BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

FILED
02/28/22
04:59 PM
R2110002

Order Instituting Rulemaking to Oversee the Resource Adequacy Program, Consider Program Reforms and Refinements, and Establish Forward Resource Adequacy Procurement Obligations.	R.21-10-002

CALIFORNIA COMMUNITY CHOICE ASSOCIATION AND PACIFIC GAS AND ELECTRIC COMPANY'S (U 39 E) LOCAL CAPACITY REQUIREMENT (LCR) FINAL WORKING GROUP REPORT

Evelyn Kahl
General Counsel and Director of Policy
CALIFORNIA COMMUNITY CHOICE ASSOCIATION
One Concord Center
2300 Clayton Road, Suite 1150
Concord, CA 94520
Telephone: (415) 254-5454
E-Mail: regulatory@cal-cca.org

NOELLE R. FORMOSA
Attorney for
PACIFIC GAS AND ELECTRIC COMPANY
77 Beale Street, B30A
San Francisco, CA 94105
Telephone: (415) 973-4655
Facsimile: (415) 973-5520
E-Mail: Noelle.Formosa@pge.com

February 28, 2022

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Oversee the Resource Adequacy Program, Consider Program Reforms and Refinements, and Establish Forward Resource Adequacy Procurement Obligations.	R.21-10-002

CALIFORNIA COMMUNITY CHOICE ASSOCIATION AND PACIFIC GAS AND ELECTRIC COMPANY'S (U 39 E) LOCAL CAPACITY REQUIREMENT (LCR) FINAL WORKING GROUP REPORT

Pursuant to the schedule set forth in (i) Ordering Paragraph ("OP") 5 of Decision ("D.") 21-06-029 and (ii) the December 2, 2021 Assigned Commissioner's Scoping Memo and Ruling and in accordance with the Rules of Practice and Procedure of the California Public Utilities Commission ("Commission"), the California Community Choice Association[1] ("CalCCA"), on behalf of itself and Pacific Gas and Electric Company ("PG&E") (together, the "Co-Leads"), respectfully submit the Local Capacity Requirement ("LCR") Final Working Group Report,[2] attached hereto as Attachment 1 ("Report"), that provides recommendations on (a) potential modifications to the current LCR timeline or processes to allow for more meaningful vetting of the LCR study results; (b) inclusion of energy storage limits in the LCR report and its

[1] California Community Choice Association represents the interests of 23 community choice electricity providers in California: Apple Valley Choice Energy, Central Coast Community Energy, Clean Energy Alliance, Clean Power Alliance, CleanPowerSF, Desert Community Energy, East Bay Community Energy, Lancaster Choice Energy, Marin Clean Energy, Orange County Power Authority, Peninsula Clean Energy, Pico Rivera Innovative Municipal Energy, Pioneer Community Energy, Pomona Choice Energy, Rancho Mirage Energy Authority, Redwood Coast Energy Authority, San Diego Community Power, San Jacinto Power, San José Clean Energy, Santa Barbara Clean Energy, Silicon Valley Clean Energy, Sonoma Clean Power, and Valley Clean Energy.

[2] Pursuant to Rule 1.8(d) of the Commission's Rules of Practice and Procedure, counsel for CalCCA certifies that PG&E has authorized CalCCA to sign and tender this document and to make the representations stated in Rule 1.8(b) on PG&E's behalf.

implications for future resource procurement; and (c) how best to harmonize the Commission's and the California Independent System Operator Corporation's local resource accounting rules, as required in OP 5 of D.21-06-029.[3] The Report also includes a discussion of the LCR's interaction with the Transmission Planning Process.

The Report includes the following appendices documenting the formal working group process:

Appendix A: Working Group Presentation

Appendix B: February 24, 2022 Informal Comments on the draft Local Capacity Requirement (LCR) Working Group Report.

The California Community Choice Association and Pacific Gas and Electric Company appreciate the opportunity to submit this Report.

Respectfully submitted,

Evelyn Kahl
General Counsel and Director of Policy
CALIFORNIA COMMUNITY CHOICE ASSOCIATION

February 28, 2022

[3] D.21-06-029, OP 5, at 75-76.

ATTACHMENT 1

CALIFORNIA COMMUNITY CHOICE ASSOCIATION AND PACIFIC GAS AND ELECTRIC COMPANY'S (U 39 E) LOCAL CAPACITY REQUIREMENT (LCR) FINAL WORKING GROUP REPORT

FINAL WORKING GROUP REPORT

TABLE OF CONTENTS

I. INTRODUCTION

California's energy landscape, including its energy infrastructure, its regulatory structures, and its markets, have undergone, and continue to undergo, rapid and transformative change. In recent years local resource adequacy ("RA") requirements have increased significantly in response to increased load and adjusted reliability methodologies, specifically in the Greater Bay Area. These changes motivated the California Public Utilities Commission ("Commission") to convene a working group process in order to explore potential modifications to the local capacity requirement ("LCR") process.

A working group process workshop, held on February 2, 2022, provided significant clarity on LCR process and methodological adjustments. While this additional information will help stakeholders more effectively engage with the LCR process, arriving at and implementing solutions will require significant additional work. Stakeholders must acknowledge and leverage the crossover between the LCR process and parallel planning processes, especially with the Integrated Resource Planning ("IRP") process and Transmission Planning Process ("TPP"). Moreover, the Commission and the CAISO should coordinate to ensure that parties are sufficiently informed of LCR milestones through notification to the Commission's service lists. Finally, all parties must carefully consider the relationship between the local RA construct and state policy efforts and ensure that changes and adjustments sufficiently prioritize and balance those goals.

II. BACKGROUND AND PURPOSE OF THE LCR WORKING GROUP

In Decision ("D.") 20-06-031, the Commission and multiple stakeholders expressed concern on the significant increase in the local RA requirements within the Greater Bay Area. Specifically, the local RA requirements increased by approximately 1,800 megawatts ("MW") from 4,550 MW to 6,353 MW based on the California Independent System Operator Corporation's ("CAISO") Local Capacity Technical Study as completed in 2019 and 2020, respectively.

In completing its 2020 Local Capacity Technical Study, CAISO indicated that the increased local RA requirements within the Greater Bay Area were largely attributed to the updated local capacity technical study criteria (outlined in section III.A.3 below) used to establish the local procurement obligations, which changed from prior years. While CAISO has stated that the updated local capacity technical study criteria are intended to align with current mandatory reliability standards developed by the North American Electric Reliability Corporation (NERC) and Western Electricity Coordinating Council ("WECC"), the Commission had not directly considered the updated local capacity technical study criteria in its RA proceeding at that time (Rulemaking ("R.") 19-11-009). The

Commission therefore directed the establishment of a working group process to evaluate CAISO's updated local reliability criteria and other LCR-related issues. The LCR working group process would result in a Working Group Report and provide stakeholder recommendations on improving the local RA requirements process. Due to numerous issues in Track 3B and Track 4 of R.19-11-009, an Administrative Law Judge ruling was issued on February 2, 2021 that suspended the deadline for a Working Group Report on LCR recommendations.

In D.21-06-029, the Commission acknowledged that the working group process had made little progress on LCR-related issues and identified the California Community Choice Association ("CalCCA") and Pacific Gas and Electric Company ("PG&E") as the co-leads, going forward, of the working group process to bring to resolution some of the issues identified in R.19-11-009, including the increase in the Greater Bay Area local RA requirements. The Commission, however, narrowed the original scope, as outlined in D.20-06-031, and directed the working group process to evaluate the following narrower list of topics and submit a Working Group Report into the RA proceeding in February 2022:

a) Potential modifications to the current LCR timeline or processes to allow more meaningful vetting of the LCR study results;

b) Inclusion of energy storage limits in the LCR report and its implications on future resource procurement; and

c) How best to harmonize the Commission's and CAISO's local resource accounting rules.

A. Schedule of Completed Activities

The co-leads scheduled and completed the following working group process activities:

Date	Activity	Status
February 2, 2022	Co-leads facilitated a workshop to discuss the of topics identified in D.21-06-029.	Complete
February 18, 2022	Co-leads circulated a draft of the Working Gro Report.	Complete
February 24, 2022	Parties submitted informal comments in respor to the Working Group Report, including any recommendations for consideration by the Commission.	Complete
February 28, 2022	Co-leads filed and served the Working Group Report.	Complete

III. WORKSHOP DISCUSSION

A. Overview of the Purpose of the LCR and Reliability Criteria

1. Process and Timeline for Stakeholder Engagement

To begin the workshop, CAISO outlined the overall process and timeline for stakeholder engagement in the LCR process. The LCR stakeholder process for year n generally begins in the fall of year n-2 and ends in the spring of year n-1. For example, the local RA requirements for 2023 will begin in fall 2021 and will end in spring 2022. The LCR stakeholder process is a public forum that is open to all market participants and includes comment submission periods and meetings where stakeholders can be engaged with CAISO. CAISO has indicated that all comments related to the LCR study and its results should be directed through the CAISO LCR stakeholder process. This is the forum to provide the most impact to the stakeholder process. The final LCR study is then submitted into the Commission's RA proceeding each spring to be ultimately adopted as part of the Commission's local RA program. Below is a general timeline of key activities in the LCR stakeholder process.

General Timing	Activity for Study Year N
October (Year N-2)	CAISO stakeholders call to initiate the process
November (Year N-2)	Comments on methodology, criteria, and assumptions for study year
November/December (Ye N-2)	Base case development begins
January (Year N-1)	CAISO receives base case from participating transmission owner (PT
Mid-January (Year N-1)	CAISO publishes base case and stakeholders comment period
February (Year N-1)	Draft study completed
March (Year N-1)	CAISO stakeholders call on draft study and stakeholders comment pe
April (Year N-1)	CAISO stakeholders call on final study and stakeholders comment pe

2. Cross-Over with Transmission Planning Process

Next, the CAISO explained how LCR needs are addressed in the TPP. The CAISO explained that TPP projects can be authorized to reduce or eliminate LCR needs on a reliability, economic, or policy-driven basis. Reliability-driven mitigations are needed when an LCR area or sub-area is deficient in the number of resources to meet the LCR requirement. Economic-driven mitigations are used to reduce the LCR need for capacity or energy cost savings. Capacity cost savings are identified by using the price differential between the cost of the local capacity and the cost of system-wide capacity using the latest Commission RA Report. Energy cost savings are derived through production cost simulations. Policy-driven mitigations are dictated by state and federal policy goals. Renewable targets and battery procurement is used in the LCR study for the appropriate study year if exact locations are known. If the exact location is not known, guidance is given in the LCR report at the

local and sub-area level. The LCR study also considers gas retirements, which the CAISO indicated are not binding in the next ten years and known upcoming retirements are included in the LCR study for the appropriate study year.

During the question-and-answer period, CalCCA expressed concern that as the state progresses to meet state policy goals, it will become increasingly difficult to plan for meeting local area reliability needs either through transmission upgrades to alleviate local areas or new resource build within local areas. CalCCA recommended that within the TPP process, the Commission and CAISO need to consider how the Transmission Plan and IRP process work together at the lowest cost.

CalCCA also asked the CAISO if the issue of local constraints and gas retirements needed to meet policy goals had been discussed in the TPP. The CAISO responded that it has looked at gas retirements for all LCR local areas and sub-areas within the last couple of years and directed parties to Appendix G for the 2018-2019 TPP[1], Appendix G for the 2019-2020 TPP[2] and Appendix G for the 2020-2021 TPP[3] that identifies transmission projects required to alleviate local constraints that allow for future gas retirements. The CAISO indicated that parties are expected to use the TPP (including the LCR studies) to identify resources that need to be procured in order to allow for resource retirements in local areas.

3. Factors Influencing Increases in the Bay Area Local Capacity Requirement

In D.21-06-029, the Commission identified significant additional increases to the Greater Bay Area local RA requirements as a primary driver for continuation of the working group process. The increases in question, of approximately 1,800 MW for 2021 and 900 MW for 2022, caused stakeholders to raise concerns regarding the CAISO's revised local capacity study criteria. Consequently, the CAISO's LCR methodology and criteria were centered as crucial discussion topics for the workshop. The CAISO presented extensively on the topic, providing significant clarity on process, opportunities for stakeholder engagement, and methodology.

Two factors were highlighted as primary causes for the Greater Bay Area local RA requirements increase: (1) a change in the LCR criteria that included the need to fully mitigate

---

[1] Appendix G – Board approved 2018-2019 Transmission Plan, March 29, 2019: http://www.caiso.com/Documents/AppendixG-BoardApproved2018-2019TransmissionPlan.pdf

[2] Appendix G – Board approved 2019-2020 Transmission Plan, March 26, 2020: http://www.caiso.com/Documents/AppendixG-BoardApproved2019-2020TransmissionPlan.pdf

[3] Appendix G – Board approved 2020-2021 Transmission Plan, March 26, 2021: http://www.caiso.com/Documents/AppendixG-BoardApproved2020-2021TransmissionPlan.pdf

transformer outages, and (2) an increase in load in the San Jose area. The updated CAISO LCR criteria now reflects mandatory NERC standards requiring transformer failures to be mitigated by either local resource procurement or be rectified by PG&E as the participating transmission owner through new transformer ratings or be rectified through new transmission project(s) approved by the CAISO in the TPP. To date, CAISO is not aware of increases to the transformer ratings or proposed transmission upgrade to mitigate the issue. Consequently, additional local RA resources are required to account for transformer-related contingencies – which were previously mitigated by the same resources in the area without specifically imposing local requirements, due to the previous mismatch between the two criteria. Correspondingly, an approximately 120 MW increase in load in the San Jose area requires utilizing less "effective" resources from Pittsburg and Contra Costa County, since all of the most "effective" resources in the San Jose area were already used in the previous year. Crucially, the minimum effective LCR is achieved by utilizing the most "effective" available resources first. The already-used resources present in the San Jose area have an approximate CAISO local effectiveness factor of 30 percent, while previously unused resources have a CAISO local effectiveness factor of only about 4 percent.

a. Change to Mandatory NERC Standards and Impact

CAISO indicated that it conducted a stakeholder process in 2019 to update the LCR criteria to align with current mandatory reliability standards developed by NERC, WECC, and CAISO. Following this open stakeholder process, the Federal Energy Regulatory Commission ("FERC") approved CAISO tariff changes to align the LCR criteria with mandatory standards on January 17, 2020, with no stakeholder opposition. The CAISO Board and FERC approved updates to the LCR criteria as outlined in CAISO Tariff Section 40.3.1.1 and contingencies as identified in CAISO Tariff Section 40.3.1.2. In particular, CAISO:

a) Updated category definitions to align with current NERC standards.

b) Updated bulk electric system (BES) voltage level definitions and aligned application of non-BES criteria accordingly.

c) Fully aligned LCR criteria for BES with more stringent NERC, WECC, and CAISO mandatory standards.

With regards to CAISO fully aligning LCR criteria for BES with more stringent mandatory NERC standards, CAISO stated that alignment of these standards provides greater transparency to the RA program and aligns LCR study criteria with the standards used in transmission development and for reliability must-run contracts. These changes update the category definitions, update the BES

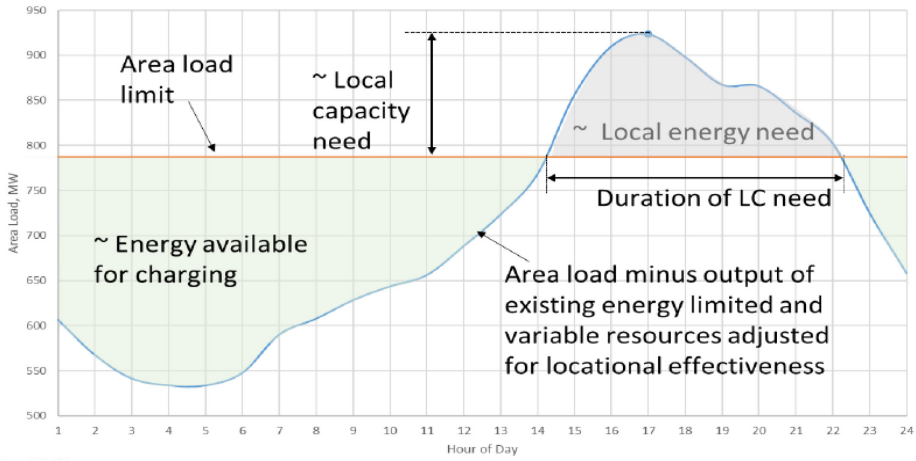
voltage level definition and application of non-BES criteria, and partially relaxes an old local capacity requirement.

B. Overview of Energy Storage Analysis and Implications to Procurement Decisions

The CAISO next presented how the LCR study process considers the need to sufficiently charge storage in locally constrained areas. The CAISO indicated that within the LCR study, local storage resources must be able to charge from the grid during all extended outage conditions by using either remaining transmission capacity into the constrained area or other contracted resources inside the constrained area. In response to a question from CalCCA, the CAISO clarified that when considering generation resources available to charge storage, the CAISO includes the number of resources needed to meet the LCR requirement (i.e., the amount of local RA that will be available).

The CAISO developed a methodology for assessing the local energy requirement and the charging feasibility of storage resources. The methodology compares the hourly forecasted net load on a peak day against the area load limit.

Figure 1: Methodology for Assessing Local Energy Need and Charging Feasibility[4]



The hour-by-hour assessment includes an comparison of the net-load versus the total load-serving capability. Total local load-serving capability includes:

- Transmission load-serving capability calculated under the worst contingency condition without any local generation; and,
- Local generation load-serving capability calculated under the worst contingency condition with the amount of generation needed according to the local capacity requirement considering the effectiveness of the aggregate of local generation to the worst constraint.

---

[4] CAISO Presentation at 29.

The CAISO explained that it uses the following assumptions in the energy storage assessment:

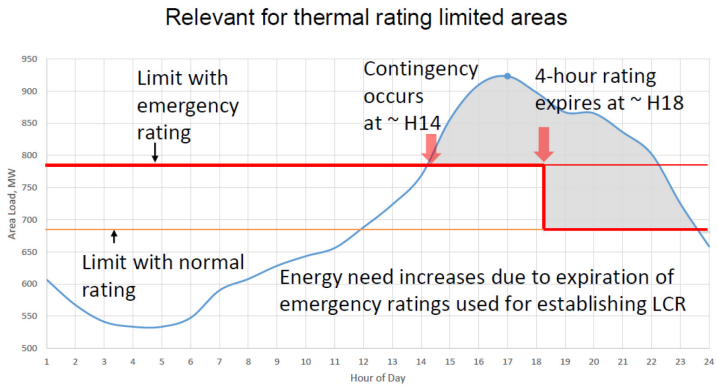
Table 1: Key Assumptions used in Energy Storage Assessment

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

The CAISO noted that most load serving entities procure 4-hour batteries due to current Commission system RA counting rules. Because of this, the CAISO now includes in the LCR study a maximum MW quantity of 4-hour batteries that can provide a 1-for-1 replacement of resources needed in that local area or sub-area. The CAISO explained that beyond this limit, batteries may not reduce the need for other local resources on a 1-for-1 basis. In response to a question from PG&E, the CAISO clarified that the maximum MW quantity of 4-hour 1-for-1 replacement is the limit for the amount of 4-hour duration resources that can be used. Longer duration resources could be used beyond that limit.

The CAISO concluded by discussing potential future enhancements it is considering to better account for storage in the LCR. This enhancement would include the differences between normal and emergency line ratings when assessing energy needs in local areas. Currently, the CAISO only uses the emergency rating.

Figure 2: Potential Future Enhancements - Effect of the Difference Between Normal and Emergency Ratings[5]



During the question-and-answer period, Calpine Corporation asked if the storage charging assessment focuses on the peak day, if there was a chance the assessment would miss other reliability challenges. For example, if the other resources in the local area are solar, there may not be enough energy to charge in winter when storage is not available rather than on the peak day. The CAISO indicated it is beginning to focus on these potential challenges more, as these circumstances may become more prevalent in the future. The California Energy Storage Alliance ("CESA") asked why the CAISO does not consider multi-day contingency events in its assessment. The CAISO responded that the assessment focuses on ensuring the peak day requirement is met and it is implied that if the batteries can charge under the worst peak day condition they could also charge in any other subsequent day, with less load, on a multi-day contingency event.

IV. RECOMMENDATIONS

On February 18, 2022, CalCCA and PG&E circulated a draft of the Working Group Report and requested that parties submit informal comments in response to the Working Group Report, including any recommendations for consideration by the Commission. Parties were requested to submit informal comments on February 24, 2022.

On February 24, 2022, no parties provided further edits to the report. CalCCA, the CAISO, Middle River Power, LLC, and San Diego Gas & Electric Company all submitted informal comments to the working group. Those informal comments have been attached as Appendix B to this Working Group Report.

---

[5] CAISO Presentation at 33.

APPENDIX A
TO ATTACHMENT 1

CALIFORNIA COMMUNITY CHOICE ASSOCIATION AND PACIFIC GAS AND ELECTRIC COMPANY'S (U 39 E) LOCAL CAPACITY REQUIREMENT (LCR) FINAL WORKING GROUP REPORT

CALIFORNIA ISO
LOCAL CAPACITY REQUIREMENTS (LCR)
WORKING GROUP MEETING PER CPUC'S D.21-06-029

Local Capacity Requirements (LCR) Working Group Meeting per CPUC's D.21-06-029

Catalin Micsa

Senior Advisor Regional Transmission Engineer

Working Group Call

February 2, 2022

Agenda

1. Introduction
2. References of current standards
3. Recap: full alignment of LCT criteria with mandatory criteria
4. 2021 - overall LCR study results and Bay Area increase
5. 2022 - secondary Bay Area increase
6. LCR needs and the TPP process
7. RA counting and its link to the LCR study and ISO back-stop
8. Charging for storage used as local RA resources
9. Open discussion

Introduction

- Resource Adequacy (RA)
  - Ensure that capacity exists and is under contract in order for all load to be served by responsible Load Serving Entities (LSEs)
  - Generally, LSEs will demonstrate that they have secured adequate qualified capacity to serve their peak load including planning reserve (every month in the month ahead timeframe).
  - Generally, LSEs will demonstrate, in the year ahead timeframe that they have secured 100% of local resources and minimum 90% of the next summer's peak load needs including planning reserve.
  - All resources participating in the ISO markets under an RA contract will have an RA must-offer-obligation to the ISO.

Introduction (cont.)

- The Local Capacity Requirements (LCR) have been introduced in the Resource Adequacy (RA) program in order to allow Load Serving Entities (LSEs) to directly contract with local resources required to meet local reliability by effectively replacing ISO Local Area Reliability Service (LARS) process.
- The LCR process is a yearly process with yearly requirements (not seasonally, monthly, daily or hourly)
- Per ISO Tariff
  - ISO can determine minimum local resource requirements and allocate them to LSEs in order to maintain reliability standards
  - If LSE procurement falls short of ISO's identified needs then ISO may engage in backstop procurement role to assure reliability standards are met in local areas

Introduction (cont.)

- The local capacity study stakeholder process is conducted at the ISO annually, starting in the fall of one year and ending in the spring of the next
  - *E.g.*, the 2023 local capacity study started in fall 2021 and will complete in spring 2022
  - 2023 stakeholder process available at: https://stakeholdercenter.caiso.com/RecurringStakeholderProcesses/Local-capacity-requirements-process-2023
- The stakeholder process is open to all, includes comment submission periods and meetings where stakeholders can ask questions.
- All comments related to the LCR process and its results should be directed to the ISO LCR process.
- The final LCR needs are filed into the CPUC's RA proceeding each spring.

Introduction (cont.)

CPUC and the ISO have determined overall timeline:

- ISO stakeholder call Oct. 27, 2021 - Methodology, criteria and assumptions - comments by November 10, 2021
- Base case development will start in November-December 2021
- Receive base cases from PTOs January 4, 2022
- Publish base cases January 14, 2022 – comments by the 28th
- Draft study completed by February 25, 2022
- ISO Stakeholder meeting March 9, 2022 – Draft study results - comments by March 23, 2022
- ISO receives new operating procedures March 23, 2022
- Validate op. proc. – publish draft final report April 1, 2022
- ISO Stakeholder call April 12, 2022 – Final study results - comments by April 22, 2022
- Final report April 29, 2022 (May 1st for most years)

Introduction (cont.)

- Per ISO Tariff, the ISO allocates the total local capacity requirements by TAC to all LSEs with load in that TAC based on their load share ratio within that TAC at the time of the ISO peak.
- Per ISO Tariff, the CPUC, as the only Local Regulatory Agency (LRA) with multiple LSEs can split its appropriate share of the LCR needs among its jurisdictional LSEs. If the CPUC does not split the entire amount the ISO must allocate the remaining need based on ISO methodology to all the CPUC jurisdictional LSEs.

References of current standards:

NERC TPL-001-4:

https://www.nerc.com/files/TPL-001-4.pdf

WECC TPL-001-WECC-CRT-3.1:

https://www.wecc.org/Reliability/TPL-001-WECC-CRT-3.1.pdf

ISO Planning Standards:

http://www.caiso.com/Documents/ISOPlanningStandards-September62018.pdf

Previous Local Capacity Technical Study Criteria

- Initially developed through the LCT Study Advisory Group ("LSAG"); an advisory group formed by the CAISO to assist the CAISO in its preparation for performing LCT Studies prior to the start of the Resource Adequacy program.

- Old LCT study criteria was established before North America Electric Reliability Corporation (NERC) required mandatory standards were formed and it represented a subset of the NERC voluntary standards available at the time.

ISO Board Approved in November 2019

- Following an open stakeholder process that included three stakeholder engagements and three rounds of comments
- And based on overwhelming stakeholder support
- The ISO Board and FERC have approved updates the Local Capacity Technical (LCT) study
  - Criteria as set out in ISO Tariff section 40.3.1.1; and
  - Contingencies as identified in ISO Tariff section 40.3.1.2.

Updates to category definitions needed to align with current NERC standards.

- Currently, the NERC TPL-001-4 standard characterizes contingencies from P0 to P7 plus extreme contingencies.
- Previous standards categorized them from A to D – fewer and less comprehensive categories.
- ISO replaced the old references with new references and characterization

Stakeholder feedback:

- General agreement

Update bulk electric system (BES) voltage level definition and align application of non-BES criteria accordingly.

- NERC BES definition has changed in recent years and now generally includes:
  - Extra High Voltage (> 300 kV) and
  - High Voltage (generally > 100 kV and < 300 kV).
- Generally, elements < 100 kV are not considered BES and are planned to meet ISO Planning standards
- For non-BES facilities, the ISO Planning Standards will be used LCT studies as well as planning studies.

Stakeholder feedback:

- General agreement

Partially relaxing an old local capacity requirement:

- Old LCT study criteria required mitigating all N-1 followed by L-2 contingencies that could cause voltage collapse or dynamic instability
- Mandatory standards only require that this “extreme event” be studied and mitigations considered based on the planners’ assessment of risk and consequences.
- Criteria modified to only require mitigation “if there is a risk of cascading” beyond a relatively small predetermined area, not to exceed 250 MW, directly affected by the outage.

Stakeholder feedback:

- General support

Fully align LCT study criteria for BES with more stringent NERC, WECC, ISO mandatory standards:

- Provides greater transparency of all reliability needs to the resource adequacy program.
- Full criteria is already used in new transmission development and to retain existing resources under reliability must-run contracts.

Stakeholder feedback:

- Strong support

Why full alignment?

- Provides level playing field for build-up of transmission and/or new RA resources.
- Provides level playing field for build-up of new RA resources vs. old in need of retirement resources.
- Provides decision makers better tools to prepare for long-term overall system planning.
- The Reliability Must Run (RMR) need for an old resources asking for retirement/mothball is evaluated against entire mandatory criteria.
- Load shedding is a viable mitigation, where allowed by NERC standards. New or upgrades to Special Protection Schemes/Remedial Action Schemes (SPS/RAS) can be used and must comply with ISO Grid Planning standards.

Difference between mandatory standards vs. LCT criteria

Contingency Component(s)	Mandatory Reliability Standards	Old Local Capacity Criteria	Current 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
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

Difference between mandatory standards vs. LCT criteria

Contingency Component(s)	Mandatory Reliability Standards	Old Local Capacity Criteria	Current Local Capacity Criteria
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:			
1. Transmission Circuit (L -1)	X	x	X
2. Transformer (T -1)	X	x	X
3. Shunt Device	X		X
4. Bus section	X		X

Difference between mandatory standards vs. LCT criteria

Contingency Component(s)	Mandatory Reliability Standards	Old Local Capacity Criteria	Current Local Capacity Criteria
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 For voltage collapse or dynamic instability situations mitigation is required “if there is a risk of cascading” beyond a relatively small predetermined area directly affected by the outage.

Major Changes from year 2020 to year 2021

1. Total 2021 LCR capacity needed has increased by 517 MW or ~ 2.2%.
2. 2021 LCR needs decrease in: Big Creek/Ventura and San Diego due to load forecast decrease, LA Basin due to new transmission projects, Stockton due to changes in the LCR criteria, Kern due to decrease in available Qualifying Capacity, Fresno and Humboldt requirement is the same.
3. 2021 LCR needs increase in: North Coast/North Bay due to change in the LCR criteria, Bay Area and Sierra due to load forecast increase and change in the LCR criteria.
4. Mixed bag some areas and sub-areas LCR needs went up some went down with many sub-areas being eliminated.

Biggest increase - Greater Bay Area Overall

Year	Category	Limiting Facility	Contingency	LCR (MW) (Deficiency)
2020	B	Reactive margin	Tesla-Metcalf 500 kV line & DEC unit	3970
	C	Aggregate of subareas		4550

Year	Category	Limiting Facility	Contingency	LCR (MW)
2021	P6	Metcalf 500/230 kV #13 transformer	Metcalf 500/230 kV #11 & #12 transformers	6353

Compared to 2020 the 2021 load forecast went up by 292 MW and total LCR need went up by 1803 MW mainly due to LCR criteria change.

Secondary increase - Greater Bay Area Overall

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

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.

- Min LCR is achieved by using the most effective units FIRST (see manual)
- San Jose resources and load effectiveness factor is ~30% (21-40%)
- Previously unused resources effectiveness factor is ~4% (3-6%)
- ~120 MW San Jose load increase = ~880 MW of LCR increase

LCR needs and the TPP process

- Reliability mitigation - any LCR area or sub-area that is “deficient” needs a reliability mitigation in the TPP process.
- Economic mitigation - reducing LCR needs has two components:
  1. Capacity cost saving - driven by the reduction in LCR needs and the differential in price between the cost of the local capacity vs the cost of system wide capacity (latest CPUC RA report is used for such costs).
  2. Energy cost savings - derived through production cost simulations.

LCR needs and the TPP process (cont.)

- Policy mitigation - dictated by state and federal policy goals.
  1. Renewable target - used in the appropriate study year (if exact location is known), else guidance is given in every LCR report at the local area and sub-area level.
  2. Battery procurement - used in the appropriate study year (if exact location is known), else guidance is given in every LCR report at the local area and sub-area level.
  3. Gas retirements - not binding in the next 10 years - results available in the 10 year out study included as Appendix G to the 2019-20 and the 2020-21 TPP write-up.
  4. Known upcoming retirements (OTC, nuclear, public data) - already included in the LCR study for the appropriate study year.

RA Counting or Qualifying Capacity

- Per previous FERC rulings and ISO Tariff section 40.8.1 the Local Regulatory Agencies (LRAs) like CPUC have the authority to set the Qualifying Capacity:
  - CAISO has default rules (in case LRAs don't have their own rules)
- Per CPUC rulings and ISO Tariff, along with many technical reasons, each resource must have a single QC (NQC) value. It is NOT allowed to have one value for system and one value for local.
- The only reason a resource counts for local is because it is located inside a local area.
- ISO can decrease the QC to NQC, for testing (Pmax), performance criteria (not used) and deliverability.

The LCR Study

- DOES NOT establish RA counting
- DOES establish the local RA resources (by delimiting the local area boundaries)
- DOES establish the individual local RA requirement for each LSE based on their load share ratio within the TAC vs. the total LCR requirement for that TAC
- DOES establish the technical requirements.
  - Total MW need by TAC (RA individual enforcement + ISO back stop)
  - MW need by local area or sub-area (RA guidance only + ISO back stop)
  - Effectiveness factors (RA guidance only + ISO back stop)
  - Load charts (RA guidance only + ISO back stop)
  - Battery charging parameters (RA guidance only + ISO back stop)

ISO local CPM enforcement

- Total MW need by TAC + MW need by local area or sub-area + Effectiveness factors + Load charts + Battery charging limits
  - In the year ahead costs are first allocated to individual deficient LSEs on their month by month deficiency bases as available in their year ahead annual showing
  - Second remaining costs are allocated to all LSEs
- The technical requirements (justification for the local CPM) must be made public, therefore the need to include them in the LCR reports.

ISO RMR enforcement

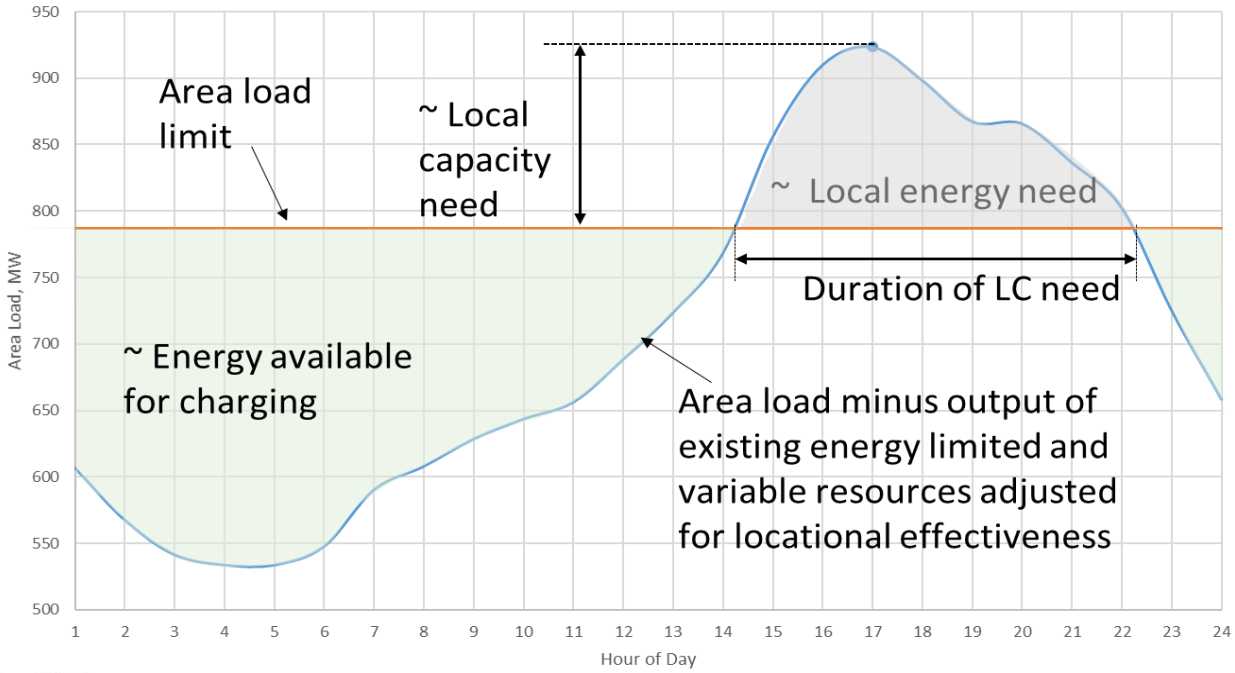
- RMR is not automatic – a resource must be non-RA and must ask (by submitting a signed affidavit) for retirement or mothball
- ISO can enforce any reliability need (Total MW need by TAC + MW need by local area or sub-area + Effectiveness factors + Load charts + Battery charging limits)
- Costs are divided to all the LSEs in the appropriate TAC(s) that drive the local need.
- The technical requirements (justification for these RMR contracts) must be made public, therefore the need to include them in public reports.

Charging for Storage used as local RA resources

- Local storage resources must be able to charge from the grid during all extended outage conditions (except extreme events) by using
  - Remaining transmission capacity into the constrained area
  - Other contracted for resources inside the constrained area

Methodology for assessing local energy need and charging feasibility

- Due to the energy limitation and need for charging, the following the methodology has been developed for assessing energy requirement and charging feasibility.
- The methodology is based on comparing the forecast hourly area effective net load for peak day against the area load carrying capability limit (area load limit).



Energy Storage Assessment Approach – Load vs load serving capability

- The assessment includes an hour-by-hour comparison of the net load versus the total (transmission + generation) load serving capability.
- Peak day 24-hour load profile is used, either directly from the CEC hourly load forecast or future year load profile developed by escalating from the historical load profile for the study area.
- Total local load serving capability includes the transmission load serving capability and local generation load serving capability.
  - The transmission load serving capability is calculated under the worst contingency condition without any local generation.
  - The local generation load serving capability is calculated under the worst contingency condition with the amount of generation needed according to the local capacity requirement considering effectiveness of the aggregate of local generation to the worst constraint.

Key assumptions used in energy storage assessment

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

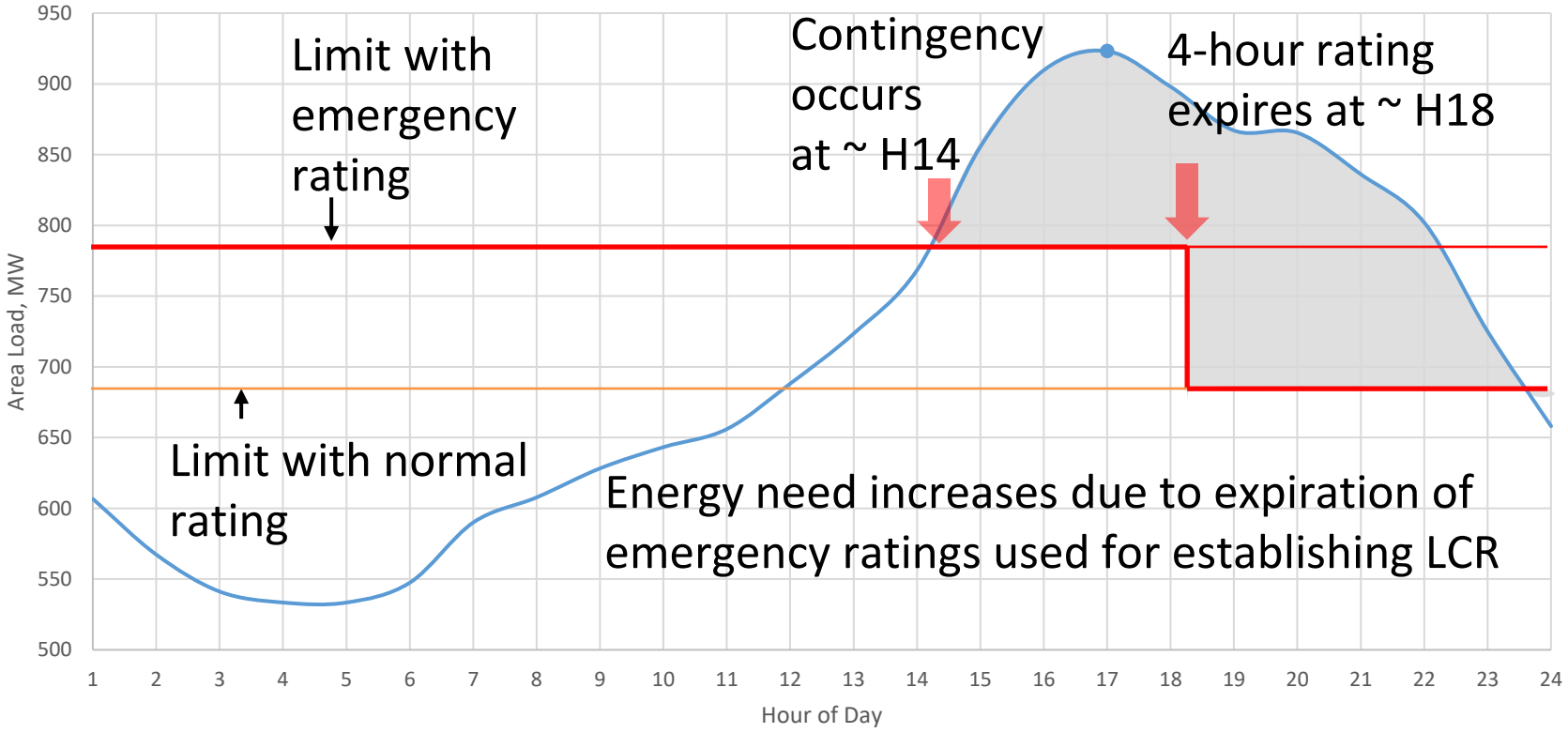
Additional consideration in presenting storage capability as part of Local Capacity Requirement (LCR) study

- Majority of LSEs are procuring (4 MWh for every 1 MW) batteries (due to current CPUC rules for system RA counting)

- The ISO has introduced “Maximum MW quantity of (4 MWh for every 1 MW) battery as 1 for 1 replacement” of resources needed in that local area or sub-area
  - Beyond this limit batteries may not reduce the need for other local resource on a 1 for 1 bases.

Potential future enhancements: Effect of difference between normal and emergency ratings

Relevant for thermal rating limited areas



California ISO

Open discussion

APPENDIX B
TO ATTACHMENT 1

CALIFORNIA COMMUNITY CHOICE ASSOCIATION AND PACIFIC GAS AND ELECTRIC COMPANY'S (U 39 E) LOCAL CAPACITY REQUIREMENT (LCR) FINAL WORKING GROUP REPORT

INFORMAL COMMENTS RECEIVED FEBRUARY 24, 2022:

CALIFORNIA COMMUNITY CHOICE ASSOCIATION

THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION

MIDDLE RIVER POWER, LLC

SAN DIEGO GAS & ELECTRIC COMPANY

CALIFORNIA COMMUNITY CHOICE ASSOCIATION
INFORMAL COMMENTS ON THE
LOCAL CAPACITY REQUIREMENT WORKING GROUP
February 2, 2022

I. INTRODUCTION

The California Community Choice Association[1] (CalCCA) appreciates the opportunity to comment on the Local Capacity Requirement (LCR) Working Group held on February 2, 2022. The CAISO Presentation[2] provided helpful clarity regarding the drivers of the 2021 and 2022 increases in Greater Bay Area requirements, interactions between the LCR and Transmission Planning Process (TPP), and how the LCR considers energy storage charging needs. In these comments, CalCCA recommends considerations that must be made in the Integrated Resource Planning (IRP) process and TPP when evaluating resource build and transmission upgrades needed to meet state policy goals at the lowest cost.

II. COMMENTS

When discussing the significant Greater Bay Area LCR changes for 2021 and 2022, the California Independent System Operator (CAISO) identified two drivers. First, the LCR reliability criteria changed in 2021. Second, the San Jose area experienced load growth for 2022 that required the use of more resources that are less-effective at meeting the constraints in other parts of the Bay Area. While the load forecast only increased by roughly 120 megawatts (MW),

---

[1] California Community Choice Association represents the interests of 23 community choice electricity providers in California: Apple Valley Choice Energy, Central Coast Community Energy, Clean Energy Alliance, Clean Power Alliance, CleanPowerSF, Desert Community Energy, East Bay Community Energy, Lancaster Choice Energy, Marin Clean Energy, Orange County Power Authority, Peninsula Clean Energy, Pico Rivera Innovative Municipal Energy, Pioneer Community Energy, Pomona Choice Energy, Rancho Mirage Energy Authority, Redwood Coast Energy Authority, San Diego Community Power, San Jacinto Power, San José Clean Energy, Santa Barbara Clean Energy, Silicon Valley Clean Energy, Sonoma Clean Power, and Valley Clean Energy.

[2] *California ISO Local Capacity Requirement (LCR) Working Group Meeting per CPUC's D.21-06-029*, Feb 2, 2022 (CAISO Presentation).

the resulting LCR increase was roughly 880 MW. The LCR increase was larger than the load forecast increase because the next set of resources that meet the contingency is very ineffective. The effectiveness factor of San Jose resources is roughly 30 percent, while the effectiveness factor of previously unused resources that are now needed to meet the new LCR is roughly 4 percent.[3] The result is procurement to meet a larger requirement relative to the increase in the forecast because each newly needed resource is so ineffective.

When changes to the local area such as load forecast increases result in large increases in LCR, several questions must be answered to most cost-effectively meet the new LCR. These include:

1. If the current resources have significantly low effectiveness factors, where should new resources locate to be more effective?
2. What are the transmission alternatives and how much do they cost compared to the large increase in local Resource Adequacy (RA) requirement or a new resource at a more effective location?
3. What information can be provided to the market about where new resources are needed based upon local area contingencies that are highly complex?

These questions should be answered through coordinated efforts between the California Public Utilities Commission (Commission) and the CAISO in the IRP and TPP. As the state progresses to meet state policy goals, it will become increasingly important to consider these questions. Achieving a zero-carbon electric system by 2045 will necessitate more renewable resource and storage development, creating opportunities for existing fossil fuel plants to retire. However, if an existing fossil fuel plant is in a locally constrained area, the resource retirement will not occur until the transmission constraint is eliminated or enough carbon-free resources are

[3] CAISO Presentation at 21.

built in the local area to fulfill the local need. The ability for local area resources to retire will also depend on the effectiveness factors of resources that would replace them. To avoid delays in meeting environmental standards, coordinated efforts between the Commission and the CAISO must occur to inform where new resources should locate to be highly effective at meeting the local need or, alternatively, where new transmission upgrades are needed to alleviate the local need.

IV. CONCLUSION

CalCCA appreciates the opportunity to comment on the LCR Working Group and urges the Commission and the CAISO to consider the recommendations herein.

Date: February 24, 2022

(*Original signed by*)

Eric Little
Director of Regulatory Affairs
California Community Choice Association
(510) 906-0182 | eric@cal-cca.org

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

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

INFORMAL COMMENTS ON CALIFORNIA COMMUNITY CHOICE ASSOCIATION AND PACIFIC GAS AND ELECTRIC COMPANY LOCAL CAPACITY REQUIREMENT WORKING GROUP REPORT OF THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION

I. Introduction

The California Independent System Operator Corporation (CAISO) submits informal comments in response to the Draft Working Group Report (Draft Report) by the California Community Choice Association (CalCCA) and Pacific Gas and Electric Company (PG&E). Decision (D.) 20-06-031 identified CalCCA and PG&E as the co-leads of a working group to evaluate three specific local capacity requirement (LCR) topics and to submit the working group report. The working group convened on February 2, 2022 and the co-leads distributed the Draft Report to the service list on February 18, 2022.

II. Discussion

The CAISO reviewed the Draft Report and has no further edits to the written report. The CAISO provides comments on each of the LCR topics below.

A. Topic 1: Potential Modifications to the Current LCR Timeline or Processes to Allow More Meaningful Vetting of the LCR Study Results

The CAISO has worked collaboratively with Commission Energy Division staff to ensure timely delivery of LCR study results. The CAISO relies on the California Energy Commission (CEC) for the underlying demand forecast to develop the LCR needs. Despite occasional delays in receiving the demand forecast, the CAISO has been able to deliver the LCR results to the Commission with sufficient time to establish Commission-jurisdictional LCR needs. Moreover,

the CAISO typically meets Commission-established deadlines for providing the final LCR study, despite undertaking additional analysis, such as developing engineering-managed results when local capacity requirements changed from a one- to three-year forward assessment and performing the storage charging assessment discussed below.

The CAISO has a robust and transparent multiple month-long stakeholder process (as described in the Draft Report in Section III.A.1) that allows for meaningful vetting, discussion, and analysis. Stakeholders should appropriately participate in the CAISO stakeholder process for any questions regarding the LCR study criteria, methodology, and results.

To improve coordination, the CAISO can work with Commission Energy Division staff to ensure the start of the CAISO's stakeholder process is also noticed via the Commission's service list. However, the CAISO cannot continue to compress its own stakeholder process timelines.

B. Topic 2: Inclusion of energy storage limits in the LCR report and its implications on future resource procurement

As discussed in the Draft Report,[1] the CAISO provided energy storage limit information to help the Commission, load serving entities, and the Central Procurement Entities form a better understanding of their collective procurement impacts in each local capacity area and sub-area vis-à-vis the existing and projected storage buildout.

C. Topic 3: How Best to Harmonize the Commission's and CAISO's Local Resource Accounting Rules

As explained by the CAISO at the February 2nd workshop, existing CAISO and Commission rules require that a resource adequacy resource cannot receive, show, or otherwise sell a different net qualifying capacity (NQC) value towards meeting the local versus system requirement. In other words, a resource adequacy resource counts towards the local requirement because it is located in a given local area; however, the local counting value must be the same as that established by the Local Regulatory Agency (LRA) towards meeting the system-wide requirement. Therefore, in the CAISO systems all resources shown for local resource adequacy count both towards local resource adequacy and toward the system resource adequacy requirements based on their respective monthly NQC values as established by the LRA.

[1] Draft Report, pp. Attachment 1-10 to 1-13.

III. Conclusion

The CAISO appreciates the opportunity to comment on the Draft Report. To improve coordination, the CAISO can work with Commission Energy Division staff to ensure the start of the CAISO's stakeholder process is also noticed via the Commission's service list.

Date: February 24, 2022

Middle River Power LLC Informal Comments on California Community Choice and Pacific Gas and Electric Company (U 39 E) Local Capacity Requirement (LCR) Working Group Report

As directed in Shawn-Dai Linderman's February 18, 2022 e-mail to parties in rulemakings R.19-11-009 and R.21-10-002, Middle River Power LLC ("MRP") hereby submits its informal comments on the draft Local Capacity Requirement ("LCR") Working Group Report ("LCR WG Report").

MRP appreciates the narrower LCR Working Group Scope adopted in D.20-06-031 and included on page Attachment 1-4 of the report. This narrower scope focuses only on (1) the LCR timeline; (2) including energy storage limits in the LCR report; and (3) local resource counting rules. This narrower scope does not contemplate the Commission undertaking a process to develop LCR that differ from the LCR developed by the CAISO. The CAISO has established processes for developing the LCR and for considering changes to the criteria used in the LCR studies. Given the CAISO's obligation to operate the bulk power system under its operational control in accordance with approved North American Electric Reliability Council ("NERC"), Western Electricity Coordinating Council ("WECC") and California Independent System Operator ("CAISO") criteria, and its primary role in developing LCR, MRP strongly believes that the CAISO, not the Commission, should be establishing the LCR used in the Commission's and CAISO's Resource Adequacy ("RA") programs.

In the discussion on the CAISO's Energy Storage analysis on page Attachment 1-13, the report relates a California Energy Storage Alliance ("CESA") question about why the CAISO does not consider multi-day contingency events in its local energy storage assessment. The report describes CAISO as responding that its assessment ensures that the peak-day charging requirement can be met and, if the batteries can charge under the peak-day conditions, they could charge in any other day with less load. As MRP understands, the CAISO's response is true if the "worst day" is defined only in terms of local area load and transmission network topology, and the associated local charging resources are not weather- or fuel-dependent. If the local charging resources are weather- or fuel-dependent, a "worst-case" day could involve a confluence of load, network topology and weather/fuel inadequacy conditions.

MRP offers the following recommendations for the report:

- Energy Division staff should notice upcoming CAISO local capacity technical study methodology meetings to parties so that all parties have the opportunity to participate in the CAISO's stakeholder process to establish the LCR.

- The Commission should adopt the CAISO's LCR values without modifications.

    - If the Commission elects to adopt a different LCR value, then such values should also be based on engineering studies performed by either Energy Division or third parties and the Commission should provide a detailed explanation as to why it adopted a different number than the CAISO's number in the relevant proposed and final Commission decisions.

February 24, 2022

INFORMAL COMMENTS OF SAN DIEGO GAS & ELECTRIC COMPANY REGARDING RESOURCE ADEQUACY (R.21-10-002), IMPLEMENTATION TRACK, PHASE 2 LOCAL CAPACITY REQUIREMENT

San Diego Gas & Electric Company (SDG&E) appreciates the opportunity to provide these comments regarding the draft Local Capacity Requirement (LCR) Working Group Report.

SDG&E generally supports the analysis performed by the California Independent System Operator (CAISO) regarding the integration of energy storage resources. As the resource portfolio grows to incorporate more battery resources, it will be important to accurately plan for the use-limited nature of these resources. CAISO's methodology for assessing charging feasibility is a good approach, as it includes an hourly assessment of whether resources can meet load in each LCR pocket. SDG&E suggests holistic consideration of the limitations of these batteries across California planning processes. In particular, the more granular assessment of resources to load forecast within individual LCR areas could be an important input to the Integrated Resource Planning (IRP) process. Incorporating these considerations will allow for more reliable and realistic resource portfolios that will serve California's energy needs.

********End of Informal Comments********