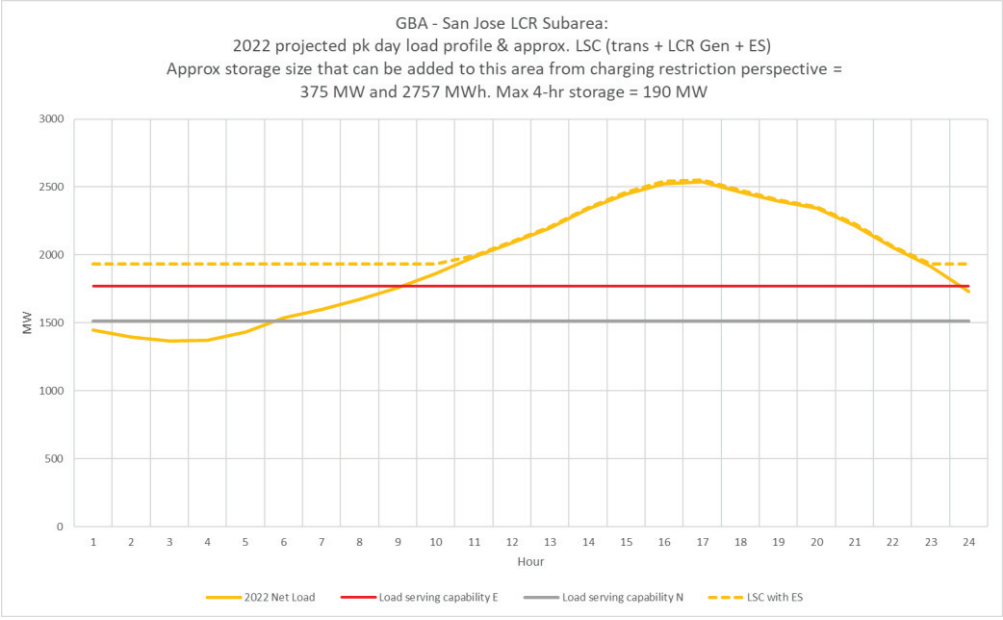
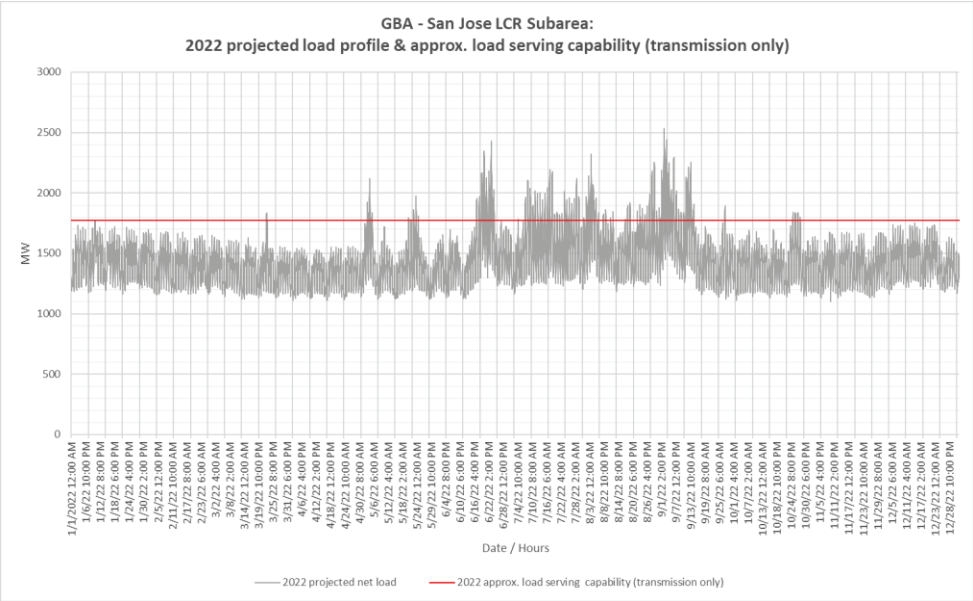


Figure 3.3-37 San Jose LCR Sub-area 2022 Forecast Hourly Profiles



San Jose LCR Sub-area Requirement

Table 3.3-33 identifies the sub-area LCR requirements. The LCR requirement for the worst contingency is 989 MW including a deficiency of 141 MW.

Table 3.3-33 San Jose LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2022	First limit	P2	Metcalf 230/115 kV transformer # 1 or # 3	METCALF 230kV - Section 2D & 2E	989 (141)

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 3.3-33.

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

Table 3.3-34 provides the forecast load and resources in South Bay-Moss Landing LCR sub-area in 2022. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-34 South Bay-Moss Landing LCR Sub-area 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	4338	Market, Net Seller, Battery	2165	2165
AAEE	-32	MUNI	198	198
Behind the meter DG	-112	QF	0	0
Net Load	4194	LTPP Preferred Resources	658	658
Transmission Losses	127	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	4321	**Total**	**3021**	**3021**

South Bay-Moss Landing LCR Sub-area Hourly Profiles

Figure 3.3-38 illustrates the forecasted 2022 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. The energy storage amount is incremental to the existing system and doesn't include approved energy storage. Figure 3.3-39 illustrates the forecast 2022 hourly profile for South Bay-Moss Landing LCR sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-38 South Bay-Moss Landing LCR Sub-area 2022 Peak Day Forecast Profiles

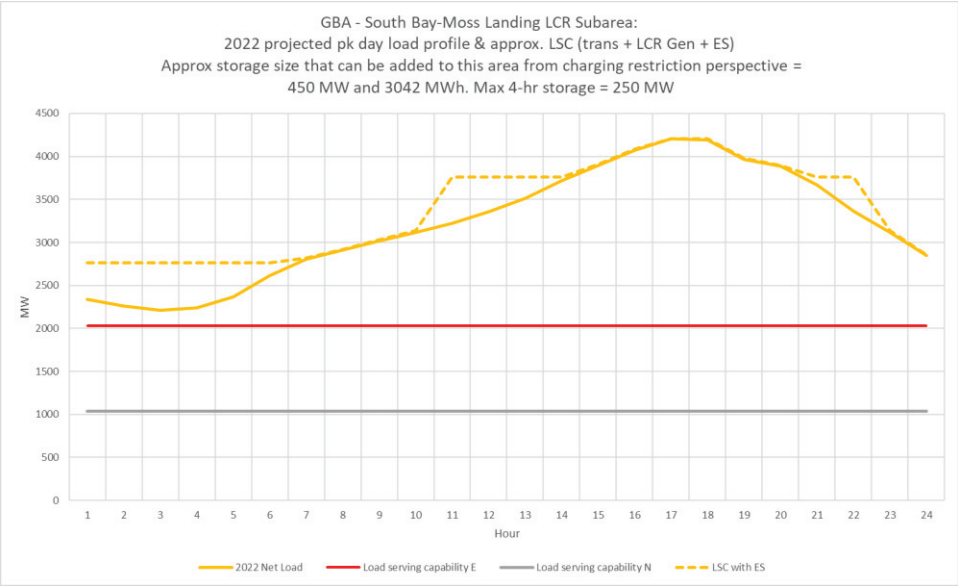
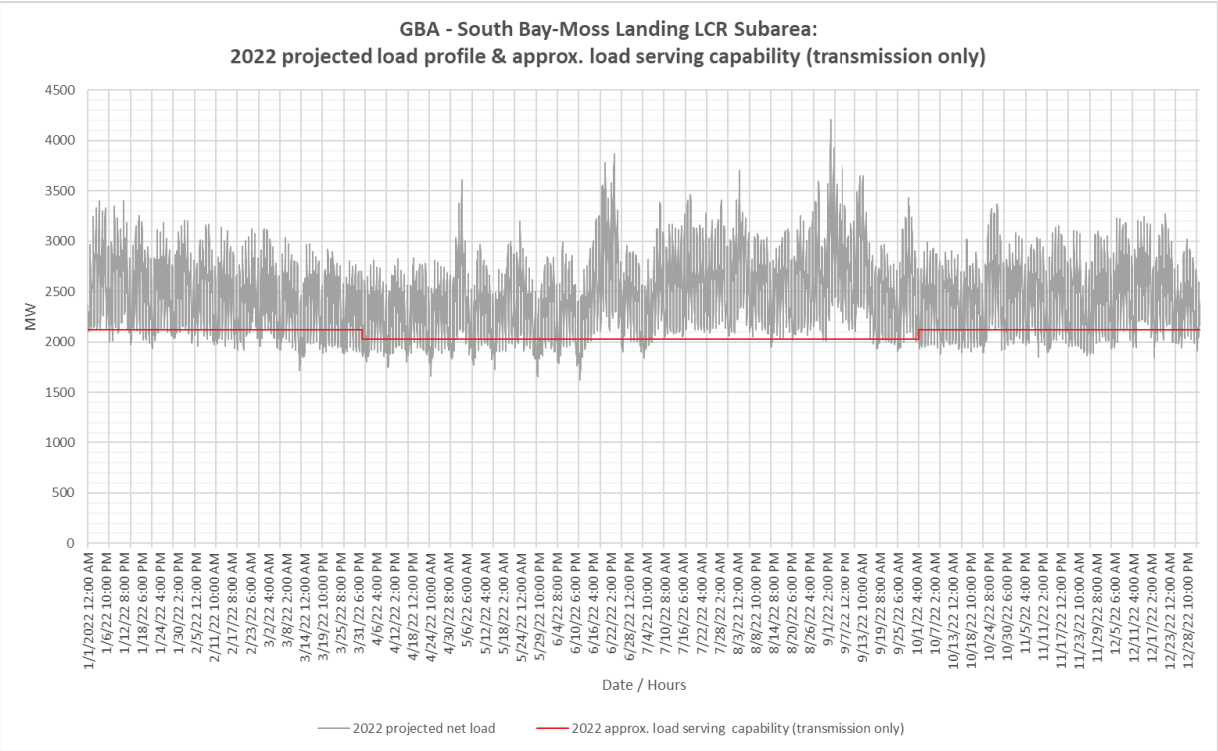


Figure 3.3-39 South Bay-Moss Landing LCR Sub-area 2022 Forecast Hourly Profiles



South Bay-Moss Landing LCR Sub- Requirement

Table 3.3-35 identifies the sub-area LCR requirements. The LCR Requirement for the worst contingency is 2333 MW.

Table 3.3-35 South Bay-Moss Landing LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2022	First Limit	P6	Moss Landing-Las Aguilas 230 kV	Tesla-Metcalf 500 kV and Moss Landing-Los Banos 500 kV	2333

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.

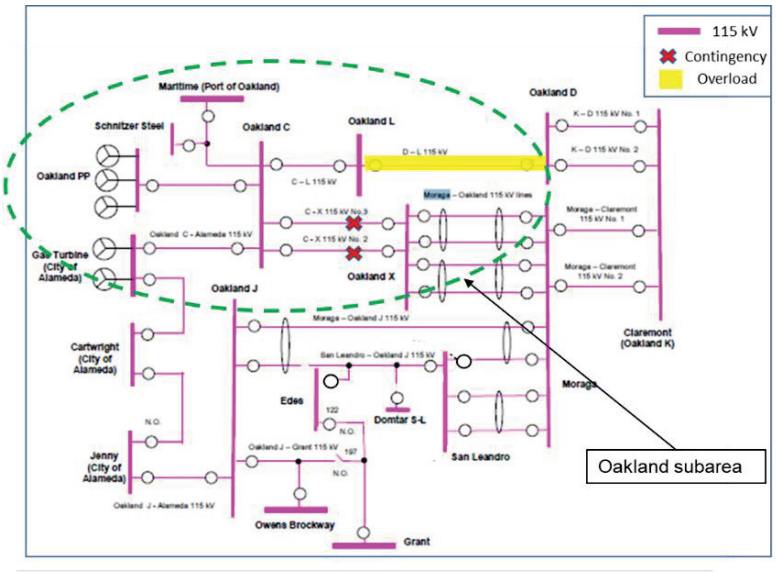
For other helpful procurement information please read procedure 2210Z Effectiveness Factors under 7320 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.5.5 *Oakland Sub-area*

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

Oakland LCR Sub-area Diagram

Figure 3.3-40 Oakland LCR Sub-area



Oakland LCR Sub-area Load and Resources

Table 3.3-36 provides the forecast load and resources in Oakland LCR sub-area in 2022. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-36 Oakland LCR Sub-area 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	184	Market	110	110
AAEE	-1	MUNI	49	49
Behind the meter DG	-2	QF	0	0
Net Load	181	LTPP Preferred Resources	0	0
Transmission Losses	0	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	181	**Total**	**159**	**159**

Oakland LCR Sub-area Hourly Profiles

Figure 3.3-41 illustrates the forecast 2022 profile for the peak day for the Oakland LCR sub-area with the Category P2 normal and emergengy load serving capabilities without local resources. The chart also includes an estimated amount of energy storage that can be added to this local area from charging restriction perspective. Figure 3.3-42 illustrates the forecast 2022 hourly profile for Oakland LCR sub-area with the Category P2 emergency load serving capability without local resources.

Figure 3.3-41 Oakland LCR Sub-area 2022 Peak Day Forecast Profiles

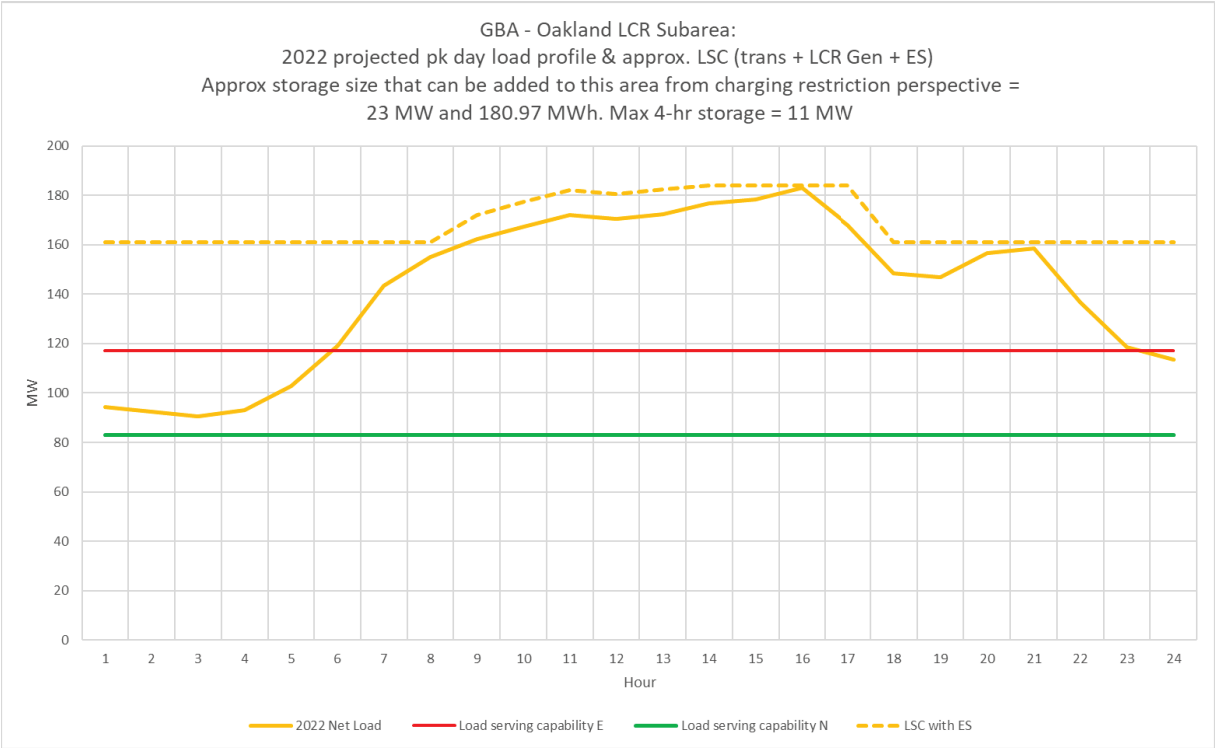
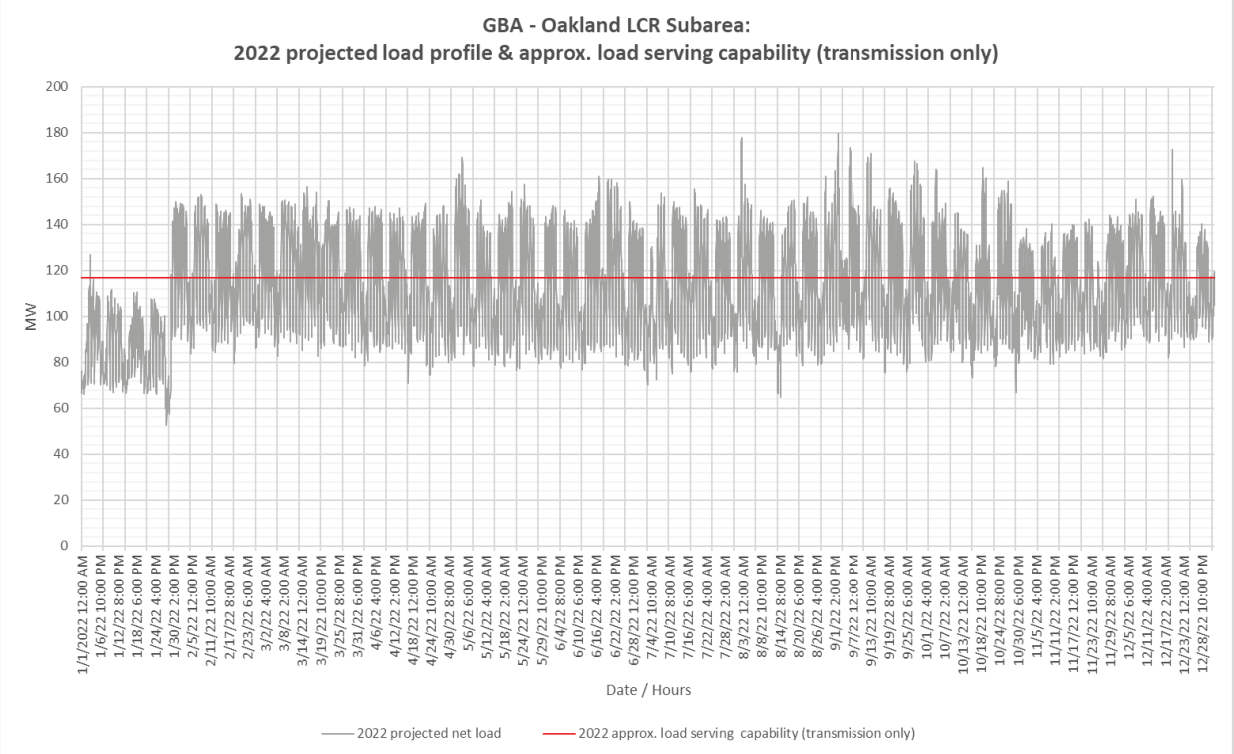


Figure 3.3-42 Oakland LCR Sub-area 2022 Forecast Hourly Profiles



Oakland LCR Sub-area Requirement

Table 3.3-37 identifies the sub-area requirements. The LCR Requirement for the worst contingency is 101 MW.

Table 3.3-37 Oakland LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2022	First limit	P2	Moraga-Oakland X #3 or #4 115 kV line	Moraga 115kV - Section 1D & 2D	101

Effectiveness factors:

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

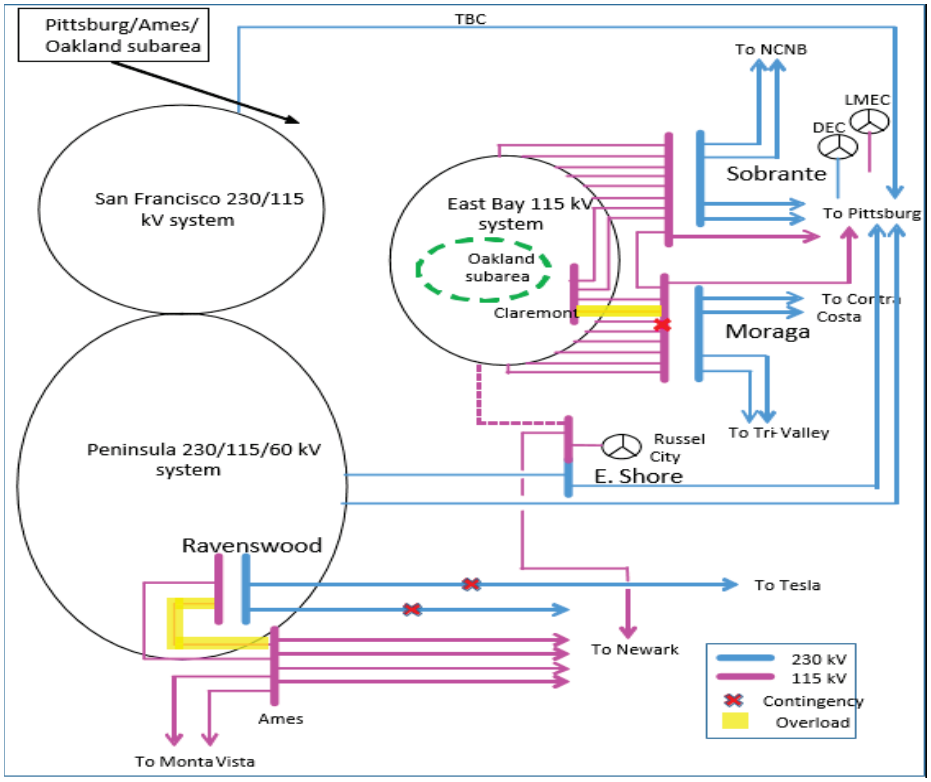
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7320 posted at: http://www.caiso.com/Documents/2210Z.pdf

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 3.3-43 Ames-Pittsburg-Oakland LCR Sub-area



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

Table 3.3-38 provides the forecast load and resources in Ames-Pittsburg-Oakland LCR sub-area in 2022. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-38 Ames-Pittsburg-Oakland LCR Sub-area 2022 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	2379	2379
	MUNI	49	49
	QF	236	236
	Solar	5	5
	Existing 20-minute Demand Response	0	0
	Mothballed	0	0
	Total	**2669**	**2669**

Ames-Pittsburg-Oakland LCR Sub-area Hourly Profiles

The Ames-Pittsburg-Oakland 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.

Ames-Pittsburg-Oakland LCR Sub-area Requirement

Table 3.3-39 identifies the sub-area LCR requirements. The LCR Requirement for the worst contingency is 1791 MW.

Table 3.3-39 Ames-Pittsburg-Oakland LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2020	First limit	P6	Ames-Ravenswood #1 115 kV line	Newark-Ravenswood 230 kV & Tesla-Ravenswood 230 kV	1791
		P2	Moraga-Claremont #2 115 kV line	Moraga 115kV - Section 2D & 2E	

Effectiveness factors:

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

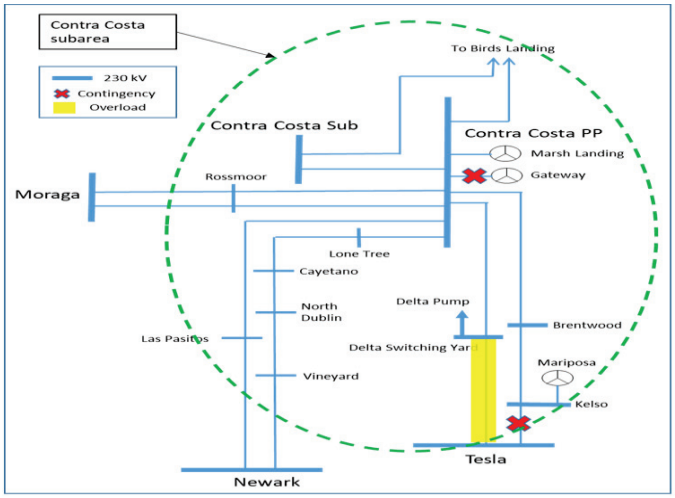
For other helpful procurement information please read procedure 2210Z Effectiveness Factors under 7320 posted at: http://www.caiso.com/Documents/2210Z.pdf

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 3.3-44 Contra Costa LCR Sub-area



Contra Costa LCR Sub-area Load and Resources

Table 3.3-40 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 3.3-40 Contra Costa LCR Sub-area 2022 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, Wind	1674	1674
	MUNI	127	127
	QF	0	0
	Wind	244	244
	Existing 20-minute Demand Response	0	0
	Mothballed	0	0
	Total	**2045**	**2045**

Contra Costa LCR Sub-area Hourly Profiles

The Contra Costa 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.

Contra Costa LCR Sub-area Requirement

Table 3.3-41 identifies the sub-area LCR requirements. The LCR requirement for the worst contingency is 1208 MW.

Table 3.3-41 Contra Costa LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2022	First limit	P3	Delta Switching Yard-Tesla 230 kV	Kelso-Tesla 230 kV line and Gateway unit	1208

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 3.3-45 illustrates the forecast 2022 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 3.3-46 illustrates the forecast 2022 hourly profile for Bay Area LCR area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-45 Bay Area LCR Area 2022 Peak Day Forecast Profiles

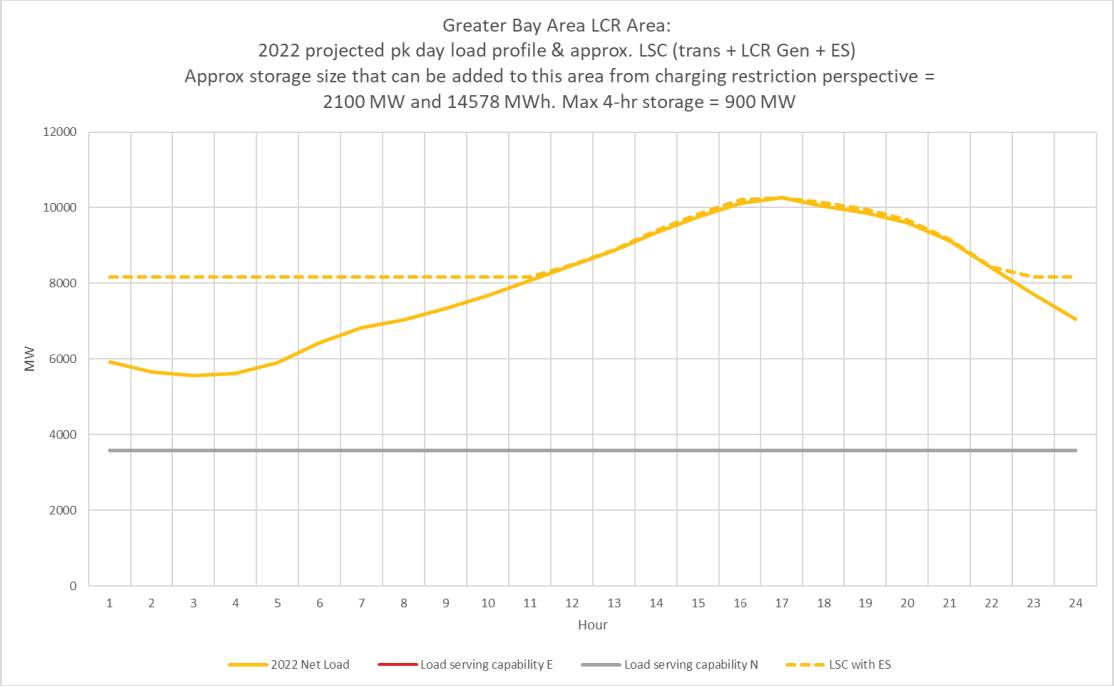
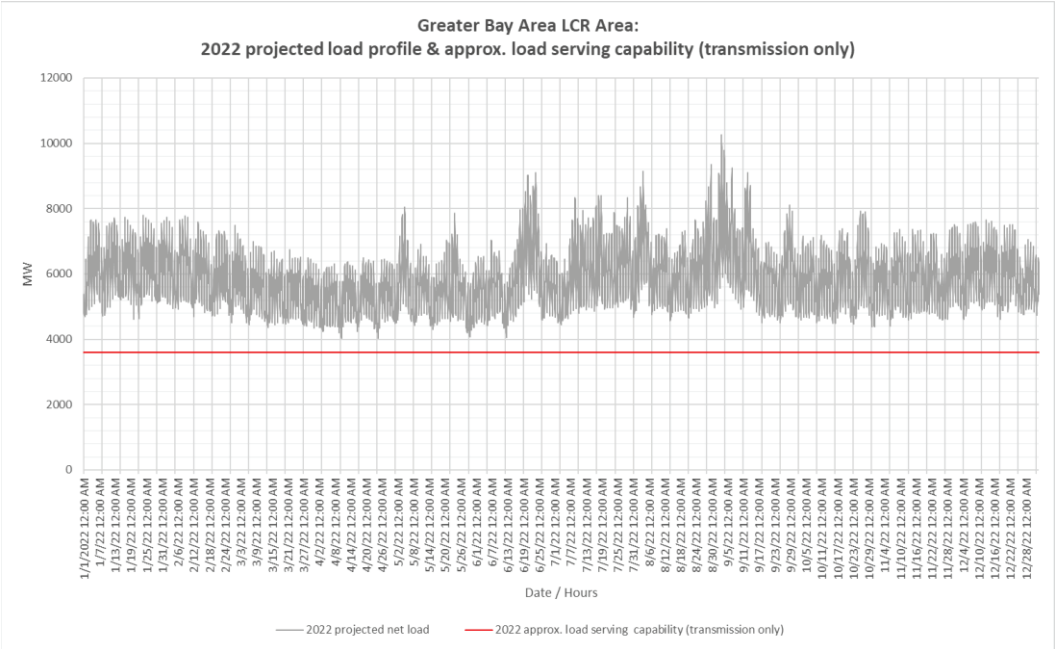


Figure 3.3-46 Bay Area LCR Area 2022 Forecast Hourly Profiles



Greater Bay LCR Area Overall Requirement

Table 3.3-42 identifies the area LCR requirements. The LCR requirement for the worst contingency is 7231 MW.

Table 3.3-42 Bay Area LCR Overall area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2022	First limit	P6	Metcalf 500/230 kV #13 transformer	Metcalf 500/230 kV #11 & #12 transformers	7231

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 2020 requirements

Compared to 2021 load forecast went down by 34 MW and total LCR need went up by 878 MW mainly due to load growth seen in the San Jose area (SVP) and it being very effective on the Metcalf 500/230 kV transformer banks. With all San Jose resources previously being used, the increased need had to be picked up by bigger amounts of less effective resources in other parts of 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 kV

The 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

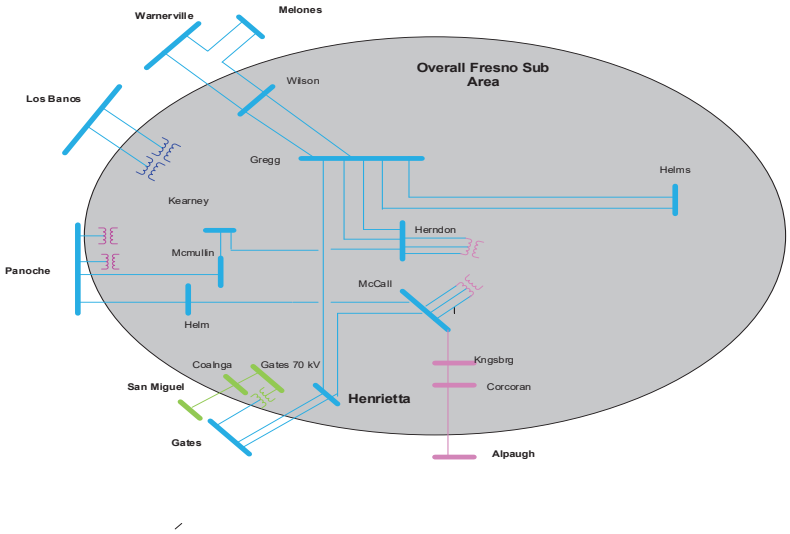
Panoche 230 is out Panoche 115 is in

Corcoran is in Smyrna is out

Coalinga is in San Miguel is out

Fresno LCR Area Diagram

Figure 3.3-47 Fresno LCR Area



Fresno LCR Area Load and Resources

Table 3.3-43 provides the forecast load and resources in Fresno LCR Area in 2022. The list of generators within the LCR sub-area are provided in Attachment A.

In year 2022 the estimated time of local area peak is 18:40 PM.

At the local area peak time the estimated, ISO metered, solar output is 12.00%.

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

Table 3.3-43 Fresno LCR Area 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	3339	Market, Net Seller, Battery	2819	2819
AAEE	-24	MUNI	190	190
Behind the meter DG	0	QF	4	4
Net Load	3315	Solar	357	159
Transmission Losses	120	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**3435**	**Total**	**3370**	**3172**

Approved transmission projects modeled

Wilson-Le Grand 115 kV Line Reconductoring (Apr 2020)

Oro Loma 70 kV Area Reinforcement (May 2020)

Herndon-Bullard 230kV Reconductoring Project (Jan 2021)

Gregg-Herndon #2 230 kV Line Circuit Breaker Upgrade (Jan 2021)

Northern Fresno 115 kV Reinforcement (Revised scope – Mar 2021)

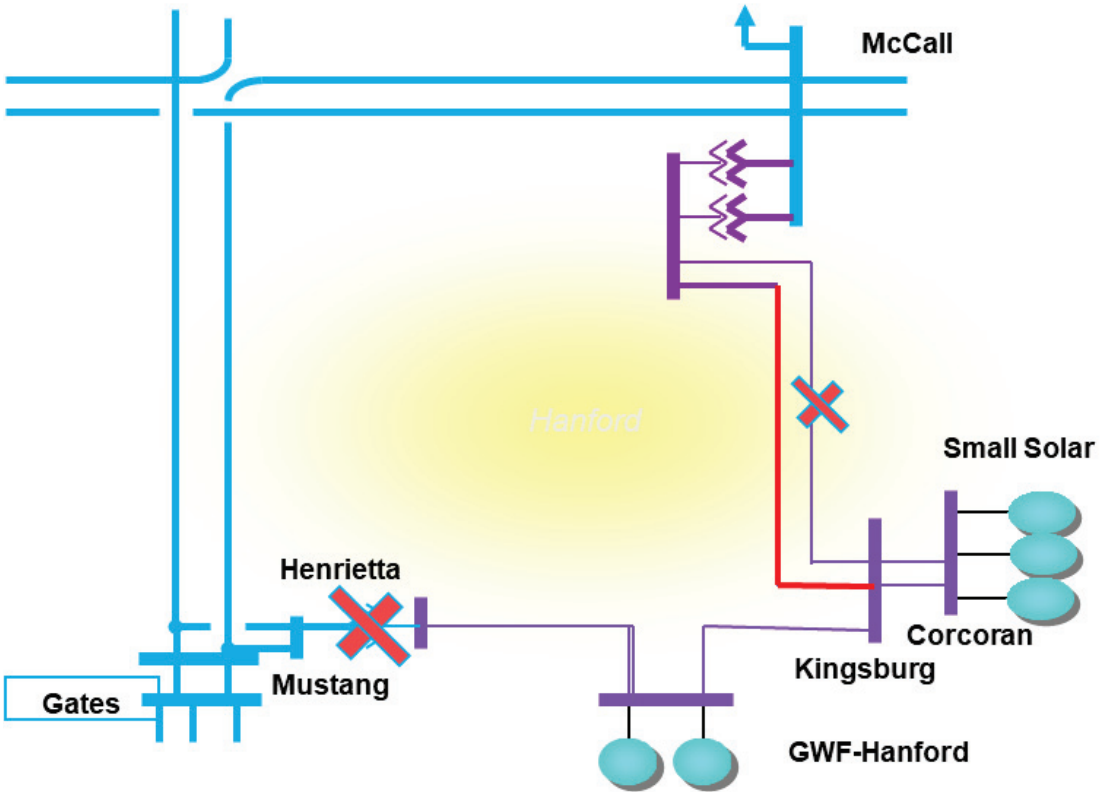
Panoche – Oro Loma 115 kV Line Reconductoring (Apr 2021)

3.3.6.2 *Hanford Sub-area*

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

Hanford LCR Sub-area Diagram

Figure 3.3-48 Hanford LCR Sub-area



Hanford LCR Sub-area Load and Resources

Table 3.3-44 provides the forecast load and resources in Hanford LCR sub-area in 2022. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-44 Hanford LCR Sub-area 2022 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	203	Market, Net Seller	125	125
AAEE	-1	MUNI	0	0
Behind the meter DG	0	QF	0	0
Net Load	202	Solar	58	26
Transmission Losses	7	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	209	**Total**	**183**	**151**

Hanford LCR Sub-area Hourly Profiles

Figure 3.3-49 illustrates the forecast 2022 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 3.3-50 illustrates the forecast 2022 hourly profile for Hanford sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-49 Hanford LCR Sub-area 2022 Peak Day Forecast Profiles

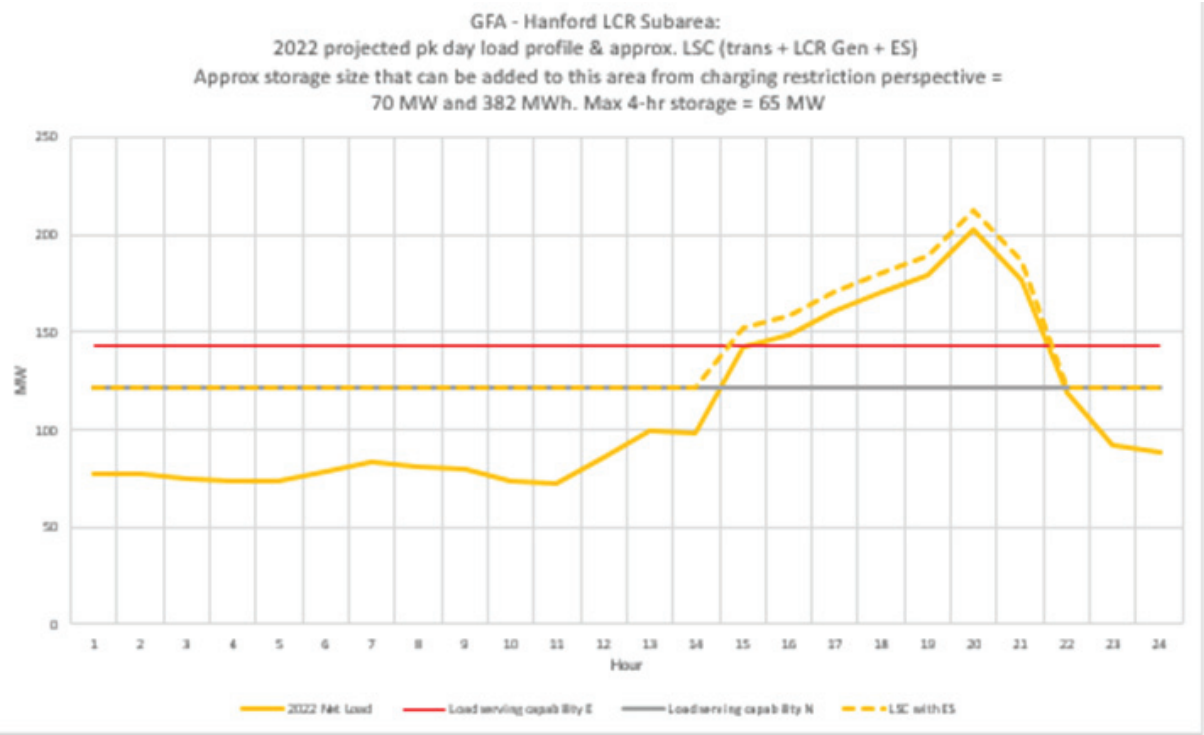
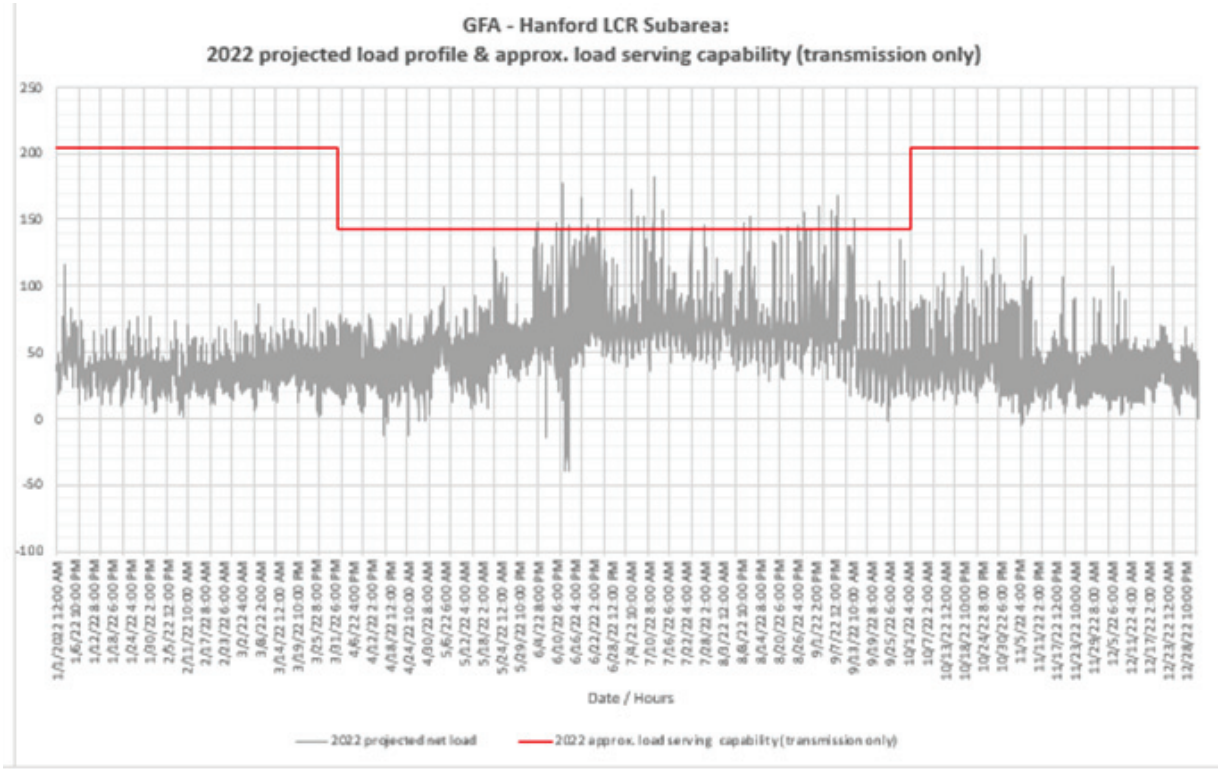


Figure 3.3-50 Hanford LCR Sub-area 2022 Forecast Hourly Profiles



Hanford LCR Sub-area Requirement

Table 3.3-45 identifies the sub-area requirements. The LCR Requirement for a Category P6 contingency is 70 MW.

Table 3.3-45 Hanford LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First Limit	P6	McCall-Kingsburg #2 115 kV	McCall-Kingsburg #1 115 kV line and Henrietta 230/115 kV TB#3	70

Effectiveness factors:

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

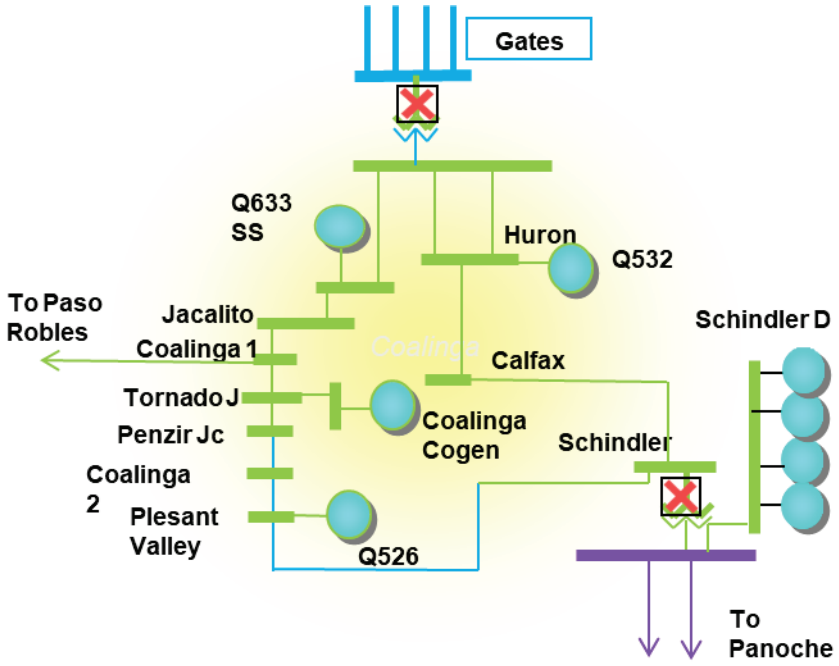
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7430 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.6.3 *Coalinga Sub-area*

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

Coalinga LCR Sub-area Diagram

Figure 3.3-51 Coalinga LCR Sub-area



Coalinga LCR Sub-area Load and Resources

Table 3.3-46 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 3.3-46 Coalinga LCR Sub-area 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	117	Market, Net Seller	0	0
AAEE	-1	MUNI	0	0
Behind the meter DG	0	QF	3	3
Net Load	116	Solar	17	8
Transmission Losses	2	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**118**	**Total**	**20**	**11**

Coalinga LCR Sub-area Hourly Profiles

Figure 3.3-52 illustrates the forecast 2022 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 3.3-53 illustrates the forecast 2022 hourly profile for Coalinga sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-52 Coalinga LCR Sub-area 2022 Peak Day Forecast Profiles

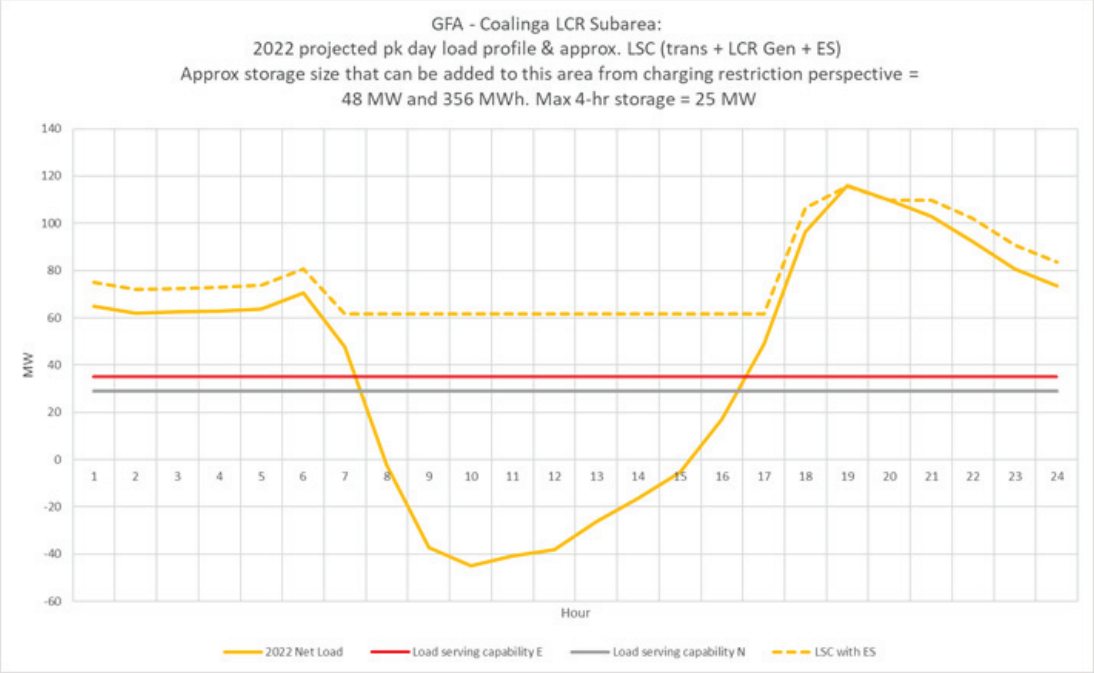
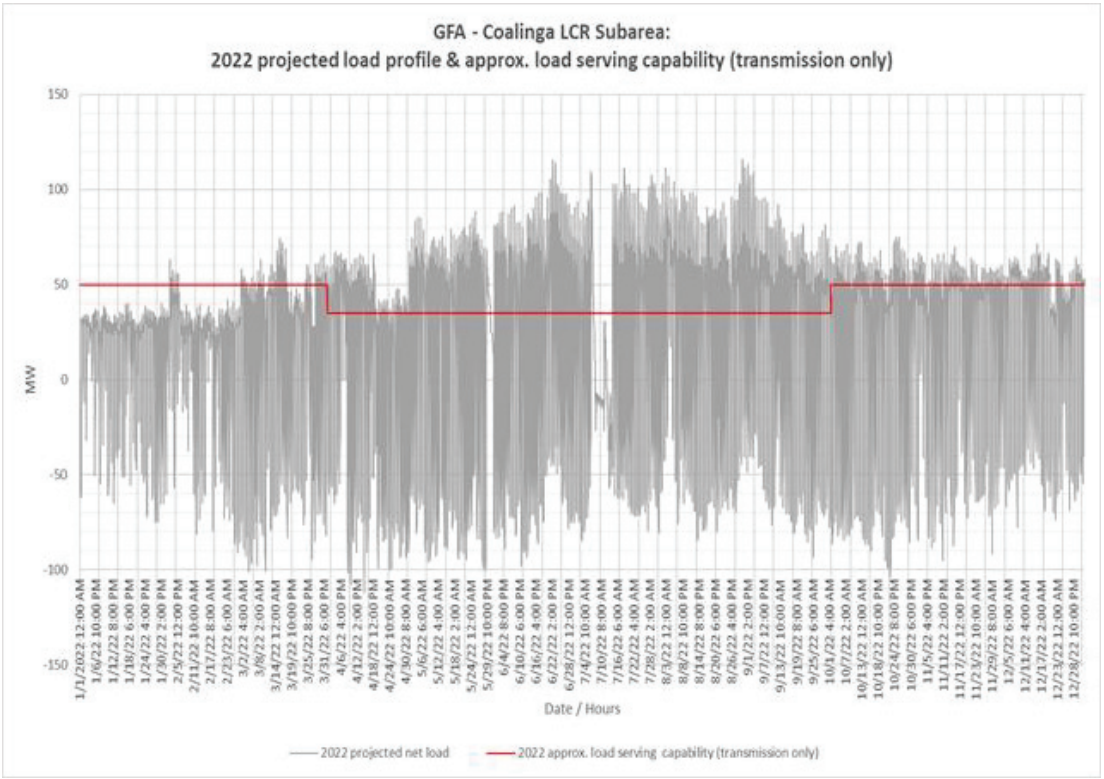


Figure 3.3-53 Coalinga LCR Sub-area 2022 Forecast Hourly Profiles



Coalinga LCR Sub-area Requirement

Table 3.3-47 identifies the sub-area requirements. The LCR Requirement for a Category P6 contingency is 96 MW including a 85 MW at peak deficiency and 76 MW NQC deficiency.

Table 3.3-47 Coalinga LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First Limit	P6	San-Miguel-Coalinga 70 kV Line and Voltage Instability	T-1/T-1: Gates 230/70 kV TB #5 and Schindler 115/70 kV TB#1	95 (85 Peak, 76 NQC)

Effectiveness factors:

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

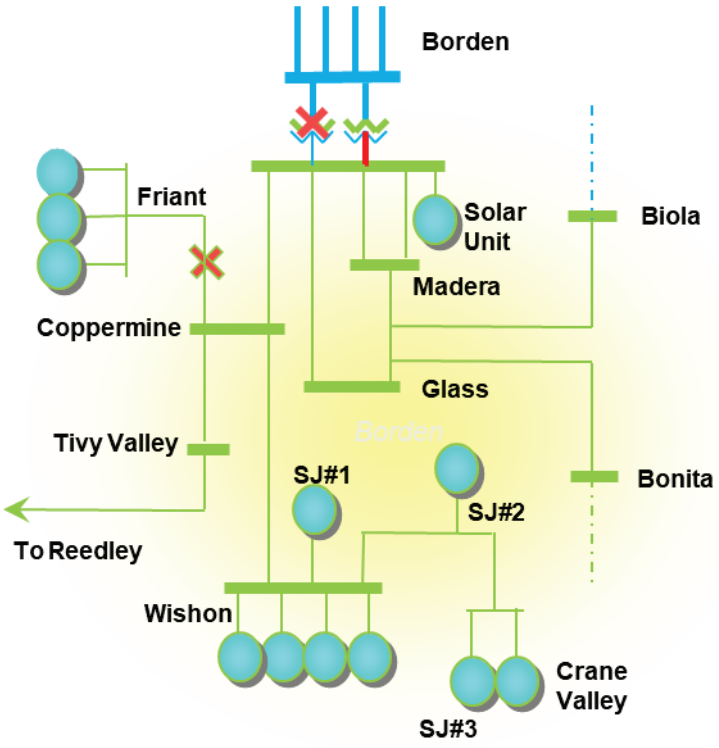
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7430 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.6.4 *Borden Sub-area*

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

Borden LCR Sub-area Diagram

Figure 3.3-54 Borden LCR Sub-area



Borden LCR Sub-area Load and Resources

Table 3.3-48 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 3.3-48 Borden LCR Sub-area 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	146	Market, Net Seller	38	38
AAEE	-1	MUNI	0	0
Behind the meter DG	0	QF	0	0
Net Load	145	Solar	14	6
Transmission Losses	4	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	149	**Total**	52	**44**

Borden LCR Sub-area Hourly Profiles

Figure 3.3-55 illustrates the forecast 2022 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 3.3-56 illustrates the forecast 2022 hourly profile for Borden sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-55 Borden LCR Sub-area 2022 Peak Day Forecast Profiles

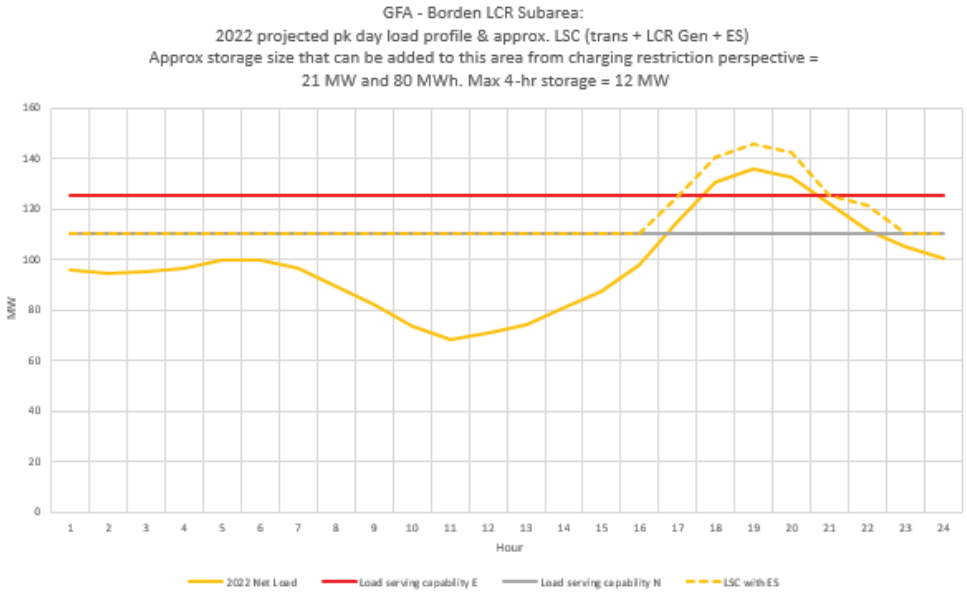
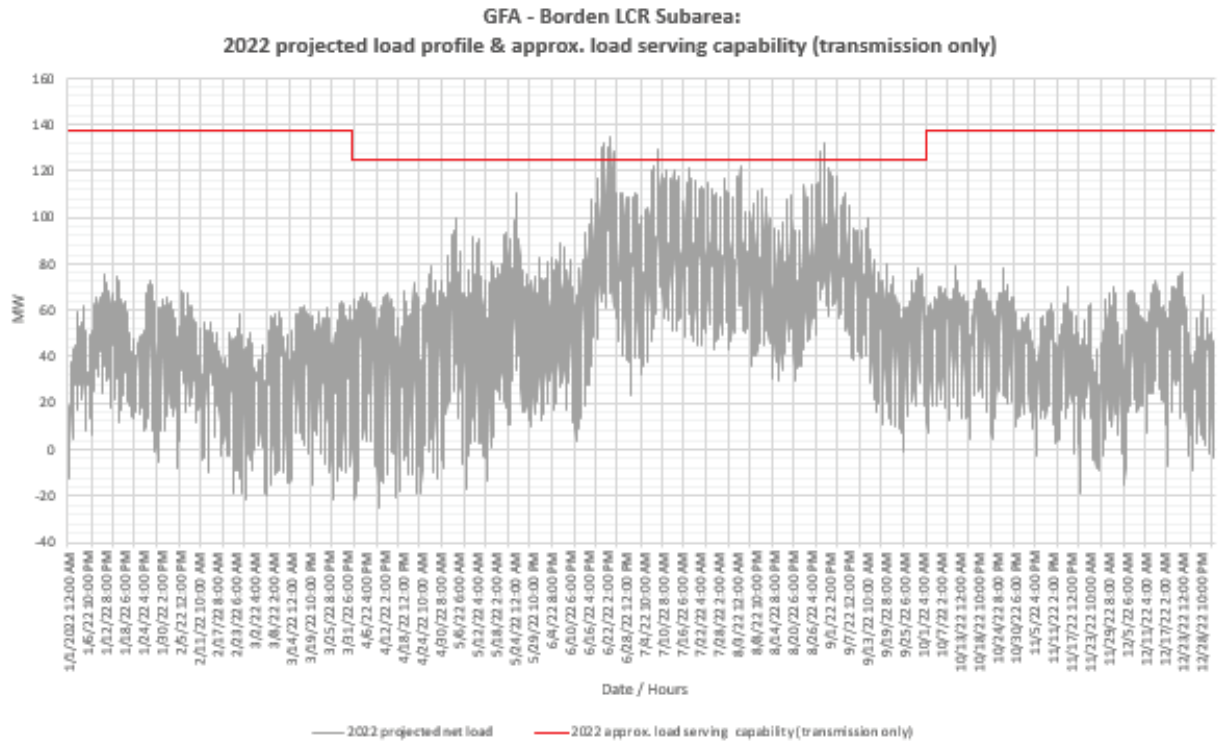


Figure 3.3-56 Borden LCR Sub-area 2022 Forecast Hourly Profiles



Borden LCR Sub-area Requirement

Table 3.3-49 identifies the sub-area requirements. The LCR Requirement for a Category P6 contingency is 35 MW.

Table 3.3-49 Borden LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First Limit	P6	Borden 230/70 kV TB # 1	Friant - Coppermine 70 kV Line and Borden 230/70 kV TB # 4	35

Effectiveness factors:

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

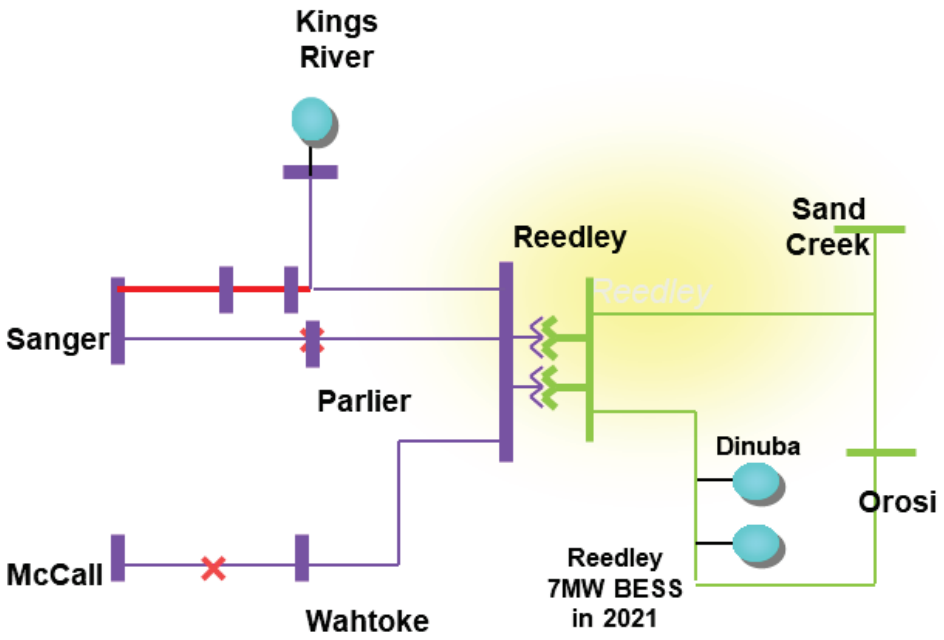
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7430 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.6.5 *Reedley Sub-area*

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

Reedley LCR Sub-area Diagram

Figure 3.3-57 Reedley LCR Sub-area



Reedley LCR Sub-area Load and Resources

Table 3.3-50 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 3.3-50 Reedley LCR Sub-area 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	228	Market, Net Seller	51	51
AAEE	-2	MUNI	0	0
Behind the meter DG	0	QF	0	0
Net Load	226	LTPP Preferred Resources	0	0
Transmission Losses	7	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	233	**Total**	**51**	**51**

Reedley LCR Sub-area Hourly Profiles

Figure 3.3-58 illustrates the forecast 2022 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 3.3-59 illustrates the forecast 2022 hourly profile for Reedley sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-58 Reedley LCR Sub-area 2022 Peak Day Forecast Profiles

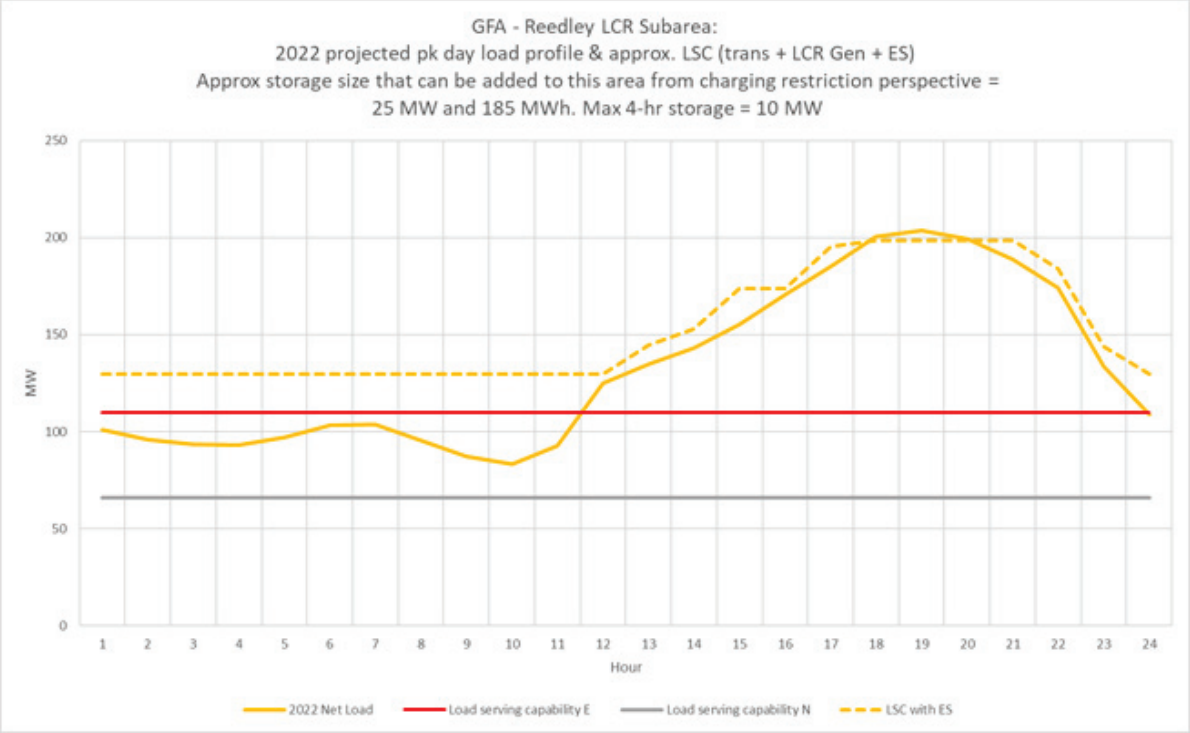
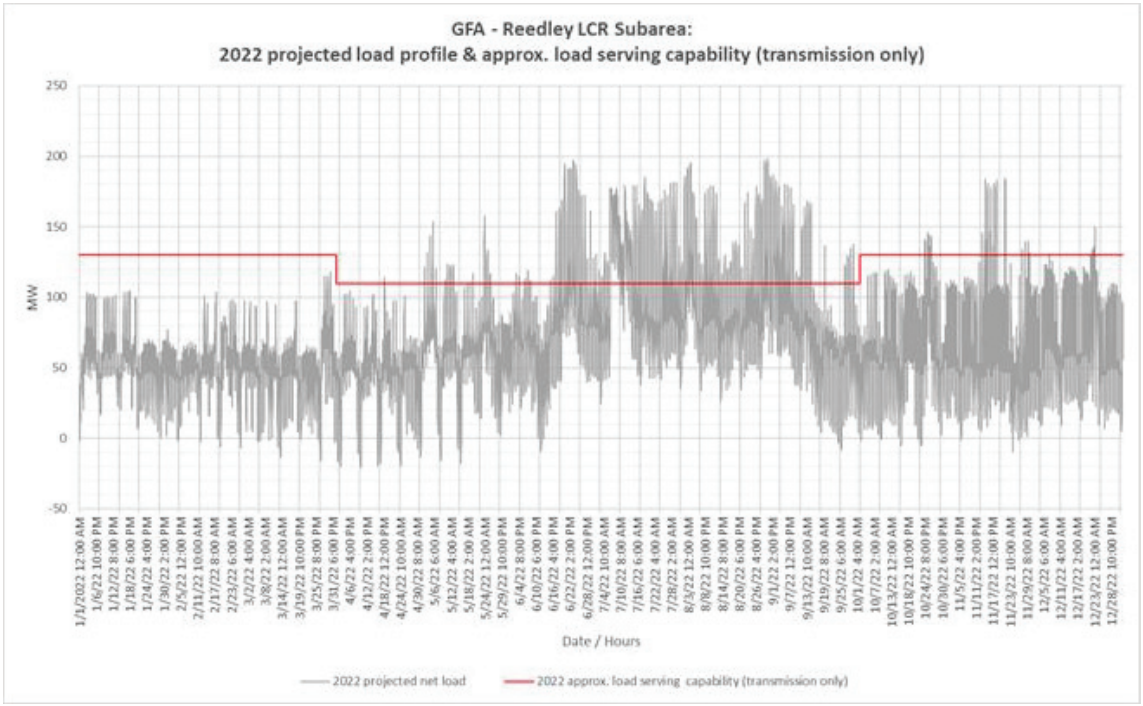


Figure 3.3-59 Reedley LCR Sub-area 2022 Forecast Hourly Profiles



Reedley LCR Sub-area Requirement

Table 3.3-51 identifies the sub-area requirements. The LCR Requirement for a Category P6 contingency is 144 MW with a 93 MW deficiency.

Table 3.3-51 Reedley LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2021	First Limit	P6	Kings River-Sanger-Reedley 115 kV line with Wahtoke load online	McCall-Reedley 115 kV & Sanger-Reedley 115 kV	144 (93)

Effectiveness factors:

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

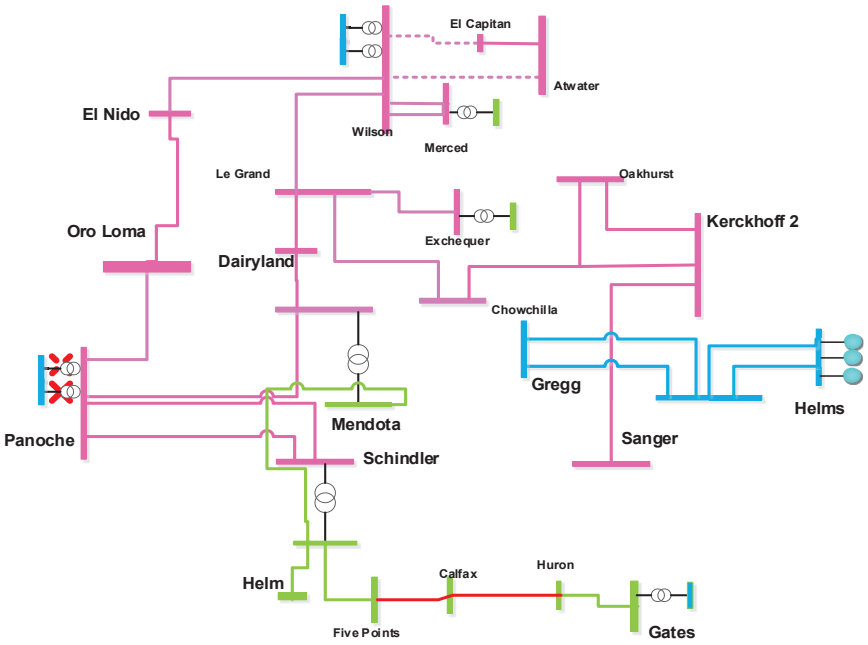
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7430 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.6.6 *Panoche Sub-area*

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

Panoche LCR Sub-area Diagram

Figure 3.3-60 Panoche LCR Sub-area



Panoche LCR Sub-area Load and Resources

Table 3.3-52 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 3.3-52 Panoche LCR Sub-area 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	463	Market, Net Seller	282	282
AAEE	-3	MUNI	85	85
Behind the meter DG	-1	QF	3	3
Net Load	459	Solar	95	42
Transmission Losses	16	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	475	**Total**	**465**	**412**

Panoche LCR Sub-area Hourly Profiles

Figure 3.3-61 illustrates the forecast 2022 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 3.3-62 illustrates the forecast 2022 hourly profile for Panoche sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-61 Panoche LCR Sub-area 2022 Peak Day Forecast Profiles

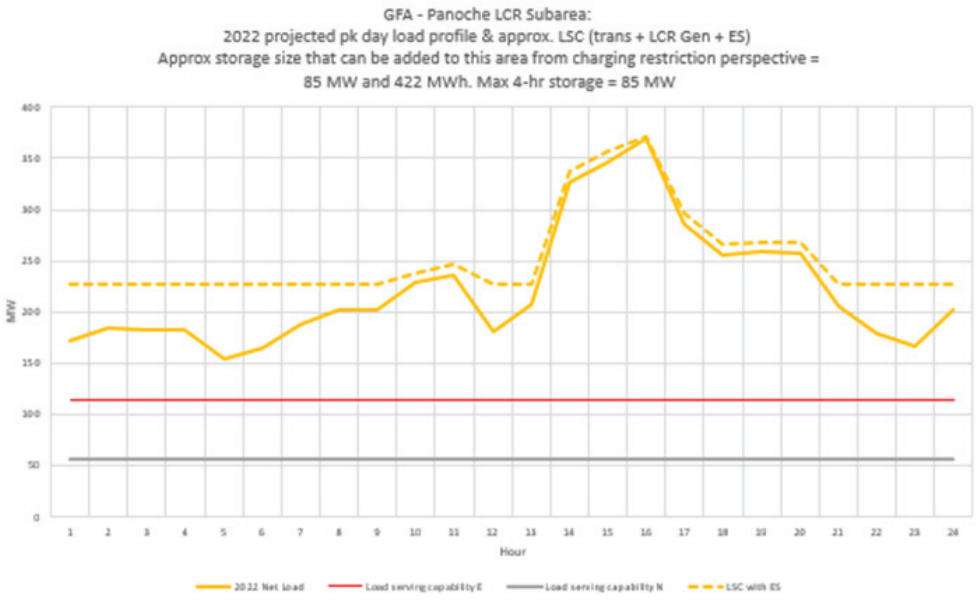
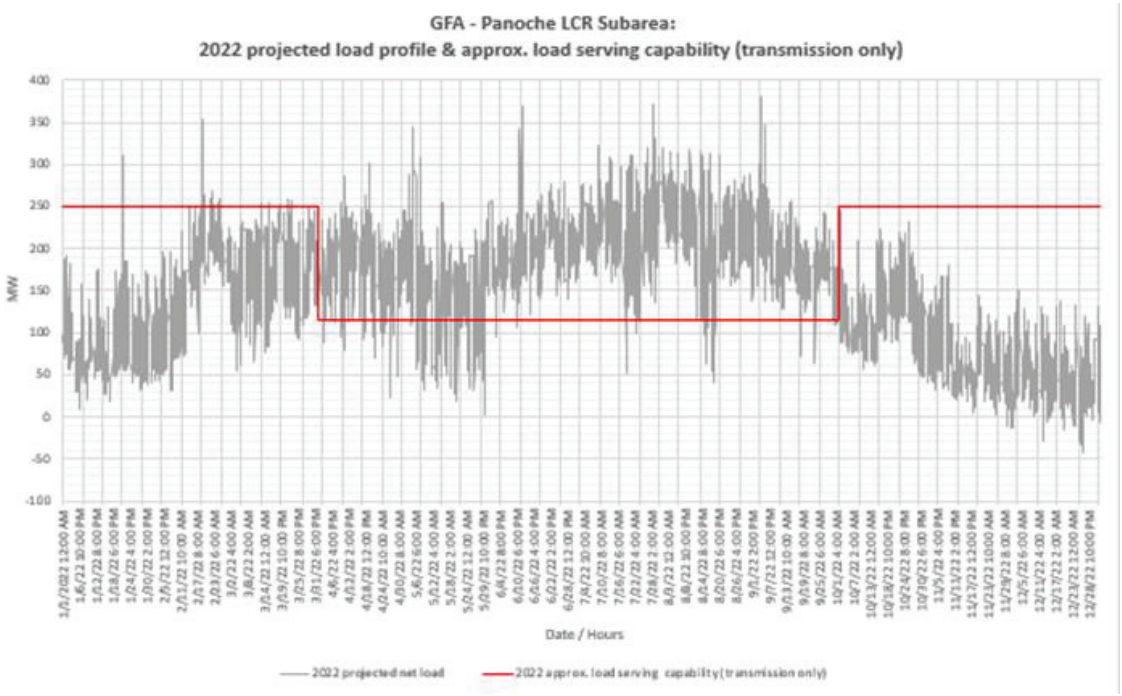


Figure 3.3-62 Panoche LCR Sub-area 2022 Forecast Hourly Profiles



Panoche LCR Sub-area Requirement

Table 3.3-53 identifies the sub-area LCR requirements. The LCR Requirement for a Category P6 contingency is 320 MW.

Table 3.3-53 Panoche LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2021	First limit	P6	Five Points-Huron-Gates 70 kV line	Panoche 230/115 kV TB #2 and Panoche 230/115 kV TB #	320

Effectiveness factors:

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

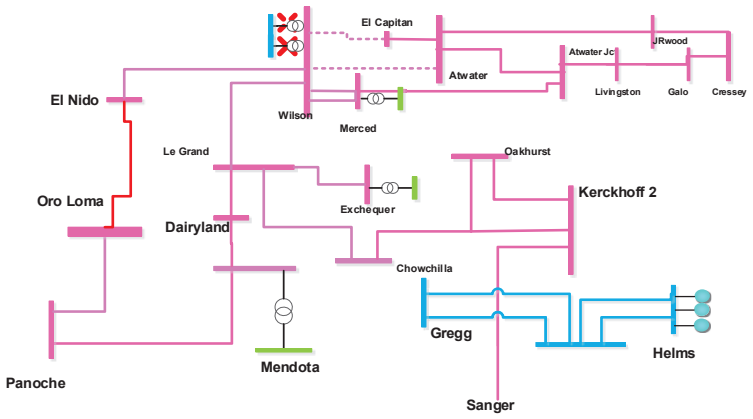
For other helpful procurement information please read procedure 2210Z Effectiveness Factors under 7430 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.6.7 *Wilson 115 kV Sub-area*

Wilson 115 kV is a sub-area of the Fresno LCR area.

Wilson LCR Sub-area Diagram

Figure 3.3-63 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 3.3-54 provides the forecasted resources in the sub-area. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-54 Wilson LCR Sub-area 2022 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 and Net Seller	260	260
	MUNI	85	85
	QF	0	0
	Solar	60	27
	Existing 20-minute Demand Response	0	0
	Mothballed	0	0
	Total	**405**	**372**

Wilson LCR Sub-area Hourly Profiles

The Wilson 115 kV sub-area is a flow-through sub-area therefore hourly profiles are not provided.

Wilson LCR Sub-area Requirement

Table 3.3-55 identifies the sub-area LCR requirements. The LCR Requirement for a Category P6 contingency is 620 MW with a 248 MW deficiency at Peak and 215 MW NQC deficiency.

Table 3.3-55 Wilson LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First Limit	P6	Panoche - Oro Loma 115 kV Line	Wilson 230/115kV TB #1 and Wilson 230/115kV TB #2	620 (248 Peak, 215 NQC)

Effectiveness factors:

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

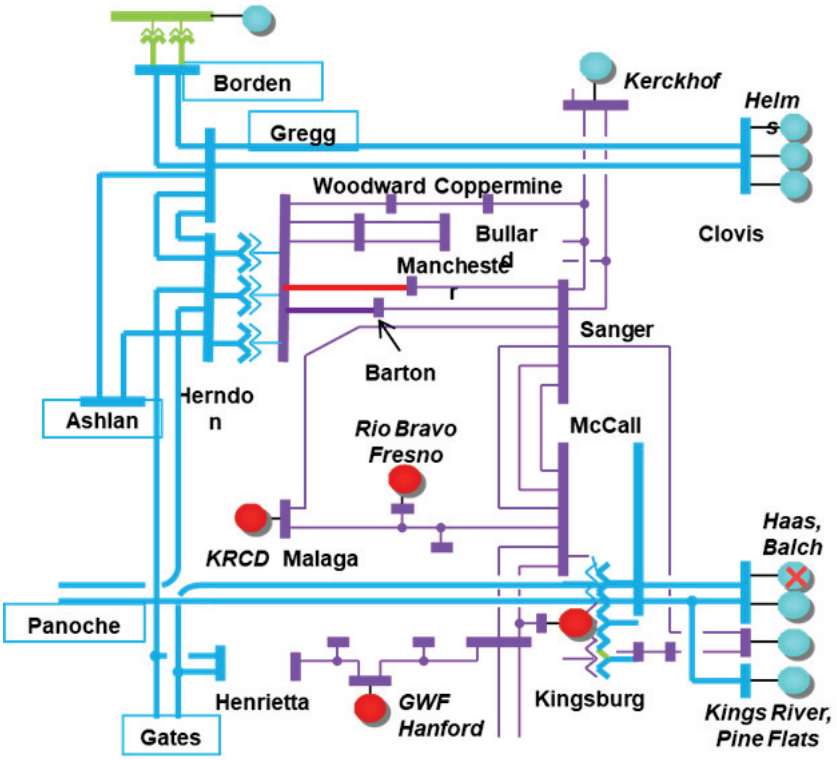
For other helpful procurement information please read procedure 2210Z Effectiveness Factors under 7430 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.6.8 *Herndon Sub-area*

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

Herndon LCR Sub-area Diagram

Figure 3.3-64 Herndon LCR Sub-area



Herndon LCR Sub-area Load and Resources

Table 3.3-56 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 3.3-56 Herndon LCR Sub-area 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	1576	Market, Net Seller	996	996
AAEE	-11	MUNI	98	98
Behind the meter DG	0	QF	1	1
Net Load	1565	Solar	63	28
Transmission Losses	35	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	1600	**Total**	**1158**	**1123**

Herndon LCR Sub-area Hourly Profiles

Figure 3.3-65 illustrates the forecast 2022 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 3.3-66 illustrates the forecast 2022 hourly profile for Herndon sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-65 Herndon LCR Sub-area 2022 Peak Day Forecast Profiles

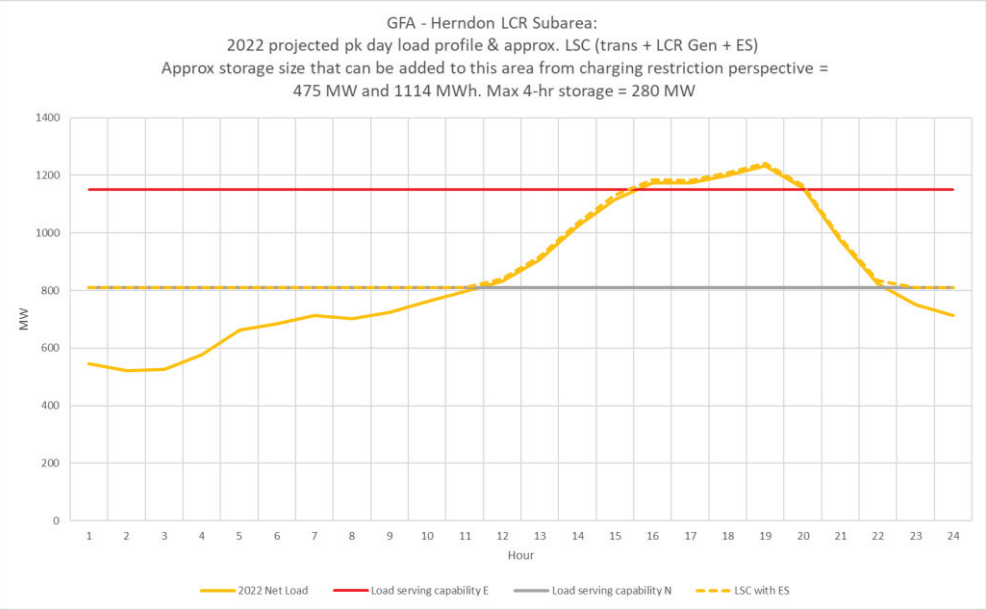
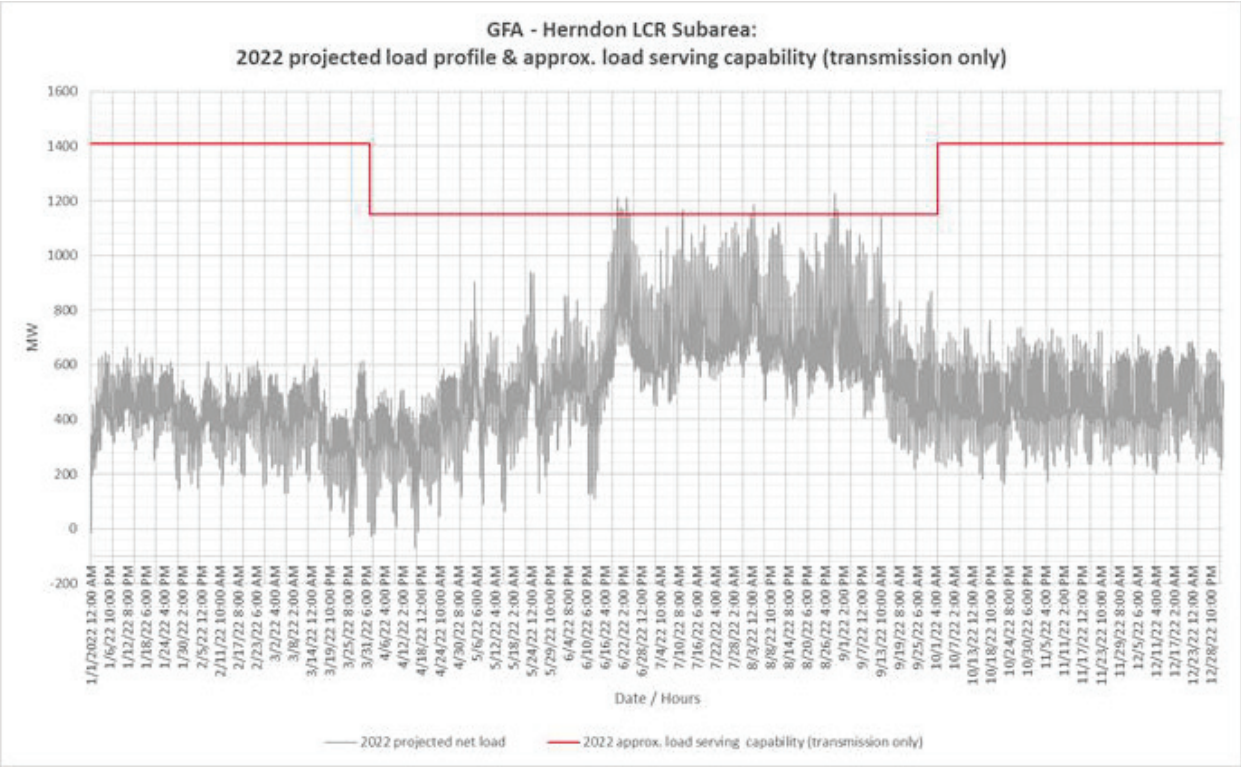


Figure 3.3-66 Herndon LCR Sub-area 2021 Forecast Hourly Profiles



Herndon LCR Sub-area Requirement

Table 3.3-57 identifies the sub-area LCR requirements. The LCR Requirement for a Category P6 contingency is 522 MW.

Table 3.3-57 Herndon LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First limit	P6	Herndon-Manchester 115 kV	Herndon-Woodward 115 kV line & Herndon-Barton 115 kV line	522

Effectiveness factors:

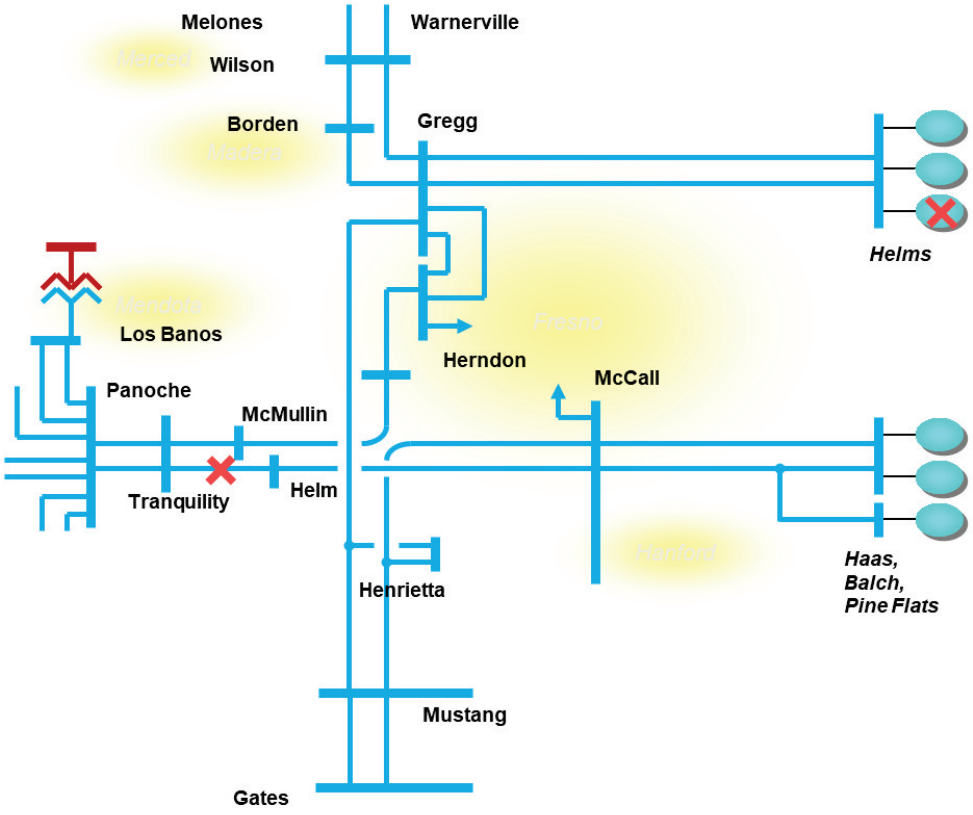
Effective factors for generators in the Herndon LCR Sub-area are in Attachment B table titled Herndon.

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 3.3-67 Fresno LCR area



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Fresno Overall LCR area Load and Resources

Table 3.3-43 provides the forecast load and resources in Fresno LCR area in 2022. The list of generators within the LCR area are provided in Attachment A.

Fresno Overall LCR area Hourly Profiles

Figure 3.3-68 illustrates the forecast 2022 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 3.3-69 illustrates the forecast 2022 hourly profile for Fresno Overall sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-68 Fresno LCR area 2022 Peak Day Forecast Profiles

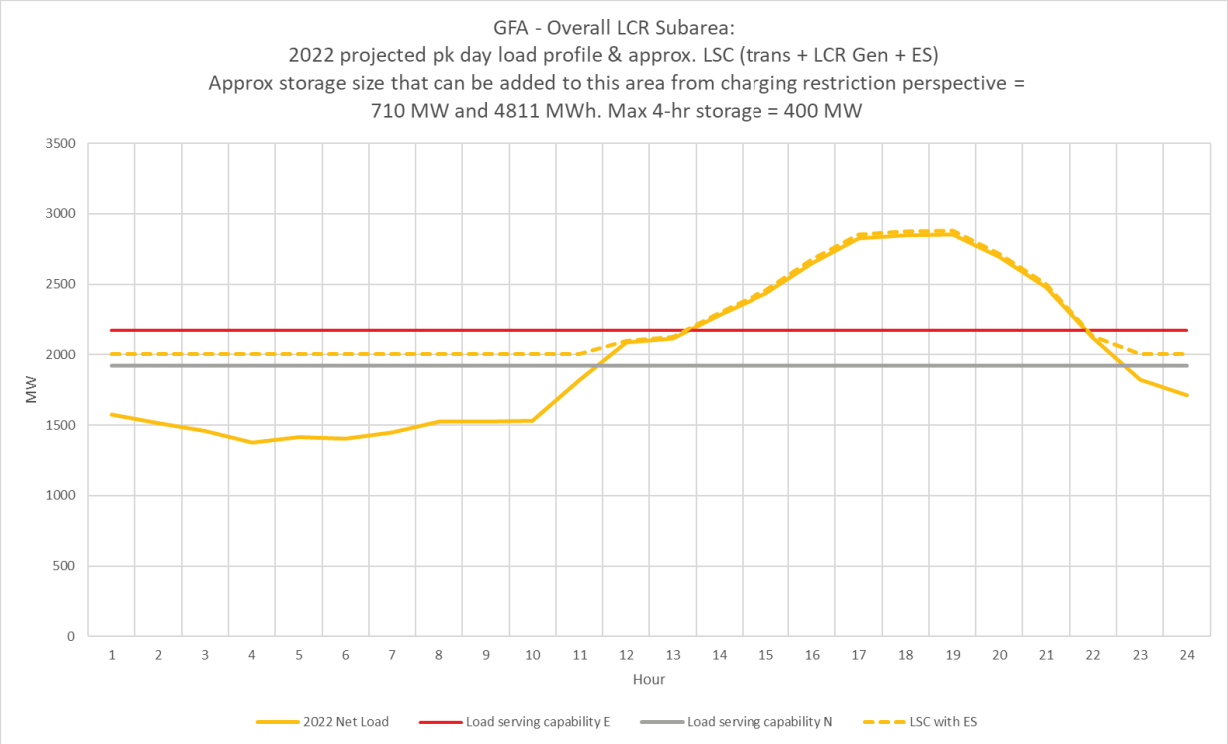
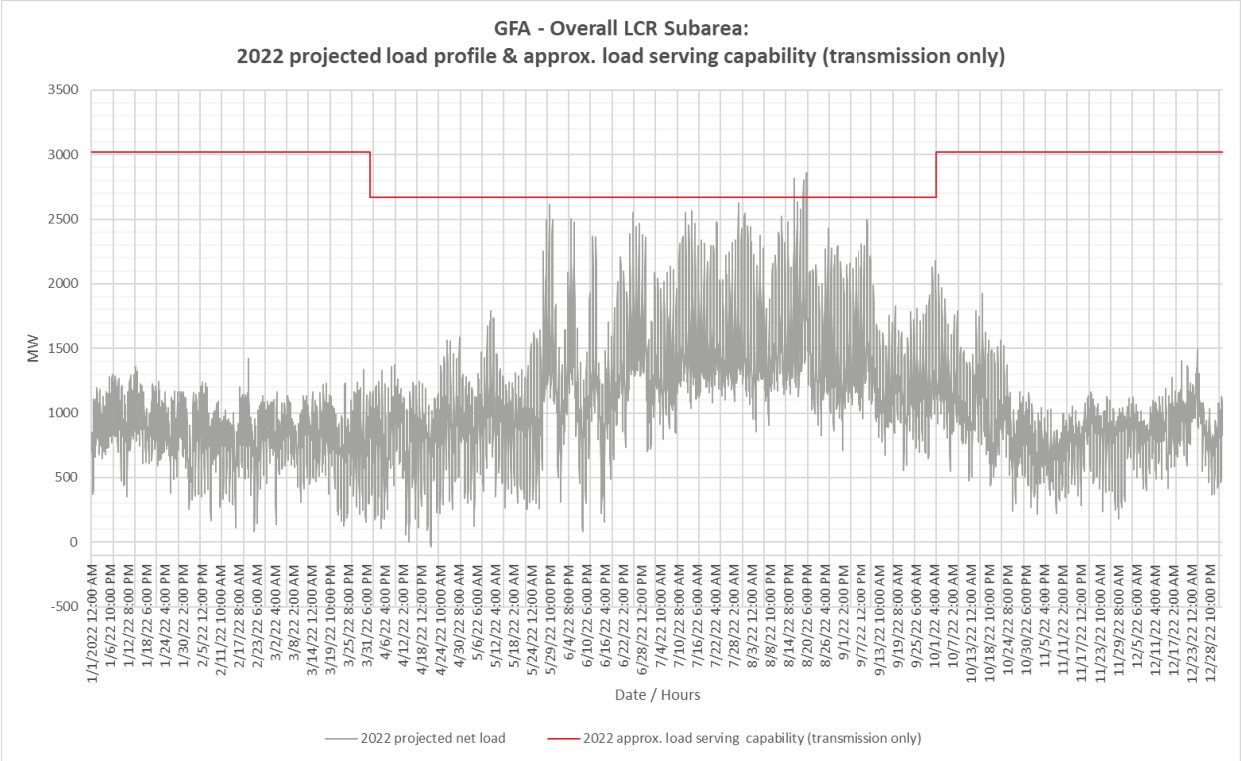


Figure 3.3-69 Fresno LCR area 2022 Forecast Hourly Profiles



Fresno Overall LCR Area Requirement

Table 3.3-58 identifies the area LCR requirements. The LCR Requirement for a Category P6 contingency is 1987 MW.

Table 3.3-58 Fresno Overall LCR Area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First limit	P6	GWF-Contandida 115 kV Line	Panoche-Helm 230 kV Line and Gates-McCall 230 kV Line	1987

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 2021 requirements

Compared with 2021 the load forecast increassed by 246 MW and the LCR need increased by 293 MW mostly due to load forcast 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

Wheeler Ridge #4 230/70 kV Transformer Bank

Wheeler Ridge #5 230/70 kV Transformer Bank

Famoso-Lerdo 115 kV Line (Normal Open)

Wasco-Famoso 70 kV Line (Normal Open)

Copus-Old River 70 kV Line (Normal 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 Stockdale 230 kV is in

Midway 230 kV is out Kern PP 230 kV is in

Wheeler Ridge 230 kV is out and Wheeler Ridge 70 kV is in

Wheeler Ridge 230 kV is out and Wheeler Ridge 70 kV is in

Famoso 115 kV is out Cawelo 115 kV is in

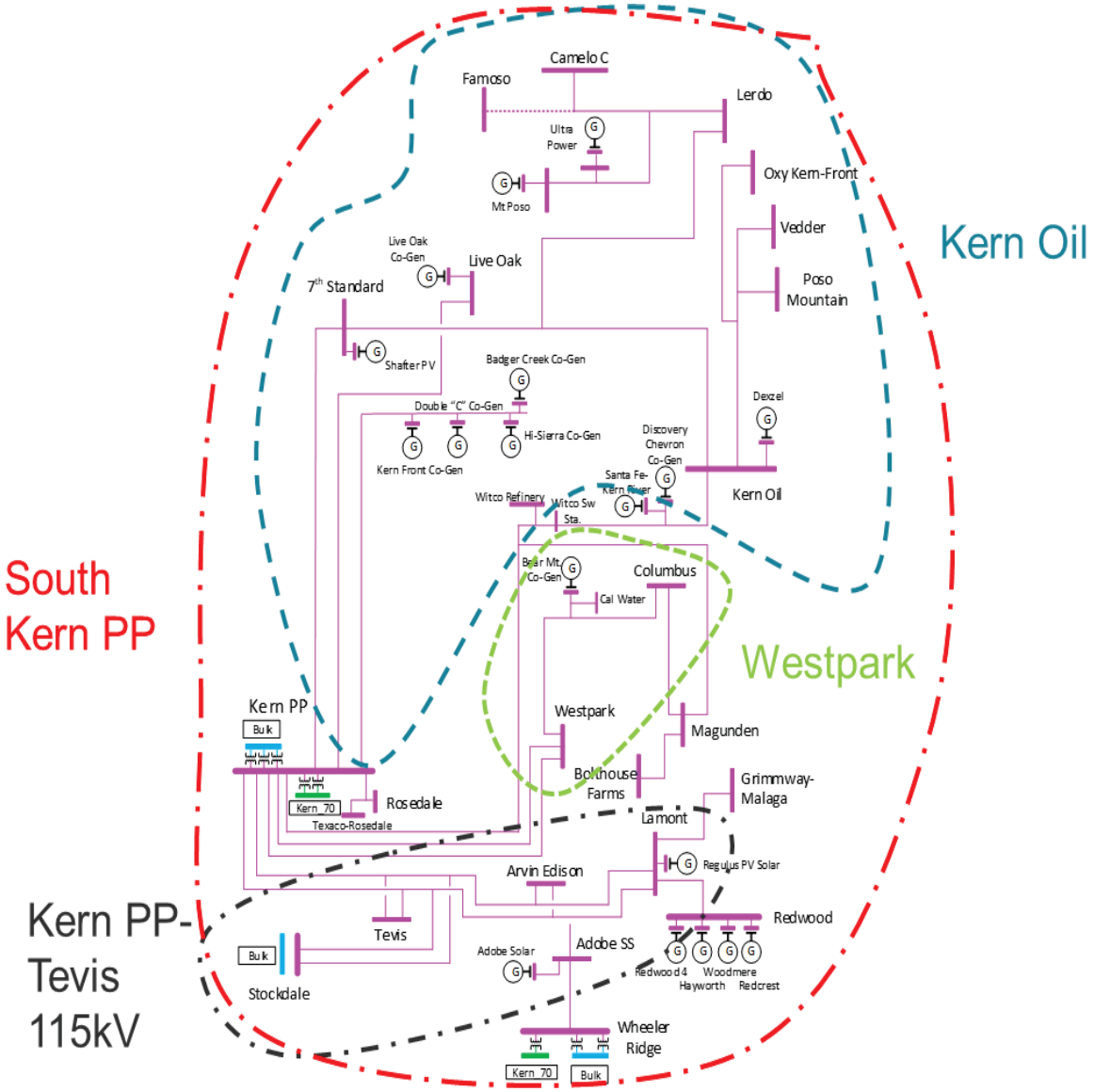
Wasco 70 kV is out Mc Farland 70 kV is in

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

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

Kern LCR Area Diagram

Figure 3.3-70 Kern LCR Area



Kern LCR Area Load and Resources

Table 3.3-59 provides the forecast load and resources in Kern LCR Area in 2022. The list of generators within the LCR area are provided in Attachment A.

In year 2022 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 3.3-59 Kern LCR Area 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	1028	Market, Net Seller	333	333
AAEE	-8	MUNI	0	0
Behind the meter DG	0	QF	4	4
Net Load	1020	Solar	81	0
Transmission Losses	9	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	1029	**Total**	418	**337**

Approved transmission projects modeled

None

3.3.7.2 *Kern 70 kV Sub-area*

Kern 70 kV sub-area has been eliminated in 2022 due to Magunden – Magunden Jct 70 kV being modeled as open in the basecase.

3.3.7.3 *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 3.3-70 for Kern PWR-Tevis sub-area diagram

Kern Power-Tevis Sub-area Load and Resources

Table 3.3-60 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 3.3-60 Kern Power-Tevis LCR Sub-area 2022 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	159	Market, Net Seller	0	0
AAEE	1	MUNI	0	0
Behind the meter DG	0	QF	0	0
Net Load	158	Solar	55	0
Transmission Losses	1	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	159	Total	55	0

Kern Power-Tevis Sub-area Hourly Profiles

Figure 3.3-71 illustrates the forecast 2022 profile for the peak day for the Kern Power-Tevis 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 3.3-72 illustrates the forecast 2022 hourly profile for Kern Power-Tevis LCR sub-area with the Category P3 emergency load serving capability without local resources.

Figure 3.3-71 Kern Power- Tevis LCR Sub-area 2022 Peak Day Forecast Profiles

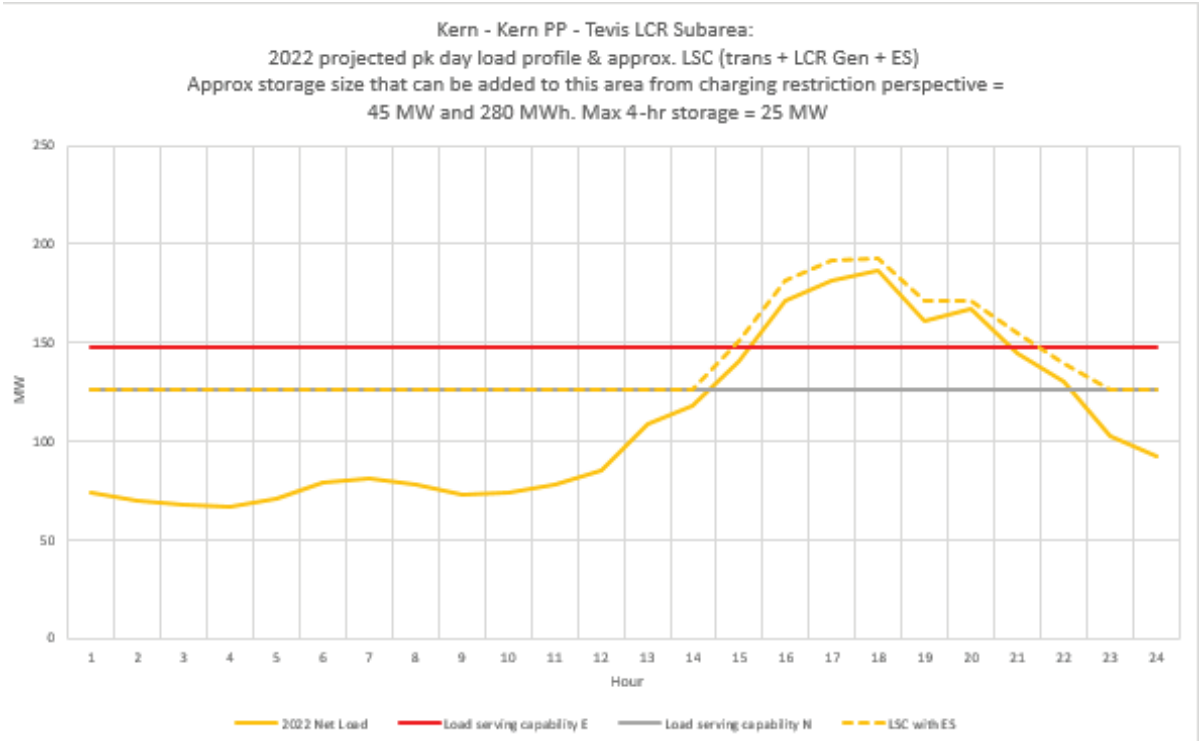
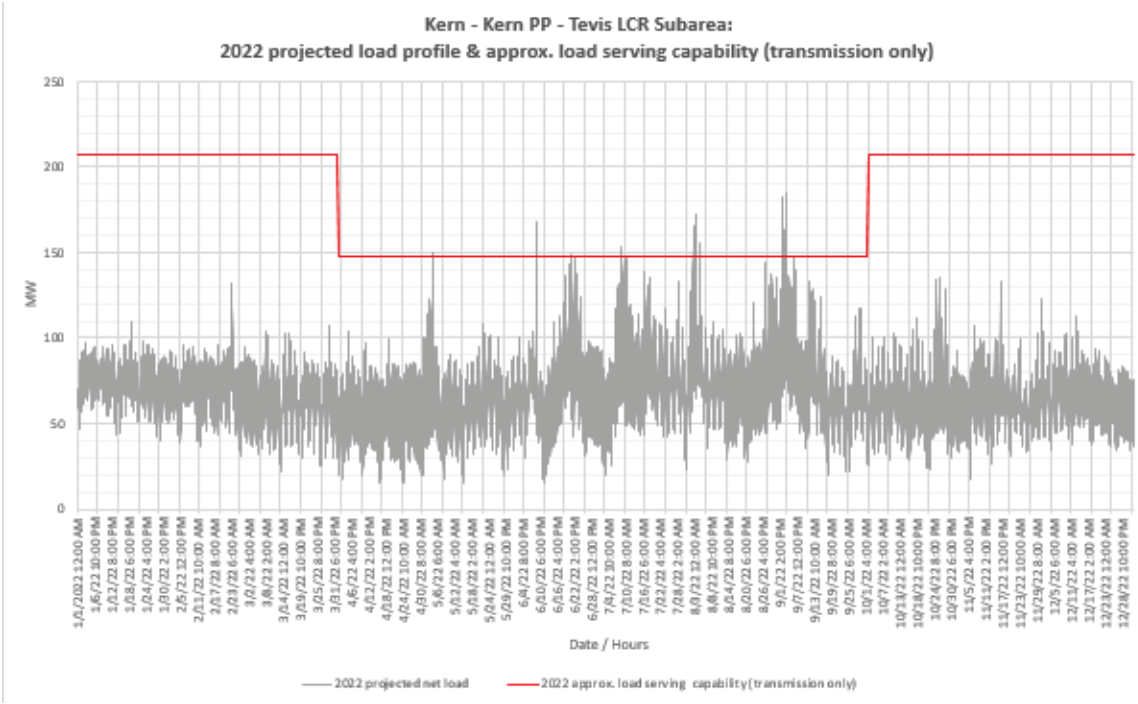


Figure 3.3-72 Kern Power- Tevis LCR Sub-area 2022 Forecast Hourly Profiles



Kern Power-Tevis LCR Sub-area Requirement

Table 3.3-61 identifies the sub-area LCR requirements. The LCR requirement for Category P2 contingency is 22 MW including a 22 MW at peak deficiency.

Table 3.3-61 Kern Power-Tevis LCR Sub-area Requirements

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	P2	Kern-Lamont 115 kV Lines (Kern-Tevis Jct 2/Tevis J1)	KERN PWR 115kV - Section 1E & 1D	22 (22 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

3.3.7.4 *Westpark Sub-area*

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

Westpark LCR Sub-area Diagram

Please see Figure 3.3-70 for Westpark sub-area diagram.

Westpark LCR Sub-area Load and Resources

Table 3.3-62 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 3.3-62 Westpark LCR Sub-area 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	141	Market, Net Seller	44	44
AAEE	-1	MUNI	0	0
Behind the meter DG	0	QF	0	0
Net Load	**140**	LTPP Preferred Resources	0	0
Transmission Losses	0	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**140**	**Total**	**44**	**44**

Westpark LCR Sub-area Hourly Profiles

Figure 3.3-73 illustrates the forecast 2022 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 3.3-74 illustrates the forecast 2022 hourly profile for Westpark LCR sub-area with the Category P3 emergency load serving capability without local resources.

Figure 3.3-73 Westpark LCR Sub-area 2022 Peak Day Forecast Profiles

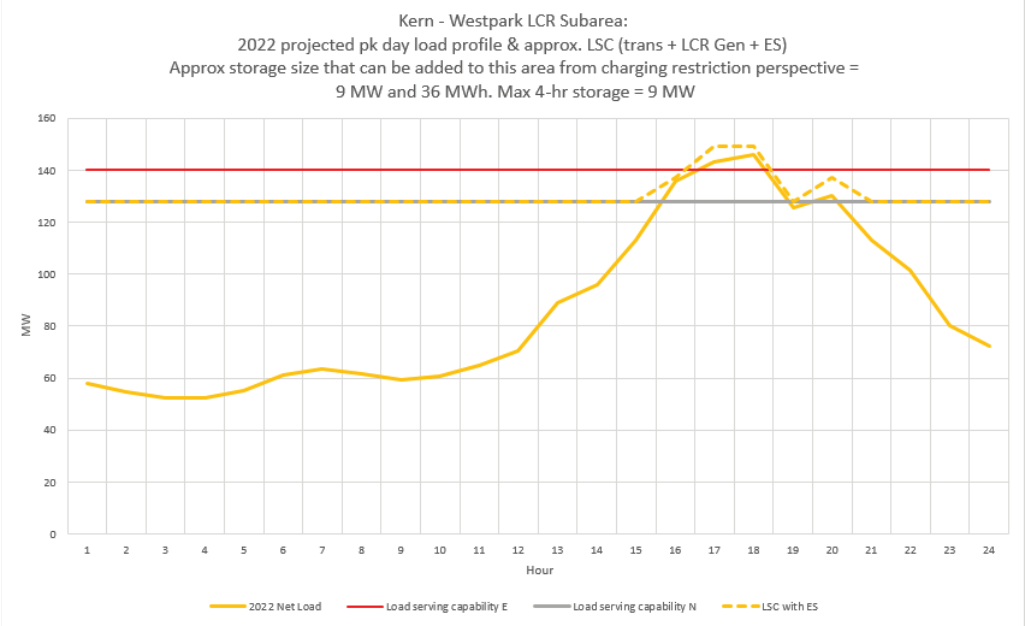
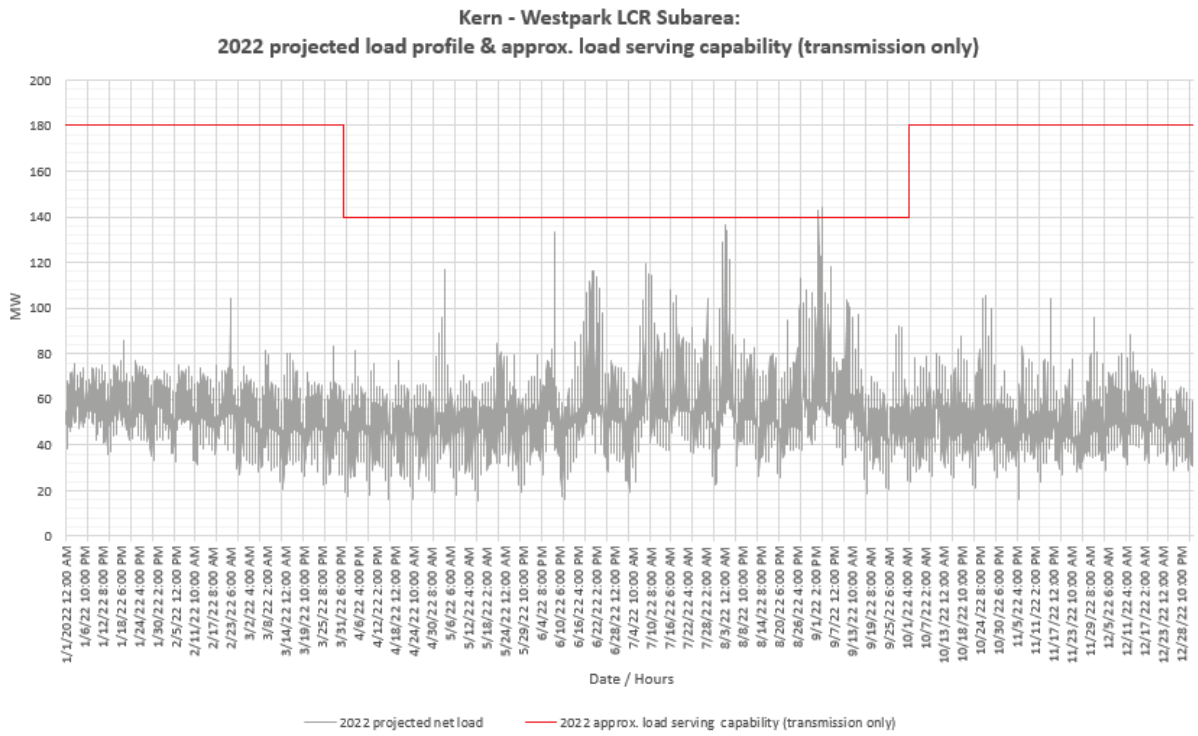


Figure 3.3-74 Westpark LCR Sub-area 2022 Forecast Hourly Profiles



Westpark LCR Sub-area Requirement

Table 3.3-63 identifies the sub-area LCR requirements. The LCR requirement for Category P3 contingency is 53 MW including a 9 MW deficiency.

Table 3.3-63 Westpark LCR Sub-area Requirements

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	P3	Kern-West Park #2 115 kV	Kern-West Park #1 115 kV and PSE-Bear Generation	53 (9)

Effectiveness factors:

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

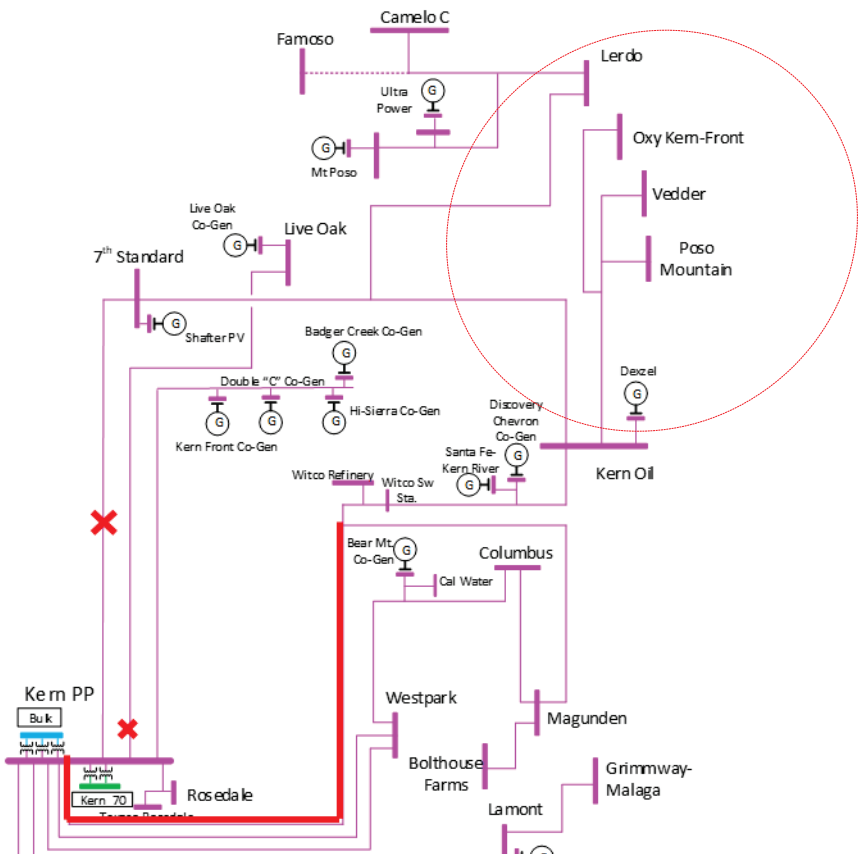
For most helpful procurement information please read procedure 2210Z Effectiveness Factors under 7450 posted at: http://www.caiso.com/Documents/2210Z.pdf

3.3.7.5 *Kern Oil Sub-area*

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

Kern Oil LCR Sub-area Diagram

Figure 3.3-75 Kern Oil LCR Sub-area



Kern Oil LCR Sub-area Load and Resources

Table 3.3-64 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 3.3-64 Kern Oil LCR Sub-area 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	278	Market, Net Seller	97	97
AAEE	-2	MUNI	0	0
Behind the meter DG	0	QF	4	4
Net Load	**276**	Solar	7	0
Transmission Losses	2	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**278**	**Total**	**108**	**101**

Kern Oil LCR Sub-area Hourly Profiles

Figure 3.3-76 illustrates the forecast 2022 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 3.3-77 illustrates the forecast 2022 hourly profile for Kern Oil LCR sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-76 Kern Oil LCR Sub-area 2022 Peak Day Forecast Profiles

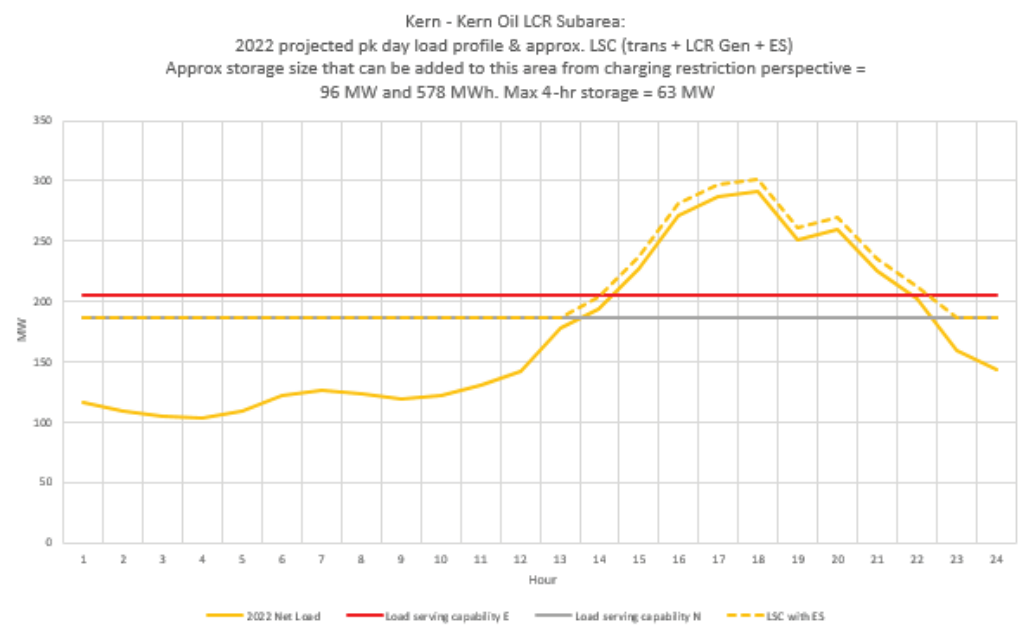
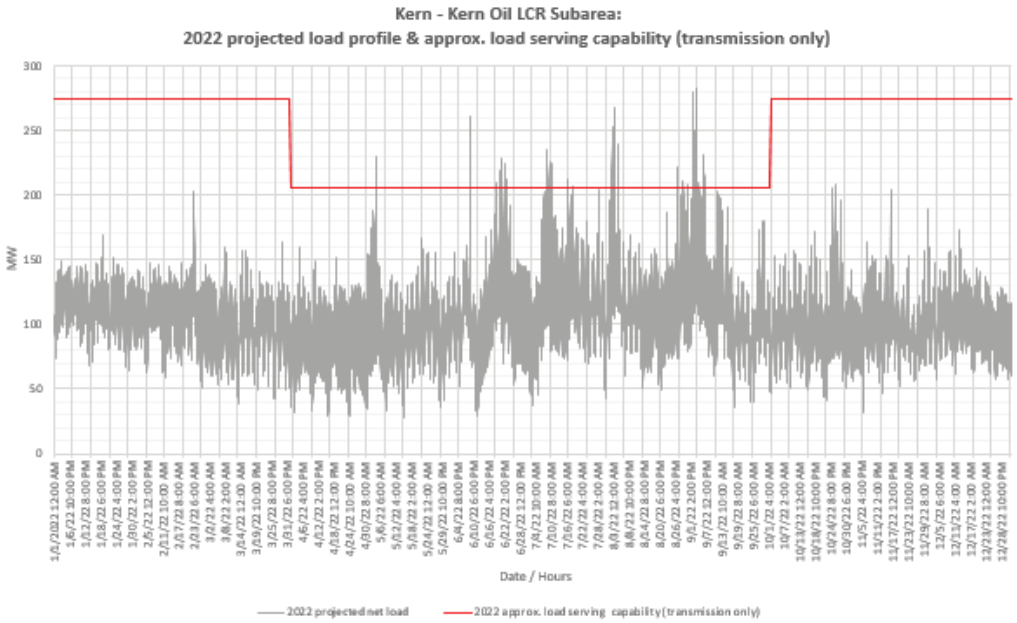


Figure 3.3-77 Kern Oil LCR Sub-area 2022 Forecast Hourly Profiles



Kern Oil LCR Sub-area Requirement

Table 3.3-65 identifies the sub-area LCR requirements. The LCR requirement for Category P6 contingency is 78 MW.

Table 3.3-65 Kern Oil LCR Sub-area Requirements

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	P6	Kern Oil Jct –Kernwater 115 kV Line	7th Standard – Kern 115 kV line & Kern Oil – Live Oak – Poso Mt 115 kV Line	78

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

3.3.7.6 *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 3.3-70 for South Kern PP area diagram.

South Kern PP LCR Sub-area Load and Resources

Refer to Table 3.3-59 Kern Area Load and Resources table.

South Kern PP LCR Sub-area Hourly Profiles

Figure 3.3-78 illustrates the forecast 2022 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 3.3-79 illustrates the forecast 2022 hourly profile for South Kern PP LCR sub-area with the Category P6 emergency load serving capability without local resources.

Figure 3.3-78 South Kern PP LCR Sub-area 2022 Peak Day Forecast Profiles

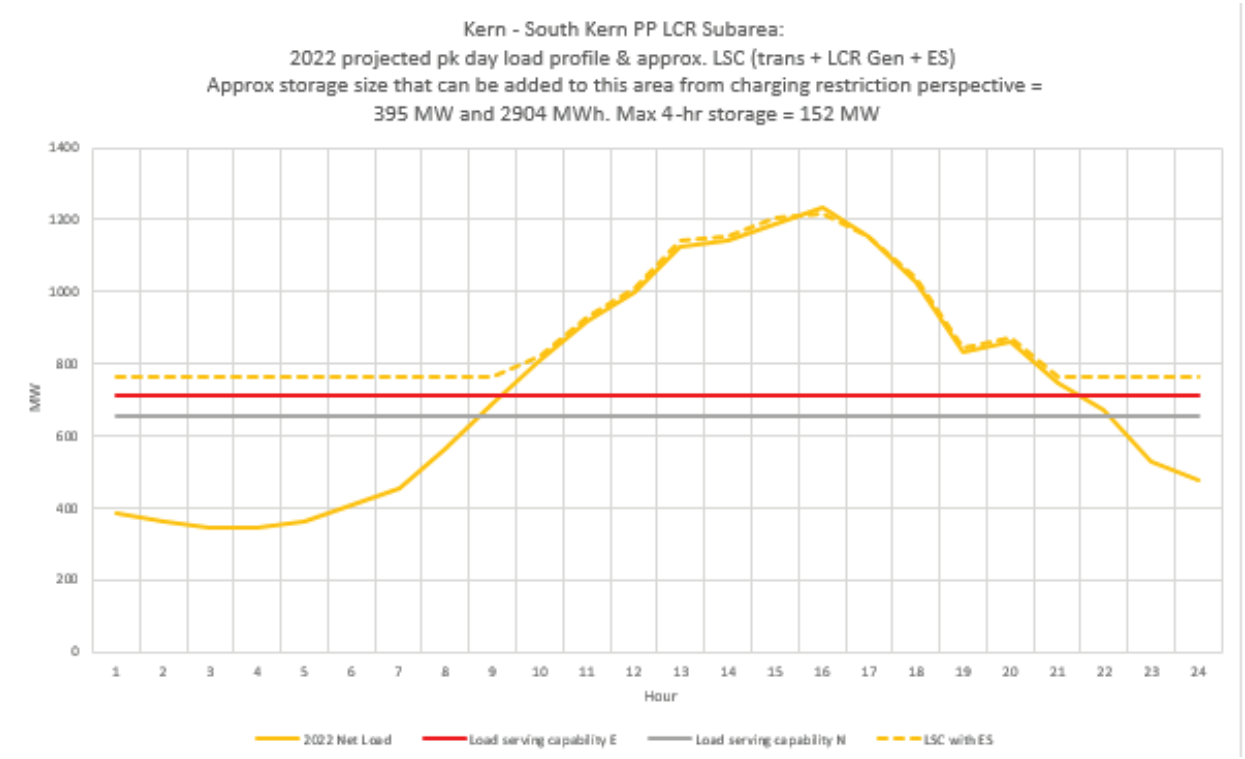
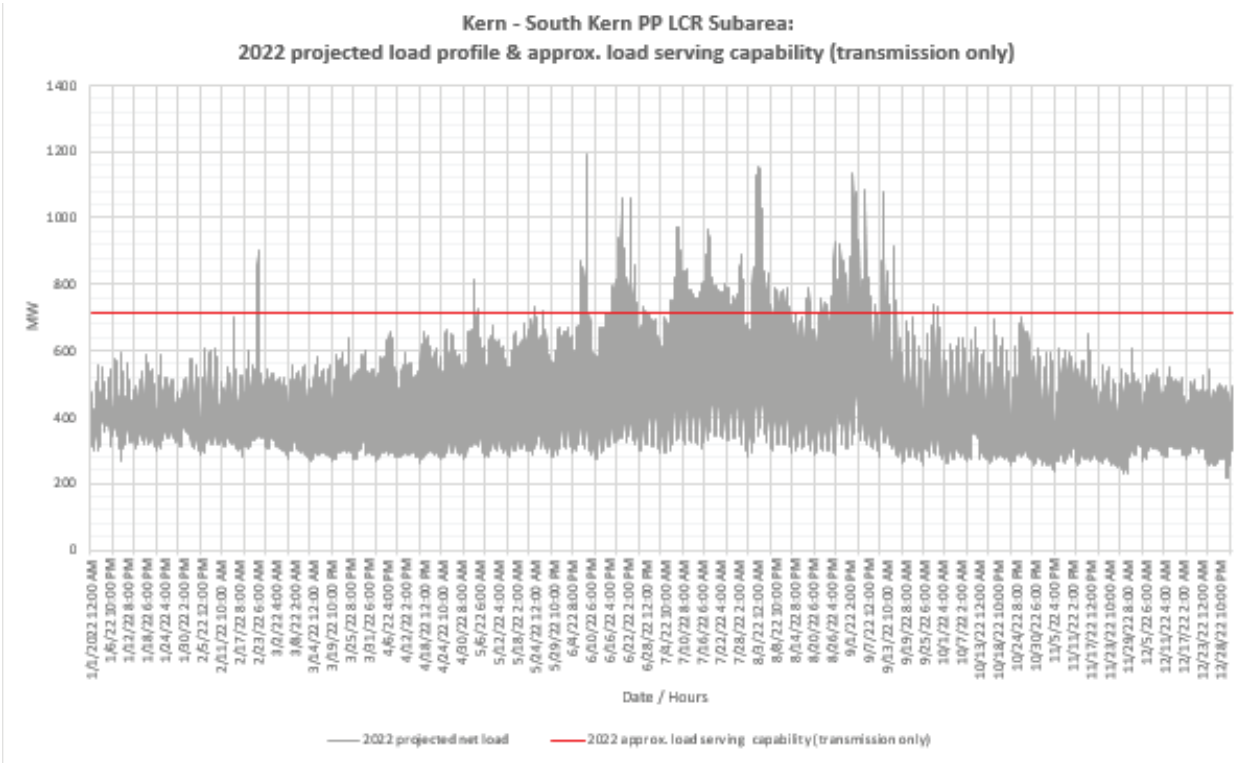


Figure 3.3-79 South Kern PP LCR Sub-area 2022 Forecast Hourly Profiles



South Kern PP LCR Sub-area Requirement

Table 3.3-66 identifies the sub-area LCR requirements. The LCR requirement for Category P6 contingency is 356 MW including a 23 MW at peak deficiency.

Table 3.3-66 South Kern PP LCR Sub-area Requirements

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	P6	Kern 230/115 kV T/F # 5	Kern 230/115 kV T/F # 3 & Kern 230/115 kV T/F # 4	356 (23 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

3.3.7.7 *Kern Area Overall Requirements*

Kern LCR Area Overall Requirement

Table 3.3-67 identifies the limiting facility and contingency that establishes the Kern Area 2022 LCR requirements. The LCR requirement for Category P6 (Multiple Contingency) is 356 MW including a 23 MW at peak deficiency.

Table 3.3-67 Kern Overall LCR Sub-area Requirements

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	P6	Aggregate of Sub-areas.		356 (23 Peak)

Kern Overall LCR Area Hourly Profile

Refer to South Kern PP LCR area profiles.

Changes compared to 2021 requirements

Compared with 2021 the load forecast decreased by 256 MW and the LCR requirement has decreased by 276 MW maily due to load forecast decrease.

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

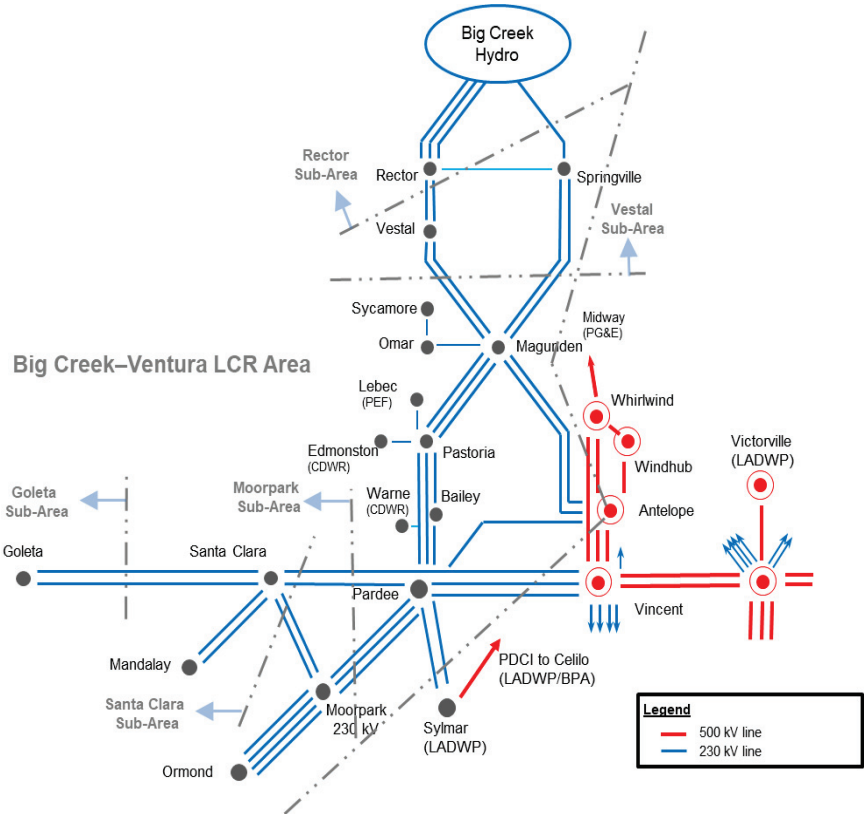
Sylmar is out Pardee is in

Vincent is out Pardee is in

Vincent is out Santa Clara is in

Big Creek/Ventura LCR Area Diagram

Figure 3.3-80 Big Creek/Ventura LCR Area



Big Creek/Ventura LCR Area Load and Resources

Table 3.3-68 provides the forecast load and resources in the Big Creek/Ventura LCR Area in 2022. The list of generators within the LCR area are provided in Attachment A.

In year 2022 the estimated time of local area peak is 4:00 PM (PST).

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 3.3-68 Big Creek/Ventura LCR Area 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	4468	Market, Net Seller	4160	4160
AAEE	-23	MUNI	315	315
Behind the meter DG	-339	QF	109	109
Net Load	**4106**	Solar	369	369
Transmission Losses	78	LTPP Preferred Resources (Battery)	593	593
Pumps	210	Existing 20-minute Demand Response	100	100
Load + Losses + Pumps	**4394**	**Total**	**5646**	**5646**

Approved transmission projects modeled:

Pardee-Moorpark No. 4 230 kV Transmission Project (ISD-Q2 2022)

3.3.8.2 *Rector Sub-area*

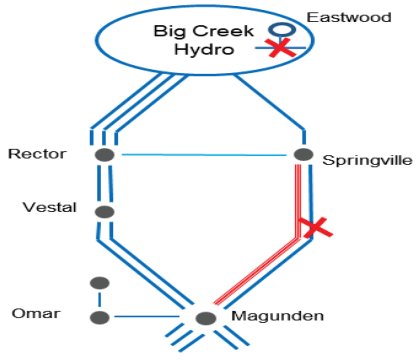
LCR need is satisfied by the need in the larger Vestal sub-area.

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 3.3-81 Vestal LCR Sub-area



Vestal LCR Sub-area Load and Resources

Table 3.3-69 provides the forecast load and resources in Vestal LCR sub-area in 2022. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-69 Vestal LCR Sub-area 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	N/A	Market, Net Seller	1069	1069
AAEE	N/A	MUNI	0	0
Behind the meter DG	N/A	QF	23	23
Net Load	**1230**	Solar	9	9
Transmission Losses	26	LTPP Preferred Resources (Battery)	50	50
Pumps	0	Existing 20-minute Demand Response	41	41
Load + Losses + Pumps	**1256**	**Total**	**1192**	**1192**

Vestal LCR Sub-area Hourly Profiles

Figure 3.3-82 illustrates the forecast 2022 annual load profile in the Vestal LCR sub-area with the Category P3 normal and emergengy load serving capabilities without local capacity resources.

Figure 3.3-83 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 3.3-82 Vestal LCR Sub-area 2022 Annual Load Profile with Estimated Transmission Only Load Serving Capability

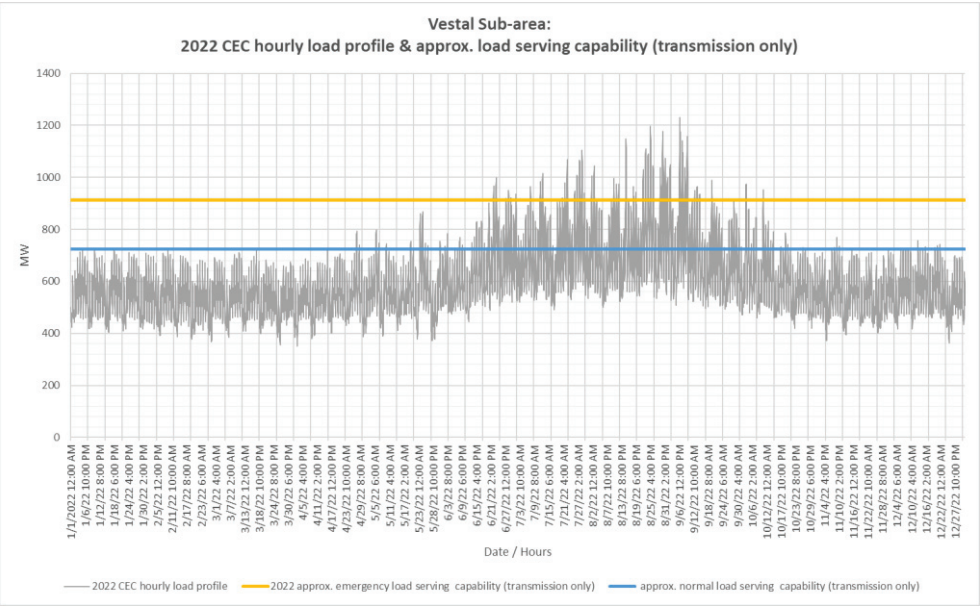
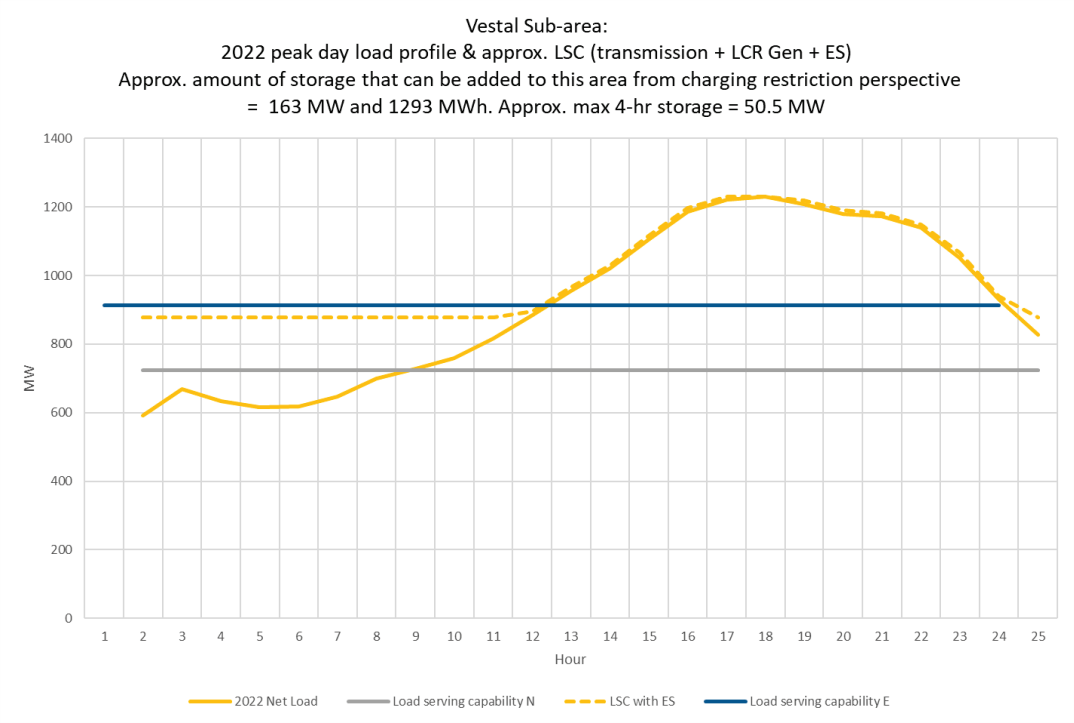


Figure 3.3-83 Vestal LCR Sub-area 2022 Load Shape and Estimated Maximum Energy Storage Capacity and Energy Based on Charging Capability Under Critical Contingency



Vestal LCR Sub-area Requirement

Table 3.3-70 identifies the sub-area LCR requirements. The LCR requirement for Category P3 contingency is 394 MW.

Table 3.3-70 Vestal LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First Limit	P3	Magunden-Springville #2 230 kV	Magunden-Springville #1 230 kV with Eastwood out of service	394
2022	Second limit[7]	P3	Magunden–Vestal #1 230 kV line	Magunden–Vestal #2 230 kV line with Eastwood out of service	324

Effectiveness factors:

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

[7] Due to the larger difference between normal and emergency ratings of the limiting facility associated with the second limit compared to that associated with the first limit, the second limit is the binding constraint for energy storage local capacity. Therefore, the energy storage local capacity analysis above is performed based on the second limit.

3.3.8.4 *Goleta Sub-area*

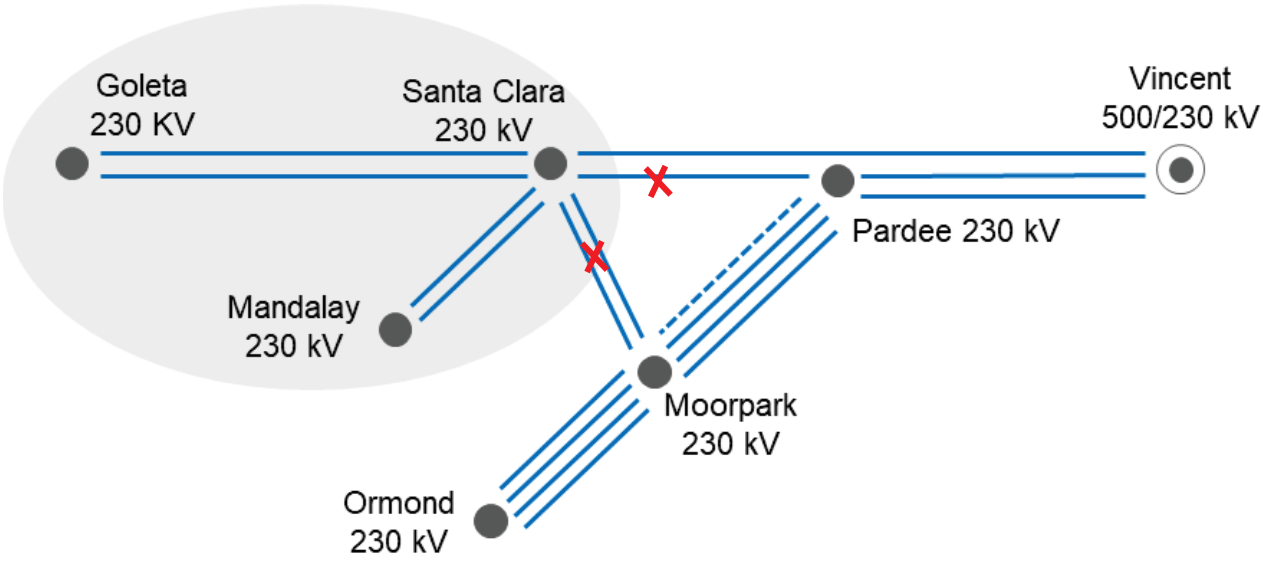
LCR need is satisfied by the need in the larger Santa Clara sub-area.

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 3.3-84 Santa Clara LCR Sub-area



Santa Clara LCR Sub-area Load and Resources

Table 3.3-71 provides the forecast load and resources in Santa Clara LCR sub-area in 2022. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-71 Santa Clara LCR Sub-area 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	N/A	Market, Net Seller, Solar	153	153
AAEE	N/A	MUNI	0	0
Behind the meter DG	N/A	QF	81	81
Net Load	**800**	LTPP Preferred Resources (Battery)	215	215
Transmission Losses	3	Existing Demand Response	7	7
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**803**	**Total**	**456**	**456**

Santa Clara LCR Sub-area Hourly Profiles

Figure 3.3-85 illustrates the forecast 2022 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 3.3-86 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 3.3-85 Santa Clara LCR Sub-area 2022 Annual Load Profile with Estimated Transmission Only Load Serving Capability

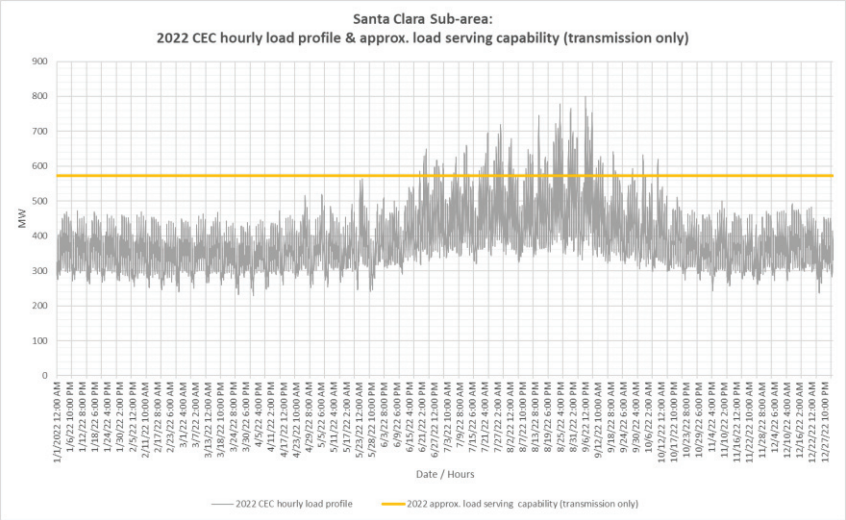
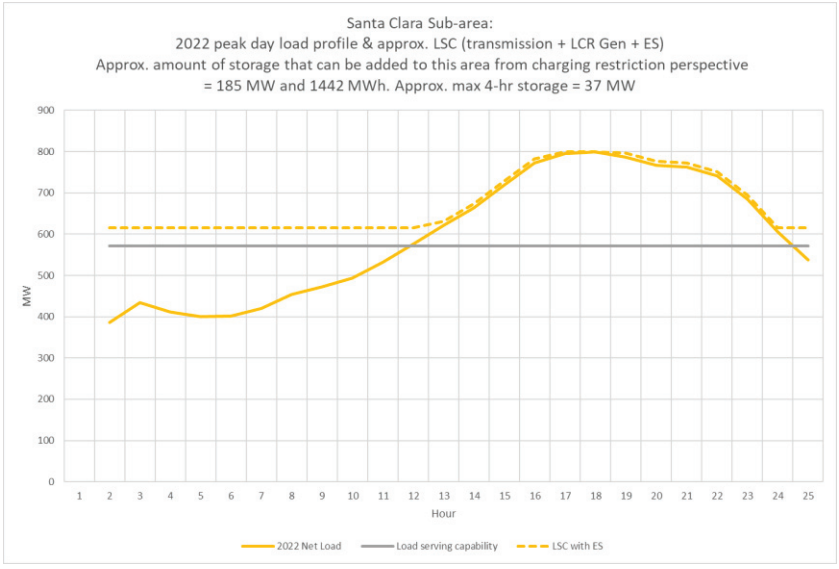


Figure 3.3-86 Santa Clara LCR Sub-area 2022 Load Shape and Estimated Maximum Energy Storage Capacity and Energy Based on Charging Capability Under Critical Contingency



Santa Clara LCR Sub-area Requirement

Table 3.3-72 identifies the sub-area requirements. The LCR requirement for Category P1 followed by P7 contingency is 193 MW.

Table 3.3-72 Santa Clara LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First Limit	P1 + P7	Voltage collapse	Pardee - Santa Clara 230 kV followed by Moorpark - Santa Clara #1 & #2 230 kV	193

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 *Moorpark Sub-area*

Moorpark sub-area will be eliminated when the Pardee-Moorpark No. 4 230 kV Transmission Project is completed.

3.3.8.7 *Big Creek/Ventura Overall*

Big Creek/Ventura LCR Sub-area Hourly Profiles

Figure 3.3-87 illustrates the forecast 2022 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 3.3-88 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 3.3-87 Big Creek/Ventura LCR area 2022 Annual Load Profile with Estimated Transmission Only Load Serving Capability

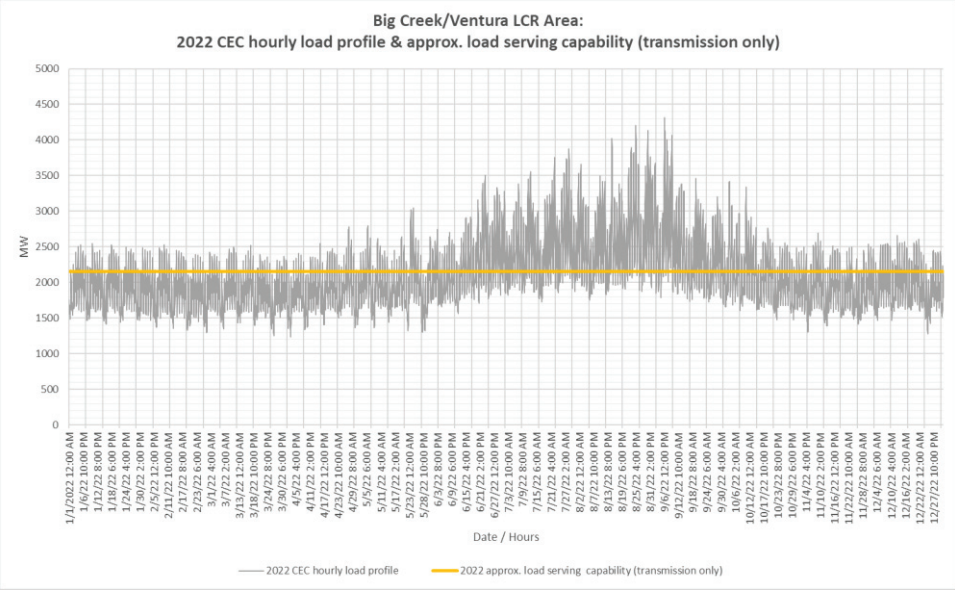
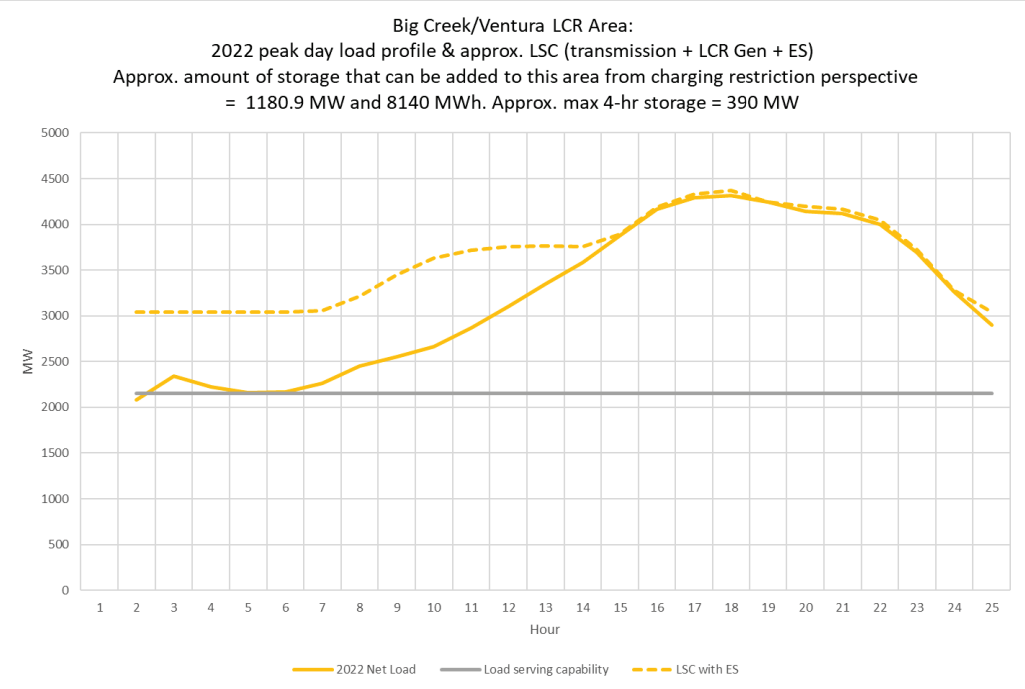


Figure 3.3-88 Big Creek/Ventura LCR area 2022 Load Shape and Estimated Maximum Energy Storage Capacity and Energy Based on Charging Capability Under Critical Contingency



Big Creek/Ventura LCR area Requirement

Table 3.3-73 identifies the area LCR requirements. The LCR requirement for Category P6 contingency is 2173 MW.

Table 3.3-73 Big Creek/Ventura LCR area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	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	2173

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 LCT study

Compared with the results for 2021, the load forecast is down by 57 MW and the LCR has decreased by 123 MW mainly due to the decrease in the load forecast.

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

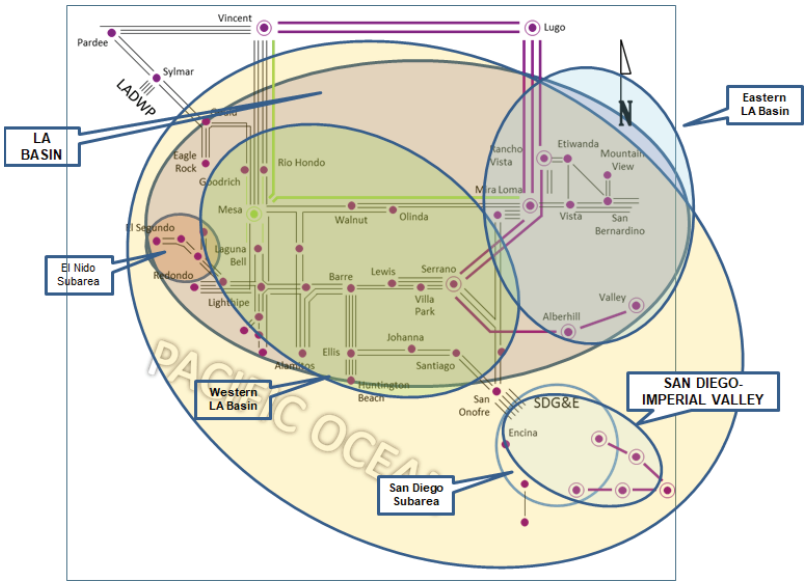
Mirage is in Coachella Valley is out

Mirage is in Ramon is out

Mirage is in Julian Hinds is out

LA Basin LCR Area Diagram

Figure 3.3-89 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 2022. The list of generators within the LCR area are provided in Attachment A and does not include new LTPP preferred resources or DR.

In year 2022 the estimated time of local area peak is 5:00 PM (PDT) based on the CEC hourly forecast for the 2020-2030 California Energy Demand Forecast Update.

At the local area peak time the estimated, ISO metered, solar output is 14%.

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

Table 3.3-74 LA Basin LCR Area 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	20233	Market, Net Seller, Wind, Battery	7169	7169
AAEE	-158	MUNI	1039	1039
Behind the meter DG	-1450	QF	121	121
Net Load	**18625**	LTPP Preferred Resources (BTM BESS, EE, DR, PV)	183	183
Transmission Losses	284	Existing Demand Response	251	251
Pumps	20	Solar	11	11
Load + Losses + Pumps	**18929**	**Total**	**8774**	**8774**

Approved new transmission and resource projects modeled:

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

Delaney-Colorado River 500 kV Line

West of Devers 230 kV Upgrades

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 3.3-89 above.

El Nido LCR Sub-area Load and Resources

Table 3.3-75 provides the forecast load and resources in El Nido LCR sub-area in 2022. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-75 El Nido LCR Sub-area 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	1011	Market, Net Seller	531	531
AAEE	-13	MUNI	0	0
Behind the meter DG	-31	QF	0	0
Net Load	**967**	LTPP Preferred Resources	23	23
Transmission Losses	2	Existing Demand Response	9	9
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**969**	**Total**	**563**	**563**

El Nido LCR Sub-area Hourly Profiles

Figure 3.3-90 illustrates the forecast 2022 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 3.3-91 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 El Nido LCR Sub-area 2022 Annual Load Profile with Estimated Transmission Load Serving Capability Only

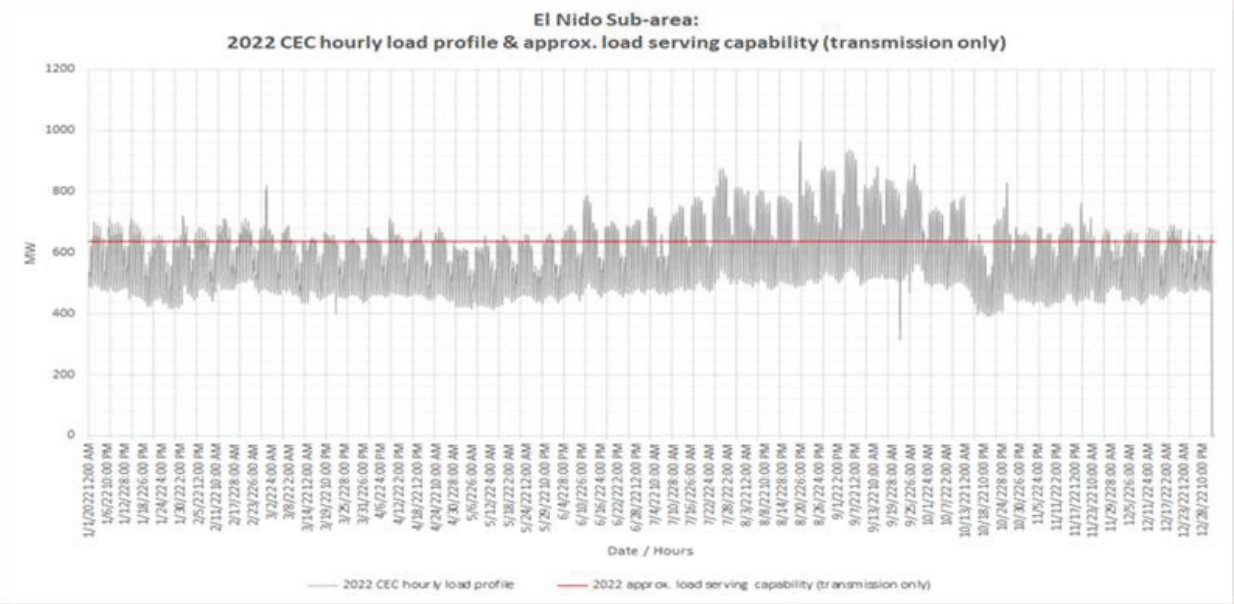
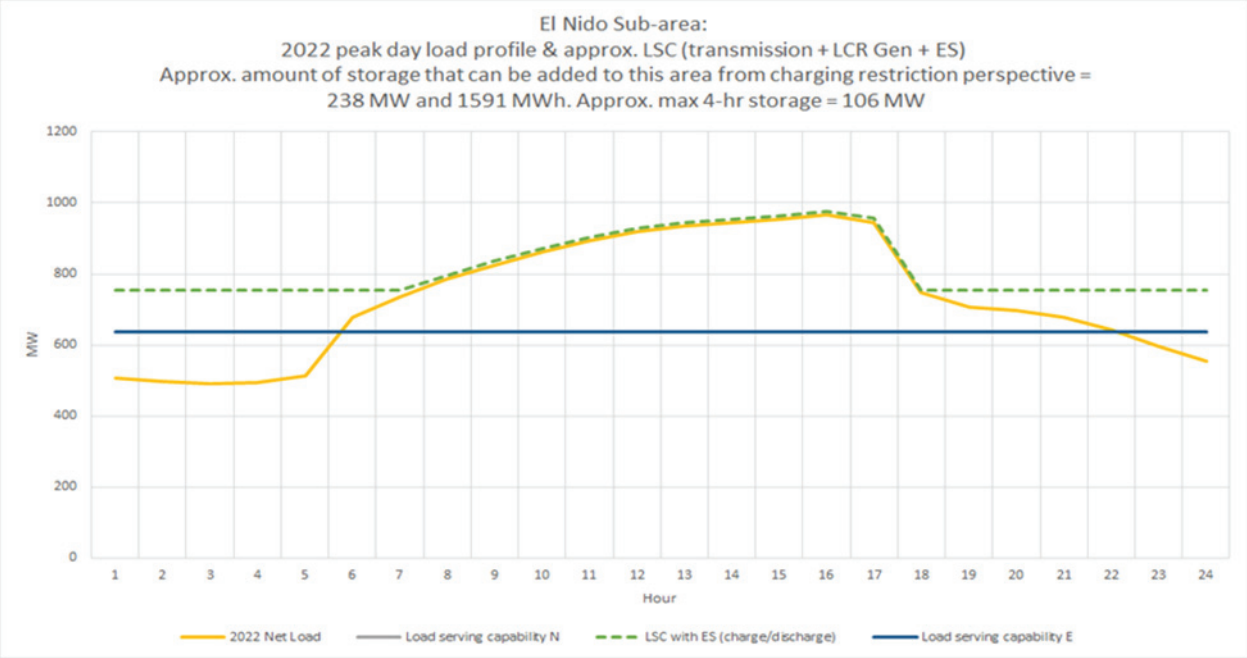


Figure 3.3-91 El Nido LCR Sub-area 2022 Load Shape and Estimated Maximum Energy Storage Capacity and Energy Based on Charging Capability Under Critical Contingency



El Nido LCR Sub-area Requirement

Table 3.3-76 identifies the sub-area requirements. The LCR requirement for Category P7 contingency is 356 MW. The LCR need decreases compared to the 2021 requirements due to lower demand forecast for the sub-area.

Table 3.3-76 El Nido LCR Sub-area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First Limit	P7	La Fresa - La Cienega 230 kV	La Fresa – El Nido #3 & 4 230 kV lines	356

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 3.3-89 above.

Western LA Basin LCR Sub-area Load and Resources

Table 3.3-77 provides the forecast load and resources in Western LA Basin LCR sub-area in 2021. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-77 Western LA Basin Sub-area 2021 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	11600	Market, Net Seller, Battery, Solar	4791	4791
AAEE	-135	MUNI	541	541
Behind the meter DG	-464	QF	55	55
Net Load	**11001**	LTPP Preferred Resources	183	183
Transmission Losses	165	Existing Demand Response	132	132
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**11166**	**Total**	**5702**	**5702**

Western LA Basin LCR Sub-area Hourly Profiles

Figure 3.3-92 illustrates the forecast 2022 annual load profile in the Western LA Basin LCR sub-area with the transmission load serving capability only.

Figure 3.3-93 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 3.3-92 Western LA Basin LCR Sub-area 2022 Annual Load Profile with Estimated Transmission Load Serving Capability Only

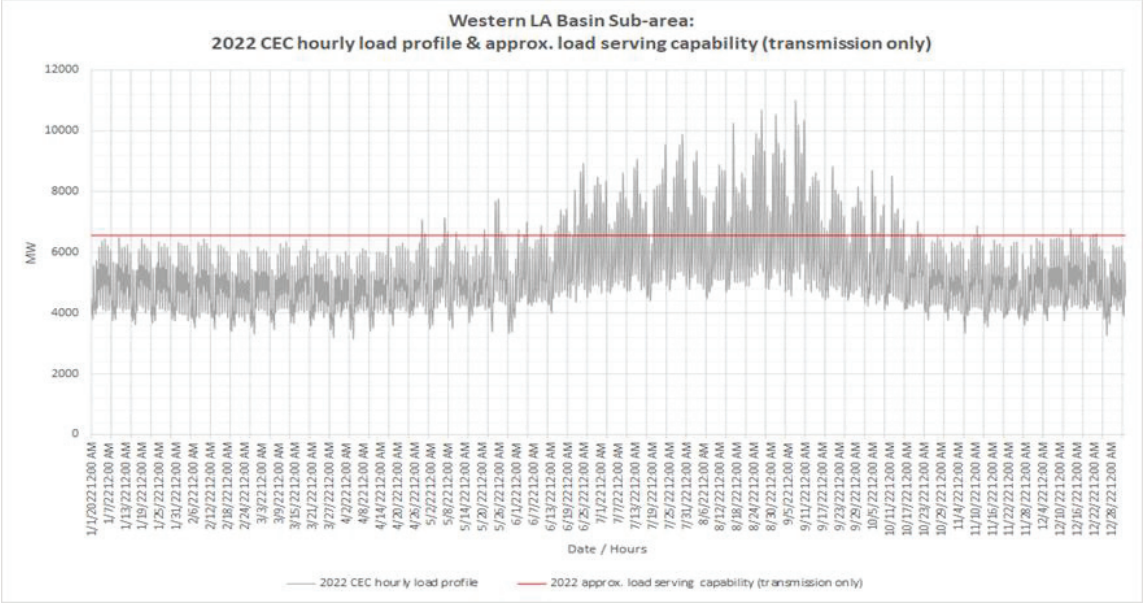
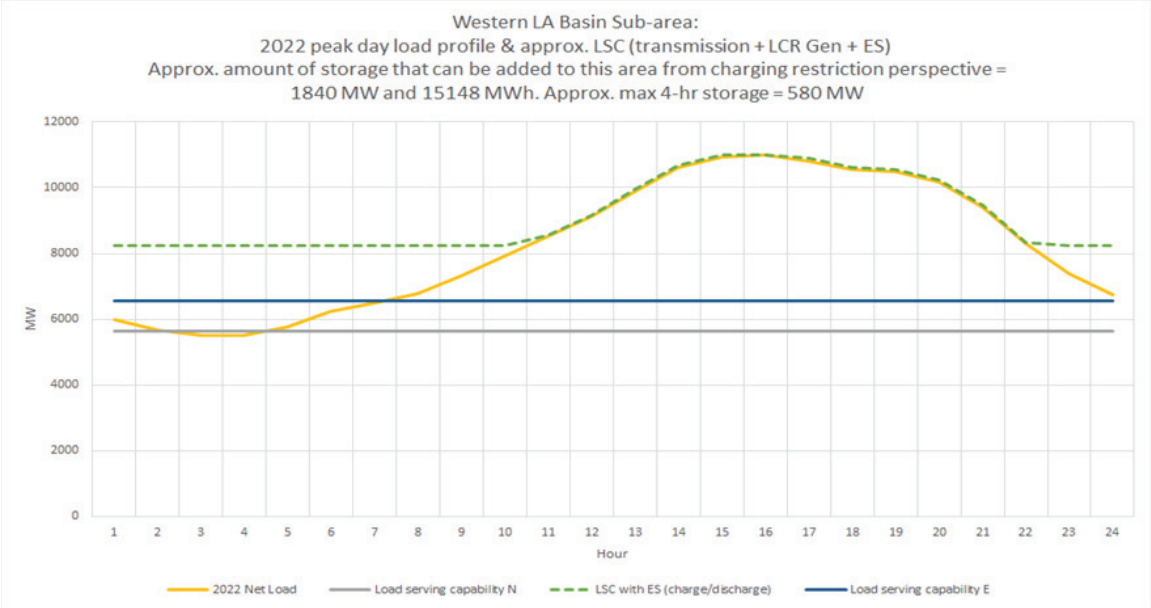


Figure 3.3-93 Western LA Basin LCR Sub-area 2022 Load Shape and Estimated Maximum Energy Storage Capacity and Energy Based on Charging Capability Under Critical Contingency



Western LA Basin LCR Sub-area Requirement

Table 3.3-78 identifies the Western LA Basin 2022 LCR sub-area requirements. The 2022 LCR need is higher than the 2021 LCR need due to the following reasons:

- The 230kV bus tie breaker at Mesa Substation is operated in the open position to mitigate short-cicuit duty concern for the final completed 500kV loop-in portion of the Mesa Loop-in Project;

- The CEC demand forecast is higher compared to the 2021 study.

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First Limit	P6	Mesa – Laguna Bell 230kV Line	Mesa – Redondo 230kV line, followed by Mesa – Lighthipe 230kV line, or vice versa	4443

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 2020 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 2020 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 2020 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 3.3-89 above.

Eastern LA Basin LCR Sub-area Load and Resources

Table 3.3-79 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 3.3-79 Eastern LA Basin Sub-area 2022 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	8178	Market, Net Seller, battery, Wind	2381	2381
AAEE	-61	MUNI	497	497
Behind the meter DG	-493	QF	66	66
Net Load	**7624**	LTPP Preferred Resources	0	0
Transmission Losses	114	Existing Demand Response	119	119
Pumps	20	Solar	9	9
Load + Losses + Pumps	**7758**	**Total**	**3072**	**3072**

Eastern LA Basin LCR Sub-area Hourly Profiles

Figure 3.3-94 **illustrates the forecast 2022 annual load profile in the Eastern LA Basin LCR sub-area with the transmission load serving capability only.**

Figure 3.3-95 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 3.3-94 Eastern LA Basin LCR Sub-area 2022 Annual Load Profile with Estimated Transmission Load Serving Capability Only

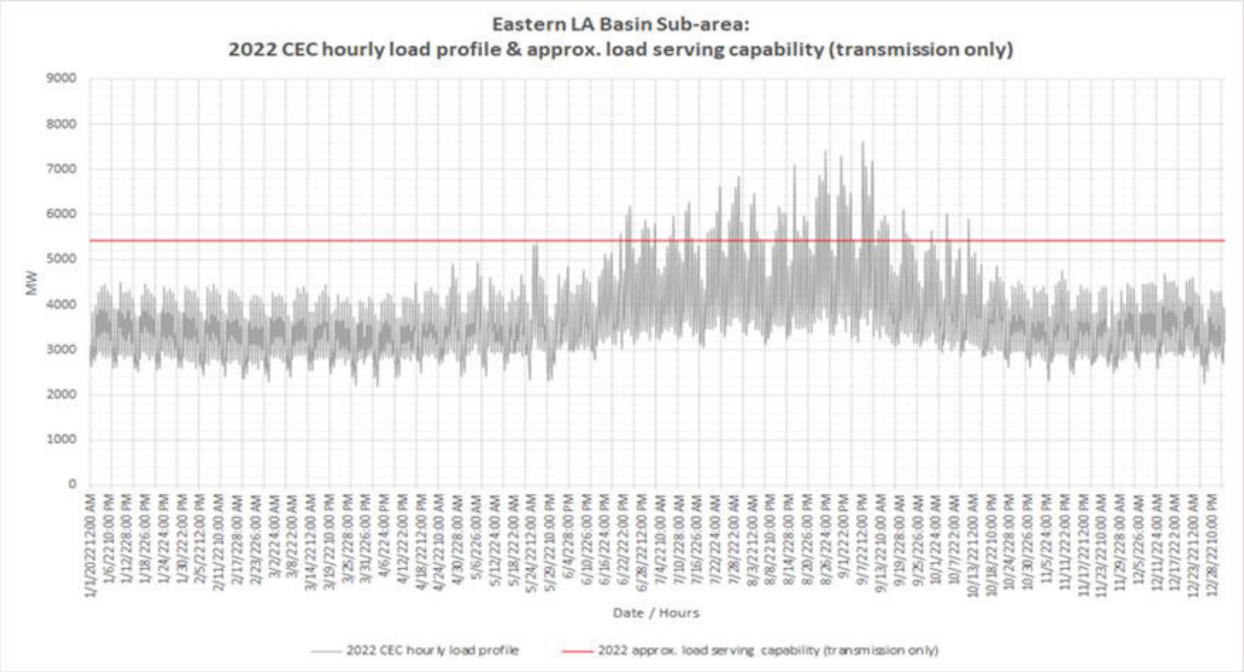
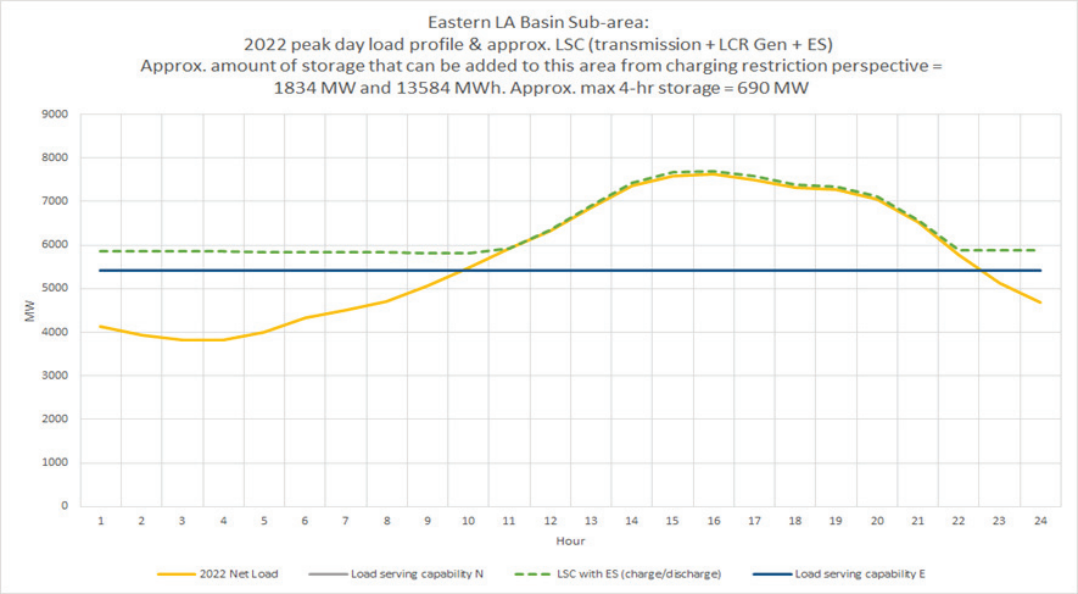


Figure 3.3-95 Eastern LA Basin LCR Sub-area 2022 Load Shape and Estimated Maximum Energy Storage Capacity and Energy Based on Charging Capability Under Critical Contingency



Eastern LA Basin LCR Sub-area Requirement

Table 3.3-80 identifies the sub-area LCR requirements. The LCR need for the Eastern LA Basin is lower than the 2021 LCR need due to implementation of the Mesa Loop-in Project that brings additional source of power into the Western LA Basin sub-area. This helps reduce power flows from eastern to western LA Basin, thus reducing the LCR need in the eastern LA Basin.

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First Limit	P1+P7	Post-transient voltage stability	Serrano - Valley 500 kV line, followed by Devers – Red Bluff 500 kV #1 and 2 lines	2203

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 3.3-96 illustrates the forecast 2022 annual load profile in the LA Basin LCR sub-area with the transmission load serving capability only.

Figure 3.3-97 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 3.3-96 LA Basin LCR Area 2022 Annual Load Profile with Estimated Transmission Load Serving Capability Only

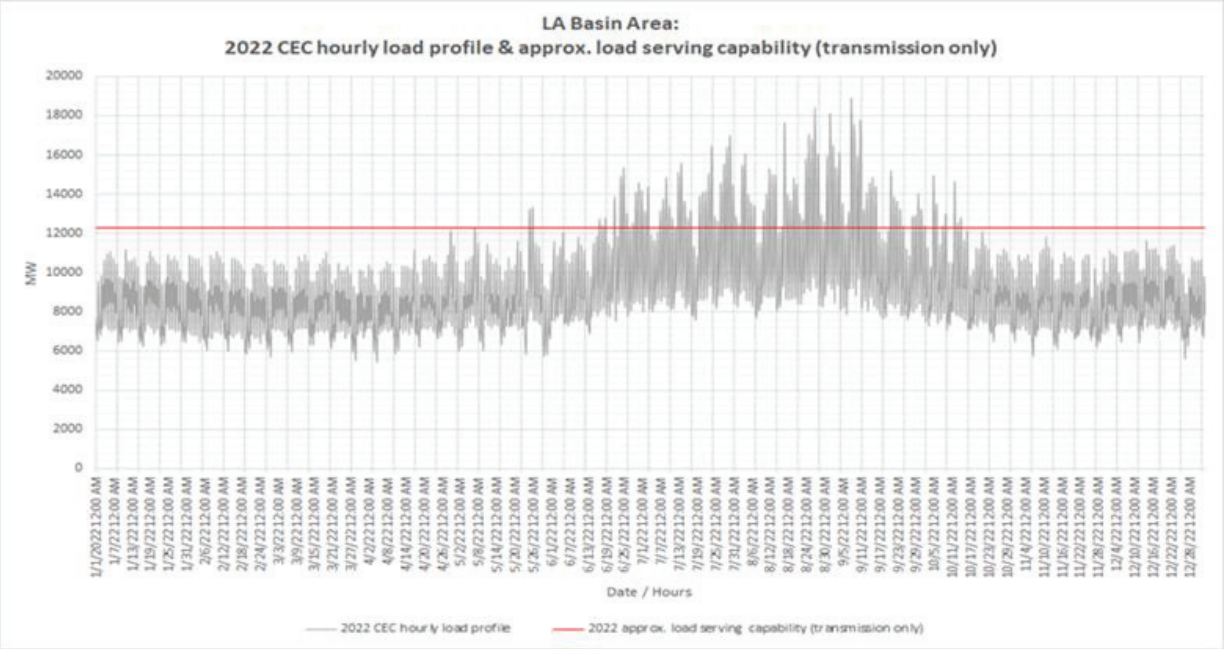
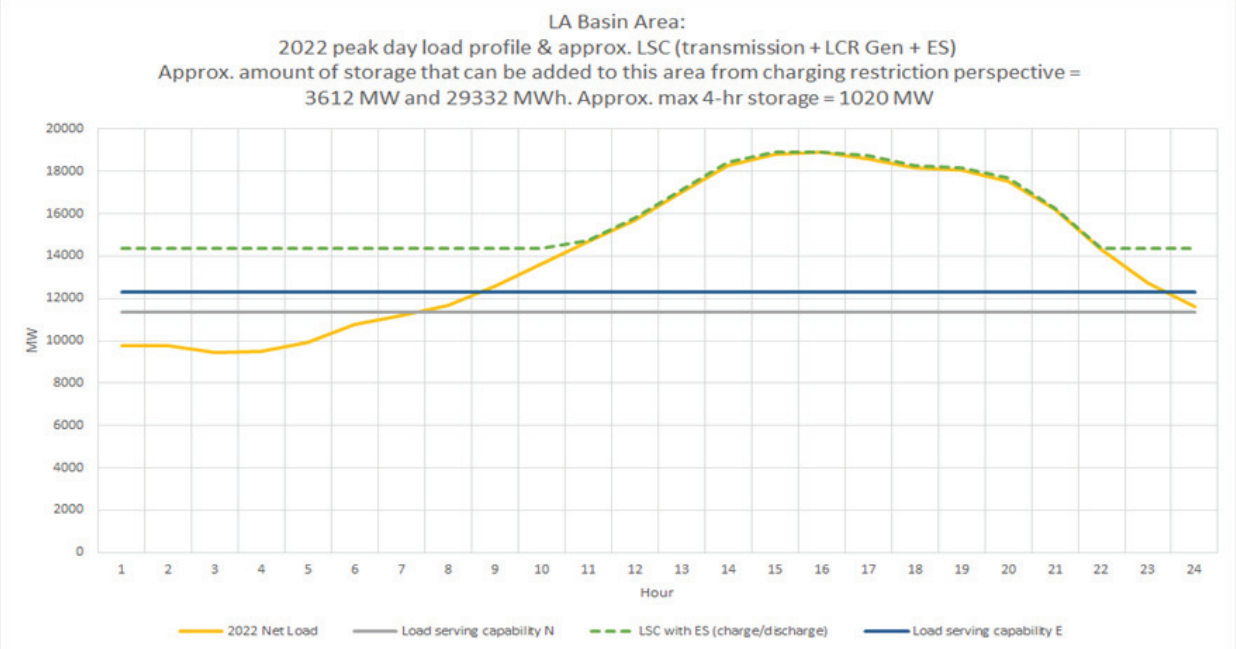


Figure 3.3-97 LA Basin LCR Area 2022 Load Shape and Estimated Maximum Energy Storage Capacity and Energy Based on Charging Capability Under Critical Contingency



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 3.3-81 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	238	1591	106
Western LA Basin sub-area	1840	15148	580
Eastern LA Basin sub-area	1834	13584	690
Overall LA Basin area	3612	29332	1020

LA Basin LCR area Requirement

Table 3.3-82 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 3.3-82 LA Basin LCR area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First Limit	Sum of Western and Eastern LA Basin LCR needs			6646
2022	Second Limit	P3	Imperial Valley – El Centro 230 kV Line (S-Line)	G-1 of TDM generation, system readjustment, followed by Imperial Valley-North Gila 500 kV line (N-1)	6198

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 LCT study

Compared with 2021, the demand modeled for the LA Basin is 1 MW lower and the LCR needs have increased by 476 MW. The increase in LCR need for the overall LA Basin is driven by the increased LCR need in the Western LA Basin caused by opening of the bus tie circuit breakers between the North and South bus sections at Mesa Substation to mitigate high short-circuit duty concern with the completion of the 500 kV loop-in project.

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 – 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

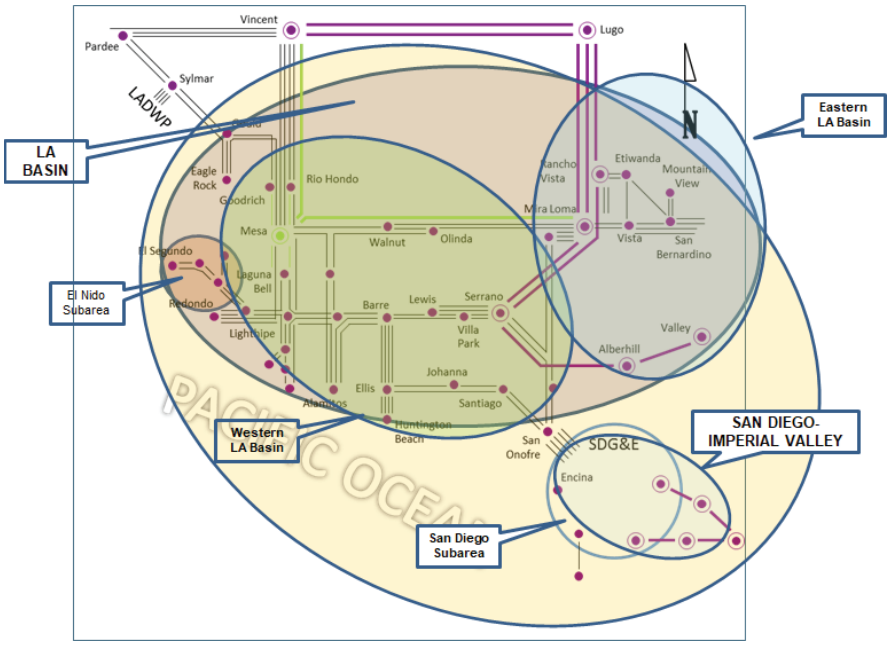
San Onofre is out Capistrano is in

Imperial Valley is in El Centro is out

Imperial Valley is in La Rosita is out

San Diego-Imperial Valley LCR Area Diagram

Figure 3.3-98 San Diego-Imperial Valley LCR Area



San Diego-Imperial Valley LCR Area Load and Resources

Table 3.3-83 provides the forecast load and resources in the San Diego-Imperial Valley LCR Area in 2022. The list of generators within the LCR area are provided in Attachment A.

In the year 2022 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 3.3-83 San Diego-Imperial Valley LCR Area 2022 Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	4514	Market, Net Seller, Battery, Wind	3978	3978
AAEE	-28	Solar (production is “0” at 20:00 hr.)	369	0
Behind the meter DG	0	QF	8	8
Net Load	**4486**	LTPP Preferred Resources	0	0
Transmission Losses	94	Existing Demand Response	7	7
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**4580**	**Total**	**4362**	**3993**

Approved transmission projects modeled:

Ocean Ranch 69 kV substation

Miramar - Mesa Rim 69 kV system reconfiguration

Upgrade Bernardo - Rancho Carmel 69 kV line

San Ysidro 69 kV reconductoring

TL13834 Trabuco-Capistrano 138 kV line upgrade

Second San Marcos – Escondido 69 kV line

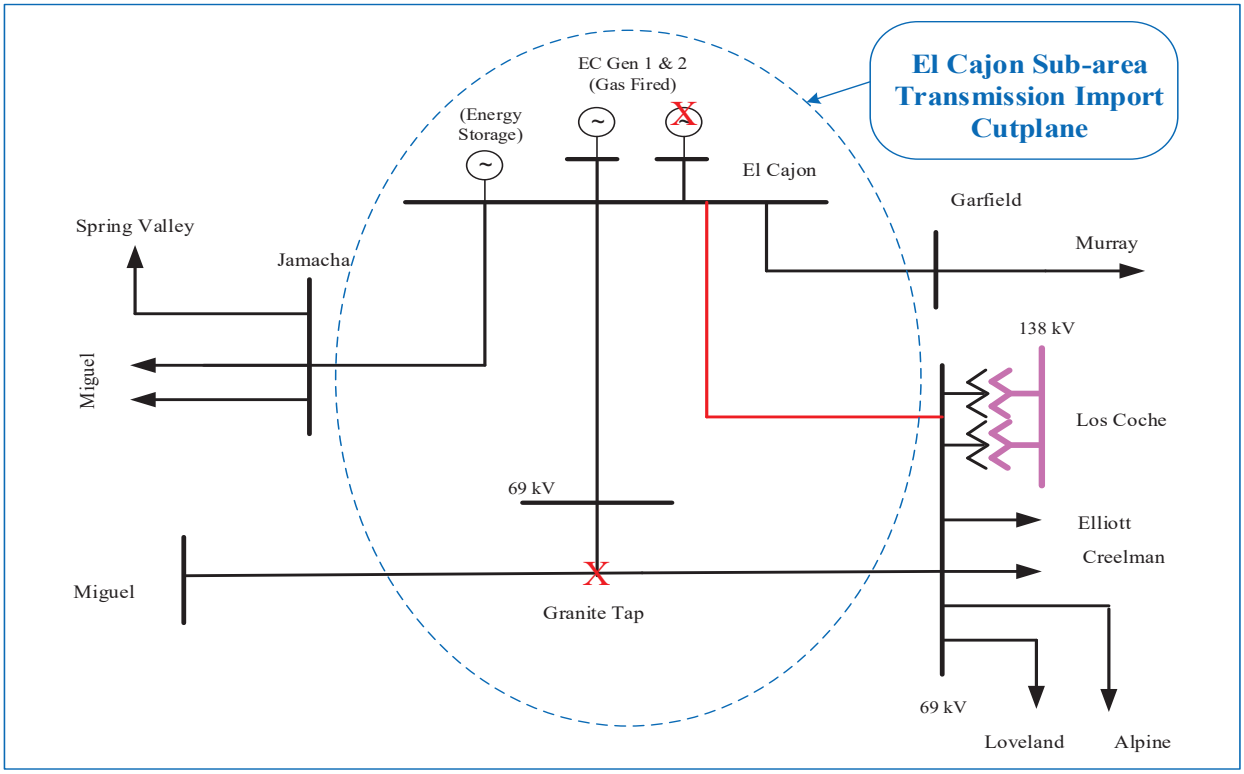
By-passing 500 kV series capacitor banks on Southwest Powerlink and Sunrise Powerlink

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 3.3-99 El Cajon LCR Sub-area



El Cajon LCR Sub-area Load and Resources

Table 3.3-84 provides the forecast load and resources in El Cajon LCR sub-area in 2022. The list of generators within the LCR sub-area are provided in Attachment A.

Table 3.3-84 El Cajon LCR Sub-area 2022 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	154	Market, Net Seller, Battery	101	101
AAEE	-1	MUNI	0	0
Behind the meter DG	0	QF	0	0
Net Load	**153**	LTPP Preferred Resources	0	0
Transmission Losses	1	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**154**	**Total**	**101**	**101**

El Cajon LCR Sub-area Hourly Profiles

Figure 3.3-100 illustrates the forecast 2022 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 3.3-101 provides the 2022 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 3.3-100 El Cajon LCR Sub-area 2022 Annual Load Forecast Profiles

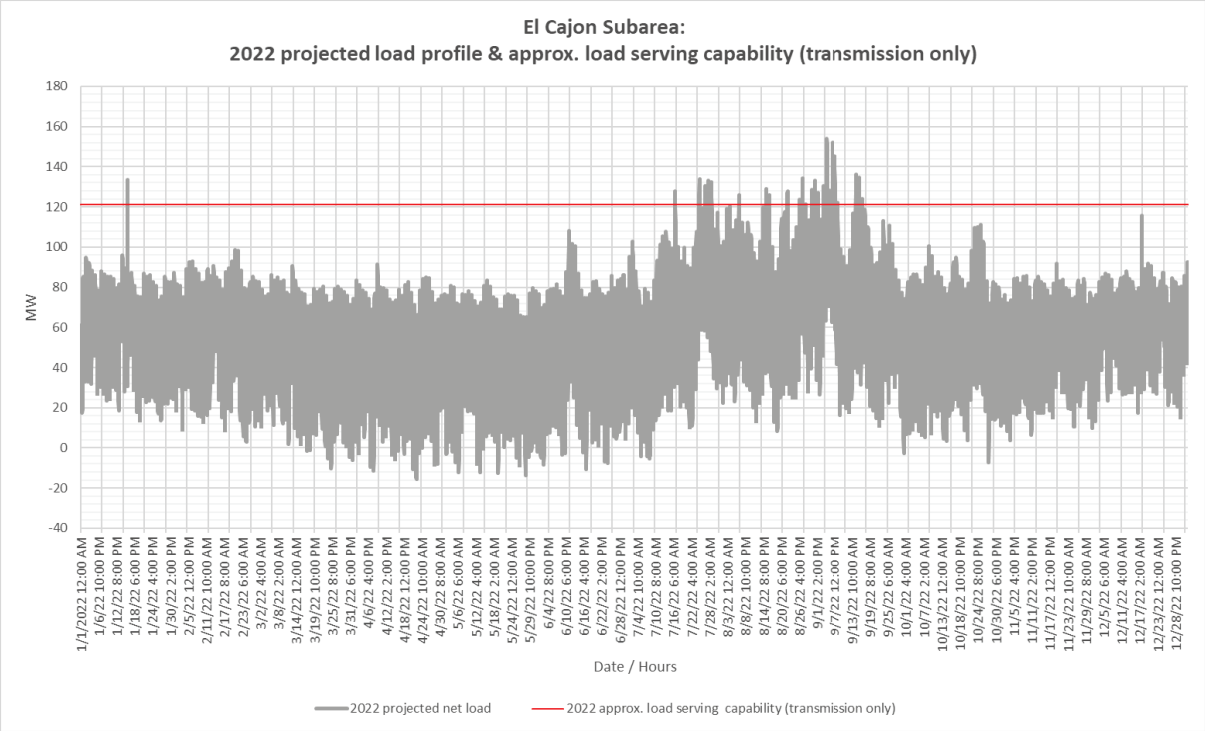
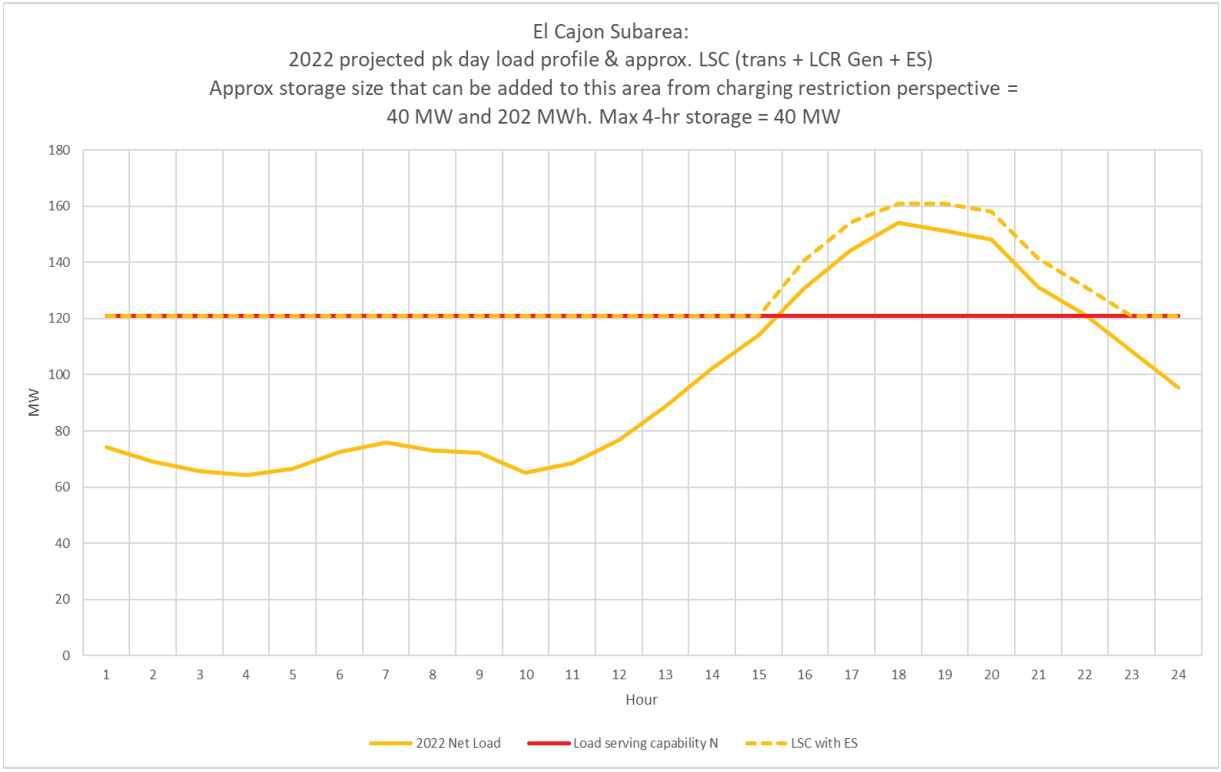


Figure 3.3-101 El Cajon LCR Sub-area 2022 Peak Day Forecast Profiles



El Cajon LCR Sub-area Requirement

Table 3.3-85 identifies the sub-area 2022 LCR requirements. The Category P3 (Single Contingency) LCR requirement is 88 MW.

Table 3.3-85 El Cajon LCR Sub-area Requirements

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	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	88

Effectiveness factors:

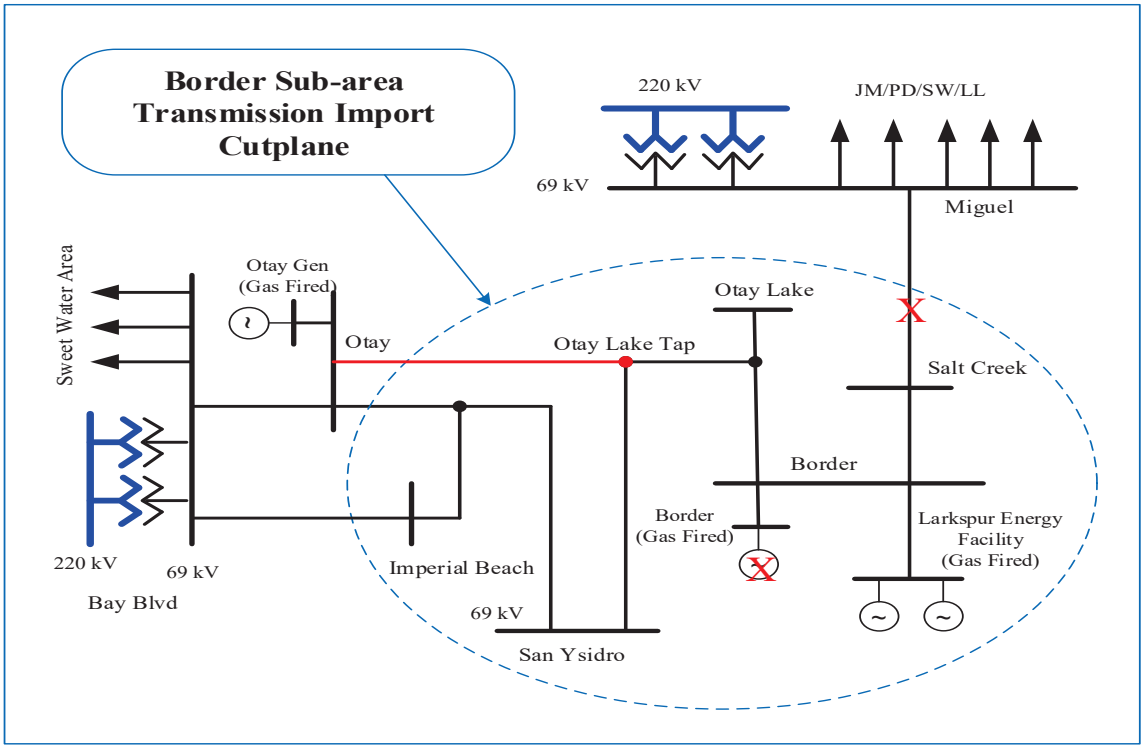
All units within the El Cajon sub-area have the same effectiveness factor.

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 3.3-102 Border LCR Sub-area



Border LCR Sub-area Load and Resources

Table 3.3-86 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 3.3-86 Border Sub-area Forecast Load and Resources

Load (MW)		**Generation (MW)**	**Aug NQC**	**At Peak**
Gross Load	143	Market, Net Seller, Battery	143	143
AAEE	-1	MUNI	0	0
Behind the meter DG	0	QF	0	0
Net Load	**142**	LTPP Preferred Resources	0	0
Transmission Losses	1	Existing 20-minute Demand Response	0	0
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**143**	**Total**	**143**	**143**

Border LCR Sub-area Hourly Profiles

Figure 3.3-103 illustrates the 2022 annual load forecast profile in the Border LCR sub-area and the Category P1 transmission load serving capability without gas generation.

Figure 3.3-104 illustrates the 2022 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 3.3-103 Borden LCR Sub-area 2022 Annual Day Forecast Profiles

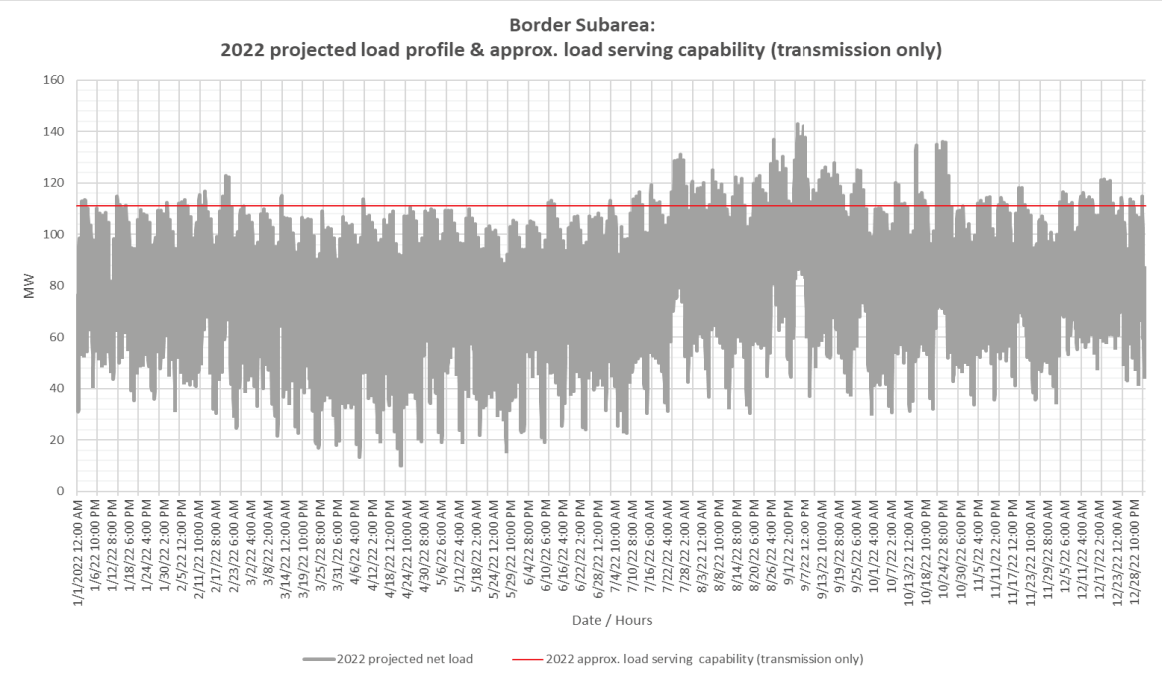
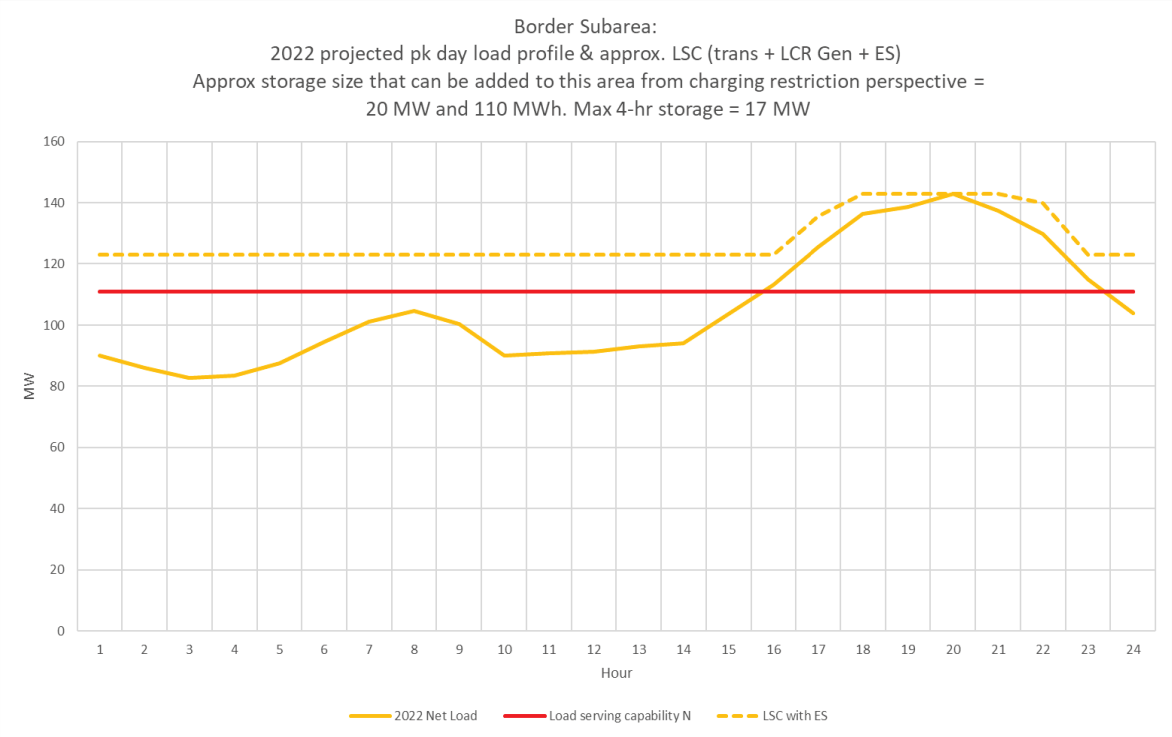


Figure 3.3-104 Border LCR Sub-area 2022 Peak Day Forecast Profiles



Border LCR sub-area requirement

Table 3.3-87 identifies the sub-area requirements. The LCR requirement for Category P3 contingency is 68 MW.

Table 3.3-87 Border LCR Sub-area Requirements

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	P3	Otay – Otay Lake Tap 69 kV (TL649)	Border unit out of service followed by the outage of Miguel-Salt Creek 69 kV #1 (TL6910)	68

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 3.3-98 above.

San Diego LCR Sub-area Load and Resources

Table 3.3-88 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 3.3-88 San Diego Sub-area 2022 Forecast Load and Resources

Load (MW)		Generation (MW)	Aug NQC	At Peak
Gross Load	4514	Market, Net Seller, Battery, Wind	2940	2940
AAEE	-28	Solar	15	0
Behind the meter DG	0	QF	8	8
Net Load	**4486**	LTPP Preferred Resources	0	0
Transmission Losses	94	Existing Demand Response	7	7
Pumps	0	Mothballed	0	0
Load + Losses + Pumps	**4580**	**Total**	**2970**	**2955**

San Diego LCR Sub-area Hourly Profiles

Figure 3.3-105 illustrates the forecast 2022 annual load profile in the San Diego LCR sub-area with the transmission load serving capability only.

Figure 3.3-106 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 3.3-105 San Diego LCR Sub-area 2022 Annual Load Profile with Estimated Transmission Load Serving Capability Only

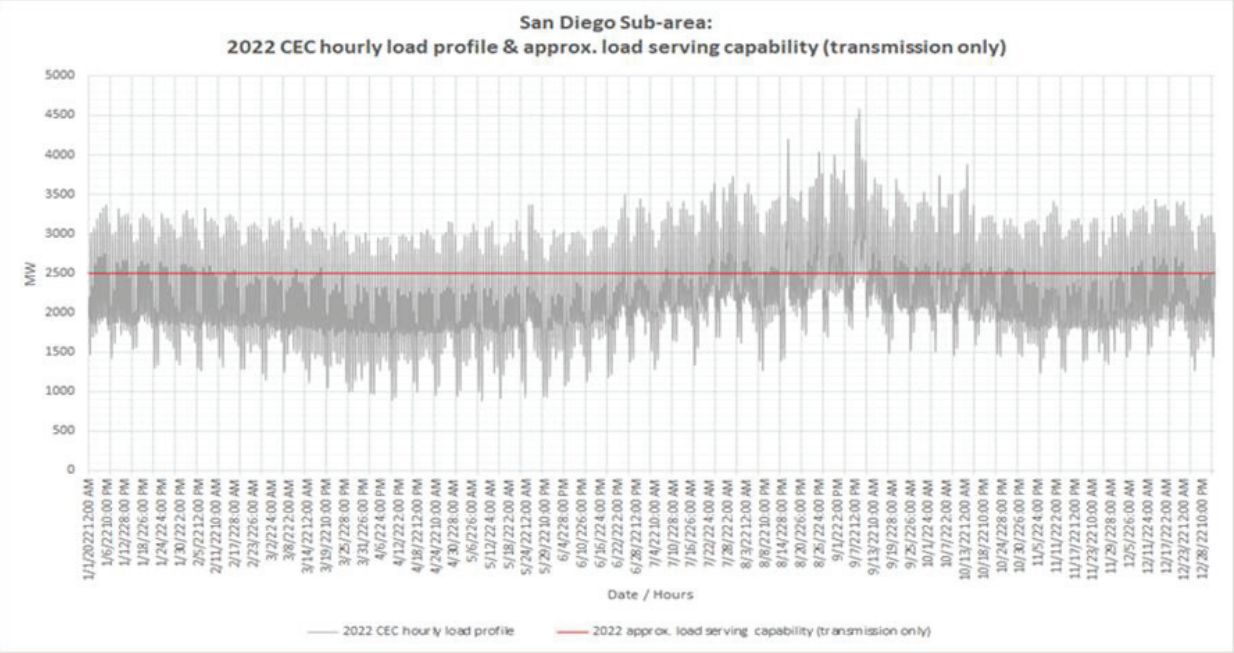
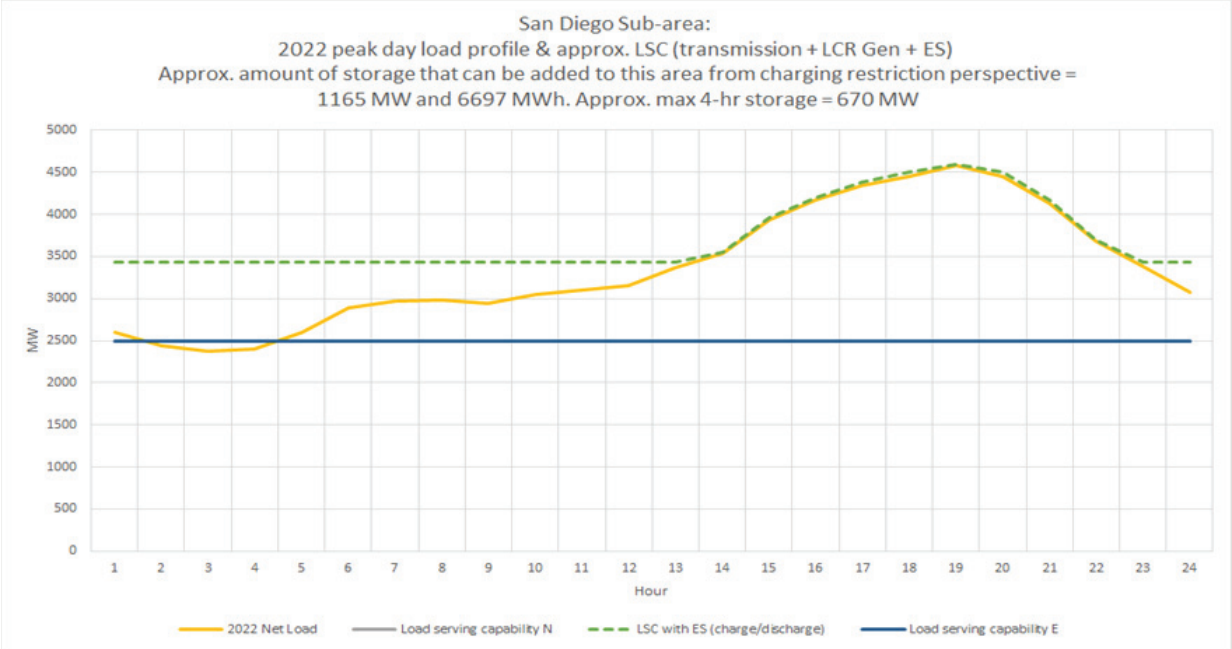


Figure 3.3-106 San Diego LCR Sub-area 2022 Load Shape and Estimated Maximum Energy Storage Capacity and Energy Based on Charging Capability Under Critical Contingency



San Diego LCR Sub-area Requirement

Table 3.3-89 identifies the sub-area LCR requirements. The Category P6 contingency LCR requirement is 2097 MW. The LCR need is lower due to lower demand forecast from the CEC for the San Diego area. Implementation of the Mesa Loop-in Project provides additional source of

power into the western LA Basin sub-area. This also helps provide additional southbound flow into San Diego sub-area as well.

Table 3.3-89 San Diego Sub-area LCR Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First Limit	P6	Remaining Sycamore-Suncrest 230 kV	ECO-Miguel 500 kV line, system readjustment, followed by one of the Sycamore-Suncrest 230 kV lines	2097

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 generating resources.

Figure 3.3-107 illustrates the forecast 2022 annual load profile in the San Diego-Imperial LCR area with the transmission load serving capability only.

Figure 3.3-108 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 3.3-90 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 3.3-107 San Diego-Imperial Valley LCR Area 2022 Annual Load Profile with Estimated Transmission Load Serving Capability Only

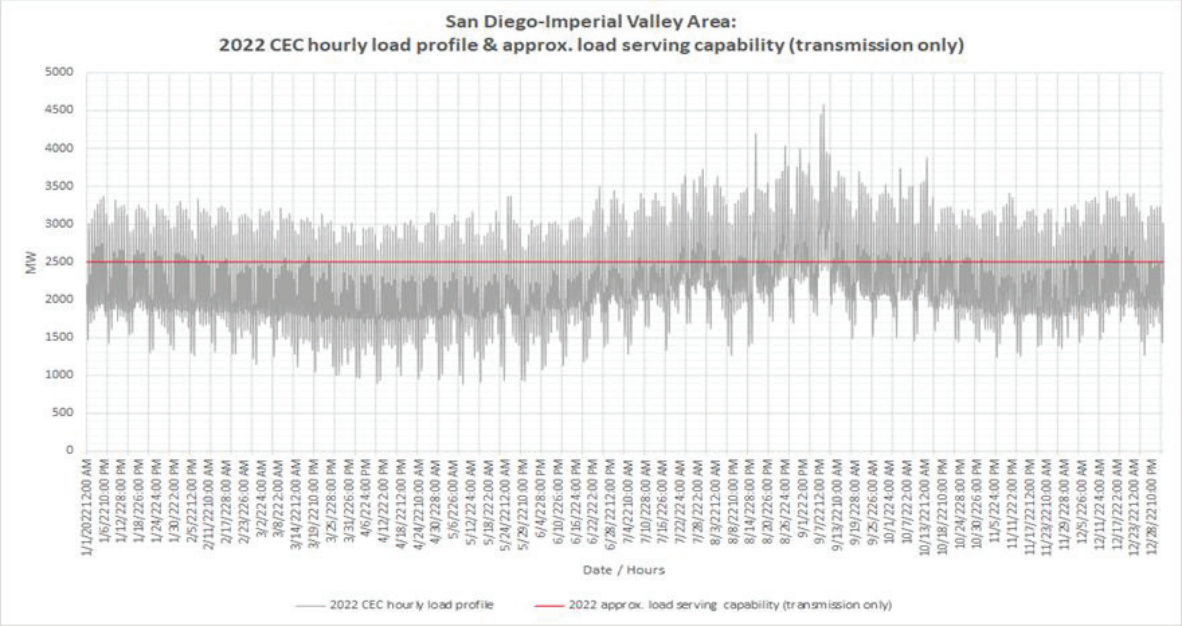
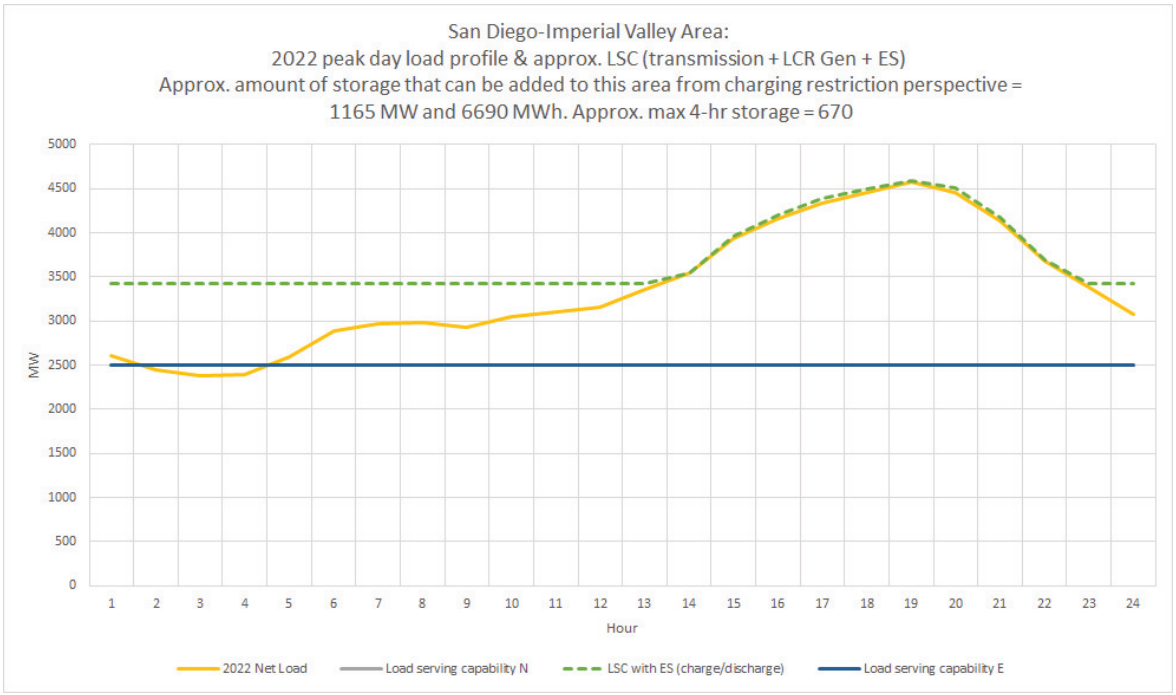


Figure 3.3-108 San Diego-Imperial Valley LCR Area 2022 Load Shape and Estimated Maximum Energy Storage Capacity and Energy Based on Charging Capability Under Critical Contingency



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 3.3-90 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	40	202	40
Border sub-area	20	110	17
San Diego sub-area	1165	6697	670
Overall San Diego-Imperial Valley Area	1165	6690	670

San Diego-Imperial Valley LCR area Requirement

Table 3.3-91 identifies the area LCR requirements. The LCR requirement for Category P3 contingency is 3993 MW.

Table 3.3-91 San Diego-Imperial Valley LCR area Requirements

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2022	First Limit	P3	Imperial Valley – El Centro 230 kV Line (S-Line)	TDM generation, system readjustment, followed by Imperial Valley-North Gila 500 kV	3993

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 2020 LCT Study

Compared with the 2021 LCT Study results, the demand forecast is higher by 57 MW. The overall LCR needs for the San Diego-Imperial Valley increases by 105 MW due to higher demand forecast as well as higher Maximum Import Capability (MIC) modeled between IID and ISO.8

[8] http://www.caiso.com/Documents/AdvisoryestimatesoffutureResourceAdequacyImportCapabilityforyears2021-2030.pdf

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 2022 to 2026 is estimated at 4.25 MW/year.

There is no new transmission project that directly affects the LCR change from 2022 to 2026.

There is no new resource that directly affects the LCR change from 2022 to 2026.

There is no projected change in resource contractual status that directly affects the LCR change from 2022 to 2026.

There is no resource projected to retire that directly affects the LCR change from 2022 to 2026.

The total increase for each intermediate year depends only on the load forecast and the study results for year 2022 and it is estimated at about 4.25 MW/year for Category P6.

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2023	First Limit	P6	Humboldt-Trinity 115 kV	Cottonwood-Bridgeville 115 kV & Humboldt - Humboldt Bay 115 kV	115
2024	First Limit	P6	Humboldt-Trinity 115 kV	Cottonwood-Bridgeville 115 kV & Humboldt - Humboldt Bay 115 kV	120

3.4.19.2 *North Coast/ North Bay Area*

The net peak load growth from 2022 to 2026 is estimated at about -5 MW/year.

There is no new transmission project that directly affects the LCR change from 2022 to 2026.

There is no new resource that directly affects the LCR change from 2022 to 2026.

There is no projected change in resource contractual status that directly affects the LCR change from 2022 to 2026.

There is no resource projected to retire that directly affects the LCR change from 2022 to 2026.

The total increase for each intermediate year depends on load growth and the study results for both year 2022 and 2026 and it is estimated at about 31.75 MW/year for Category P3. However both years are already deficient and therefore 2023 and 2024 will also be deficient.

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2023	First Limit	P3	Tulucay - Vaca Dixon 230 kV Line	Vaca Dixon - Lakeville 230 kV with DEC out of service	834
2024	First Limit	P3	Tulucay - Vaca Dixon 230 kV Line	Vaca Dixon - Lakeville 230 kV with DEC out of service	834

3.4.19.3 *Sierra Area*

The net peak load growth from 2022 to 2026 is estimated at 65.5 MW/year.

There are 5 new transmission projects that directly affects the LCR change from 2022 to 2026.

- Rio Oso 230/115 kV transformer upgrade (July 2022)

- Rio Oso Area 230 kV Voltage Support (Sept 2022)

Both projects inpact years 2023 and 2024, 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 2022 to 2026.

There is no projected change in resource contractual status that directly affects the LCR change from 2022 to 2026.

There is no resource projected to retire that directly affects the LCR change from 2022 to 2026.

The total requirement for both year 2023 and 2024 depend on the result for year 2022 only plus an estimated increase of 117.5 MW/year for Category P3.

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2023	First limit	P6	Table Mountain – Pease 60 kV	Table Mountain – Palermo 230 kV Table Mountain – Rio Oso 230 kV	1338
2024	First limit	P6	Table Mountain – Pease 60 kV	Table Mountain – Palermo 230 kV Table Mountain – Rio Oso 230 kV	1455

3.4.19.4 *Stockton Area*

The net peak load growth from 2022 to 2026 is estimated at 24.5 MW/year (1.5 MW/year in Lockeford and 23 MW/year in Tesla-Bellota).

There are no new transmission project that directly affects the LCR change from 2022 to 2026.

There is no projected change in resource contractual status that directly affects the LCR change from 2022 to 2026.

There is no resource projected to retire that directly affects the LCR change from 2022 to 2026.

The total increase for each intermediate year depends only on the available resources in the Tesla-Bellota sub-area , since this sub-area is deficient in both years. Base on the current load forecast the Lockeford sub-area will only see a need, including a deficiency, for years 2025 and beyond.

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2023	First Limit	N/A	Stockton Overall		562
2024	First Limit	N/A	Stockton Overall		562

3.4.19.5 *Bay Area*

The net peak load growth from 2022 to 2026 is estimated at 201.25 MW/year.

There are 5 new transmission projects that directly affect the LCR change from 2022 to 2026.

- Oakland Clean Energy Initiative Project (Aug. 2022)
- Metcalf-Piercy & Swift and Newark-Dixon Landing 115 kV Upgrade (Aug. 2022)
- Morgan Hill Area Reinforcement (revised scope) (Dec. 2022)

All projects impact both years. For both years the TPP project impact is minimal to the Bay Area overall requirement.

There are 3 new resources that directly affect the LCR change from 2022 to 2026. About 15 MW of preferred resources (Battery), will be available starting year 2023. These new resources do not change the LCR needs in the Bay Area overall in any significant way.

There is no projected change in resource contractual status that directly affects the LCR change from 2022 to 2026.

There are two resources projected to retire that directly affects the LCR change from 2022 to 2026. The retirement of the last two Oakland resources in 2023 only does not change the LCR needs in the Bay Area overall in any significant way.

The total decrease for each intermediate year depends on the load increase and the study results between years 2022 and 2026 and it is estimated at about 187 MW/year for Category P6.

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2023	First limit	P6	Metcalf 500/230 kV #13 transformer	Metcalf 500/230 kV #11 & #12 transformers	7418
2024	First limit	P6	Metcalf 500/230 kV #13 transformer	Metcalf 500/230 kV #11 & #12 transformers	7605

3.4.19.6 *Fresno Area*

The net peak load growth from 2022 to 2026 is estimated at 34 MW/year.

There are 4 new transmission projects that directly affect the LCR change from 2022 to 2026.

- Reedley 70 kV Reinforcement Projects (Dec 2021)
- Wilson-Oro Loma 115 kV Line Reconductoring (Dec 2025)
- Wilson 115 kV Area Reinforcement (May 2023)

- Bellota-Warnerville 230 kV Line Reconductoring (Mar 2024)

The first two project impact the 2023 and 2024 LCR needs. 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 2022 to 2026.

There is no projected change in resource contractual status that directly affects the LCR change from 2022 to 2026.

There is no resource projected to retire that directly affects the LCR change from 2022 to 2026.

The total increase for each intermediate year depends on load growth and the study results between years 2022 and 2026 and it is estimated at about 81.75 MW/year for Category P6.

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2023	First limit	P6	GWF-Contandida 115 kV Line	Panoche-Helm 230 kV Line and Gates-McCall 230 kV line	2069
2024	First limit	P6	GWF-Contandida 115 kV Line	Panoche-Helm 230 kV Line and Gates-McCall 230 kV line	2151

3.4.19.7 *Kern Area*

The net peak load growth from 2022 to 2026 is estimated at 9.5 MW/year.

There are no new transmission projects that directly affect the LCR change from 2022 to 2026.

There are no new resources that directly affect the LCR change from 2022 to 2026.

There is no projected change in resource contractual status that directly affects the LCR change from 2022 to 2026.

There is no resource projected to retire that directly affects the LCR change from 2022 to 2026.

The total decrease for each intermediate year depends on the load increase and the study results regarding South Kern PP sub-area between years 2022 and 2026 and it is estimated at about 19 MW/year for Category P6.

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2023	N/A	P6	Aggregate of Sub-areas.		375
2024	N/A	P6	Aggregate of Sub-areas.		394

3.4.19.8 *Big Creek/Ventura Area*

The net peak load growth from 2022 to 2026 is estimated at 15.75 MW/year.

There are one new transmission project that directly affect the LCR change from 2022 to 2026.

The Sylmar-Pardee 230 kV Rating Increase Project influences both year 2023 and 2024 as a step down decrease of LCR needs.

There are no new resources that directly affect the LCR change from 2022 to 2026.

There is no projected change in resource contractual status that directly affects the LCR change from 2022 to 2026.

There are 2 resources projected to retire that directly affects the LCR change from 2022 to 2026. This change will not significantly impact the overall LCR needs.

The total LCR requirement for year 2023 and 2024 are only dependent on year 2026 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)
2023	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	935
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	951

3.4.19.9 *LA Basin Area*

The net peak load growth from 2022 to 2026 is estimated at 54.25 MW/year.

There are no new transmission projects that directly affect the LCR change from 2022 to 2026.

There are no new resources that directly affect the LCR change from 2022 to 2026.

There is no projected change in resource contractual status that directly affects the LCR change from 2022 to 2026.

There are 7 resources projected to retire that directly affect the LCR change from 2022 to 2026. These resources are all projected to retire after 2023 due to OTC compliance dates, however they do not influence in a meaningfull way the change in LCR results between 2023 and 2024.

There will be a step function increase in 2023 due to new transmission projects as well as reduction in San Diego-Imperial Valley area needs due to the "S" line upgrade and installation of new more effective resources in San Diego-Imperial Valley, coupled with LA Basin and San Diego load growth.

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2023	First Limit	N/A	Sum of Western and Eastern	See Western and Eastern	6196
2023	Second Limit	P3	El Centro 230/92 kV	TDM, system readjustment and Imperial Valley–North Gila 500 kV line	6152
2024	First Limit	N/A	Sum of Western and Eastern	See Western and Eastern	6251
2024	Second Limit	P3	El Centro 230/92 kV	TDM, system readjustment and Imperial Valley–North Gila 500 kV line	6207

3.4.19.10 *San Diego-Imperial Valley Area*

The net peak load growth from 2022 to 2026 is estimated at 31.75 MW/year.

There are 7 new transmission projects that directly affect the LCR change from 2022 to 2026.

- TL6906 Mesa Rim rearrangement
- Rose Canyon-La Jolla 69 kV T/L upgrade
- Imperial Valley-El Centro 230 kV ("S") line upgrade (Dec 2022)
- Reconductor of Stuart Tap–Las Pulgas 69 kV line (TL690E)
- TL695B Japanese Mesa-Talega Tap reconductor
- Artesian 230 kV expansion with 69 kV upgrade
- South Orange County Reliability Enhancement

Other than the "S" line upgrade the rest of the projects do not meaningfully impact the overall LCR results. Starting 2023 there will be a step function decrease in LCR needs due to the "S" line upgrade.

There are 16 new resources that directly affect the LCR change from 2022 to 2026. About 100 MW NQC or 86 MW at peak of new resources are available for both 2023 and 2024. An additional 613 MW NQC or 605 MW at peak of new resources are available in 2024 only. The majority of the new resources available at the time of the peak do change the LCR needs in the San Diego-Imperial Valley area since they are highly effective in mitigating the local need.

There is no projected change in resource contractual status that directly affects the LCR change from 2022 to 2026.

There is no resource projected to retire that directly affects the LCR change from 2022 to 2026.

There will be a step function decrease in 2023 due to new highly effective resources and and new "S" line upgrade transmission project and there will be step function decrease in 2024 due to additional highly effective new resources coupled with LA Basin and San Diego load growth for Category P3.

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

Year	Limit	Category	Limiting Facility	Contingency	LCR (MW)
2023	First Limit	P3	El Centro 230/92 kV	TDM power plant, system readjustment and Imperial Valley–North Gila 500 kV line	3540
2024	First Limit	P3	El Centro 230/92 kV	TDM power plant, system readjustment and Imperial Valley–North Gila 500 kV line	3330

Attachment A – List of physical resources by PTO, local area ar

PTO	MKT/SCHED RESOURCE ID	BUS #	BUS NAME	kV	NQC	UNIT ID	LCR AREA NAME	LCR SUB-AREA NAME
PG&E	ALMEGT_1_UNIT 1	38118	ALMDACT1	13.8	23.40	1	Bay Area	Oakland
PG&E	ALMEGT_1_UNIT 2	38119	ALMDACT2	13.8	23.50	1	Bay Area	Oakland
PG&E	BANKPP_2_NSPIN	38820	DELTA A	13.2	11.55	1	Bay Area	Contra Costa
PG&E	BANKPP_2_NSPIN	38820	DELTA A	13.2	11.55	2	Bay Area	Contra Costa
PG&E	BANKPP_2_NSPIN	38820	DELTA A	13.2	11.55	3	Bay Area	Contra Costa
PG&E	BANKPP_2_NSPIN	38815	DELTA B	13.2	11.55	4	Bay Area	Contra Costa
PG&E	BANKPP_2_NSPIN	38815	DELTA B	13.2	11.55	5	Bay Area	Contra Costa
PG&E	BANKPP_2_NSPIN	38770	DELTA C	13.2	11.55	6	Bay Area	Contra Costa
PG&E	BANKPP_2_NSPIN	38770	DELTA C	13.2	11.55	7	Bay Area	Contra Costa
PG&E	BANKPP_2_NSPIN	38765	DELTA D	13.2	11.55	8	Bay Area	Contra Costa
PG&E	BANKPP_2_NSPIN	38765	DELTA D	13.2	11.55	9	Bay Area	Contra Costa
PG&E	BANKPP_2_NSPIN	38760	DELTA E	13.2	11.55	10	Bay Area	Contra Costa
PG&E	BANKPP_2_NSPIN	38760	DELTA E	13.2	11.55	11	Bay Area	Contra Costa
PG&E	BRDSLD_2_HIWIND	32172	HIGHWINDS	34.5	34.02	1	Bay Area	Contra Costa
PG&E	BRDSLD_2_MTZUM2	32179	MNTZUMA2	0.69	16.42	1	Bay Area	Contra Costa
PG&E	BRDSLD_2_MTZUMA	32188	HIGHWND3	0.69	7.73	1	Bay Area	Contra Costa
PG&E	BRDSLD_2_SHILO1	32176	SHILOH	34.5	31.50	1	Bay Area	Contra Costa
PG&E	BRDSLD_2_SHILO2	32177	SHILOH 2	34.5	31.50	1	Bay Area	Contra Costa
PG&E	BRDSLD_2_SHLO3A	32191	SHILOH3	0.58	21.53	1	Bay Area	Contra Costa
PG&E	BRDSLD_2_SHLO3B	32194	SHILOH4	0.58	21.00	1	Bay Area	Contra Costa
PG&E	CALPIN_1_AGNEW	35860	OLS-AGNE	9.11	28.56	1	Bay Area	San Jose, South Bay-Moss Landing
PG&E	CAYTNO_2_VASCO	30531	0162-WD	230	4.30	FW	Bay Area	Contra Costa
PG&E	CLRMTK_1_QF				0.00		Bay Area	Oakland
PG&E	COCOPP_2_CTG1	33188	MARSHCT1	16.4	190.00	1	Bay Area	Contra Costa
PG&E	COCOPP_2_CTG2	33188	MARSHCT2	16.4	189.21	2	Bay Area	Contra Costa
PG&E	COCOPP_2_CTG3	33189	MARSHCT3	16.4	188.50	3	Bay Area	Contra Costa
PG&E	COCOPP_2_CTG4	33189	MARSHCT4	16.4	189.89	4	Bay Area	Contra Costa

PG&E	COCOSB_6_SOLAR				0.00		Bay Area	Contra Costa
PG&E	CROKET_7_UNIT	32900	CRCKTCOG	18	211.49	1	Bay Area	Pittsburg
PG&E	CSCCOG_1_UNIT 1	36859	Laf300	12	3.00	1	Bay Area	San Jose, South Bay-Moss Landing
PG&E	CSCCOG_1_UNIT 1	36859	Laf300	12	3.00	2	Bay Area	San Jose, South Bay-Moss Landing
PG&E	CSCGNR_1_UNIT 1	36858	Gia100	13.8	24.00	1	Bay Area	San Jose, South Bay-Moss Landing
PG&E	CSCGNR_1_UNIT 2	36895	Gia200	13.8	24.00	2	Bay Area	San Jose, South Bay-Moss Landing
PG&E	CUMBIA_1_SOLAR	33102	COLUMBIA	0.38	5.13	1	Bay Area	Pittsburg
PG&E	DELTA_2_PL1X4	33107	DEC STG1	24	269.60	1	Bay Area	Pittsburg
PG&E	DELTA_2_PL1X4	33108	DEC CTG1	18	181.13	1	Bay Area	Pittsburg
PG&E	DELTA_2_PL1X4	33109	DEC CTG2	18	181.13	1	Bay Area	Pittsburg
PG&E	DELTA_2_PL1X4	33110	DEC CTG3	18	181.13	1	Bay Area	Pittsburg
PG&E	DIXNLD_1_LNDFL				0.64		Bay Area	
PG&E	DUANE_1_PL1X3	36863	DVRaGT1	13.8	48.27	1	Bay Area	San Jose, South Bay-Moss Landing
PG&E	DUANE_1_PL1X3	36864	DVRbGT2	13.8	48.27	1	Bay Area	San Jose, South Bay-Moss Landing
PG&E	DUANE_1_PL1X3	36865	DVRaST3	13.8	46.96	1	Bay Area	San Jose, South Bay-Moss Landing
PG&E	GATWAY_2_PL1X3	33118	GATEWAY1	18	180.78	1	Bay Area	Contra Costa
PG&E	GATWAY_2_PL1X3	33119	GATEWAY2	18	171.17	1	Bay Area	Contra Costa
PG&E	GATWAY_2_PL1X3	33120	GATEWAY3	18	171.17	1	Bay Area	Contra Costa
PG&E	GILROY_1_UNIT	35850	GLRY COG	13.8	69.00	1	Bay Area	Llagas, San Jose, South Bay-Moss Landing
PG&E	GILROY_1_UNIT	35850	GLRY COG	13.8	36.00	2	Bay Area	Llagas, San Jose, South Bay-Moss Landing
PG&E	GILRPP_1_PL1X2	35851	GROYPKR1	13.8	47.60	1	Bay Area	Llagas, San Jose, South Bay-Moss Landing
PG&E	GILRPP_1_PL1X2	35852	GROYPKR2	13.8	47.60	1	Bay Area	Llagas, San Jose, South Bay-Moss Landing

PG&E	GILRPP_1_PL3X4	35853	GROYPKR3	13.8	46.20	1	Bay Area	Llagas, San Jose, South Bay-Moss Landing
PG&E	GRZZLY_1_BERKLY	32741	HILLSIDE_12	12.5	14.67	1	Bay Area	
PG&E	KELSO_2_UNITS	33813	MARIPCT1	13.8	48.09	1	Bay Area	Contra Costa
PG&E	KELSO_2_UNITS	33815	MARIPCT2	13.8	48.09	2	Bay Area	Contra Costa
PG&E	KELSO_2_UNITS	33817	MARIPCT3	13.8	48.09	3	Bay Area	Contra Costa
PG&E	KELSO_2_UNITS	33819	MARIPCT4	13.8	48.09	4	Bay Area	Contra Costa
PG&E	KIRKER_7_KELCYN				3.21		Bay Area	Pittsburg
PG&E	LAWRNC_7_SUNYVL				0.17		Bay Area	
PG&E	LECEF_1_UNITS	35858	LECEFST1	13.8	111.58	1	Bay Area	San Jose, South Bay-Moss Landing
PG&E	LECEF_1_UNITS	35854	LECEFGT1	13.8	46.49	1	Bay Area	San Jose, South Bay-Moss Landing
PG&E	LECEF_1_UNITS	35855	LECEFGT2	13.8	46.49	1	Bay Area	San Jose, South Bay-Moss Landing
PG&E	LECEF_1_UNITS	35856	LECEFGT3	13.8	46.49	1	Bay Area	San Jose, South Bay-Moss Landing
PG&E	LECEF_1_UNITS	35857	LECEFGT4	13.8	46.49	1	Bay Area	San Jose, South Bay-Moss Landing
PG&E	LMBEPK_2_UNITA1	32173	LAMBGT1	13.8	47.50	1	Bay Area	Contra Costa
PG&E	LMBEPK_2_UNITA2	32174	GOOSEHGT	13.8	47.60	2	Bay Area	Contra Costa
PG&E	LMBEPK_2_UNITA3	32175	CREEDGT1	13.8	47.40	3	Bay Area	Contra Costa
PG&E	LMEC_1_PL1X3	33113	LMECST1	18	243.71	1	Bay Area	Pittsburg
PG&E	LMEC_1_PL1X3	33111	LMECCT2	18	165.41	1	Bay Area	Pittsburg
PG&E	LMEC_1_PL1X3	33112	LMECCT1	18	165.41	1	Bay Area	Pittsburg
PG&E	MARTIN_1_SUNSET				1.22		Bay Area	
PG&E	METEC_2_PL1X3	35883	MEC STG1	18	213.13	1	Bay Area	San Jose, South Bay-Moss Landing
PG&E	METEC_2_PL1X3	35881	MEC CTG1	18	178.43	1	Bay Area	San Jose, South Bay-Moss Landing
PG&E	METEC_2_PL1X3	35882	MEC CTG2	18	178.43	1	Bay Area	San Jose, South Bay-Moss Landing
PG&E	MISSIX_1_QF				0.01		Bay Area	
PG&E	MLPTAS_7_QFUNTS				0.00		Bay Area	San Jose, South Bay-Moss Landing

PG&E	MOSSLD_1_QF				0.00		Bay Area	
PG&E	MOSSLD_2_PSP1	36223	DUKMOSS3	18	183.60	1	Bay Area	South Bay-Moss Landing
PG&E	MOSSLD_2_PSP1	36221	DUKMOSS1	18	163.20	1	Bay Area	South Bay-Moss Landing
PG&E	MOSSLD_2_PSP1	36222	DUKMOSS2	18	163.20	1	Bay Area	South Bay-Moss Landing
PG&E	MOSSLD_2_PSP2	36226	DUKMOSS6	18	183.60	1	Bay Area	South Bay-Moss Landing
PG&E	MOSSLD_2_PSP2	36224	DUKMOSS4	18	163.20	1	Bay Area	South Bay-Moss Landing
PG&E	MOSSLD_2_PSP2	36225	DUKMOSS5	18	163.20	1	Bay Area	South Bay-Moss Landing
PG&E	NEWARK_1_QF				0.05		Bay Area	
PG&E	OAK C_1_EBMUD				1.20		Bay Area	Oakland
PG&E	OAK C_7_UNIT 1	32901	OAKLND 1	13.8	55.00	1	Bay Area	Oakland
PG&E	OAK C_7_UNIT 2	32902	OAKLND 2	13.8	55.00	1	Bay Area	Oakland
PG&E	OAK C_7_UNIT 3	32903	OAKLND 3	13.8	0.00	1	Bay Area	Oakland
PG&E	OAK L_1_GTG1				0.00		Bay Area	Oakland
PG&E	OXMTN_6_LNDFIL	33469	OX_MTN	4.16	1.47	1	Bay Area	Ames
PG&E	OXMTN_6_LNDFIL	33469	OX_MTN	4.16	1.47	2	Bay Area	Ames
PG&E	OXMTN_6_LNDFIL	33469	OX_MTN	4.16	1.47	3	Bay Area	Ames
PG&E	OXMTN_6_LNDFIL	33469	OX_MTN	4.16	1.47	4	Bay Area	Ames
PG&E	OXMTN_6_LNDFIL	33469	OX_MTN	4.16	1.47	5	Bay Area	Ames
PG&E	OXMTN_6_LNDFIL	33469	OX_MTN	4.16	1.47	6	Bay Area	Ames
PG&E	OXMTN_6_LNDFIL	33469	OX_MTN	4.16	1.47	7	Bay Area	Ames
PG&E	PALALT_7_COBUG				4.50		Bay Area	
PG&E	RICHMN_1_CHVSR2				2.30		Bay Area	
PG&E	RICHMN_1_SOLAR				0.54		Bay Area	
PG&E	RICHMN_7_BAYENV				2.00		Bay Area	

PG&E	RUSCTY_2_UNITS	35306	RUSELST1	15	237.09	3	Bay Area	Ames
PG&E	RUSCTY_2_UNITS	35304	RUSELCT1	15	180.15	1	Bay Area	Ames
PG&E	RUSCTY_2_UNITS	35305	RUSELCT2	15	180.15	2	Bay Area	Ames
PG&E	RVRVEW_1_UNITA1	33178	RVEC_GEN	13.8	47.60	1	Bay Area	Contra Costa
PG&E	SHELRF_1_UNITS	33142	SHELL 2	12.5	10.91	1	Bay Area	Pittsburg
PG&E	SHELRF_1_UNITS	33143	SHELL 3	12.5	10.91	1	Bay Area	Pittsburg
PG&E	SHELRF_1_UNITS	33141	SHELL 1	12.5	5.88	1	Bay Area	Pittsburg
PG&E	SRINTL_6_UNIT	33468	SRI INTL	9.11	0.78	1	Bay Area	
PG&E	STAUFF_1_UNIT	33139	STAUFER	9.11	0.01	1	Bay Area	
PG&E	STOILS_1_UNITS	32921	CHEVGEN1	13.8	2.09	1	Bay Area	Pittsburg
PG&E	STOILS_1_UNITS	32922	CHEVGEN2	13.8	2.09	1	Bay Area	Pittsburg
PG&E	STOILS_1_UNITS	32923	CHEVGEN3	13.8	0.97	3	Bay Area	Pittsburg
PG&E	SWIFT_1_NAS	35623	SWIFT	21	3.00	BT	Bay Area	San Jose, South Bay-Moss Landing
PG&E	TIDWTR_2_UNITS	33151	FOSTER W	12.5	4.05	1	Bay Area	Pittsburg
PG&E	TIDWTR_2_UNITS	33151	FOSTER W	12.5	4.05	2	Bay Area	Pittsburg
PG&E	TIDWTR_2_UNITS	33151	FOSTER W	12.5	3.08	3	Bay Area	Pittsburg
PG&E	UNCHEM_1_UNIT	32920	UNION CH	9.11	13.10	1	Bay Area	Pittsburg
PG&E	UNOCAL_1_UNITS	32910	UNOCAL	12	0.02	1	Bay Area	Pittsburg
PG&E	UNOCAL_1_UNITS	32910	UNOCAL	12	0.02	2	Bay Area	Pittsburg
PG&E	UNOCAL_1_UNITS	32910	UNOCAL	12	0.02	3	Bay Area	Pittsburg
PG&E	USWNDR_2_LABWD1				1.89		Bay Area	Contra Costa
PG&E	USWNDR_2_SMUD	365574	SOLANO2W		18.24	2	Bay Area	Contra Costa
PG&E	USWNDR_2_SMUD	365566	SOLANO1W		3.22	1	Bay Area	Contra Costa
PG&E	USWNDR_2_SMUD2	365600	SOLANO3W		26.84	3	Bay Area	Contra Costa
PG&E	USWPJR_2_UNITS	39233	GRNRDG	0.69	16.42	1	Bay Area	Contra Costa
PG&E	WNDMAS_2_UNIT 1	33170	WINDMSTR	9.11	7.98	1	Bay Area	Contra Costa
PG&E	ZOND_6_UNIT	35316	ZOND SYS	9.11	3.59	1	Bay Area	Contra Costa
PG&E	ZZ_IBMCTL_1_UNIT 1	35637	IBM-CTLE	115	0.00	1	Bay Area	San Jose, South Bay-Moss Landing
PG&E	ZZ_IMHOFF_1_UNIT 1	33136	CCCSD	12.5	0.00	1	Bay Area	Pittsburg
PG&E	ZZ_MARKHM_1_CATLST	35863	CATALYST	9.11	0.00	1	Bay Area	San Jose, South Bay-Moss Landing
PG&E	ZZ_NA	35861	SJ-SCL W	4.3	0.00	1	Bay Area	San Jose, South Bay-Moss Landing

PG&E	ZZ_NA	36209	SLD ENRG	12.5	0.00	1	Bay Area	South Bay-Moss Landing
PG&E	ZZ_SEAWST_6_LAPOS	35312	FOREBAYW	22	0.00	1	Bay Area	Contra Costa
PG&E	ZZ_USWPFK_6_FRICK	35320	FRICKWND	12	1.90	1	Bay Area	Contra Costa
PG&E	ZZ_USWPFK_6_FRICK	35320	FRICKWND	12	0.00	2	Bay Area	Contra Costa
PG&E	ZZ_ZANKER_1_UNIT 1	35861	SJ-SCL W	4.3	0.00	RN	Bay Area	San Jose, South Bay-Moss Landing
PG&E	ZZZ_New Unit	30045	MOSSLAND	500	300.00	ES	Bay Area	South Bay-Moss Landing
PG&E	ZZZ_New Unit	30755	MOSSLNSW	230	182.50	ES	Bay Area	South Bay-Moss Landing
PG&E	ZZZ_New Unit	35646	MRGN HIL	115	75.00	ES	Bay Area	San Jose, South Bay-Moss Landing
PG&E	ZZZ_New Unit	30522	0354-WD	21	1.83	EW	Bay Area	Contra Costa
PG&E	ZZZ_New Unit	365540	Q1016		0.00	1	Bay Area	
PG&E	ZZZ_New Unit	32741	HILLSIDE		0.00	RN	Bay Area	
PG&E	ZZZ_New Unit	365559	STANFORD		0.00	RN	Bay Area	
PG&E	ZZZ_New Unit	35302	NUMMI-LV	12.6	0.00	RN	Bay Area	
PG&E	ZZZ_New Unit	35859	HGST-LV	12.4	0.00	RN	Bay Area	
PG&E	ZZZ_New Unit	35307	A100US-L	12.6	0.00	RN	Bay Area	
PG&E	ZZZZZ_METCLF_1_QF				0.00		Bay Area	
PG&E	ZZZZZ_USWNDR_2_UNITS	32168	EXNCO	9.11	0.00	1	Bay Area	Contra Costa
PG&E	ZZZZZZ_COCOPP_7_UNIT 6	33116	C.COS 6	18	0.00	RT	Bay Area	Contra Costa
PG&E	ZZZZZZ_COCOPP_7_UNIT 7	33117	C.COS 7	18	0.00	RT	Bay Area	Contra Costa
PG&E	ZZZZZZ_CONTAN_1_UNIT	36856	CCA100	13.8	0.00	1	Bay Area	San Jose, South Bay-Moss Landing
PG&E	ZZZZZZ_FLOWD1_6_ALTPP 1	35318	FLOWDPTR	9.11	0.00	1	Bay Area	Contra Costa
PG&E	ZZZZZZ_LFC 51_2_UNIT 1	35310	PPASSWND	21	0.00	1	Bay Area	
PG&E	ZZZZZZ_MOSSLD_7_UNIT 6	36405	MOSSLND6	22	0.00	1	Bay Area	South Bay-Moss Landing
PG&E	ZZZZZZ_MOSSLD_7_UNIT 7	36406	MOSSLND7	22	0.00	1	Bay Area	South Bay-Moss Landing

PG&E	ZZZZZZ_PITTSP_7_UNIT 5	33105	PTSB 5	18	0.00	RT	Bay Area	Pittsburg
PG&E	ZZZZZZ_PITTSP_7_UNIT 6	33106	PTSB 6	18	0.00	RT	Bay Area	Pittsburg
PG&E	ZZZZZZ_PITTSP_7_UNIT 7	30000	PTSB 7	20	0.00	RT	Bay Area	Pittsburg
PG&E	ZZZZZZ_UNTDQF_7_UNITS	33466	UNTED CO	9.11	0.00	1	Bay Area	
PG&E	ADERA_1_SOLAR1	34319	CHWCHLAS	0.48	0.00	1	Fresno	Herndon, Panoche 115 kV, Wilson 115 kV
PG&E	ADMEST_6_SOLAR	34315	ADAMS_E	12.5	0.00	1	Fresno	Herndon
PG&E	AGRICO_6_PL3N5	34608	AGRICO	13.8	22.69	3	Fresno	Herndon
PG&E	AGRICO_7_UNIT	34608	AGRICO	13.8	43.13	4	Fresno	Herndon
PG&E	AGRICO_7_UNIT	34608	AGRICO	13.8	7.47	2	Fresno	Herndon
PG&E	AVENAL_6_AVPARK	34265	AVENAL P	12	0.00	1	Fresno	Coalinga
PG&E	AVENAL_6_AVSLR1	34691	AVENAL_1	21	0.00	EW	Fresno	Coalinga
PG&E	AVENAL_6_AVSLR2	34691	AVENAL_1	21	0.00	EW	Fresno	Coalinga
PG&E	AVENAL_6_SANDDG	34263	SANDDRAG	12	0.00	1	Fresno	Coalinga
PG&E	AVENAL_6_SUNCTY	34257	SUNCTY D	12	0.00	1	Fresno	Coalinga
PG&E	BALCHS_7_UNIT 1	34624	BALCH	13.2	31.00	1	Fresno	Herndon
PG&E	BALCHS_7_UNIT 2	34612	BLCH	13.8	52.50	1	Fresno	Herndon
PG&E	BALCHS_7_UNIT 3	34614	BLCH	13.8	54.60	1	Fresno	Herndon
PG&E	CANTUA_1_SOLAR	34349	CANTUA_D	12.5	2.70	1	Fresno	Panoche 115 kV
PG&E	CANTUA_1_SOLAR	34349	CANTUA_D	12.5	2.70	2	Fresno	Panoche 115 kV
PG&E	CHEVCO_6_UNIT 1	34652	CHV.COAL	9.11	2.09	1	Fresno	Coalinga, Panoche 115 kV
PG&E	CHEVCO_6_UNIT 2	34652	CHV.COAL	9.11	0.85	2	Fresno	Coalinga, Panoche 115 kV
PG&E	CHWCHL_1_BIOMAS	34305	CHWCHLA2	13.8	9.30	1	Fresno	Herndon, Panoche 115 kV, Wilson 115 kV
PG&E	CHWCHL_1_UNIT	34301	CHOWCOGN	13.8	48.00	1	Fresno	Herndon, Panoche 115 kV, Wilson 115 kV
PG&E	CORCAN_1_SOLAR1	34690	CORCORAN	12.5	5.40	FW	Fresno	Herndon, Hanford
PG&E	CORCAN_1_SOLAR2	34692	CORCORAN	12.5	2.97	FW	Fresno	Herndon, Hanford
PG&E	CRESSY_1_PARKER	34140	CRESSEY	115	1.29		Fresno	

PG&E	CRNEVL_6_CRNVA	34634	CRANEVLY	12	0.00	1	Fresno	Borden
PG&E	CRNEVL_6_SJQN 2	34631	SJ2GEN	9.11	0.01	1	Fresno	Borden
PG&E	CRNEVL_6_SJQN 3	34633	SJ3GEN	9.11	0.00	1	Fresno	Borden
PG&E	CURTIS_1_CANLCK				0.00		Fresno	
PG&E	CURTIS_1_FARFLD				0.47		Fresno	
PG&E	DAIRLD_1_MD1SL1				0.00		Fresno	
PG&E	DAIRLD_1_MD2BM1				0.00		Fresno	
PG&E	DINUBA_6_UNIT	34648	DINUBA E	13.8	0.00	1	Fresno	Herndon, Reedley
PG&E	EEKTMN_6_SOLAR1	34629	KETTLEMN	0.8	0.00	1	Fresno	
PG&E	ELCAP_1_SOLAR				0.00		Fresno	
PG&E	ELNIDP_6_BIOMAS	34330	ELNIDO	13.8	9.59	1	Fresno	Panoche 115 kV, Wilson 115 kV
PG&E	EXCHEC_7_UNIT 1	34306	EXCHQUER	13.8	90.72	1	Fresno	Panoche 115 kV, Wilson 115 kV
PG&E	EXCLSG_1_SOLAR	34623	Q678	0.5	16.20	1	Fresno	Panoche 115 kV
PG&E	FRESHW_1_SOLAR1	34699	Q529	0.39	0.00	1	Fresno	Herndon
PG&E	FRIANT_6_UNITS	34636	FRIANTDM	6.6	8.56	2	Fresno	Borden
PG&E	FRIANT_6_UNITS	34636	FRIANTDM	6.6	4.57	3	Fresno	Borden
PG&E	FRIANT_6_UNITS	34636	FRIANTDM	6.6	1.21	4	Fresno	Borden
PG&E	GIFENS_6_BUGSL1	34644	Q679	0.55	5.40	1	Fresno	
PG&E	GIFFEN_6_SOLAR	34467	GIFFEN_DIST	12.5	2.70	1	Fresno	Herndon
PG&E	GIFFEN_6_SOLAR1				0.00	1	Fresno	Herndon
PG&E	GUERNS_6_SOLAR	34463	GUERNSEY_D2	12.5	2.70	5	Fresno	
PG&E	GUERNS_6_SOLAR	34461	GUERNSEY_D1	12.5	2.70	8	Fresno	
PG&E	GWFPWR_1_UNITS	34431	GWF_HEP1	13.8	45.30	1	Fresno	Herndon, Hanford
PG&E	GWFPWR_1_UNITS	34433	GWF_HEP2	13.8	45.30	1	Fresno	Herndon, Hanford
PG&E	HAASPH_7_PL1X2	34610	HAAS	13.8	72.00	1	Fresno	Herndon
PG&E	HAASPH_7_PL1X2	34610	HAAS	13.8	72.00	2	Fresno	Herndon
PG&E	HELMPG_7_UNIT 1	34600	HELMS	18	407.00	1	Fresno	
PG&E	HELMPG_7_UNIT 2	34602	HELMS	18	407.00	2	Fresno	
PG&E	HELMPG_7_UNIT 3	34604	HELMS	18	404.00	3	Fresno	
PG&E	HENRTA_6_SOLAR1				0.00		Fresno	
PG&E	HENRTA_6_SOLAR2				0.00		Fresno	
PG&E	HENRTA_6_UNITA1	34539	GWF_GT1	13.8	44.99	1	Fresno	

PG&E	HENRTA_6_UNITA2	34541	GWF_GT2	13.8	44.89	1	Fresno	
PG&E	HENRTS_1_SOLAR	34617	Q581	0.38	27.00	1	Fresno	Herndon
PG&E	HURON_6_SOLAR	34557	HURON_DI	12.5	2.70	1	Fresno	Coalinga, Panoche 115 kV
PG&E	HURON_6_SOLAR	34557	HURON_DI	12.5	2.70	2	Fresno	Coalinga, Panoche 115 kV
PG&E	JAYNE_6_WLSLR	34639	WESTLNDS	0.48	0.00	1	Fresno	Coalinga
PG&E	KANSAS_6_SOLAR	34666	KANSASS_S	12.5	0.00	F	Fresno	
PG&E	KERKH1_7_UNIT 1	34344	KERCK1-1	6.6	13.00	1	Fresno	Herndon, Wilson 115 kV
PG&E	KERKH1_7_UNIT 3	34345	KERCK1-3	6.6	12.80	3	Fresno	Herndon, Wilson 115 kV
PG&E	KERKH2_7_UNIT 1	34308	KERCKHOF	13.8	153.90	1	Fresno	Herndon, Wilson 115 kV
PG&E	KERMAN_6_SOLAR1				0.00		Fresno	
PG&E	KERMAN_6_SOLAR2				0.00		Fresno	
PG&E	KINGCO_1_KINGBR	34642	KINGSBUR	9.11	34.50	1	Fresno	Herndon, Hanford
PG&E	KINGRV_7_UNIT 1	34616	KINGSRIV	13.8	51.20	1	Fresno	Herndon, Reedley
PG&E	KNGBRG_1_KBSLR1				0.00		Fresno	
PG&E	KNGBRG_1_KBSLR2				0.00		Fresno	
PG&E	KNTSTH_6_SOLAR	34694	KENT_S	0.8	0.00	1	Fresno	
PG&E	LEPRFD_1_KANSAS	34680	KANSAS	12.5	5.40	1	Fresno	Herndon, Hanford
PG&E	MALAGA_1_PL1X2	34671	KRCDPCT1	13.8	48.00	1	Fresno	Herndon
PG&E	MALAGA_1_PL1X2	34672	KRCDPCT2	13.8	48.00	1	Fresno	Herndon
PG&E	MCCALL_1_QF	34219	MCCALL 4	12.5	0.65	QF	Fresno	Herndon
PG&E	MCSWAN_6_UNITS	34320	MCSWAIN	9.11	9.60	1	Fresno	Panoche 115 kV, Wilson 115 kV
PG&E	MENBIO_6_RENEW1	34339	CALRENEW	12.5	1.35	1	Fresno	Herndon, Panoche 115 kV, Wilson 115 kV
PG&E	MERCED_1_SOLAR1				0.00		Fresno	
PG&E	MERCED_1_SOLAR2				0.00		Fresno	

PG&E	MERCFL_6_UNIT	34322	MERCEDFL	9.11	3.36	1	Fresno	Panoche 115 kV, Wilson 115 kV
PG&E	MNDOTA_1_SOLAR1	34313	NORTHSTA	0.2	16.20	1	Fresno	Panoche 115 kV, Wilson 115 kV
PG&E	MNDOTA_1_SOLAR2				0.00		Fresno	
PG&E	MSTANG_2_SOLAR	34683	Q643W	0.8	8.10	1	Fresno	
PG&E	MSTANG_2_SOLAR3	34683	Q643W	0.8	10.80	1	Fresno	
PG&E	MSTANG_2_SOLAR4	34683	Q643W	0.8	8.10	1	Fresno	
PG&E	ONLLPP_6_UNITS	34316	ONEILPMP	9.11	12.12	1	Fresno	
PG&E	OROLOM_1_SOLAR1	34689	ORO LOMA_3	12.5	0.00	EW	Fresno	Panoche 115 kV
PG&E	OROLOM_1_SOLAR2	34689	ORO LOMA_3	12.5	0.00	EW	Fresno	Panoche 115 kV
PG&E	ORTGA_6_ME1SL1				0.00		Fresno	
PG&E	PAIGES_6_SOLAR	34653	Q526	0.55	0.00	1	Fresno	Coalinga, Panoche 115 kV
PG&E	PINFLT_7_UNITS	38720	PINEFLAT	13.8	32.63	1	Fresno	Herndon
PG&E	PINFLT_7_UNITS	38720	PINEFLAT	13.8	32.63	2	Fresno	Herndon
PG&E	PINFLT_7_UNITS	38720	PINEFLAT	13.8	32.63	3	Fresno	Herndon
PG&E	PNCHPP_1_PL1X2	34328	STARGT1	13.8	54.18	1	Fresno	Panoche 115 kV
PG&E	PNCHPP_1_PL1X2	34329	STARGT2	13.8	54.18	2	Fresno	Panoche 115 kV
PG&E	PNOCHE_1_PL1X2	34142	WHD_PAN2	13.8	49.97	1	Fresno	Herndon, Panoche 115 kV
PG&E	PNOCHE_1_UNITA1	34186	DG_PAN1	13.8	52.01	1	Fresno	Panoche 115 kV
PG&E	REEDLY_6_SOLAR				0.00		Fresno	Herndon, Reedley
PG&E	S_RITA_6_SOLAR1				0.00		Fresno	
PG&E	SCHNDR_1_FIVPTS	34353	SCHINDLER_D	12.5	2.70	1	Fresno	Coalinga, Panoche 115 kV
PG&E	SCHNDR_1_FIVPTS	34353	SCHINDLER_D	12.5	1.35	2	Fresno	Coalinga, Panoche 115 kV
PG&E	SCHNDR_1_OS2BM2				0.00		Fresno	Coalinga
PG&E	SCHNDR_1_WSTSDE	34353	SCHINDLER_D	12.5	2.70	3	Fresno	Coalinga, Panoche 115 kV
PG&E	SCHNDR_1_WSTSDE	34353	SCHINDLER_D	12.5	1.35	4	Fresno	Coalinga, Panoche 115 kV
PG&E	SGREGY_6_SANGER	34646	SANGERCO	13.8	38.77	1	Fresno	Herndon
PG&E	SGREGY_6_SANGER	34646	SANGERCO	13.8	9.31	2	Fresno	Herndon

PG&E	STOREY_2_MDRCH2	34253	BORDEN D	12.5	0.28		Fresno		
PG&E	STOREY_2_MDRCH3	34253	BORDEN D	12.5	0.19		Fresno		
PG&E	STOREY_2_MDRCH4	34253	BORDEN D	12.5	0.20		Fresno		
PG&E	STOREY_7_MDRCHW	34209	STOREY D	12.5	0.82	1	Fresno		
PG&E	STROUD_6_SOLAR	34563	STROUD_D	12.5	2.70	1	Fresno	Herndon	
PG&E	STROUD_6_SOLAR	34563	STROUD_D	12.5	2.70	2	Fresno	Herndon	
PG&E	STROUD_6_WWHSR1				0.00		Fresno	Herndon	
PG&E	SUMWHT_6_SWSSR1				5.00		Fresno		
PG&E	TRNQL8_2_AMASR1	365514	Q1032G1	0.55	5.40	1	Fresno		
PG&E	TRNQL8_2_AZUSR1	365517	Q1032G2	0.55	5.40	2	Fresno		
PG&E	TRNQL8_2_ROJSR1	365520	Q1032G3	0.55	8.10	3	Fresno		
PG&E	TRNQL8_2_VERSR1	365520	Q1032G3	0.55	0.00	3	Fresno		
PG&E	TRNQLT_2_SOLAR	34340	Q643X	0.8	54.00	1	Fresno		
PG&E	ULTPFR_1_UNIT 1	34640	ULTR.PWR	9.11	24.07	1	Fresno	Herndon	
PG&E	VEGA_6_SOLAR1	34314	VEGA	34.5	0.00	1	Fresno		
PG&E	WAUKNA_1_SOLAR	34696	CORCORANPV_S	21	5.40	1	Fresno	Herndon, Hanford	
PG&E	WAUKNA_1_SOLAR2	34677	Q558	21	5.33	1	Fresno	Herndon, Hanford	
PG&E	WFRESN_1_SOLAR				0.00		Fresno		
PG&E	WHITNY_6_SOLAR	34673	Q532	0.55	0.00	1	Fresno	Coalinga, Panoche 115 kV	
PG&E	WISHON_6_UNITS	34658	WISHON	2.3	4.51	1	Fresno	Borden	
PG&E	WISHON_6_UNITS	34658	WISHON	2.3	4.51	2	Fresno	Borden	
PG&E	WISHON_6_UNITS	34658	WISHON	2.3	4.51	3	Fresno	Borden	
PG&E	WISHON_6_UNITS	34658	WISHON	2.3	4.51	4	Fresno	Borden	
PG&E	WISHON_6_UNITS	34658	WISHON	2.3	0.36	SJ	Fresno	Borden	
PG&E	WOODWR_1_HYDRO				0.00		Fresno		
PG&E	WRGHTP_7_AMENGY	34207	WRIGHT D	12.5	0.53	QF	Fresno		
PG&E	ZZ_BORDEN_2_QF	34253	BORDEN D	12.5	1.30	QF	Fresno		
PG&E	ZZ_BULLRD_7_SAGNES	34213	BULLD 12	12.5	0.06	1	Fresno	Herndon	
PG&E	ZZ_JRWOOD_1_UNIT 1	34332	JRWCOGEN	9.11	0.00	1	Fresno		

PG&E	ZZ_KERKH1_7_UNIT 2	34343	KERCK1-2	6.6	8.50	2	Fresno	Herndon, Wilson 115 kV
PG&E	ZZ_NA	34485	FRESNOWW	12.5	0.10	2	Fresno	
PG&E	ZZ_NA	34485	FRESNOWW	12.5	0.00	1	Fresno	
PG&E	ZZ_NA	34485	FRESNOWW	12.5	0.00	3	Fresno	
PG&E	ZZ_New Unit	34651	JACALITO-LV	0.55	1.22	RN	Fresno	
PG&E	ZZZ_New Unit	365697	Q1158B	0.36	300.00	1	Fresno	
PG&E	ZZZ_New Unit	365524	Q1036SPV	0.36	41.42	1	Fresno	
PG&E	ZZZ_New Unit	34688	Q272	0.36	33.21	1	Fresno	
PG&E	ZZZ_New Unit	365675	Q1128-5S	0.36	13.50	1	Fresno	Panoche 115 kV, Wilson 115 kV
PG&E	ZZZ_New Unit	365673	Q1128-4S	0.36	13.50	1	Fresno	Panoche 115 kV, Wilson 115 kV
PG&E	ZZZ_New Unit	34335	Q723	0.32	13.50	1	Fresno	Borden
PG&E	ZZZ_New Unit	365604	Q1028Q10	0.36	5.40	1	Fresno	Panoche 115 kV, Wilson 115 kV
PG&E	ZZZ_New Unit	365663	Q1127SPV	0.36	5.40	1	Fresno	Panoche 115 kV, Wilson 115 kV
PG&E	ZZZ_New Unit	365504	Q632BSPV	0.55	5.00	1	Fresno	
PG&E	ZZZ_New Unit	34649	Q965SPV	0.36	3.65	1	Fresno	Herndon
PG&E	ZZZ_New Unit	365694	Q1158S	0.36	0.00	1	Fresno	
PG&E	ZZZ_New Unit	34603	JGBSWLT	12.5	0.00	ST	Fresno	Herndon
PG&E	ZZZZZ_CAPMAD_1_UNIT 1	34179	MADERA_G	13.8	0.00	RT	Fresno	
PG&E	ZZZZZ_COLGA1_6_SHELL W	34654	COLNGAGN	9.11	0.00	1	Fresno	Coalinga
PG&E	ZZZZZ_GATES_6_PL1X2	34553	WHD_GAT2	13.8	0.00	RT	Fresno	Coalinga
PG&E	ZZZZZ_INTTRB_6_UNIT	34342	INT.TURB	9.11	0.00	1	Fresno	

PG&E	ZZZZZ_MENBIO_6_UNIT	34334	BIO PWR	9.11	0.00	1	Fresno	Panoche 115 kV, Wilson 115 kV
PG&E	BRDGVL_7_BAKER				0.00		Humboldt	
PG&E	FAIRHV_6_UNIT	31150	FAIRHAVN	13.8	12.65	1	Humboldt	
PG&E	FTSWRD_6_TRFORK				0.15		Humboldt	
PG&E	FTSWRD_7_QFUNTS				0.00		Humboldt	
PG&E	GRSCRK_6_BGCKWW				0.00		Humboldt	
PG&E	HUMBPP_1_UNITS3	31180	HUMB_G1	13.8	16.69	3	Humboldt	
PG&E	HUMBPP_1_UNITS3	31180	HUMB_G1	13.8	16.32	1	Humboldt	
PG&E	HUMBPP_1_UNITS3	31180	HUMB_G1	13.8	16.22	4	Humboldt	
PG&E	HUMBPP_1_UNITS3	31180	HUMB_G1	13.8	15.85	2	Humboldt	
PG&E	HUMBPP_6_UNITS	31182	HUMB_G3	13.8	16.62	8	Humboldt	
PG&E	HUMBPP_6_UNITS	31181	HUMB_G2	13.8	16.33	6	Humboldt	
PG&E	HUMBPP_6_UNITS	31182	HUMB_G3	13.8	16.33	9	Humboldt	
PG&E	HUMBPP_6_UNITS	31181	HUMB_G2	13.8	16.24	7	Humboldt	
PG&E	HUMBPP_6_UNITS	31181	HUMB_G2	13.8	16.14	5	Humboldt	
PG&E	HUMBPP_6_UNITS	31182	HUMB_G3	13.8	15.95	10	Humboldt	
PG&E	HUMBSB_1_QF				0.00		Humboldt	
PG&E	KEKAWK_6_UNIT	31166	KEKAWAK	9.1	0.00	1	Humboldt	
PG&E	LAPAC_6_UNIT	31158	LP SAMOA	12.5	0.00	1	Humboldt	
PG&E	LOWGAP_1_SUPHR				0.00		Humboldt	
PG&E	PACLUM_6_UNIT	31152	PAC.LUMB	13.8	5.82	1	Humboldt	
PG&E	PACLUM_6_UNIT	31152	PAC.LUMB	13.8	5.82	2	Humboldt	
PG&E	PACLUM_6_UNIT	31153	PAC.LUMB	2.4	3.49	3	Humboldt	
PG&E	ZZZZZ_BLULKE_6_BLUELK	31156	BLUELKPP	12.5	0.00	1	Humboldt	
PG&E	7STDRD_1_SOLAR1	35065	7STNDRD_1	21	5.40	FW	Kern	South Kern PP, Kern Oil
PG&E	ADOBEE_1_SOLAR	35021	Q622B	34.5	5.40	1	Kern	South Kern PP
PG&E	BDGRCK_1_UNITS	35029	BADGERCK	13.8	40.20	1	Kern	South Kern PP
PG&E	BEARMT_1_UNIT	35066	PSE-BEAR	13.8	44.00	1	Kern	South Kern PP, Westpark

PG&E	BKRFLD_2_SOLAR1				0.37		Kern	South Kern PP
PG&E	DEXZEL_1_UNIT	35024	DEXEL +	13.8	17.78	1	Kern	South Kern PP, Kern Oil
PG&E	DISCOV_1_CHEVRN	35062	DISCOVRY	13.8	2.58	1	Kern	South Kern PP, Kern Oil
PG&E	DOUBLC_1_UNITS	35023	DOUBLE C	13.8	49.50	1	Kern	South Kern PP
PG&E	KERNFT_1_UNITS	35026	KERNFRNT	9.11	48.60	1	Kern	South Kern PP
PG&E	LAMONT_1_SOLAR1	35019	REGULUS	0.4	16.20	1	Kern	South Kern PP, Kern PWR-Tevis
PG&E	LAMONT_1_SOLAR2	35092	Q744G4	0.38	5.40	1	Kern	South Kern PP, Kern PWR-Tevis
PG&E	LAMONT_1_SOLAR3	35087	Q744G3	0.4	4.05	3	Kern	South Kern PP, Kern PWR-Tevis
PG&E	LAMONT_1_SOLAR4	35059	Q744G2	0.4	21.38	2	Kern	South Kern PP, Kern PWR-Tevis
PG&E	LAMONT_1_SOLAR5	35054	Q744G1	0.4	4.50	1	Kern	South Kern PP, Kern PWR-Tevis
PG&E	LIVOAK_1_UNIT 1	35058	PSE-LVOK	9.1	42.50	1	Kern	South Kern PP, Kern Oil
PG&E	MAGUND_1_BKISR1				0.27		Kern	South Kern PP, Kern Oil
PG&E	MAGUND_1_BKSSR2				1.42		Kern	South Kern PP, Kern Oil
PG&E	MTNPOS_1_UNIT	35036	MT POSO	13.8	34.35	1	Kern	South Kern PP, Kern Oil
PG&E	OLDRIV_6_BIOGAS				1.69		Kern	South Kern PP, Kern 70 kV
PG&E	OLDRIV_6_CESDBM				0.90		Kern	South Kern PP, Kern 70 kV
PG&E	OLDRIV_6_LKVBM1				0.91		Kern	South Kern PP, Kern 70 kV
PG&E	OLDRV1_6_SOLAR	35091	OLD_RVR1	12.5	5.40	1	Kern	South Kern PP, Kern 70 kV
PG&E	SIERRA_1_UNITS	35027	HISIERRA	9.11	49.57	1	Kern	South Kern PP
PG&E	SKERN_6_SOLAR1	35089	S_KERN	0.48	5.40	1	Kern	South Kern PP, Kern 70 kV
PG&E	SKERN_6_SOLAR2	365563	Q885	0.36	2.70	1	Kern	South Kern PP, Kern 70 kV

PG&E	VEDDER_1_SEKERN	35046	SEKR	9.11	2.19	1	Kern	South Kern PP, Kern Oil
PG&E	ZZZZZ_KRNCNY_6_UNIT	35018	KERNCNYN	11	0.00	1	Kern	South Kern PP, Kern 70 kV
PG&E	ZZZZZ_OILDAL_1_UNIT 1	35028	OILDALE	9.11	0.00	RT	Kern	South Kern PP, Kern Oil
PG&E	ZZZZZ_RIOBRV_6_UNIT 1	35020	RIOBRAVO	9.1	0.00	1	Kern	South Kern PP, Kern 70 kV
PG&E	ZZZZZ_ULTOGL_1_POSO	35035	ULTR PWR	9.11	0.00	1	Kern	South Kern PP, Kern Oil
PG&E	ADLIN_1_UNITS	31435	GEO.ENGY	9.1	8.00	1	NCNB	Eagle Rock, Fulton
PG&E	ADLIN_1_UNITS	31435	GEO.ENGY	9.1	8.00	2	NCNB	Eagle Rock, Fulton
PG&E	CLOVDL_1_SOLAR				0.41		NCNB	Eagle Rock, Fulton
PG&E	CSTOGA_6_LNDFIL				0.00		NCNB	Fulton
PG&E	FULTON_1_QF				0.06		NCNB	Fulton
PG&E	GEYS11_7_UNIT11	31412	GEYSER11	13.8	68.00	1	NCNB	Eagle Rock, Fulton
PG&E	GEYS12_7_UNIT12	31414	GEYSER12	13.8	50.00	1	NCNB	Fulton
PG&E	GEYS13_7_UNIT13	31416	GEYSER13	13.8	56.00	1	NCNB	
PG&E	GEYS14_7_UNIT14	31418	GEYSER14	13.8	50.00	1	NCNB	Fulton
PG&E	GEYS16_7_UNIT16	31420	GEYSER16	13.8	49.00	1	NCNB	Fulton
PG&E	GEYS17_2_BOTRCK				8.23	1	NCNB	Fulton
PG&E	GEYS17_7_UNIT17	31422	GEYSER17	13.8	56.00	1	NCNB	Fulton
PG&E	GEYS18_7_UNIT18	31424	GEYSER18	13.8	45.00	1	NCNB	
PG&E	GEYS20_7_UNIT20	31426	GEYSER20	13.8	40.00	1	NCNB	
PG&E	GYS5X6_7_UNITS	31406	GEYSR5-6	13.8	42.50	1	NCNB	Eagle Rock, Fulton
PG&E	GYS5X6_7_UNITS	31406	GEYSR5-6	13.8	42.50	2	NCNB	Eagle Rock, Fulton
PG&E	GYS7X8_7_UNITS	31408	GEYSER78	13.8	38.00	1	NCNB	Eagle Rock, Fulton
PG&E	GYS7X8_7_UNITS	31408	GEYSER78	13.8	38.00	2	NCNB	Eagle Rock, Fulton
PG&E	GYSRVL_7_WSPRNG				1.48		NCNB	Fulton
PG&E	HILAND_7_YOLOWD				0.00		NCNB	Eagle Rock, Fulton
PG&E	IGNACO_1_QF				0.01		NCNB	
PG&E	INDVLY_1_UNITS	31436	INDIAN V	9.1	0.79	1	NCNB	Eagle Rock, Fulton
PG&E	MONTPH_7_UNITS	32700	MONTICLO	9.1	3.11	1	NCNB	Fulton

PG&E	MONTPH_7_UNITS	32700	MONTICLO	9.1	3.11	2	NCNB	Fulton
PG&E	MONTPH_7_UNITS	32700	MONTICLO	9.1	0.93	3	NCNB	Fulton
PG&E	NCPA_7_GP1UN1	38106	NCPA1GY1	13.8	31.00	1	NCNB	
PG&E	NCPA_7_GP1UN2	38108	NCPA1GY2	13.8	28.00	1	NCNB	
PG&E	NCPA_7_GP2UN3	38110	NCPA2GY1	13.8	0.00	1	NCNB	Fulton
PG&E	NCPA_7_GP2UN4	38112	NCPA2GY2	13.8	52.73	1	NCNB	Fulton
PG&E	NOVATO_6_LNDFL				3.56		NCNB	
PG&E	POTTER_6_UNITS	31433	POTTRVLY	2.4	1.32	1	NCNB	Eagle Rock, Fulton
PG&E	POTTER_6_UNITS	31433	POTTRVLY	2.4	0.60	3	NCNB	Eagle Rock, Fulton
PG&E	POTTER_6_UNITS	31433	POTTRVLY	2.4	0.60	4	NCNB	Eagle Rock, Fulton
PG&E	POTTER_7_VECINO				0.01		NCNB	Eagle Rock, Fulton
PG&E	SANTFG_7_UNITS	31400	SANTA FE	13.8	31.50	1	NCNB	
PG&E	SANTFG_7_UNITS	31400	SANTA FE	13.8	31.50	2	NCNB	
PG&E	SMUDGO_7_UNIT 1	31430	SMUDGEO1	13.8	47.00	1	NCNB	
PG&E	SNMALF_6_UNITS	31446	SONMA LF	9.1	3.12	1	NCNB	Fulton
PG&E	UKIAH_7_LAKEMN	38020	CITY UKH	115	1.21	2	NCNB	Eagle Rock, Fulton
PG&E	UKIAH_7_LAKEMN	38020	CITY UKH	115	0.49	1	NCNB	Eagle Rock, Fulton
PG&E	ZZZZZ_BEARCN_2_UNITS	31402	BEAR CAN	13.8	0.00	1	NCNB	Fulton
PG&E	ZZZZZ_BEARCN_2_UNITS	31402	BEAR CAN	13.8	0.00	2	NCNB	Fulton
PG&E	ZZZZZ_WDFRDF_2_UNITS	31404	WEST FOR	13.8	0.00	1	NCNB	Fulton
PG&E	ZZZZZ_WDFRDF_2_UNITS	31404	WEST FOR	13.8	0.00	2	NCNB	Fulton
PG&E	ZZZZZZ_GEYS17_2_BOTRCK	31421	BOTTLERK	13.8	0.00	1	NCNB	Fulton
PG&E	ALLGNY_6_HYDRO1				0.03		Sierra	
PG&E	APLHIL_1_SLABCK				0.00	1	Sierra	South of Rio Oso, South of Palermo
PG&E	BANGOR_6_HYDRO				1.00		Sierra	
PG&E	BELDEN_7_UNIT 1	31784	BELDEN	13.8	119.00	1	Sierra	South of Palermo
PG&E	BIOMAS_1_UNIT 1	32156	WOODLAND	9.11	24.31	1	Sierra	Drum-Rio Oso, South of Palermo

PG&E	BNNIEN_7_ALTAPH	32376	BONNIE N	60	0.68		Sierra	Placer, Gold Hill-Drum, Drum-Rio Oso, South of Rio Oso, South of Palermo
PG&E	BOGUE_1_UNITA1	32451	FREC	13.8	47.60	1	Sierra	Bogue, Drum-Rio Oso
PG&E	BOWMN_6_HYDRO	32480	BOWMAN	9.11	2.54	1	Sierra	Drum-Rio Oso, South of Palermo
PG&E	BUCKCK_2_HYDRO				0.04		Sierra	South of Palermo
PG&E	BUCKCK_7_OAKFLT				1.30		Sierra	South of Palermo
PG&E	BUCKCK_7_PL1X2	31820	BCKS CRK	11	30.63	1	Sierra	South of Palermo
PG&E	BUCKCK_7_PL1X2	31820	BCKS CRK	11	26.62	2	Sierra	South of Palermo
PG&E	CAMPFW_7_FARWST	32470	CMP.FARW	9.11	2.90	1	Sierra	
PG&E	CHICPK_7_UNIT 1	32462	CHI.PARK	11.5	42.00	1	Sierra	Placer, Gold Hill-Drum, Drum-Rio Oso, South of Rio Oso, South of Palermo
PG&E	COLGAT_7_UNIT 1	32450	COLGATE1	13.8	161.65	1	Sierra	
PG&E	COLGAT_7_UNIT 2	32452	COLGATE2	13.8	161.68	1	Sierra	
PG&E	CRESTA_7_PL1X2	31812	CRESTA	11.5	35.54	2	Sierra	South of Palermo
PG&E	CRESTA_7_PL1X2	31812	CRESTA	11.5	34.86	1	Sierra	South of Palermo
PG&E	DAVIS_1_SOLAR1				0.00		Sierra	Drum-Rio Oso, South of Palermo
PG&E	DAVIS_1_SOLAR2				0.00		Sierra	Drum-Rio Oso, South of Palermo
PG&E	DAVIS_7_MNMETH				1.76		Sierra	Drum-Rio Oso, South of Palermo
PG&E	DEADCK_1_UNIT	31862	DEADWOOD	9.11	0.00	1	Sierra	Drum-Rio Oso
PG&E	DEERCR_6_UNIT 1	32474	DEER CRK	9.11	2.98	1	Sierra	Drum-Rio Oso, South of Palermo
PG&E	DRUM_7_PL1X2	32504	DRUM 1-2	6.6	13.00	1	Sierra	Drum-Rio Oso, South of Palermo
PG&E	DRUM_7_PL1X2	32504	DRUM 1-2	6.6	13.00	2	Sierra	Drum-Rio Oso, South of Palermo
PG&E	DRUM_7_PL3X4	32506	DRUM 3-4	6.6	15.64	2	Sierra	Drum-Rio Oso, South of Palermo

PG&E	DRUM_7_PL3X4	32506	DRUM 3-4	6.6	13.26	1	Sierra	Drum-Rio Oso, South of Palermo
PG&E	DRUM_7_UNIT 5	32454	DRUM 5	13.8	50.00	1	Sierra	Drum-Rio Oso, South of Palermo
PG&E	DUTCH1_7_UNIT 1	32464	DTCHFLT1	11	22.00	1	Sierra	Placer, Gold Hill-Drum, Drum-Rio Oso, South of Rio Oso, South of Palermo
PG&E	DUTCH2_7_UNIT 1	32502	DTCHFLT2	6.9	26.00	1	Sierra	Drum-Rio Oso, South of Palermo
PG&E	ELDORO_7_UNIT 1	32513	ELDRADO1	21.6	11.00	1	Sierra	Gold Hill-Drum, South of Rio Oso, South of Palermo
PG&E	ELDORO_7_UNIT 2	32514	ELDRADO2	21.6	11.00	1	Sierra	Gold Hill-Drum, South of Rio Oso, South of Palermo
PG&E	FMEADO_6_HELLHL	32486	HELLHOLE	9.11	0.43	1	Sierra	South of Rio Oso, South of Palermo
PG&E	FMEADO_7_UNIT	32508	FRNCH MD	4.2	16.00	1	Sierra	South of Rio Oso, South of Palermo
PG&E	FORBST_7_UNIT 1	31814	FORBSTWN	11.5	37.50	1	Sierra	Drum-Rio Oso
PG&E	GRIDLY_6_SOLAR	38054	GRIDLEY	60	0.00	1	Sierra	Pease
PG&E	GRNLF2_1_UNIT	32492	GRNLEAF2	13.8	38.99	1	Sierra	Pease, Drum-Rio Oso
PG&E	HALSEY_6_UNIT	32478	HALSEY F	9.11	13.50	1	Sierra	Placer, Gold Hill-Drum, Drum-Rio Oso, South of Rio Oso, South of Palermo
PG&E	HAYPRS_6_QFUNTS	32488	HAYPRES+	9.11	0.05	2	Sierra	Drum-Rio Oso, South of Palermo
PG&E	HAYPRS_6_QFUNTS	32488	HAYPRES+	9.11	0.04	1	Sierra	Drum-Rio Oso, South of Palermo
PG&E	HIGGNS_1_COMBIE				0.22		Sierra	Drum-Rio Oso, South of Rio Oso, South of Palermo
PG&E	HIGGNS_7_QFUNTS				0.24		Sierra	Drum-Rio Oso, South of Rio Oso, South of Palermo

PG&E	KELYRG_6_UNIT	31834	KELLYRDG	9.11	11.00	1	Sierra	Drum-Rio Oso
PG&E	LIVEOK_6_SOLAR				0.14		Sierra	Pease
PG&E	LODIEC_2_PL1X2	38123	LODI CT1	18	199.03	1	Sierra	South of Rio Oso, South of Palermo
PG&E	LODIEC_2_PL1X2	38124	LODI ST1	18	103.55	1	Sierra	South of Rio Oso, South of Palermo
PG&E	MDFKRL_2_PROJCT	32458	RALSTON	13.8	82.13	1	Sierra	South of Rio Oso, South of Palermo
PG&E	MDFKRL_2_PROJCT	32456	MIDLFORK	13.8	63.94	1	Sierra	South of Rio Oso, South of Palermo
PG&E	MDFKRL_2_PROJCT	32456	MIDLFORK	13.8	63.94	2	Sierra	South of Rio Oso, South of Palermo
PG&E	NAROW1_2_UNIT	32466	NARROWS1	9.1	12.00	1	Sierra	
PG&E	NAROW2_2_UNIT	32468	NARROWS2	9.1	28.51	1	Sierra	
PG&E	NWCSTL_7_UNIT 1	32460	NEWCSTLE	13.2	0.51	1	Sierra	Placer, Gold Hill-Drum, Drum-Rio Oso, South of Rio Oso, South of Palermo
PG&E	OROVIL_6_UNIT	31888	OROVLLE	9.11	7.50	1	Sierra	Drum-Rio Oso
PG&E	OXBOW_6_DRUM	32484	OXBOW F	9.11	3.62	1	Sierra	Drum-Rio Oso, South of Palermo
PG&E	PLACVL_1_CHILIB	32510	CHILIBAR	4.2	8.40	1	Sierra	Gold Hill-Drum, South of Rio Oso, South of Palermo
PG&E	PLACVL_1_RCKCRE				1.20		Sierra	South of Rio Oso, South of Palermo
PG&E	PLSNTG_7_LNCLND	32408	PLSNT GR	60	3.09		Sierra	Drum-Rio Oso, South of Rio Oso, South of Palermo
PG&E	POEPH_7_UNIT 1	31790	POE 1	13.8	60.00	1	Sierra	South of Palermo
PG&E	POEPH_7_UNIT 2	31792	POE 2	13.8	60.00	1	Sierra	South of Palermo
PG&E	RCKCRK_7_UNIT 1	31786	ROCK CK1	13.8	57.00	1	Sierra	South of Palermo
PG&E	RCKCRK_7_UNIT 2	31788	ROCK CK2	13.8	56.90	1	Sierra	South of Palermo
PG&E	RIOOSO_1_QF				1.15		Sierra	Drum-Rio Oso, South of Palermo
PG&E	ROLLIN_6_UNIT	32476	ROLLINSF	9.11	13.50	1	Sierra	Drum-Rio Oso, South of Palermo
PG&E	SLYCRK_1_UNIT 1	31832	SLY.CR.	9.11	13.00	1	Sierra	Drum-Rio Oso

PG&E	SPAULD_6_UNIT 3	32472	SPAULDG	9.11	1.59	3	Sierra	Drum-Rio Oso, South of Palermo
PG&E	SPAULD_6_UNIT12	32472	SPAULDG	9.11	7.00	1	Sierra	Drum-Rio Oso, South of Palermo
PG&E	SPAULD_6_UNIT12	32472	SPAULDG	9.11	4.40	2	Sierra	Drum-Rio Oso, South of Palermo
PG&E	SPI LI_2_UNIT 1	32498	SPILINCF	12.5	9.93	1	Sierra	Drum-Rio Oso, South of Rio Oso, South of Palermo
PG&E	STIGCT_2_LODI	38114	Stig CC	13.8	49.50	1	Sierra	South of Rio Oso, South of Palermo
PG&E	ULTRCK_2_UNIT	32500	ULTR RCK	9.11	22.83	1	Sierra	Drum-Rio Oso, South of Rio Oso, South of Palermo
PG&E	WDLEAF_7_UNIT 1	31794	WOODLEAF	13.8	60.00	1	Sierra	Drum-Rio Oso
PG&E	WHEATL_6_LNDFIL	32350	WHEATLND	60	3.55		Sierra	
PG&E	WISE_1_UNIT 1	32512	WISE	12	14.50	1	Sierra	Placer, Gold Hill-Drum, Drum-Rio Oso, South of Rio Oso, South of Palermo
PG&E	WISE_1_UNIT 2	32512	WISE	12	3.20	1	Sierra	Placer, Gold Hill-Drum, Drum-Rio Oso, South of Rio Oso, South of Palermo
PG&E	YUBACT_1_SUNSWT	32494	YUBA CTY	9.11	49.97	1	Sierra	Pease, Drum-Rio Oso
PG&E	YUBACT_6_UNITA1	32496	YCEC	13.8	47.60	1	Sierra	Pease, Drum-Rio Oso
PG&E	ZZ_NA	32162	RIV.DLTA	9.11	0.00	1	Sierra	Drum-Rio Oso, South of Palermo
PG&E	ZZ_UCDAVS_1_UNIT	32166	UC DAVIS	9.11	0.00	RN	Sierra	Drum-Rio Oso, South of Palermo
PG&E	ZZZ_New Unit	365936	Q653FSPV	0.48	2.46	1	Sierra	Drum-Rio Oso, South of Palermo
PG&E	ZZZ_New Unit	365940	Q653FSPV	0.48	2.46	2	Sierra	Drum-Rio Oso, South of Palermo

PG&E	ZZZ_New Unit	365938	Q653FC6B	0.48	0.00	2	Sierra	Drum-Rio Oso, South of Palermo
PG&E	ZZZZZ_GOLDHL_1_QF				0.00		Sierra	South of Rio Oso, South of Palermo
PG&E	ZZZZZ_GRNLF1_1_UNITS	32490	GRNLEAF1	13.8	0.00	1	Sierra	Bogue, Drum-Rio Oso
PG&E	ZZZZZ_GRNLF1_1_UNITS	32491	GRNLEAF1	13.8	0.00	2	Sierra	Bogue, Drum-Rio Oso
PG&E	ZZZZZ_KANAKA_1_UNIT				0.00		Sierra	Drum-Rio Oso
PG&E	ZZZZZ_PACORO_6_UNIT	31890	PO POWER	9.11	0.00	1	Sierra	Drum-Rio Oso
PG&E	ZZZZZ_PACORO_6_UNIT	31890	PO POWER	9.11	0.00	2	Sierra	Drum-Rio Oso
PG&E	BEARDS_7_UNIT 1	34074	BEARDSLY	6.9	8.36	1	Stockton	Tesla-Bellota, Stanislaus
PG&E	CAMCHE_1_PL1X3	33850	CAMANCHE	4.2	0.92	1	Stockton	Tesla-Bellota
PG&E	CAMCHE_1_PL1X3	33850	CAMANCHE	4.2	0.92	2	Stockton	Tesla-Bellota
PG&E	CAMCHE_1_PL1X3	33850	CAMANCHE	4.2	0.92	3	Stockton	Tesla-Bellota
PG&E	CRWCKS_1_SOLAR1	34051	Q539	34.5	0.00	1	Stockton	Tesla-Bellota
PG&E	DONNLS_7_UNIT	34058	DONNELLS	13.8	72.00	1	Stockton	Tesla-Bellota, Stanislaus
PG&E	FROGTN_1_UTICAA				1.40		Stockton	Tesla-Bellota, Stanislaus
PG&E	FROGTN_1_UTICAM				2.37		Stockton	Tesla-Bellota, Stanislaus
PG&E	LOCKFD_1_BEARCK				0.41		Stockton	Tesla-Bellota
PG&E	LOCKFD_1_KSOLAR				0.27		Stockton	Tesla-Bellota
PG&E	LODI25_2_UNIT 1	38120	LODI25CT	9.11	23.80	1	Stockton	Lockeford
PG&E	MANTEC_1_ML1SR1				0.00		Stockton	Tesla-Bellota
PG&E	PEORIA_1_SOLAR				0.41		Stockton	Tesla-Bellota, Stanislaus
PG&E	PHOENX_1_UNIT				0.84		Stockton	Tesla-Bellota, Stanislaus
PG&E	SCHLTE_1_PL1X3	33811	GWFTRCY3	13.8	138.11	1	Stockton	Tesla-Bellota
PG&E	SCHLTE_1_PL1X3	33805	GWFTRCY1	13.8	85.70	1	Stockton	Tesla-Bellota
PG&E	SCHLTE_1_PL1X3	33807	GWFTRCY2	13.8	85.70	1	Stockton	Tesla-Bellota

PG&E	SNDBAR_7_UNIT 1	34060	SANDBAR	13.8	12.88	1	Stockton	Tesla-Bellota, Stanislaus
PG&E	SPIFBD_1_PL1X2	34055	SPISONORA	13.8	5.67	1	Stockton	Tesla-Bellota, Stanislaus
PG&E	SPRGAP_1_UNIT 1	34078	SPRNG GP	6	0.01	1	Stockton	Tesla-Bellota, Stanislaus
PG&E	STANIS_7_UNIT 1	34062	STANISLS	13.8	91.00	1	Stockton	Tesla-Bellota, Stanislaus
PG&E	STNRES_1_UNIT	34056	STNSLSRP	13.8	18.26	1	Stockton	Tesla-Bellota
PG&E	TULLCK_7_UNITS	34076	TULLOCH	6.9	7.41	2	Stockton	Tesla-Bellota
PG&E	TULLCK_7_UNITS	34076	TULLOCH	6.9	6.58	1	Stockton	Tesla-Bellota
PG&E	TULLCK_7_UNITS	34076	TULLOCH	6.9	4.86	3	Stockton	Tesla-Bellota
PG&E	ULTPCH_1_UNIT 1	34050	CH.STN.	13.8	16.19	1	Stockton	Tesla-Bellota, Stanislaus
PG&E	VLYHOM_7_SSJID				0.65		Stockton	Tesla-Bellota, Stanislaus
PG&E	ZZZ_New Unit	365684	Q1103		10.80	1	Stockton	Tesla-Bellota
PG&E	ZZZ_New Unit	34053	Q539		0.00	1	Stockton	Tesla-Bellota
PG&E	ZZZ_New Unit	365556	SAFEWAYB		0.00	RN	Stockton	Tesla-Bellota
PG&E	ZZZZZ_FROGTN_7_UTICA				0.00		Stockton	Tesla-Bellota, Stanislaus
PG&E	ZZZZZ_STOKCG_1_UNIT 1	33814	INGREDION	12.5	0.00	RN	Stockton	Tesla-Bellota
PG&E	ZZZZZZ_NA	33830	GEN.MILL	9.11	0.00	1	Stockton	Lockeford
SCE	ACACIA_6_SOLAR	29878	ACACIA_G	0.48	5.40	EQ	BC/Ventura	
SCE	ALAMO_6_UNIT	25653	ALAMO SC	13.8	11.36	1	BC/Ventura	
SCE	BGSKYN_2_AS2SR1	29774	ANTLOP2_G1	0.42	28.35	EQ	BC/Ventura	
SCE	BGSKYN_2_ASPSR2				27.00		BC/Ventura	
SCE	BGSKYN_2_BS3SR3				5.40		BC/Ventura	
SCE	BIGCRK_2_EXESWD	24317	MAMOTH1G	13.8	92.02	1	BC/Ventura	Rector, Vestal
SCE	BIGCRK_2_EXESWD	24318	MAMOTH2G	13.8	92.02	2	BC/Ventura	Rector, Vestal
SCE	BIGCRK_2_EXESWD	24308	B CRK2-1	13.8	51.18	2	BC/Ventura	Rector, Vestal
SCE	BIGCRK_2_EXESWD	24308	B CRK2-1	13.8	49.99	1	BC/Ventura	Rector, Vestal
SCE	BIGCRK_2_EXESWD	24314	B CRK 4	11.5	49.80	42	BC/Ventura	Rector, Vestal
SCE	BIGCRK_2_EXESWD	24314	B CRK 4	11.5	49.60	41	BC/Ventura	Rector, Vestal
SCE	BIGCRK_2_EXESWD	24315	B CRK 8	13.8	43.30	82	BC/Ventura	Rector, Vestal
SCE	BIGCRK_2_EXESWD	24313	B CRK3-3	13.8	35.92	5	BC/Ventura	Rector, Vestal
SCE	BIGCRK_2_EXESWD	24312	B CRK3-2	13.8	35.43	4	BC/Ventura	Rector, Vestal

SCE	BIGCRK_2_EXESWD	24311	B CRK3-1	13.8	34.44	1	BC/Ventura	Rector, Vestal
SCE	BIGCRK_2_EXESWD	24312	B CRK3-2	13.8	34.44	3	BC/Ventura	Rector, Vestal
SCE	BIGCRK_2_EXESWD	24311	B CRK3-1	13.8	33.46	2	BC/Ventura	Rector, Vestal
SCE	BIGCRK_2_EXESWD	24307	B CRK1-2	13.8	30.71	4	BC/Ventura	Rector, Vestal
SCE	BIGCRK_2_EXESWD	24315	B CRK 8	13.8	24.01	81	BC/Ventura	Rector, Vestal
SCE	BIGCRK_2_EXESWD	24306	B CRK1-1	7.2	21.26	2	BC/Ventura	Rector, Vestal
SCE	BIGCRK_2_EXESWD	24307	B CRK1-2	13.8	21.26	3	BC/Ventura	Rector, Vestal
SCE	BIGCRK_2_EXESWD	24306	B CRK1-1	7.2	19.58	1	BC/Ventura	Rector, Vestal
SCE	BIGCRK_2_EXESWD	24309	B CRK2-2	7.2	19.39	4	BC/Ventura	Rector, Vestal
SCE	BIGCRK_2_EXESWD	24309	B CRK2-2	7.2	18.40	3	BC/Ventura	Rector, Vestal
SCE	BIGCRK_2_EXESWD	24310	B CRK2-3	7.2	18.21	6	BC/Ventura	Rector, Vestal
SCE	BIGCRK_2_EXESWD	24310	B CRK2-3	7.2	16.73	5	BC/Ventura	Rector, Vestal
SCE	BIGCRK_2_EXESWD	24323	PORTAL	4.8	9.45	1	BC/Ventura	Rector, Vestal
SCE	BIGCRK_7_DAM7				0.00		BC/Ventura	Rector, Vestal
SCE	BIGCRK_7_MAMRES				0.00		BC/Ventura	Rector, Vestal
SCE	BIGSKY_2_BSKSR6	29734	BSKY G BC	0.42	5.40	1	BC/Ventura	
SCE	BIGSKY_2_BSKSR7	29737	BSKY G WABS	0.42	5.40	1	BC/Ventura	
SCE	BIGSKY_2_BSKSR8	29740	BSKY G ABSR	0.38	5.40	1	BC/Ventura	
SCE	BIGSKY_2_SOLAR1	29704	BSKY G SMR	0.42	5.40	1	BC/Ventura	
SCE	BIGSKY_2_SOLAR2	29744	BSKY_G_ESC	0.42	34.41	1	BC/Ventura	
SCE	BIGSKY_2_SOLAR3	29725	BSKY_G_BD	0.42	5.40	1	BC/Ventura	
SCE	BIGSKY_2_SOLAR4	29701	BSKY_G_BA	0.42	17.26	1	BC/Ventura	
SCE	BIGSKY_2_SOLAR5	29731	BSKY_G_BB	0.42	1.35	1	BC/Ventura	
SCE	BIGSKY_2_SOLAR6	29728	BSKY_G_SOLV	0.42	22.95	1	BC/Ventura	
SCE	BIGSKY_2_SOLAR7	29731	BSKY_G_ADSR	0.42	13.50	1	BC/Ventura	
SCE	CEDUCR_2_SOLAR1	25049	DUCOR1	0.39	0.00	EQ	BC/Ventura	Vestal
SCE	CEDUCR_2_SOLAR2	25052	DUCOR2	0.39	0.00	EQ	BC/Ventura	Vestal
SCE	CEDUCR_2_SOLAR3	25055	DUCOR3	0.39	0.00	EQ	BC/Ventura	Vestal
SCE	CEDUCR_2_SOLAR4	25058	DUCOR4	0.39	0.00	EQ	BC/Ventura	Vestal
SCE	DELSUR_6_BSOLAR	24411	DELSUR_DIST	66	0.81	1	BC/Ventura	
SCE	DELSUR_6_CREST	24411	DELSUR_DIST	66	0.00		BC/Ventura	
SCE	DELSUR_6_DRYFRB	24411	DELSUR_DIST	66	1.35	1	BC/Ventura	
SCE	DELSUR_6_SOLAR1	24411	DELSUR_DIST	66	1.76	2	BC/Ventura	
SCE	DELSUR_6_SOLAR4	24411	DELSUR_DIST	66	0.00		BC/Ventura	

SCE	DELSUR_6_SOLAR5	24411	DELSUR_DIST	66	0.00		BC/Ventura	
SCE	EASTWD_7_UNIT	24319	EASTWOOD	13.8	199.00	1	BC/Ventura	Rector, Vestal
SCE	EDMONS_2_NSPIN	25605	EDMON1AP	14.4	16.86	1	BC/Ventura	
SCE	EDMONS_2_NSPIN	25606	EDMON2AP	14.4	16.86	2	BC/Ventura	
SCE	EDMONS_2_NSPIN	25607	EDMON3AP	14.4	16.86	3	BC/Ventura	
SCE	EDMONS_2_NSPIN	25607	EDMON3AP	14.4	16.86	4	BC/Ventura	
SCE	EDMONS_2_NSPIN	25608	EDMON4AP	14.4	16.86	5	BC/Ventura	
SCE	EDMONS_2_NSPIN	25608	EDMON4AP	14.4	16.86	6	BC/Ventura	
SCE	EDMONS_2_NSPIN	25609	EDMON5AP	14.4	16.86	7	BC/Ventura	
SCE	EDMONS_2_NSPIN	25609	EDMON5AP	14.4	16.86	8	BC/Ventura	
SCE	EDMONS_2_NSPIN	25610	EDMON6AP	14.4	16.86	9	BC/Ventura	
SCE	EDMONS_2_NSPIN	25610	EDMON6AP	14.4	16.86	10	BC/Ventura	
SCE	EDMONS_2_NSPIN	25611	EDMON7AP	14.4	16.85	11	BC/Ventura	
SCE	EDMONS_2_NSPIN	25611	EDMON7AP	14.4	16.85	12	BC/Ventura	
SCE	EDMONS_2_NSPIN	25612	EDMON8AP	14.4	16.85	13	BC/Ventura	
SCE	EDMONS_2_NSPIN	25612	EDMON8AP	14.4	16.85	14	BC/Ventura	
SCE	GLDFGR_6_SOLAR1	25079	PRIDE B G	0.64	5.40	1	BC/Ventura	
SCE	GLDFGR_6_SOLAR2	25169	PRIDE C G	0.64	3.08	1	BC/Ventura	
SCE	GLOW_6_SOLAR	29896	APPINV	0.42	0.00	EQ	BC/Ventura	
SCE	GOLETA_2_QF	25335	GOLETA_DIST	66	0.04	S1	BC/Ventura	S.Clara, Moorpark, Goleta
SCE	GOLETA_6_ELLWOD	29004	ELLWOOD	13.8	54.00	1	BC/Ventura	S.Clara, Moorpark, Goleta
SCE	GOLETA_6_EXGEN	24362	EXGEN2	13.8	0.00	G1	BC/Ventura	S.Clara, Moorpark, Goleta
SCE	GOLETA_6_EXGEN	24326	EXGEN1	13.8	0.00	S1	BC/Ventura	S.Clara, Moorpark, Goleta
SCE	GOLETA_6_GAVOTA	25335	GOLETA_DIST	66	0.00	S1	BC/Ventura	S.Clara, Moorpark, Goleta
SCE	GOLETA_6_TAJIGS	25335	GOLETA_DIST	66	2.84	S1	BC/Ventura	S.Clara, Moorpark, Goleta
SCE	LEBECS_2_UNITS	29053	PSTRIAS1	18	173.86	S1	BC/Ventura	
SCE	LEBECS_2_UNITS	29051	PSTRIAG1	18	168.90	G1	BC/Ventura	
SCE	LEBECS_2_UNITS	29052	PSTRIAG2	18	168.90	G2	BC/Ventura	
SCE	LEBECS_2_UNITS	29054	PSTRIAG3	18	168.90	G3	BC/Ventura	
SCE	LEBECS_2_UNITS	29055	PSTRIAS2	18	84.45	S2	BC/Ventura	

SCE	LITLRK_6_GBCSR1	24419	LTLRCK_DIST	66	0.81	AS	BC/Ventura	
SCE	LITLRK_6_SEPV01	24419	LTLRCK_DIST	66	0.00	AS	BC/Ventura	
SCE	LITLRK_6_SOLAR1	24419	LTLRCK_DIST	66	1.35	AS	BC/Ventura	
SCE	LITLRK_6_SOLAR2	24419	LTLRCK_DIST	66	0.54	AS	BC/Ventura	
SCE	LITLRK_6_SOLAR3	24419	LTLRCK_DIST	66	0.54	AS	BC/Ventura	
SCE	LITLRK_6_SOLAR4	24419	LTLRCK_DIST	66	0.81	AS	BC/Ventura	
SCE	LNCSTR_6_CREST				0.00		BC/Ventura	
SCE	MNDALY_6_MCGRTH	29306	MCGPKGEN	13.8	47.20	1	BC/Ventura	S.Clara, Moorpark
SCE	MOORPK_2_CALABS	25081	WDT251	13.8	4.57	EQ	BC/Ventura	Moorpark
SCE	MOORPK_6_QF				0.80		BC/Ventura	Moorpark
SCE	NEENCH_6_SOLAR	29900	ALPINE_G	0.48	17.82	EQ	BC/Ventura	
SCE	OASIS_6_CREST				0.00		BC/Ventura	
SCE	OASIS_6_GBDSR4	24421	OASIS_DIST	66	0.81	1	BC/Ventura	
SCE	OASIS_6_SOLAR1	25095	SOLARISG2	0.2	0.00	EQ	BC/Ventura	
SCE	OASIS_6_SOLAR2	25075	SOLARISG	0.2	5.40	EQ	BC/Ventura	
SCE	OASIS_6_SOLAR3				0.00		BC/Ventura	
SCE	OMAR_2_UNIT 1	24102	OMAR 1G	13.8	70.30	1	BC/Ventura	
SCE	OMAR_2_UNIT 2	24103	OMAR 2G	13.8	71.24	2	BC/Ventura	
SCE	OMAR_2_UNIT 3	24104	OMAR 3G	13.8	74.03	3	BC/Ventura	
SCE	OMAR_2_UNIT 4	24105	OMAR 4G	13.8	81.44	4	BC/Ventura	
SCE	ORMOND_7_UNIT 1	24107	ORMOND1G	26	741.27	1	BC/Ventura	Moorpark
SCE	ORMOND_7_UNIT 2	24108	ORMOND2G	26	750.00	2	BC/Ventura	Moorpark
SCE	OSO_6_NSPIN	25614	OSO A P	13.2	2.25	1	BC/Ventura	
SCE	OSO_6_NSPIN	25614	OSO A P	13.2	2.25	2	BC/Ventura	
SCE	OSO_6_NSPIN	25614	OSO A P	13.2	2.25	3	BC/Ventura	
SCE	OSO_6_NSPIN	25614	OSO A P	13.2	2.25	4	BC/Ventura	
SCE	OSO_6_NSPIN	25615	OSO B P	13.2	2.25	5	BC/Ventura	
SCE	OSO_6_NSPIN	25615	OSO B P	13.2	2.25	6	BC/Ventura	
SCE	OSO_6_NSPIN	25615	OSO B P	13.2	2.25	7	BC/Ventura	
SCE	OSO_6_NSPIN	25615	OSO B P	13.2	2.25	8	BC/Ventura	
SCE	PLAINV_6_BSOLAR	29917	SSOLAR)GRWKS	0.8	0.00	1	BC/Ventura	
SCE	PLAINV_6_DSOLAR	29914	WADR_PV	0.42	2.70	1	BC/Ventura	

SCE	PLAINV_6_NLRSR1	29921	NLR_INVTR	0.42	0.00	1	BC/Ventura	
SCE	PLAINV_6_SOLAR3	25089	CNTRL ANT G	0.42	0.00	1	BC/Ventura	
SCE	PLAINV_6_SOLARC	25086	SIRA SOLAR G	0.8	0.00	1	BC/Ventura	
SCE	PMDLET_6_SOLAR1				2.70		BC/Ventura	
SCE	RECTOR_2_CREST	25333	RECTOR_DIST	66	0.00	S1	BC/Ventura	Rector, Vestal
SCE	RECTOR_2_KAWEAH	25333	RECTOR_DIST	66	1.74	S2	BC/Ventura	Rector, Vestal
SCE	RECTOR_2_KAWH 1	24370	KAWGEN	13.8	0.52	1	BC/Ventura	Rector, Vestal
SCE	RECTOR_2_QF	25333	RECTOR_DIST	66	3.94	S1	BC/Ventura	Rector, Vestal
SCE	RECTOR_2_TFDBM1				0.00		BC/Ventura	Rector, Vestal
SCE	RECTOR_7_TULARE	25333	RECTOR_DIST	66	0.00	S1	BC/Ventura	Rector, Vestal
SCE	REDMAN_2_SOLAR	24425	REDMAN_DIST	66	1.01	AS	BC/Ventura	
SCE	REDMAN_6_AVSSR1				0.81		BC/Ventura	
SCE	ROSMND_6_SOLAR	24434	ROSAMOND_DIS	66	0.81	AS	BC/Ventura	
SCE	RSMSLR_6_SOLAR1	29984	DAWNGEN	0.8	5.40	EQ	BC/Ventura	
SCE	RSMSLR_6_SOLAR2	29888	TWILGHTG	0.8	5.40	EQ	BC/Ventura	
SCE	SAUGUS_6_CREST				0.00		BC/Ventura	
SCE	SAUGUS_6_MWDFTH	25336	SAUGUS_MWD	66	5.40	S1	BC/Ventura	
SCE	SAUGUS_6_QF	24135	SAUGUS	66	0.70		BC/Ventura	
SCE	SAUGUS_7_CHIQCN	24135	SAUGUS	66	5.63		BC/Ventura	
SCE	SAUGUS_7_LOPEZ	24135	SAUGUS	66	5.34		BC/Ventura	
SCE	SHUTLE_6_CREST	24426	SHUTTLE_DIST	66	0.00	AS	BC/Ventura	
SCE	SNCLRA_2_HOWLNG	25080	SANTACLR_DIS	13.8	8.72	EQ	BC/Ventura	S.Clara, Moorpark
SCE	SNCLRA_2_SPRHYD	25080	SANTACLR_DIS	13.8	0.18	EQ	BC/Ventura	S.Clara, Moorpark
SCE	SNCLRA_2_UNIT	29952	CAMGEN	13.8	27.50	D1	BC/Ventura	S.Clara, Moorpark
SCE	SNCLRA_2_UNIT1	24159	WILLAMET	3.8	15.63	D1	BC/Ventura	S.Clara, Moorpark
SCE	SNCLRA_6_OXGEN	24110	OXGEN	13.8	35.38	D1	BC/Ventura	S.Clara, Moorpark
SCE	SNCLRA_6_PROCGN	24119	PROCGEN	13.8	45.47	D1	BC/Ventura	S.Clara, Moorpark
SCE	SNCLRA_6_QF	25080	SANTACLR_DIS	13.8	0.00	EQ	BC/Ventura	S.Clara, Moorpark
SCE	SPRGVL_2_CREST	25334	SPRNGVL_DIST	66	0.00	S1	BC/Ventura	Rector, Vestal
SCE	SPRGVL_2_QF	25334	SPRNGVL_DIST	66	0.18	S1	BC/Ventura	Rector, Vestal
SCE	SPRGVL_2_TULE	25334	SPRNGVL_DIST	66	0.00	S2	BC/Ventura	Rector, Vestal

SCE	SPRGVL_2_TULESC	25334	SPRNGVL_DIST	66	0.00	S1	BC/Ventura	Rector, Vestal
SCE	SUNSHN_2_LNDFL	29954	WDT273	13.7	3.17	1	BC/Ventura	
SCE	SUNSHN_2_LNDFL	29954	WDT273	13.7	3.17	2	BC/Ventura	
SCE	SUNSHN_2_LNDFL	29954	WDT273	13.7	3.17	3	BC/Ventura	
SCE	SUNSHN_2_LNDFL	29954	WDT273	13.7	3.17	4	BC/Ventura	
SCE	SUNSHN_2_LNDFL	29954	WDT273	13.7	3.17	5	BC/Ventura	
SCE	SYCAMR_2_UNIT 1	24143	SYCCYN1G	13.8	77.41	1	BC/Ventura	
SCE	SYCAMR_2_UNIT 2	24144	SYCCYN2G	13.8	80.00	2	BC/Ventura	
SCE	SYCAMR_2_UNIT 3	24145	SYCCYN3G	13.8	80.00	3	BC/Ventura	
SCE	SYCAMR_2_UNIT 4	24146	SYCCYN4G	13.8	80.00	4	BC/Ventura	
SCE	TENGEN_2_PL1X2	24148	TENNGEN1	13.8	18.80	D1	BC/Ventura	
SCE	TENGEN_2_PL1X2	24149	TENNGEN2	13.8	18.80	D2	BC/Ventura	
SCE	VESTAL_2_KERN	24372	KR 3-1	11	6.50	1	BC/Ventura	Vestal
SCE	VESTAL_2_KERN	24373	KR 3-2	11	6.13	2	BC/Ventura	Vestal
SCE	VESTAL_2_RTS042				0.00		BC/Ventura	Vestal
SCE	VESTAL_2_SOLAR1	25064	TULRESLR_1	0.39	5.40	1	BC/Ventura	Vestal
SCE	VESTAL_2_SOLAR2	25065	TULRESLR_2	0.39	3.78	1	BC/Ventura	Vestal
SCE	VESTAL_2_UNIT1				4.03		BC/Ventura	Vestal
SCE	VESTAL_2_WELLHD	24116	WELLGEN	13.8	49.00	1	BC/Ventura	Vestal
SCE	VESTAL_6_QF	29008	LAKEGEN	13.8	5.49	1	BC/Ventura	Vestal
SCE	WARNE_2_UNIT	25651	WARNE1	13.8	20.79	1	BC/Ventura	
SCE	WARNE_2_UNIT	25652	WARNE2	13.8	20.79	2	BC/Ventura	
SCE	ZZ_NA	24340	CHARMIN	13.8	2.80	1	BC/Ventura	S.Clara, Moorpark
SCE	ZZZ_New Unit	698508	WDT1519	66	100.00	EQ	BC/Ventura	S.Clara, Moorpark
SCE	ZZZ_New Unit	699101	WDT1454	66	40.00	EQ	BC/Ventura	S.Clara, Moorpark
SCE	ZZZ_New Unit	99739	GOLETA-DIST	66	30.00	EQ	BC/Ventura	S.Clara, Moorpark, Goleta
SCE	ZZZ_New Unit	99740	S.CLARA-DIST	66	11.00	EQ	BC/Ventura	S.Clara, Moorpark
SCE	ZZZ_New Unit	24127	S.CLARA	66	9.27	X8	BC/Ventura	S.Clara, Moorpark
SCE	ZZZ_New Unit	24057	GOLETA	66	4.73	X8	BC/Ventura	S.Clara, Moorpark, Goleta

SCE	ZZZZZ_APPGEN_6_UNIT 1	24009	APPGEN1G	13.8	0.00	1	BC/Ventura	
SCE	ZZZZZ_APPGEN_6_UNIT 1	24010	APPGEN2G	13.8	0.00	2	BC/Ventura	
SCE	ZZZZZ_APPGEN_6_UNIT 1	24361	APPGEN3G	13.8	0.00	3	BC/Ventura	
SCE	ZZZZZ_MNDALY_7_UNIT 1	24089	MANDLY1G	13.8	0.00	1	BC/Ventura	S.Clara, Moorpark
SCE	ZZZZZ_MNDALY_7_UNIT 2	24090	MANDLY2G	13.8	0.00	2	BC/Ventura	S.Clara, Moorpark
SCE	ZZZZZ_MNDALY_7_UNIT 3	24222	MANDLY3G	16	0.00	3	BC/Ventura	S.Clara, Moorpark
SCE	ZZZZZ_MOORPK_7_UNITA1	24098	MOORPARK	66	0.00		BC/Ventura	Moorpark
SCE	ZZZZZ_PANDOL_6_UNIT	24113	PANDOL	13.8	0.00	1	BC/Ventura	Vestal
SCE	ZZZZZ_PANDOL_6_UNIT	24113	PANDOL	13.8	0.00	2	BC/Ventura	Vestal
SCE	ZZZZZ_SAUGUS_2_TOLAND	24135	SAUGUS	66	0.00		BC/Ventura	
SCE	ZZZZZ_SAUGUS_6_PTCHGN	24118	PITCHGEN	13.8	0.00	D1	BC/Ventura	
SCE	ZZZZZ_VESTAL_6_ULTRGN	24150	ULTRAGEN	13.8	0.00	1	BC/Ventura	Vestal
SCE	ALAMIT_2_PL1X3	24577	ALMT STG	18	251.66	S1	LA Basin	Western
SCE	ALAMIT_2_PL1X3	24575	ALMT CTG1	18	211.52	G1	LA Basin	Western
SCE	ALAMIT_2_PL1X3	24576	ALMT CTG2	18	211.52	G2	LA Basin	Western
SCE	ALAMIT_7_UNIT 3	24003	ALAMT3 G	18	332.18	3	LA Basin	Western
SCE	ALAMIT_7_UNIT 4	24004	ALAMT4 G	18	335.67	4	LA Basin	Western
SCE	ALAMIT_7_UNIT 5	24005	ALAMT5 G	20	497.97	5	LA Basin	Western
SCE	ALTWD_1_QF	25635	ALTWIND	115	3.82	Q1	LA Basin	Eastern, Valley-Devers
SCE	ALTWD_1_QF	25635	ALTWIND	115	3.82	Q2	LA Basin	Eastern, Valley-Devers
SCE	ANAHM_2_CANYN1	25211	CanyonGT 1	13.8	49.40	1	LA Basin	Western
SCE	ANAHM_2_CANYN2	25212	CanyonGT 2	13.8	48.00	2	LA Basin	Western
SCE	ANAHM_2_CANYN3	25213	CanyonGT 3	13.8	48.00	3	LA Basin	Western
SCE	ANAHM_2_CANYN4	25214	CanyonGT 4	13.8	49.40	4	LA Basin	Western

SCE	ANAHM_7_CT	25208	DowlingCTG	13.8	40.64	1	LA Basin	Western
SCE	ARCOGN_2_UNITS	24011	ARCO 1G	13.8	51.98	1	LA Basin	Western
SCE	ARCOGN_2_UNITS	24012	ARCO 2G	13.8	51.98	2	LA Basin	Western
SCE	ARCOGN_2_UNITS	24013	ARCO 3G	13.8	51.98	3	LA Basin	Western
SCE	ARCOGN_2_UNITS	24014	ARCO 4G	13.8	51.98	4	LA Basin	Western
SCE	ARCOGN_2_UNITS	24163	ARCO 5G	13.8	25.99	5	LA Basin	Western
SCE	ARCOGN_2_UNITS	24164	ARCO 6G	13.8	25.99	6	LA Basin	Western
SCE	BARRE_2_QF	24016	BARRE	230	0.00		LA Basin	Western
SCE	BARRE_6_PEAKER	29309	BARPKGEN	13.8	47.00	1	LA Basin	Western
SCE	BLAST_1_WIND	24839	BLAST	115	10.29	1	LA Basin	Eastern, Valley-Devers
SCE	BUCKWD_1_NPALM1	25634	BUCKWIND	115	0.65		LA Basin	Eastern, Valley-Devers
SCE	BUCKWD_1_QF	25634	BUCKWIND	115	3.47	QF	LA Basin	Eastern, Valley-Devers
SCE	BUCKWD_7_WINTCV	25634	BUCKWIND	115	0.28	W5	LA Basin	Eastern, Valley-Devers
SCE	CABZON_1_WINDA1	29290	CABAZON	33	8.61	1	LA Basin	Eastern, Valley-Devers
SCE	CAPWD_1_QF	25633	CAPWIND	115	4.11	QF	LA Basin	Eastern, Valley-Devers
SCE	CENTER_2_RHONDO	24203	CENTER S	66	1.91		LA Basin	Western
SCE	CENTER_2_SOLAR1				0.00		LA Basin	Western
SCE	CENTER_2_TECNG1				0.00		LA Basin	Western
SCE	CENTER_6_PEAKER	29308	CTRPKGEN	13.8	47.11	1	LA Basin	Western
SCE	CENTRY_6_PL1X4	25302	CLTNCTRY	13.8	36.00	1	LA Basin	Eastern
SCE	CHEVMN_2_UNITS	24022	CHEVGEN1	13.8	3.77	1	LA Basin	Western, El Nido
SCE	CHEVMN_2_UNITS	24023	CHEVGEN2	13.8	3.77	2	LA Basin	Western, El Nido
SCE	CHINO_2_APEBT1	25180	WDT1250BESS_	0.48	20.00	1	LA Basin	Eastern
SCE	CHINO_2_JURUPA				0.00		LA Basin	Eastern
SCE	CHINO_2_QF				0.00		LA Basin	Eastern
SCE	CHINO_2_SASOLR				0.00		LA Basin	Eastern
SCE	CHINO_2_SOLAR				0.27		LA Basin	Eastern

SCE	CHINO_2_SOLAR2				0.00		LA Basin	Eastern
SCE	CHINO_6_CIMGEN	24026	CIMGEN	13.8	26.00	D1	LA Basin	Eastern
SCE	CHINO_7_MILIKN	24024	CHINO	66	1.19		LA Basin	Eastern
SCE	COLTON_6_AGUAM1	25303	CLTNAGUA	13.8	43.00	1	LA Basin	Eastern
SCE	CORONS_2_SOLAR				0.00		LA Basin	Eastern
SCE	CORONS_6_CLRWTR	29338	CLRWTRCT	13.8	20.72	G1	LA Basin	Eastern
SCE	CORONS_6_CLRWTR	29340	CLRWTRST	13.8	7.28	S1	LA Basin	Eastern
SCE	DELAMO_2_SOLAR1				0.41		LA Basin	Western
SCE	DELAMO_2_SOLAR2				0.47		LA Basin	Western
SCE	DELAMO_2_SOLAR3				0.34		LA Basin	Western
SCE	DELAMO_2_SOLAR4				0.35		LA Basin	Western
SCE	DELAMO_2_SOLAR5				0.27		LA Basin	Western
SCE	DELAMO_2_SOLAR6				0.54		LA Basin	Western
SCE	DELAMO_2_SOLRC1				0.00		LA Basin	Western
SCE	DELAMO_2_SOLRD				0.00		LA Basin	Western
SCE	DEVERS_1_QF	25639	SEAWIND	115	0.92	QF	LA Basin	Eastern, Valley-Devers
SCE	DEVERS_1_QF	25632	TERAWND	115	0.76	QF	LA Basin	Eastern, Valley-Devers
SCE	DEVERS_1_SEPV05				0.00		LA Basin	Eastern, Valley-Devers
SCE	DEVERS_1_SOLAR				0.00		LA Basin	Eastern, Valley-Devers
SCE	DEVERS_1_SOLAR1				0.00		LA Basin	Eastern, Valley-Devers
SCE	DEVERS_1_SOLAR2				0.00		LA Basin	Eastern, Valley-Devers
SCE	DEVERS_2_CS2SR4				0.00		LA Basin	Eastern, Valley-Devers

SCE	DEVERS_2_DHSPG2				0.00		LA Basin	Eastern, Valley-Devers
SCE	DMDVLY_1_UNITS	25425	ESRP P2	6.9	3.00	8	LA Basin	Eastern
SCE	DREWS_6_PL1X4	25301	CLTNDREW	13.8	36.00	1	LA Basin	Eastern
SCE	DVLCYN_1_UNITS	25603	DVLCYN3G	13.8	36.95	3	LA Basin	Eastern
SCE	DVLCYN_1_UNITS	25604	DVLCYN4G	13.8	36.95	4	LA Basin	Eastern
SCE	DVLCYN_1_UNITS	25648	DVLCYN1G	13.8	27.72	1	LA Basin	Eastern
SCE	DVLCYN_1_UNITS	25649	DVLCYN2G	13.8	27.72	2	LA Basin	Eastern
SCE	ELLIS_2_QF	24325	ORCOGEN	13.8	0.06	1	LA Basin	Western
SCE	ELSEGN_2_UN1011	29904	ELSEG5GT	16.5	131.50	5	LA Basin	Western, El Nido
SCE	ELSEGN_2_UN1011	29903	ELSEG6ST	13.8	131.50	6	LA Basin	Western, El Nido
SCE	ELSEGN_2_UN2021	29902	ELSEG7GT	16.5	131.84	7	LA Basin	Western, El Nido
SCE	ELSEGN_2_UN2021	29901	ELSEG8ST	13.8	131.84	8	LA Basin	Western, El Nido
SCE	ETIWND_2_CHMPNE				0.00		LA Basin	Eastern
SCE	ETIWND_2_FONTNA	24055	ETIWANDA	66	0.21		LA Basin	Eastern
SCE	ETIWND_2_RTS010	24055	ETIWANDA	66	0.41		LA Basin	Eastern
SCE	ETIWND_2_RTS015	24055	ETIWANDA	66	0.81		LA Basin	Eastern
SCE	ETIWND_2_RTS017	24055	ETIWANDA	66	0.95		LA Basin	Eastern
SCE	ETIWND_2_RTS018	24055	ETIWANDA	66	0.41		LA Basin	Eastern
SCE	ETIWND_2_RTS023	24055	ETIWANDA	66	0.68		LA Basin	Eastern
SCE	ETIWND_2_RTS026	24055	ETIWANDA	66	1.62		LA Basin	Eastern
SCE	ETIWND_2_RTS027	24055	ETIWANDA	66	0.54		LA Basin	Eastern
SCE	ETIWND_2_SOLAR1				0.00		LA Basin	Eastern
SCE	ETIWND_2_SOLAR2				0.00		LA Basin	Eastern
SCE	ETIWND_2_SOLAR5				0.00		LA Basin	Eastern
SCE	ETIWND_2_UNIT1	24071	INLAND	13.8	10.34	1	LA Basin	Eastern
SCE	ETIWND_6_GRPLND	29305	ETWPKGEN	13.8	47.39	1	LA Basin	Eastern

SCE	ETIWND_6_MWDETI	25422	ETI MWDG	13.8	16.70	1	LA Basin	Eastern
SCE	GARNET_1_SOLAR	24815	GARNET	115	0.00		LA Basin	Eastern, Valley-Devers
SCE	GARNET_1_SOLAR2	24815	GARNET	115	1.08		LA Basin	Eastern, Valley-Devers
SCE	GARNET_1_UNITS	24815	GARNET	115	1.63	G1	LA Basin	Eastern, Valley-Devers
SCE	GARNET_1_UNITS	24815	GARNET	115	1.28	G3	LA Basin	Eastern, Valley-Devers
SCE	GARNET_1_UNITS	24815	GARNET	115	0.56	G2	LA Basin	Eastern, Valley-Devers
SCE	GARNET_1_WIND	24815	GARNET	115	1.37		LA Basin	Eastern, Valley-Devers
SCE	GARNET_1_WINDS	24815	GARNET	115	4.73	W2	LA Basin	Eastern, Valley-Devers
SCE	GARNET_1_WT3WND	24815	GARNET	115	0.00	W3	LA Basin	Eastern, Valley-Devers
SCE	GARNET_2_DIFWD1	24815	GARNET	115	1.65		LA Basin	Eastern, Valley-Devers
SCE	GARNET_2_HYDRO	24815	GARNET	115	0.76	QF	LA Basin	Eastern, Valley-Devers
SCE	GARNET_2_WIND1	24815	GARNET	115	2.35		LA Basin	Eastern, Valley-Devers
SCE	GARNET_2_WIND2	24815	GARNET	115	2.46		LA Basin	Eastern, Valley-Devers
SCE	GARNET_2_WIND3	24815	GARNET	115	2.65		LA Basin	Eastern, Valley-Devers
SCE	GARNET_2_WIND4	24815	GARNET	115	2.06		LA Basin	Eastern, Valley-Devers
SCE	GARNET_2_WIND5	24815	GARNET	115	0.63		LA Basin	Eastern, Valley-Devers
SCE	GARNET_2_WPMWD6	24815	GARNET	115	1.25		LA Basin	Eastern, Valley-Devers
SCE	GLNARM_2_UNIT 5	29013	GLENARM5_CT	13.8	50.00	CT	LA Basin	Western
SCE	GLNARM_2_UNIT 5	29014	GLENARM5_ST	13.8	15.00	ST	LA Basin	Western
SCE	GLNARM_7_UNIT 1	29005	PASADNA1	13.8	22.07	1	LA Basin	Western
SCE	GLNARM_7_UNIT 2	29006	PASADNA2	13.8	22.30	1	LA Basin	Western
SCE	GLNARM_7_UNIT 3	25042	PASADNA3	13.8	44.83	1	LA Basin	Western
SCE	GLNARM_7_UNIT 4	25043	PASADNA4	13.8	42.42	1	LA Basin	Western
SCE	HARBGN_7_UNITS	24062	HARBOR G	13.8	76.27	1	LA Basin	Western

SCE	HARBGN_7_UNITS	24062	HARBOR G	13.8	11.86	HP	LA Basin	Western
SCE	HARBGN_7_UNITS	25510	HARBORG4	4.16	11.86	LP	LA Basin	Western
SCE	HINSON_6_CARBGN	24020	CARBGEN1	13.8	14.43	1	LA Basin	Western
SCE	HINSON_6_CARBGN	24328	CARBGEN2	13.8	14.43	1	LA Basin	Western
SCE	HINSON_6_LBECH1	24170	LBEACH12	13.8	65.00	1	LA Basin	Western
SCE	HINSON_6_LBECH2	24170	LBEACH12	13.8	65.00	2	LA Basin	Western
SCE	HINSON_6_LBECH3	24171	LBEACH34	13.8	65.00	3	LA Basin	Western
SCE	HINSON_6_LBECH4	24171	LBEACH34	13.8	65.00	4	LA Basin	Western
SCE	HINSON_6_SERRGN	24139	SERRFGEN	13.8	34.00	D1	LA Basin	Western
SCE	HNTGBH_2_PL1X3	24581	HUNTBCH CTG2	18	211,23	G2	LA Basin	Western
SCE	HNTGBH_2_PL1X3	24582	HUNTBCH STG	18	251.34	S1	LA Basin	Western
SCE	HNTGBH_2_PL1X3	24580	HUNTBCH CTG1	18	211.23	G1	LA Basin	Western
SCE	HNTGBH_7_UNIT 2	24067	HUNT2 G	13.8	225.80	2	LA Basin	Western
SCE	INDIGO_1_UNIT 1	29190	WINTECX2	13.8	42.00	1	LA Basin	Eastern, Valley-Devers
SCE	INDIGO_1_UNIT 2	29191	WINTECX1	13.8	42.00	1	LA Basin	Eastern, Valley-Devers
SCE	INDIGO_1_UNIT 3	29180	WINTEC8	13.8	42.00	1	LA Basin	Eastern, Valley-Devers
SCE	LACIEN_2_VENICE	24337	VENICE	13.8	3.00	1	LA Basin	Western, El Nido
SCE	LAGBEL_6_QF	29951	REFUSE	13.8	0.35	D1	LA Basin	Western
SCE	LGHTHP_6_ICEGEN	24070	ICEGEN	13.8	48.00	1	LA Basin	Western
SCE	MESAS_2_QF	24209	MESA CAL	66	0.00		LA Basin	Western
SCE	MIRLOM_2_CORONA				0.00		LA Basin	Eastern
SCE	MIRLOM_2_LNDFL				0.81		LA Basin	Eastern
SCE	MIRLOM_2_MLBBTA	25185	WDT1425_G1	0.48	10.00	1	LA Basin	Eastern
SCE	MIRLOM_2_MLBBTB	25186	WDT1426_G2	0.48	10.00	1	LA Basin	Eastern
SCE	MIRLOM_2_ONTARO				1.49		LA Basin	Eastern
SCE	MIRLOM_2_RTS032				0.41		LA Basin	Eastern
SCE	MIRLOM_2_RTS033				0.27		LA Basin	Eastern

SCE	MIRLOM_2_TEMESC				0.00		LA Basin	Eastern
SCE	MIRLOM_6_PEAKER	29307	MRLPKGEN	13.8	46.00	1	LA Basin	Eastern
SCE	MIRLOM_7_MWDLKM	24210	MIRALOMA	66	1.80		LA Basin	Eastern
SCE	MOJAVE_1_SIPHON	25657	MJVSPHN1	13.8	3.20	1	LA Basin	Eastern
SCE	MOJAVE_1_SIPHON	25658	MJVSPHN1	13.8	3.20	2	LA Basin	Eastern
SCE	MOJAVE_1_SIPHON	25659	MJVSPHN1	13.8	3.20	3	LA Basin	Eastern
SCE	MTWIND_1_UNIT 1	29060	MOUNTWND	115	9.32	S1	LA Basin	Eastern, Valley-Devers
SCE	MTWIND_1_UNIT 2	29060	MOUNTWND	115	4.66	S2	LA Basin	Eastern, Valley-Devers
SCE	MTWIND_1_UNIT 3	29060	MOUNTWND	115	4.71	S3	LA Basin	Eastern, Valley-Devers
SCE	OLINDA_2_COYCRK	24211	OLINDA	66	3.13		LA Basin	Western
SCE	OLINDA_2_LNDFL2	29011	BREAPWR2	13.8	7.16	S1	LA Basin	Western
SCE	OLINDA_2_LNDFL2	29011	BREAPWR2	13.8	4.00	C1	LA Basin	Western
SCE	OLINDA_2_LNDFL2	29011	BREAPWR2	13.8	4.00	C2	LA Basin	Western
SCE	OLINDA_2_LNDFL2	29011	BREAPWR2	13.8	4.00	C3	LA Basin	Western
SCE	OLINDA_2_LNDFL2	29011	BREAPWR2	13.8	4.00	C4	LA Basin	Western
SCE	OLINDA_2_QF	24211	OLINDA	66	0.00		LA Basin	Western
SCE	OLINDA_7_BLKSND	24211	OLINDA	66	0.36		LA Basin	Western
SCE	OLINDA_7_LNDFIL	24211	OLINDA	66	0.00		LA Basin	Western
SCE	PADUA_2_ONTARO	24111	PADUA	66	0.35		LA Basin	Eastern
SCE	PADUA_2_SOLAR1	24111	PADUA	66	0.00		LA Basin	Eastern
SCE	PADUA_6_MWDSDM	24111	PADUA	66	2.60		LA Basin	Eastern
SCE	PADUA_6_QF	24111	PADUA	66	0.39		LA Basin	Eastern
SCE	PADUA_7_SDIMAS	24111	PADUA	66	1.05		LA Basin	Eastern
SCE	PANSEA_1_PANARO	25640	PANAERO	115	6.30	QF	LA Basin	Eastern, Valley-Devers
SCE	PWEST_1_UNIT	24815	GARNET	115	0.44	PC	LA Basin	Western

SCE	REDOND_7_UNIT 5	24121	REDON5 G	18	178.87	5	LA Basin	Western
SCE	REDOND_7_UNIT 6	24122	REDON6 G	18	175.00	6	LA Basin	Western
SCE	REDOND_7_UNIT 8	24124	REDON8 G	20	495.90	8	LA Basin	Western
SCE	RENWD_1_QF	25636	RENWIND	115	1.33	Q1	LA Basin	Eastern, Valley-Devers
SCE	RENWD_1_QF	25636	RENWIND	115	1.32	Q2	LA Basin	Eastern, Valley-Devers
SCE	RVSIDE_2_RERCU3	24299	RERC2G3	13.8	49.00	1	LA Basin	Eastern
SCE	RVSIDE_2_RERCU4	24300	RERC2G4	13.8	49.00	1	LA Basin	Eastern
SCE	RVSIDE_6_RERCU1	24242	RERC1G	13.8	48.35	1	LA Basin	Eastern
SCE	RVSIDE_6_RERCU2	24243	RERC2G	13.8	48.50	1	LA Basin	Eastern
SCE	RVSIDE_6_SOLAR1	24244	SPRINGEN	13.8	2.03		LA Basin	Eastern
SCE	RVSIDE_6_SPRING	24244	SPRINGEN	13.8	36.00	1	LA Basin	Eastern
SCE	SANITR_6_UNITS	24324	SANIGEN	13.8	0.84	D1	LA Basin	Eastern
SCE	SANTGO_2_LNDFL1	24341	COYGEN	13.8	18.65	1	LA Basin	Western
SCE	SANTGO_2_MABBT1	25192	WDT1406_G	0.48	2.00	1	LA Basin	Western
SCE	SANWD_1_QF	25646	SANWIND	115	3.26	Q1	LA Basin	Eastern, Valley-Devers
SCE	SANWD_1_QF	25646	SANWIND	115	3.26	Q2	LA Basin	Eastern, Valley-Devers
SCE	SBERDO_2_PSP3	24923	MNTV-ST1	18	257.82	1	LA Basin	Eastern, West of Devers
SCE	SBERDO_2_PSP3	24921	MNTV-CT1	18	148.59	1	LA Basin	Eastern, West of Devers
SCE	SBERDO_2_PSP3	24922	MNTV-CT2	18	148.59	1	LA Basin	Eastern, West of Devers
SCE	SBERDO_2_PSP4	24926	MNTV-ST2	18	257.82	1	LA Basin	Eastern, West of Devers
SCE	SBERDO_2_PSP4	24924	MNTV-CT3	18	148.59	1	LA Basin	Eastern, West of Devers
SCE	SBERDO_2_PSP4	24925	MNTV-CT4	18	148.59	1	LA Basin	Eastern, West of Devers
SCE	SBERDO_2_QF	24214	SANBRDNO	66	0.14		LA Basin	Eastern, West of Devers
SCE	SBERDO_2_REDLND	24214	SANBRDNO	66	0.54		LA Basin	Eastern, West of Devers

SCE	SBERDO_2_RTS005	24214	SANBRDNO	66	0.68		LA Basin	Eastern, West of Devers
SCE	SBERDO_2_RTS007	24214	SANBRDNO	66	0.68		LA Basin	Eastern, West of Devers
SCE	SBERDO_2_RTS011	24214	SANBRDNO	66	0.95		LA Basin	Eastern, West of Devers
SCE	SBERDO_2_RTS013	24214	SANBRDNO	66	0.95		LA Basin	Eastern, West of Devers
SCE	SBERDO_2_RTS016	24214	SANBRDNO	66	0.41		LA Basin	Eastern, West of Devers
SCE	SBERDO_2_RTS048	24214	SANBRDNO	66	0.00		LA Basin	Eastern, West of Devers
SCE	SBERDO_2_SNTANA	24214	SANBRDNO	66	0.30		LA Basin	Eastern, West of Devers
SCE	SBERDO_6_MILLCK	24214	SANBRDNO	66	1.09		LA Basin	Eastern, West of Devers
SCE	SENTNL_2_CTG1	29101	SENTINEL_G1	13.8	103.76	1	LA Basin	Eastern, Valley-Devers
SCE	SENTNL_2_CTG2	29102	SENTINEL_G2	13.8	95.34	1	LA Basin	Eastern, Valley-Devers
SCE	SENTNL_2_CTG3	29103	SENTINEL_G3	13.8	96.85	1	LA Basin	Eastern, Valley-Devers
SCE	SENTNL_2_CTG4	29104	SENTINEL_G4	13.8	102.47	1	LA Basin	Eastern, Valley-Devers
SCE	SENTNL_2_CTG5	29105	SENTINEL_G5	13.8	103.81	1	LA Basin	Eastern, Valley-Devers
SCE	SENTNL_2_CTG6	29106	SENTINEL_G6	13.8	100.99	1	LA Basin	Eastern, Valley-Devers
SCE	SENTNL_2_CTG7	29107	SENTINEL_G7	13.8	97.06	1	LA Basin	Eastern, Valley-Devers
SCE	SENTNL_2_CTG8	29108	SENTINEL_G8	13.8	101.80	1	LA Basin	Eastern, Valley-Devers
SCE	TIFFNY_1_DILLON	29021	WINTEC6	115	9.45	1	LA Basin	Eastern, Valley-Devers
SCE	TRNSWD_1_QF	25637	TRANWIND	115	8.18	QF	LA Basin	Eastern, Valley-Devers
SCE	TULEWD_1_TULWD1				26.80		LA Basin	Eastern, Valley-Devers
SCE	VALLEY_5_PERRIS	24160	VALLEYSC	115	7.94		LA Basin	Eastern, Valley, Valley-Devers

SCE	VALLEY_5_REDMTN	24160	VALLEYSC	115	3.80		LA Basin	Eastern, Valley, Valley-Devers
SCE	VALLEY_5_RTS044	24160	VALLEYSC	115	2.16		LA Basin	Eastern, Valley, Valley-Devers
SCE	VALLEY_5_SOLAR1	24160	VALLEYSC	115	0.00		LA Basin	Eastern, Valley, Valley-Devers
SCE	VALLEY_5_SOLAR2	25082	WDT786	34.5	5.40	EQ	LA Basin	Eastern, Valley, Valley-Devers
SCE	VENWD_1_WIND1	25645	VENWIND	115	1.98	Q1	LA Basin	Eastern, Valley-Devers
SCE	VENWD_1_WIND2	25645	VENWIND	115	3.37	Q2	LA Basin	Eastern, Valley-Devers
SCE	VENWD_1_WIND3	25645	VENWIND	115	4.00	EU	LA Basin	Eastern, Valley-Devers
SCE	VERNON_6_GONZL1	24342	FEDGEN	13.8	5.75	1	LA Basin	Western
SCE	VERNON_6_GONZL2	24342	FEDGEN	13.8	5.75	1	LA Basin	Western
SCE	VERNON_6_MALBRG	24241	MALBRG3G	13.8	49.26	S3	LA Basin	Western
SCE	VERNON_6_MALBRG	24239	MALBRG1G	13.8	42.37	C1	LA Basin	Western
SCE	VERNON_6_MALBRG	24240	MALBRG2G	13.8	42.37	C2	LA Basin	Western
SCE	VILLPK_2_VALLYV	24216	VILLA PK	66	4.10	DG	LA Basin	Western
SCE	VILLPK_6_MWDYOR	24216	VILLA PK	66	3.60		LA Basin	Western
SCE	VISTA_2_RIALTO	24901	VSTA	230	0.27		LA Basin	Eastern
SCE	VISTA_2_RTS028	24901	VSTA	230	0.95		LA Basin	Eastern
SCE	VISTA_6_QF	24902	VSTA	66	0.10		LA Basin	Eastern
SCE	WALCRK_2_CTG1	29201	WALCRKG1	13.8	96.43	1	LA Basin	Western
SCE	WALCRK_2_CTG2	29202	WALCRKG2	13.8	96.91	1	LA Basin	Western
SCE	WALCRK_2_CTG3	29203	WALCRKG3	13.8	96.65	1	LA Basin	Western
SCE	WALCRK_2_CTG4	29204	WALCRKG4	13.8	96.49	1	LA Basin	Western
SCE	WALCRK_2_CTG5	29205	WALCRKG5	13.8	96.65	1	LA Basin	Western
SCE	WALNUT_2_SOLAR				0.00		LA Basin	Western
SCE	WALNUT_6_HILLGEN	24063	HILLGEN	13.8	32.97	D1	LA Basin	Western
SCE	WALNUT_7_WCOVST	24157	WALNUT	66	5.37		LA Basin	Western
SCE	WHTWTR_1_WINDA1	29061	WHITEWTR	33	12.92	1	LA Basin	Eastern, Valley-Devers

SCE	ZZ_ARCOGN_2_UNITS	24018	BRIGEN	13.8	0.00	1	LA Basin	Western
SCE	ZZ_HINSON_6_QF	24064	HINSON	66	0.00	1	LA Basin	Western
SCE	ZZ_LAFRES_6_QF	24332	PALOGEN	13.8	0.00	D1	LA Basin	Western, El Nido
SCE	ZZ_MOBGEN_6_UNIT 1	24094	MOBGEN	13.8	0.00	1	LA Basin	Western, El Nido
SCE	ZZ_NA	24327	THUMSGEN	13.8	0.00	1	LA Basin	Western
SCE	ZZ_NA	24329	MOBGEN2	13.8	0.00	1	LA Basin	Western, El Nido
SCE	ZZ_NA	24330	OUTFALL1	13.8	0.00	1	LA Basin	Western, El Nido
SCE	ZZ_NA	24331	OUTFALL2	13.8	0.00	1	LA Basin	Western, El Nido
SCE	ZZ_NA	29260	ALTAMSA4	115	0.00	1	LA Basin	Eastern, Valley-Devers
SCE	ZZZ_New	698082	ALMITOS B1A	0.42	50.00	1	LA Basin	Western
SCE	ZZZ_New	698083	ALMITOS B12	0.42	50.00	1	LA Basin	Western
SCE	ZZZ_New	97624	WH_STN_1	13.8	49.00	1	LA Basin	Western
SCE	ZZZ_New	97625	WH_STN_2	13.8	49.00	1	LA Basin	Western
SCE	ZZZZZ_ALAMIT_7_UNIT 1	24001	ALAMT1 G	18	0.00	1	LA Basin	Western
SCE	ZZZZZ_ALAMIT_7_UNIT 2	24002	ALAMT2 G	18	0.00	2	LA Basin	Western
SCE	ZZZZZ_ALAMIT_7_UNIT 6	24161	ALAMT6 G	20	0.00	6	LA Basin	Western
SCE	ZZZZZ_BRDWAY_7_UNIT 3	29007	BRODWYSC	13.8	0.00		LA Basin	Western
SCE	ZZZZZ_CENTER_2_QF	29953	SIGGEN	13.8	0.00	D1	LA Basin	Western
SCE	ZZZZZ_CHINO_6_SMPPAP	24140	SIMPSON	13.8	0.00	D1	LA Basin	Eastern
SCE	ZZZZZ_ETIWND_7_MIDVLY	24055	ETIWANDA	66	0.00		LA Basin	Eastern

SCE	ZZZZZ_ETIWND_7_UNIT 3	24052	MTNVIST3	18	0.00	3	LA Basin	Eastern
SCE	ZZZZZ_ETIWND_7_UNIT 4	24053	MTNVIST4	18	0.00	4	LA Basin	Eastern
SCE	ZZZZZ_HNTGBH_7_UNIT 1	24066	HUNT1 G	13.8	0.00	1	LA Basin	Western
SCE	ZZZZZ_INLDEM_5_UNIT 1	29041	IEEC-G1	19.5	0.00	1	LA Basin	Eastern, Valley, Valley-Devers
SCE	ZZZZZ_INLDEM_5_UNIT 2	29042	IEEC-G2	19.5	0.00	1	LA Basin	Eastern, Valley, Valley-Devers
SCE	ZZZZZ_LAGBEL_2_STG1				0.00		LA Basin	Western
SCE	ZZZZZ_MIRLOM_6_DELGEN	29339	DELGEN	13.8	0.00	1	LA Basin	Eastern
SCE	ZZZZZ_REDOND_7_UNIT 7	24123	REDON7 G	20	0.00	7	LA Basin	Western
SCE	ZZZZZ_RHONDO_2_QF	24213	RIOHONDO	66	0.00	DG	LA Basin	Western
SCE	ZZZZZ_RHONDO_6_PUENTE	24213	RIOHONDO	66	0.00		LA Basin	Western
SCE	ZZZZZ_VALLEY_7_BADLND	24160	VALLEYSC	115	0.00		LA Basin	Eastern, Valley, Valley-Devers
SCE	ZZZZZ_VALLEY_7_UNITA1	24160	VALLEYSC	115	0.00		LA Basin	Eastern, Valley, Valley-Devers
SCE	ZZZZZ_WALNUT_7_WCOVCT	24157	WALNUT	66	0.00		LA Basin	Western
SCE	ZZZZZZ_ELSEGN_7_UNIT 4	24048	ELSEG4 G	18	0.00	4	LA Basin	Western, El Nido
SDG&E	BORDER_6_UNITA1	22149	CALPK_BD	13.8	51.25	1	SD-IV	San Diego, Border
SDG&E	BREGGO_6_DEGRSL	22085	BORREGO	12.5	1.70	DG	SD-IV	San Diego
SDG&E	BREGGO_6_SOLAR	22082	BR GEN1	0.21	7.02	1	SD-IV	San Diego
SDG&E	CARLS1_2_CARCT1	22783	EA5 REPOWER1	13.8	105.50	1	SD-IV	San Diego
SDG&E	CARLS1_2_CARCT1	22784	EA5 REPOWER2	13.8	105.50	1	SD-IV	San Diego
SDG&E	CARLS1_2_CARCT1	22786	EA5 REPOWER4	13.8	105.50	1	SD-IV	San Diego
SDG&E	CARLS1_2_CARCT1	22788	EA5 REPOWER3	13.8	105.50	1	SD-IV	San Diego
SDG&E	CARLS2_1_CARCT1	22787	EA5 REPOWER5	13.8	105.50	1	SD-IV	San Diego
SDG&E	CCRITA_7_RPPCHF	22124	CHCARITA	138	3.60	1	SD-IV	San Diego

SDG&E	CHILLS_1_SYCENG	22120	CARLTNHS	138	0.62	1	SD-IV	San Diego
SDG&E	CHILLS_7_UNITA1	22120	CARLTNHS	138	1.52	2	SD-IV	San Diego
SDG&E	CNTNLA_2_SOLAR1	23463	DW GEN3&4	0.33	33.75	1	SD-IV	
SDG&E	CNTNLA_2_SOLAR2	23463	DW GEN3&4	0.33	0.00	2	SD-IV	
SDG&E	CPSTNO_7_PRMADS	22112	CAPSTRNO	138	5.71	1	SD-IV	San Diego
SDG&E	CPVERD_2_SOLAR	23309	IV GEN3 G1	0.31	20.85	G1	SD-IV	
SDG&E	CPVERD_2_SOLAR	23301	IV GEN3 G2	0.31	16.68	G2	SD-IV	
SDG&E	CRELMN_6_RAMON1	22152	CREELMAN	69	0.54	DG	SD-IV	San Diego
SDG&E	CRELMN_6_RAMON2	22152	CREELMAN	69	1.35	DG	SD-IV	San Diego
SDG&E	CRELMN_6_RAMSR3				0.93		SD-IV	San Diego
SDG&E	CRSTWD_6_KUMYAY	22915	KUMEYAAY	0.69	10.50	1	SD-IV	San Diego
SDG&E	CSLR4S_2_SOLAR	23298	DW GEN1 G1	0.32	17.55	G1	SD-IV	
SDG&E	CSLR4S_2_SOLAR	23299	DW GEN1 G2	0.32	17.55	G2	SD-IV	
SDG&E	ELCAJN_6_EB1BT1	22208	EL CAJON	69	7.50	1	SD-IV	San Diego, El Cajon
SDG&E	ELCAJN_6_LM6K	23320	EC GEN2	13.8	48.10	1	SD-IV	San Diego, El Cajon
SDG&E	ELCAJN_6_UNITA1	22150	EC GEN1	13.8	45.42	1	SD-IV	San Diego, El Cajon
SDG&E	ENERSJ_2_WIND	23100	ECO GEN1 G1	0.69	32.57	G1	SD-IV	
SDG&E	ESCNDO_6_EB1BT1	22256	ESCNDIDO	69	10.00	1	SD-IV	San Diego
SDG&E	ESCNDO_6_EB2BT2	22256	ESCNDIDO	69	10.00	1	SD-IV	San Diego
SDG&E	ESCNDO_6_EB3BT3	22256	ESCNDIDO	69	10.00	1	SD-IV	San Diego
SDG&E	ESCNDO_6_PL1X2	22257	ESGEN	13.8	48.71	1	SD-IV	San Diego
SDG&E	ESCNDO_6_UNITB1	22153	CALPK_ES	13.8	48.04	1	SD-IV	San Diego
SDG&E	ESCO_6_GLMQF	22332	GOALLINE	69	36.41	1	SD-IV	San Diego
SDG&E	IVSLRP_2_SOLAR1	23440	DW GEN2 G1	0.36	54.00	1	SD-IV	
SDG&E	IVWEST_2_SOLAR1	23155	DU GEN1 G1	0.2	21.91	G1	SD-IV	
SDG&E	IVWEST_2_SOLAR1	23156	DU GEN1 G2	0.2	18.59	G2	SD-IV	
SDG&E	JACMSR_1_JACSR1	23352	ECO GEN2	0.55	5.40	1	SD-IV	
SDG&E	LAKHDG_6_UNIT 1	22625	LKHODG1	13.8	20.00	1	SD-IV	San Diego
SDG&E	LAKHDG_6_UNIT 2	22626	LKHODG2	13.8	20.00	2	SD-IV	San Diego
SDG&E	LARKSP_6_UNIT 1	22074	LRKSPBD1	13.8	46.00	1	SD-IV	San Diego, Border
SDG&E	LARKSP_6_UNIT 2	22075	LRKSPBD2	13.8	46.00	1	SD-IV	San Diego, Border

SDG&E	LAROA1_2_UNITA1	20187	LRP-U1	16	0.00	1	SD-IV	
SDG&E	LAROA2_2_UNITA1	22997	INTBCT	16	176.81	1	SD-IV	
SDG&E	LAROA2_2_UNITA1	22996	INTBST	18	145.19	1	SD-IV	
SDG&E	LILIAC_6_SOLAR	22404	LILIAC	69	0.81	DG	SD-IV	San Diego
SDG&E	MRGT_6_MEF2	22487	MEF_MR2	13.8	44.00	1	SD-IV	San Diego
SDG&E	MRGT_6_MMAREF	22486	MEF_MR1	13.8	45.00	1	SD-IV	San Diego
SDG&E	MSHGTS_6_MMARLF	22448	MESAHGTS	69	4.03	1	SD-IV	San Diego
SDG&E	MSSION_2_QF	22496	MISSION	69	0.70	1	SD-IV	San Diego
SDG&E	MURRAY_6_UNIT	22532	MURRAY	69	0.00		SD-IV	San Diego
SDG&E	OCTILO_5_WIND	23314	OCO GEN G1	0.69	27.83	G1	SD-IV	
SDG&E	OCTILO_5_WIND	23318	OCO GEN G2	0.69	27.83	G2	SD-IV	
SDG&E	OGROVE_6_PL1X2	22628	PA GEN1	13.8	48.00	1	SD-IV	San Diego
SDG&E	OGROVE_6_PL1X2	22629	PA GEN2	13.8	48.00	1	SD-IV	San Diego
SDG&E	OTAY_6_PL1X2	22617	OYGEN	13.8	35.50	1	SD-IV	San Diego
SDG&E	OTMESA_2_PL1X3	22607	OTAYMST1	16	272.27	1	SD-IV	San Diego
SDG&E	OTMESA_2_PL1X3	22606	OTAYMGT2	18	166.17	1	SD-IV	San Diego
SDG&E	OTMESA_2_PL1X3	22605	OTAYMGT1	18	165.16	1	SD-IV	San Diego
SDG&E	PALOMR_2_PL1X3	22265	PEN_ST	18	225.24	1	SD-IV	San Diego
SDG&E	PALOMR_2_PL1X3	22262	PEN_CT1	18	170.18	1	SD-IV	San Diego
SDG&E	PALOMR_2_PL1X3	22263	PEN_CT2	18	170.18	1	SD-IV	San Diego
SDG&E	PIOPIC_2_CTG1	23162	PIO PICO CT1	13.8	111.30	1	SD-IV	San Diego
SDG&E	PIOPIC_2_CTG2	23163	PIO PICO CT2	13.8	112.70	1	SD-IV	San Diego
SDG&E	PIOPIC_2_CTG3	23164	PIO PICO CT3	13.8	112.00	1	SD-IV	San Diego
SDG&E	PRCTVY_1_MIGBT1				0.00		SD-IV	San Diego
SDG&E	SAMPSN_6_KELCO1	22704	SAMPSON	12.5	0.85	1	SD-IV	San Diego
SDG&E	SLRMS3_2_SRMSR1	23442	DW GEN2 G3A	0.6	40.50	1	SD-IV	
SDG&E	SLRMS3_2_SRMSR1	23443	DW GEN2 G3B	0.6	27.00	1	SD-IV	
SDG&E	SMRCOS_6_LNDFIL	22724	SANMRCOS	69	1.50	1	SD-IV	San Diego
SDG&E	TERMEX_2_PL1X3	22981	TDM STG	21	280.13	1	SD-IV	

SDG&E	TERMEX_2_PL1X3	22982	TDM CTG2	18	156.44	1	SD-IV	
SDG&E	TERMEX_2_PL1X3	22983	TDM CTG3	18	156.44	1	SD-IV	
SDG&E	VLCNTR_6_VCSLR	22870	VALCNTR	69	0.63	DG	SD-IV	San Diego
SDG&E	VLCNTR_6_VCSLR1	22870	VALCNTR	69	0.68	DG	SD-IV	San Diego
SDG&E	VLCNTR_6_VCSLR2	22870	VALCNTR	69	1.35	DG	SD-IV	San Diego
SDG&E	VSTAES_6_VESBT1	23541	ME GEN 1_BS1	0.64	5.50	1	SD-IV	San Diego
SDG&E	VSTAES_6_VESBT1	23216	ME GEN 1_BS2	0.48	5.50	1	SD-IV	San Diego
SDG&E	WISTRA_2_WRSSR1	23287	Q429_G1	0.31	27.00	1	SD-IV	
SDG&E	ZZ_NA	22916	PFC-AVC	0.6	0.00	1	SD-IV	San Diego
SDG&E	ZZZ_New Unit	23710	Q1170_BESS	0.48	62.50	1	SD-IV	San Diego
SDG&E	ZZZ_New Unit	23441	DW GEN6	0.42	40.58	1	SD-IV	
SDG&E	ZZZ_New Unit	22020	AVOCADO	69	40.00	S2	SD-IV	San Diego
SDG&E	ZZZ_New Unit	23544	Q1169_BESS1	0.4	35.00	C8	SD-IV	San Diego
SDG&E	ZZZ_New Unit	23519	Q1169_BESS2	0.4	35.00	C8	SD-IV	San Diego
SDG&E	ZZZ_New Unit	23412	Q1434_G	0.64	30.00	1	SD-IV	San Diego
SDG&E	ZZZ_New Unit	22942	BUE GEN 1_G1	0.69	11.60	G1	SD-IV	
SDG&E	ZZZ_New Unit	22945	BUE GEN 1_G2	0.69	11.60	G2	SD-IV	
SDG&E	ZZZ_New Unit	22947	BUE GEN 1_G3	0.69	11.60	G3	SD-IV	
SDG&E	ZZZ_New Unit	22256	ESCNDIDO	69	6.50	S2	SD-IV	San Diego
SDG&E	ZZZ_New Unit	22112	CAPSTRNO	138	5.90	1	SD-IV	San Diego
SDG&E	ZZZ_New Unit	22112	CAPSTRNO	138	4.00	S2	SD-IV	San Diego
SDG&E	ZZZ_New Unit	23597	Q1175_BESS	0.48	0.00	1	SD-IV	
SDG&E	ZZZ_New Unit	22404	LILAC	69	0.00	S2	SD-IV	San Diego
SDG&E	ZZZ_New Unit	22512	MONSRATE	69	0.00	S2	SD-IV	San Diego

SDG&E	ZZZZZ_CBRLLO_6_PLSTP1	22092	CABRILLO	69	0.00	1	SD-IV	San Diego
SDG&E	ZZZZZ_DIVSON_6_NSQF	22172	DIVISION	69	0.00	1	SD-IV	San Diego
SDG&E	ZZZZZ_ELCAJN_7_GT1	22212	ELCAJNGT	12.5	0.00	1	SD-IV	San Diego, El Cajon
SDG&E	ZZZZZ_ENCINA_7_EA1	22233	ENCINA 1	14.4	0.00	1	SD-IV	San Diego
SDG&E	ZZZZZ_ENCINA_7_EA2	22234	ENCINA 2	14.4	0.00	1	SD-IV	San Diego
SDG&E	ZZZZZ_ENCINA_7_EA3	22236	ENCINA 3	14.4	0.00	1	SD-IV	San Diego
SDG&E	ZZZZZ_ENCINA_7_EA4	22240	ENCINA 4	22	0.00	1	SD-IV	San Diego
SDG&E	ZZZZZ_ENCINA_7_EA5	22244	ENCINA 5	24	0.00	1	SD-IV	San Diego
SDG&E	ZZZZZ_ENCINA_7_GT1	22248	ENCINAGT	12.5	0.00	1	SD-IV	San Diego
SDG&E	ZZZZZ_KEARNY_7_KY2	22373	KEARN2AB	12.5	0.00	1	SD-IV	San Diego
SDG&E	ZZZZZ_KEARNY_7_KY2	22374	KEARN2CD	12.5	0.00	1	SD-IV	San Diego
SDG&E	ZZZZZ_KEARNY_7_KY2	22373	KEARN2AB	12.5	0.00	2	SD-IV	San Diego
SDG&E	ZZZZZ_KEARNY_7_KY2	22374	KEARN2CD	12.5	0.00	2	SD-IV	San Diego
SDG&E	ZZZZZ_KEARNY_7_KY3	22375	KEARN3AB	12.5	0.00	1	SD-IV	San Diego
SDG&E	ZZZZZ_KEARNY_7_KY3	22376	KEARN3CD	12.5	0.00	1	SD-IV	San Diego
SDG&E	ZZZZZ_KEARNY_7_KY3	22375	KEARN3AB	12.5	0.00	2	SD-IV	San Diego
SDG&E	ZZZZZ_KEARNY_7_KY3	22376	KEARN3CD	12.5	0.00	2	SD-IV	San Diego
SDG&E	ZZZZZ_MRGT_7_UNITS	22488	MIRAMRGT	12.5	0.00	1	SD-IV	San Diego
SDG&E	ZZZZZ_MRGT_7_UNITS	22488	MIRAMRGT	12.5	0.00	2	SD-IV	San Diego
SDG&E	ZZZZZ_NIMTG_6_NIQF	22576	NOISLMTR	69	0.00	1	SD-IV	San Diego
SDG&E	ZZZZZ_OTAY_6_LNDFL5	22604	OTAY	69	0.00		SD-IV	San Diego
SDG&E	ZZZZZ_OTAY_6_LNDFL6	22604	OTAY	69	0.00		SD-IV	San Diego
SDG&E	ZZZZZ_OTAY_6_UNITB1	22604	OTAY	69	0.00	1	SD-IV	San Diego
SDG&E	ZZZZZ_OTAY_7_UNITC1	22604	OTAY	69	0.00	3	SD-IV	San Diego
SDG&E	ZZZZZ_PTLOMA_6_NTCCGN	22660	POINTLMA	69	0.00	2	SD-IV	San Diego
SDG&E	ZZZZZ_PTLOMA_6_NTCQF	22660	POINTLMA	69	0.00	1	SD-IV	San Diego

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

Gen Bus	Gen Name	Gen ID	Eff Factor. (%)
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
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

Gen Bus	Gen Name	Gen ID	Eff Factor. (%)
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
32486	HELLHOLE	1	2
32508	FRNCH MD	1	2

Gen Bus	Gen Name	Gen ID	Eff Factor. (%)
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 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 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