PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

March 30, 2023

<u>**Via E-mail and U.S. Mail**</u>

Mr. John Spomer, Senior Counsel
California Independent System Operator Corporation
250 Outcropping Way
Folsom, CA 95630

Re: Combined Subpoena for General RA information necessary for the CPUC to evaluate Resource Adequacy program and policies

Dear Mr. Spomer:

The California Public Utility Commission's ("CPUC"), pursuant to its duties to establish and administer California's Resource Adequacy requirements for load serving entities under the CPUC's jurisdiction, subpoenas information and data in the possession of the California Independent System Operator ("CAISO"). The attached subpoena requests certain data and information necessary for the CPUC to evaluate the Resource Adequacy program and policies as detailed in Exhibit A.

This letter confirms that all confidential information contained in any documents produced by the CAISO in response to the above-referenced subpoena will be treated in accordance with the terms of the Confidentiality Letter Agreement between the Commission and the CAISO, dated April 28, 2004. If you have any questions or concerns, please feel free to contact me at (415) 696-7329.

Sincerely,

Marybelle C. Ang

Marybelle C. Ang
Attorney

cc: Jaime Gannon, CPUC
        Natalie Guishar, CPUC

504955799

PUBLIC UTILITIES COMMISSION
STATE OF CALIFORNIA
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Re: **Combined Subpoena for General RA information necessary for the CPUC to evaluate Resource Adequacy program and policies**	**SUBPOENA OR SUBPOENA DUCES TECUM (Cal. Pub. Util. Code § 311)**

THE PEOPLE OF THE STATE OF CALIFORNIA,

TO: **The Custodian of Record for the California Independent System Operator Corporation, 250 Outcropping Way Folsom, CA 95630**

1. Pursuant to section 311(a) of the Public Utilities Code, you are ordered to appear before the California Public Utilities Commission, located at 505 Van Ness Avenue, San Francisco, California, 94102 to testify as a witness in this matter unless your appearance is excused as indicated in box 2c below or you make an agreement with the person named in item 4 below.

2. You are:

   a. ☐ Ordered to appear in person.

   b. ☐ Ordered to appear in person and produce the documents described in Exhibit A. The personal attendance of the custodian or other qualified witness and the production of the original records is required by this subpoena.

   c. **X** Not required to appear in person if you produce copies of the documents described in Exhibit A to the persons named in item 4, below, and in Exhibit A, prior to the dates and times set forth in Exhibit A.

3. If you have been subpoenaed as a witness, you are entitled to witness fees and mileage actually traveled, as provided by law. You may request one day's witness and mileage fees for travel to and from the place you are required to appear. You may demand these fees at the time of service from the process server or from the party or attorney requesting the subpoena. If they are not paid or tendered at that time, or unless the subpoena was obtained by the Commission staff, you are not required to appear (Public Utilities Code Section 1791).

4. IF YOU HAVE ANY QUESTIONS ABOUT THIS SUBPOENA OR YOU WANT TO BE CERTAIN WHETHER YOUR PRESENCE IS REQUIRED, CONTACT THE FOLLOWING PERSON:

   Name: Marybelle C. Ang   Telephone: (415) 696-7329

DISOBEDIENCE OF THIS SUBPOENA MAY BE PUNISHED AS CONTEMPT BY THIS COMMISSION

By Order of the Public Utilities Commission of the State of California.

Dated this 30th day of March 2023.

Rachel Peterson
_____

By: Rachel Peterson
Title: Executive Director

504800121

DECLARATION IN SUPPORT
OF SUBPOENA DUCES TECUM

I, Marybelle Ang declare as follows:

1. I am an attorney duly licensed to practice in the State of California and am employed as a staff attorney for the California Public Utilities Commission (hereinafter "CPUC"). My business address is 505 Van Ness, San Francisco, California. Good cause exists for the production of the documents requested in the Subpoena Duces Tecum issued by the CPUC to the California Independent System Operator Corporation ("CAISO"), as set forth with particularity in Exhibit A attached to the Subpoena Duces Tecum, in that the documents are material to the Commission's on-going implementation of the Resource Adequacy Requirements in Rulemaking 14-10-010, pursuant to Public Utilities Code § 380, and implementation of General Order 167.

2. It is my understanding and belief that the documents requested are in the custody, control and/or possession of the CAISO.

Executed under penalty of perjury under the laws of the State of California, on this 30th day of March, 2023, at San Francisco, California.

/s/   *Marybelle C. Ang*
_____
Marybelle C. Ang

EXHIBIT A

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

Exhibit A to
Subpoena for data and information necessary to evaluate
the Resource Adequacy program, energy storage procurement, reliability procurement, and
integrated resource planning policies

INSTRUCTIONS AND DEFINITIONS

The following instructions and definitions apply to each Request for Production of Documents ("Request") herein, and each Request is to be responded to as if these instructions and definitions were set forth in full, with regard to it.

Each Request calls for all documents responsive to that Request that are in your possession, custody, or control, including documents in the possession of your attorneys, investigators, representatives or others acting on your behalf or under your direction or control. You must make a diligent search of your records and of other papers and any materials in your possession or available to you or to persons subject to your influence and control.

If you claim privilege as to any documents, state the nature of the privilege, all facts that support the claim of privilege, the person claiming the privilege and a full and complete description of the document, including its title, date, author, nature, the job titles of the document's author(s), recipients(s), and persons copied (e.g., "cc" or "bcc"), form (e.g., letter, memorandum, etc.), subject matter and the name and address of the present custodian of the original or any copies of the document known to you.

The singular number and masculine gender as used herein also mean the plural, feminine or neuter, as is necessary to give the broadest possible scope to each Request.

The following definitions apply to each Request for Production of Documents ("Request") herein, and each Request is to be responded to as if these definitions were set forth in full, with regard to it:

"DOCUMENT" means any written, printed, typed, recorded, magnetic, punched, copied, graphic or other tangible thing in, upon, or from which information may be conveyed, embodied, translated, or stored, including, but not limited to, papers, records, books, telegrams, telexes, dictation or other audio tapes, video tapes, computer tapes, computer disks, diskettes, CD ROMs, computer printouts, microfilm, microfiche, laser disks, diaries, calendars, photographs, charts, viewgraphs, drawings, sketches and all other writings or drafts thereof, as well as any other writings as defined in California Evidence Code Section 250. This definition expressly includes, without limitation, all originals, drafts, non-

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conforming copies, reproductions, facsimiles of written, typed or printed material of any kind, books, letters, contracts, minutes of meetings, memoranda, notes on desk calendars and appointment books, canceled checks, invoices, correspondence, telegrams, telex messages, intra-office communications, electronic mail messages, photographs and films, art work and information stored on tape, computer disk or any other type of data storage device. If copies of a document are not identical by reason of hand notations, initials, identification marks or any other modification, each such non-identical copy is a separate document within the meaning of this definition.

"PERSON" means any natural person and any other cognizable entity, including without limitation, corporations, proprietorships, partnership, joint ventures, consortiums, Limited Liability Company, clubs, associations, foundations, governmental agencies or instrumentalities, societies, and orders. As used in the document requests, the acts and knowledge of a "person" are defined to include the acts and knowledge of that person's directors, officers, members, employees, licensees, representatives, agents, and attorneys.

"RESPONDENT" and "CAISO or ISO" refer to the California Independent System Operator Corporation (CAISO), its officers, directors, employees, agents, representatives, and attorneys, responding party(ies), their predecessor(s) and successor(s) in interest, their agents, employees, servants, officers, representatives, counsel, and anyone else acting on its behalf or at its request.

"RELATE" and **"RELATING TO"** mean consisting of, summarizing, identifying, explaining, reflecting, describing, discussing, pertaining to, containing, mentioning, concerning, illustrating, referring to, alluding to, responding to, commenting on, in respect of, about, regarding, discussing, involving, analyzing, constituting, or referring to in any way.

"ANY" includes and encompasses "all" and "all" includes and encompasses "any". "Or" includes and encompasses "and" and "and" includes or encompasses "or." Each of these terms shall be interpreted to give the broadest possible scope to each Request.

MATERIALITY

Currently, the CAISO provides the CPUC with ongoing access to the CAISO Outage Management System (OMS) Web Client and to the CAISO Daily Outage Report, pursuant to a CPUC subpoena dated September 30, 2003. As described in that subpoena, the CPUC developed General Order 167 (GO 167) to meet its obligations under Public Utilities Code §761.3, which require the CPUC to, among other things, implement and enforce maintenance and operation standards for electric generating facilities. The CPUC's Safety and Enforcement Division (SED) accesses OMS daily to obtain scheduling and outage information regarding individual generators.

California Public Utilities Code Section (§)380 requires that the CPUC, in consultation with the CAISO, establish resource adequacy (RA) requirements for all load serving entities within the CPUC's

jurisdiction. Per §380, RA requirements must facilitate the development of new generating capacity, equitably allocate the cost of generating capacity, and minimize enforcement requirements and costs. The CPUC's RA program annually establishes minimum capacity obligation requirements for CPUC jurisdictional load serving entities (LSEs) on a one year-ahead basis at both the system and local level. Decision (D.) 05-10-043 established system RA requirements and D.06-06-064 established local RA requirements. The CPUC also adopted a flexible RA capacity requirement in D.13-06-024. Through R.21-10-002, the CPUC currently administers its Resource Adequacy (RA) program and requires all Load Serving Entities ("LSEs") to demonstrate compliance by entering capacity contracts with generators on a year-ahead (YA) and month-ahead (MA) basis, and in specific local areas. The CPUC's Energy Division (ED) administers the RA program, reviews all RA-related compliance filings, and advises the presiding Administrative Law Judge (ALJ) in the ongoing RA proceeding(s).

Additionally, as required by AB 2514 (Skinner, 2010), the CPUC opened R.10-12-007 to consider the adoption of procurement targets for viable and cost-effective energy storage systems. Under that rulemaking, the CPUC issued D.13-10-040, which established an energy storage target of 1,325 MW for PG&E, SCE, and SDG&E to be procured by 2020 and installed by the end of 2024. The decision also adopts an Energy Storage Procurement Framework and Design Program (Appendix A to D.13-10-040) that articulates grid optimization, renewable integration, and GHG emissions reductions as the three guiding purposes of the CPUC's energy storage procurement policy. In addition, the decision orders the CPUC Energy Division to, "conduct a comprehensive evaluation of the Energy Storage Procurement Framework and Design Program by no later than 2016 and submit a report to the Commission." In March 2021 the CPUC launched the inaugural Energy Storage Procurement Study.

At the heart of the study is an analysis of actual operations to date, including analyses of performance and operating behavior, market participation, and various monetized, quantified, and/or qualitative benefits towards the CPUC's guiding purposes of grid optimization, renewable integration, and GHG emissions reductions. In order to conduct this study, the study team and its consultants require accurate and detailed information about energy storage resources participating in the CAISO marketplace, as well as other CAISO system and market information relevant to assessing the performance of energy storage resources. The data requested in this subpoena will be used to inform modeling and analysis. The data may also be used to design or implement future CPUC studies regarding energy storage, distributed energy resources, or grid planning, and to draft future data requests or subpoenas (if needed).

Additionally, the CPUC, along with the CEC, CAISO, and the Governor's Office of Business and Economic Development (GO-Biz), is tasked by the Governor's Emergency Proclamation of July 30, 2021 on working with the state's load serving entities (LSEs) to accelerate plans for the "construction, procurement, and rapid deployment of new clean energy and storage projects to mitigate the risk of

capacity shortages and increase the availability of carbon-free-energy at all times of day." The Tracking Energy Development (TED) Task Force determined that it would prioritize reliability projects that are expected to be online by 2023, along with the expansion of projects that can be online by 2026. The TED Task Force requests information on developers and projects in the interconnection queue in order to meet its objectives of addressing project barriers and supporting the state's reliability needs. Moreover, the information on developers and projects in the interconnection queue will be used by the CPUC in fulfilling its requirement under SB 887 (Becker, 2022), now PU Code § 454.27, which requires the CPUC to provide "transmission-focused guidance to the CAISO about resource portfolios of expected future renewable energy resources and zero-carbon resources," based on the technical feasibility and commercial interest of projects in each region.

      With the passage of Senate Bill (SB) 350 (De Léon, 2015), now PU Codes § 454.51 and § 454.52, the CPUC administers the Integrated Resource Planning (IRP) program (R.20-05-003) that among other things, requires the CPUC to "Identify a diverse and balanced portfolio of resources needed to ensure a reliable electricity supply that provides optimal integration of renewable energy in a cost-effective manner."

      This subpoena requests this critical data and information to allow the CPUC to evaluate the success of the RA program on an annual and monthly basis, and to determine whether program modifications could improve the CPUC's ability to fulfill its statutory duties in future program years. ED staff also requests the data in support of the Energy Storage Procurement Study, and IRP, in addition to the TED Task Force, and other modeling efforts. Specifically, ED staff uses plant-specific information for generators that are dispatched to serve CAISO and other California electricity demand in simulating their dispatch over hourly and potentially sub-hourly time steps. Calculating, predicting, and planning for reliability, cost, and GHG impacts related to IRP and energy storage procurement in the future, requires ED staff to have accurate and complete resource-specific operating characteristics of generating facilities. If ED staff needs to broaden the use of the requested data for additional purposes in accordance with PU Codes § 311, § 380, § 454.27, § 454.51, § 454.52, and § 701, it will notify and confer with the CAISO on the scope of use for the data at issue.

      As such, this subpoena is meant to be an inclusive subpoena, renewed annually. The subpoena requests that the CAISO deliver data to the CPUC at scheduled intervals, to reflect the availability of the data at the CAISO. The CPUC requests data in thirty-two (32) broad categories: (1) Resource Adequacy (RA) Import Allocations, (2) Supply Plans Filed by Generators and Monthly Supply Plan Validations for RA Resources (3) List of Units Confirmed to Provide RA to the CAISO, (4) Economic Bids and Self-Schedules, (5) CAISO Settlement Quality Meter Data (SQMD), (6) Access to Outage Management System (OMS) Application, (7) Monthly Masterfile Data (8) Flexible Capacity Needs Assessment Data and

Allocations, (9) Access to CAISO Customer Interface for RA (CIRA), (10) Energy Management Systems (EMS) Data, (11a) Capacity Procurement Mechanism (CPM) and Capacity Solicitation Process (CSP) Results, (11b) Capacity Procurement Mechanism (CPM) Settlement Data, (11c) Reliability Must Run (RMR) Cost Data, (12) Reliability Event Reports Sent to the Western Electricity Coordinating Council (WECC), (13) Energy Market Settlement Data for Demand Response (DR) and Energy Storage Resources (PDR/RDRR/PDR-LSR, NGR/LESR/DDR, Pumped Storage Hydro, Hybrid), (14) CPUC Jurisdictional Load Serving Entity (LSE) Annual and Monthly Deficiency Notices, (15) Local Capacity Study Data, (16) Local Residual Analysis, (17) Capacity Procurement Mechanism (CPM) and Reliability Must Run (RMR) Designation Capacity Costs and Costs Allocations, (18) Notices of Intent to Retire, Mothball, or Return to Service, (19) California Energy Commission (CEC) Subpoena Data, (20) RA Availability Incentive Mechanism (RAAIM) Data, (21) DR Registration System (DRRS) Information, (22) Price Taker Export Analysis Underlying Data, (23) Use Limited Resource Information, (24) Wheeling Transactions, (25) Counting Firm Load as Contingency Reserves by Investor-Owned Utilities, (26) Market Battery State of Charge, (27) Generation Resource PNODE Longitude/Latitude, (28) Ancillary Services Market Settlement Data for DR and Energy Storage Resources (PDR/RDRR/PDR-LSR, NGR/LESR/DDR, Pumped Storage Hydro, Hybrid), (29) Identification of Co-located Storage Resource Configurations (30) Meter Data for Hybrid Energy Storage with a Variable or Intermittent Component, (31) Proxy Demand Response Commitment Cost Offers, and (32) Data on Projects in the Interconnection Queue, Interconnection Customers, Deliverability Allocations, and Project Status.

The schedule for delivery of requested information is presented in Table 1. The field names and date formats in the data files shall not be changed over the course of the year, or from one year to the next. CPUC requests that all data and notifications identified in this subpoena be sent to the following e-mail addresses: RAFiling@cpuc.ca.gov, Natalie.Guishar@cpuc.ca.gov, Eric.Dupre@cpuc.ca.gov, and Andrew.Dugowson@cpuc.ca.gov.

DESCRIPTION OF DATA REQUESTED

1. Resource Adequacy (RA) Import Allocations

The CPUC now has access to CAISO's CIRA application and no longer needs the CAISO to provide this Import Allocation file. However, if CIRA becomes inaccessible or if the data contained therein becomes inaccurate, CAISO will provide the import allocation information to the CPUC at a time mutually agreeable by the parties.

Specifically, the CAISO will provide the final numerical values per branch group and per LSE of import allocations received by LSEs applicable for the 2023 and 2024 compliance years. Please format the information similar to the chart posted here, including the source data for previous steps in the import allocation process: http://www.caiso.com/Documents/2023HoldersImportCapability.xls.

2. Supply Plans Filed and Monthly Supply Plan Validations for RA Resources

The CPUC currently has access to supply plan validation files through the CIRA application. However, if CIRA becomes inaccessible or if the data contained therein becomes inaccurate, CAISO will provide to the CPUC, at a time mutually agreeable by the parties, two spreadsheets which show validation of Year Ahead, as well as monthly System, Local, and Flexible RA Filings by all LSEs serving load in CAISO. The CAISO will also include both the monthly supply files and the annual supply files submitted at the end of October. The validation spreadsheets will list all RA capacity committed to provide RA to any LSE. The CPUC specifically requests two sets of files, an initial validation, and a final validation. The initial validation is to be performed before any corrections or communications with suppliers is performed, to allow the CPUC to validate filings as of the RA Filing due date (currently at T-45 days before the beginning of the RA compliance or trade month). A second validation is to be performed after all corrections and re-filings have been performed. This is to ensure that after remediation by LSEs and suppliers, all RA Filings are ready for approval. In addition to these two sets, the CPUC requests that the ISO provide, on an as needed basis as requested by CPUC staff, any additional updated cross validation files between the T-45 and T-30 sets. Please provide a spreadsheet in .xlsx format with a tab for all RA resources (both physical resources internal to CAISO and system resources external to CAISO) committed as RA, both those resources where suppliers confirmed RA capacity that was listed in RA Filings, and that capacity committed by suppliers as RA that did not match with any LSE RA Filing. Also note that this subpoena requests data for all system and flexible RA resources, including those resources listed by non-CPUC jurisdictional LSEs. Within the System RA Validation file, please include the following columns:

Columns for the System RA Validation File:

RA Validation Status	"Passed" = LSE gets credit for RA Capacity MW
	"Error" = LSE does not get credit for RA Capacity MW
Supply Validation Status	"Pass" or "Warning" = Resource ID is committed for Supply Capacity MW
	"Error" = Resource ID is not committed for Supply Capacity MW
RA LSE	The name of the LSE claiming the facility as RA capacity
Resource ID	The facility's identification used for scheduling
SCID/Scheduling Coordinator ID	The Scheduling Coordinator for the facility
Effective Start Date	When the RA Capacity MW starts

Effective End Date	When the RA Capacity MW ends
RA Capacity (MW)	RA Capacity shown on LSE's RA plan
Supply Capacity (MW)	Total RA Capacity shown on supplier's supply plan
Comments	Description of error or warning

Within the Flexible RA Validation file, please include the following columns:

Columns for Flexible RA Validation File:

RA Validation Status	"Passed" = LSE gets credit for RA Capacity MW "Error" = LSE does not get credit for RA Capacity MW
Supply Validation Status	"Pass" or "Warning" = Resource ID is committed for Supply Capacity MW "Error" = Resource ID is not committed for Supply Capacity MW
RA LSE	The name of the LSE claiming the facility as RA capacity
Resource ID	The facility's identification used for scheduling
SCID/Scheduling Coordinator ID	The Scheduling Coordinator for the facility
Effective Start Date	When the RA Capacity MW starts
Effective End Date	When the RA Capacity MW ends
RA Flex Category	Flexible Capacity category shown on LSE's RA plan
Supply Flex Category	Flexible Capacity category shown on supplier's supply plan
RA Flexible Capacity (MW)	Flexible RA Capacity shown on LSE's RA plan
Supply Flexible Capacity (MW)	Flexible RA Capacity shown on supplier's supply plan
Comments	Description of error or warning

Specifications of data: The CAISO is requested to provide the data in .xlsx format. A template for the supply plan validation file is provided as Appendix A with a format for the CAISO to fill out and send to the CPUC. Please provide two files, one for the system RA validations and the other for the flexible RA validations. Please provide both files again for final validations.

Dates covered by this item: Year Ahead Filings for 2023 RA compliance year, as well as all month-ahead filings for the months of 2023. In addition, this subpoena requests access to the Year Ahead Filings of 2024 and the first Month Ahead Filings for January through March 2024.

3. List of Units Confirmed to Provide RA to the CAISO

The CPUC now has access to CAISO's CIRA application and no longer needs the CAISO to provide these files. However, if CIRA becomes inaccessible or if the data contained therein become inaccurate, CAISO will provide to the CPUC (1) a monthly list of all Resource IDs that are confirmed as RA capacity

for the following operational month and (2) a spreadsheet in .xlsx format with a tab for each month, adding information for each month as it becomes available after RA units are confirmed for the operational month. Within each tab, CAISO will create and fill in the following columns:

a. **Resource Name** – all Resources confirmed to provide RA capacity that month

b. **SCID for the Resource –** the SCID for the resource that is providing RA capacity

c. **SCID for the LSE** that the resource is committed to provide RA capacity to

d. **Resource ID** – the Resource ID of the unit providing RA

e. **Supply RA Capacity** – Amount in MW of RA capacity that the unit has confirmed to provide to the CAISO

f. **Scheduled Outage Replacement Capacity** – Amount in MW of replacement capacity on each unit that is being replaced for the month.

g. **Start and End Dates** of confirmed capacity or replacement capacity on same line as the capacity.

4. Economic Bids and Self-Schedules

In order to evaluate Demand Response Auction Mechanism (DRAM) resources in the CAISO Market, verify compliance with the CPUC Flexible, Local, and System RA compliance obligations, evaluate net qualifying capacity of combined heat and power (CHP) and biomass resources, assist staff in evaluating energy procurement and scheduling patterns, and enable staff to assess the interaction between market outcomes and reliability, the CPUC requests that the CAISO provide resource-specific hourly economic or self-schedule bid data for every generator and load, namely: generators, RDRR, PDR, NGRs, imports, exports, and load that participates in the CAISO electricity market. CPUC staff must assess patterns in bidding or scheduling of import and export energy as staff develops import and export assumptions about future load and resource balance for IRP modeling. In addition, to better assess market outcomes, CPUC staff must be able to assess demand bids in the CAISO markets.

Specifications of data: The following data can be provided in a single file. For bid segment data, the CPUC is requesting the max bid segment. On a case-by-case basis, however, the CPUC may request additional bid segments for a subset of information. These data allow the CPUC to analyze behavior of each individual generator, import or export energy resource, DR program, load, and aggregate quantities either economically bid or self-scheduled in the CAISO. All files will be in .csv format.

Generator and Demand Response (PDR/RDRR) – Information is requested for all of 2023 beginning on 1/1/2023 and continuing for each month through 2023, according to the timeline in Table 1.

Imports – The CPUC requests the following information for import energy resources that participate in the CAISO electricity market starting from January 1, 2023, through December 31, 2023, according to the timeline in Table 1. The CPUC will use the requested data to assess patterns in resource bidding and scheduling to enhance IRP modeling. CPUC will also use these data to adequately evaluate the current RA import rules (including qualifying capacity and Must Offer Obligation).

Exports – The CPUC requests the following information for exports from the CAISO electricity market starting from January 1, 2023, through December 31, 2023, according to the timeline in Table 1. CPUC will use these data to assess patterns in resource bidding and scheduling.

Load – The CPUC requests the following information for bid-in load in the CAISO electricity market starting from January 1, 2023, through December 31, 2023, according to the timeline in Table 1. CPUC will use these data to assess demand bidding patterns and to better understand market outcomes.

Multiple bid segments are noted below as "segment [X]."

CPUC Field Name	ISO Native Field Name
Unit Type	UNIT_TYPE
Resource ID	RESOURCE_NAME
Scheduling Coordinator ID	SCID
Trade Date	TRADE_DATE
Trade Hour	TRADE_HOUR
Real Time Market Dispatch Quantity	RTM_DISPATCH_QUANTITY
Real Time Market Dispatch Price	RTM_DISPATCH_PRICE
Real Time Bid Segment [X] Quantity	RTM_BID_QUANTITY
Real Time Bid Segment [X] Price	RTM_BID_PRICE
Real Time Market Self-Schedule Capacity (MW)	RTM_SELFCHEDMW
RUC Dispatch Quantity	RUC_DISPATCH_QUANTITY
Day Ahead Market Dispatch Quantity	DAM_DISPATCH_QUANTITY
Day Ahead Market Dispatch Price	DAM_DISPATCH_PRICE
Day Ahead Bid Segment [X] Quantity	DAM_BID_QUANTITY
Day Ahead Bid Segment [X] Price	DAM_BID_PRICE
Day Ahead Market Self-Schedule Capacity (MW)	DAM_SELFCHEDMW

Definition of each field name:

a. **Unit Type** – To help differentiate generator, demand response, or import energy

b. **Resource ID –** The Resource ID for each unit

c. **Scheduling Coordinator ID –** The four letter SCID that represents the SC for the resource

d. **Trade Date** – Please include every day of the month

e. **Trade Hour** – Please include all 24 hours each day

f. **Real Time Market Dispatch Quantity**– Please provide the hourly integrated MW quantity at which the resource was dispatched during the hour in the real time market.

g. **Real Time Market Dispatch Price** – Please provide the hourly integrated dollar value dispatch price paid to the resource in the real time market.

h. **Real Time Bid Segment [X] Quantity** – Please provide the MW range of each individual real time bid segment for the given hour in a separate field (replace "[X]" with "1," "2," etc.). If the resource does not bid, leave this field blank. Do not enter 0. The default request is for the max bid. On a case-by-case basis, the CPUC may request additional bid segments for a subset of information.

i. **Real Time Bid Segment [X] Price –** Please provide the price of each individual real time bid segment for the given hour in a separate field (replace "[X]" with "1," "2," etc.). If the resource does not bid, leave this field blank. Do not enter 0. The default request is for the max bid. On a case-by-case basis, the CPUC may request additional bid segments for a subset of information.

j. **Real Time Market Self-Schedule Capacity (MW)** – Please provide the MW quantity scheduled into the RTM if scheduled. If the resource bids and does not self-schedule leave this field blank. Do not enter 0.

k. **RUC Dispatch Quantity** – Please provide the hourly MW quantity committed for this resource via the RUC process. If CAISO did not commit capacity via the RUC process for the resource in a given hour, leave this field blank. Do not enter 0.

l. **Day Ahead Market Dispatch Quantity** – Please provide the hourly integrated MW quantity at which the resource was dispatched during the hour in the day ahead market.

m. **Day Ahead Market Dispatch Price** – Please provide the hourly integrated dollar value dispatch price the resource received in the day ahead market.

n. **Day Ahead Bid Segment [X] Quantity** – Please provide the MW range of each individual day ahead bid segment for the given hour in a separate field (replace "[X]" with "1," "2," etc.). If the resource does not bid, leave this field blank. Do not enter 0. The default request is for the max bid. On a case-by-case basis, the CPUC may request additional bid segments for a subset of information.

o. **Day Ahead Bid Segment [X] Price** - Please provide the price of each individual day ahead bid segment for the given hour in a separate field (replace "[X]" with "1," "2," etc.). If the resource does not bid, leave this field blank. Do not enter 0. The default request is for the max bid. On a case-by-case basis, the CPUC may request additional bid data for a subset of information.

p. **Day Ahead Market Self-Schedule Capacity (MW)** – Please provide the MW quantity scheduled into the IFM if scheduled. If the resource bids and does not self-schedule leave this field blank. Do not enter 0.

5. CAISO Settlement Quality Meter Data (SQMD)

CPUC requests provision of SQMD from all generator and load resources that participate in the CAISO electricity market. CPUC staff requires access to these data in order to properly evaluate performance of LSE contracted generation, develop QC for CHP and biomass resources in the RA program, develop accurate production profiles for non-dispatchable resources in IRP and RA modeling, properly assess patterns of import and export to validate hourly modeling in the RA and IRP proceedings, and better understand and analyze market outcomes. CPUC staff are also evaluating patterns of energy flow and dispatch in order to inform long term procurement guidelines for LSEs and to inform our comments related to CAISO market design.

Resources covered: All generator types including (but not limited to) wind, hydro, solar, geothermal, biomass, and cogeneration; import resources; demand response; non-generating resources; and hybrid resources. Also include load in, imports to, and exports from the CAISO market.

Time period of data requested: For 2023 data, the CPUC requests provision of the T+12B and T+70B Settlement Quality Meter Data from 1/1/23 through 12/31/23 for all resources. A detailed schedule is described in Table 1.

Specifications of data: The CAISO is requested to prepare either one or two settlement files, depending on whether supply and load settlement data must be reported separately in CAISO's system. (If not, one file is acceptable.) Supply settlement data should contain hourly (8,760 entries per year or 8,784 entries in a leap year) actual settlement quality meter data reported by all Resource IDs. Load settlement data should also contain hourly (8,760 entries per year or 8,784 entries in a leap year) actual settlement data

for all loads. Each current supply and load Resource ID should be reported separately. Data should be listed using the current (*i.e.*, applicable in 2022) Resource ID; previous Resource IDs are not needed.

Data should be sent in a comma separated value (.csv) file. Six columns are needed:

    a. **Scheduling Coordinator ID –** the four letter SCID that represents the SC for the resource

    b. **Res_ID** - Resource ID

    c. **Date** - The standardized date in the format MM/DD/YYYY

    d. **Hour** - The hour in which the MWh to be reported was generated. All hours should be in the hour-ending (1 through 24) format. For example, a data field with the number "4" will represent all the MWh produced in the hour from 0300 through 0359.59. There should be no adjustment for Daylight Savings Time. A year is presumed to have 8,760 hours occurring in it, except for leap years, which would have 8,784 hours.

    e. **MWh** - The total MWh metered (either positive for generation or negative for demand response) in the 60 minutes for the hour being reported. Missing data should be represented as a blank cell and periods of no generation should be marked as a zero.

    f. **Tie** – For imports and exports, report the intertie or scheduling point.

Description of intended use -The CPUC intends to use the requested data primarily for the purpose of preparing and posting to its website the following reports:

    a. Annual Net Qualifying Capacity Report for the subsequent compliance year: The CPUC or the CEC on the CPUC's behalf will use the settlement quality meter data to compute Qualifying Capacity values for intermittent resources subject to the CPUC counting conventions and will post the Net Qualifying Capacity totals on the CPUC website.

    b. Oversight of the DRAM Pilot: CPUC staff will use these data to oversee general DR program activities including the DRAM pilot.

    c. Assessment of market outcomes and reliability, which requires settlement data for all resources (including imports) and for both sides of the market (including exports and load settlements).

    d. The CPUC may retain these data and use it for other analytical purposes, although the CPUC will not publicly disclose the data in any other way without prior ISO notification and consultation.

6. Access to Outage Management Systems (OMS) Application

CPUC requests online access to transmission and generation outage information contained in the OMS application.

7. Monthly MasterFile Data

The CPUC requests the CAISO to provide monthly updates of data entered by generators into the MasterFile database in order to monitor generator performance, reliability, and compliance with GO 167, and to implement key features of the RA Program related to system physical and operational needs. The CPUC is responsible for directing the construction of sufficient generating and transmission facilities in order to meet the CPUC's established reliability criteria in both the RA proceeding and the CPUC's Integrating Resource Planning (IRP) Proceeding. As more of the physical and operational needs of the system reflect specific performance qualities of specific plants (e.g., ancillary service capabilities, ramp rates, minimum start times etc.) for purposes of renewable integration, once-through cooling mitigation,

and general IRP system needs assessments, the CPUC will need to monitor the quality and level of operational flexibility particular to each plant and across the generation fleet in general.

The CPUC seeks access to all listings by all Scheduling Coordinator IDs (SCIDs). In particular, the CPUC requests data corresponding to all fields listed in (1) the "Intertie RDT - RESOURCE" tab and (2) the "Generator RDT - RESOURCE" tab in the most recent "GRDT and IRDT Definitions" table.[1] CPUC also requests SEGMENT data corresponding to the fields listed in Appendix B, referring also to the "GRDT and IRDT Definitions" document.

Energy Division will use these data for purposes of reliability modeling as well as other purposes of procurement and DRAM pilot oversight. The CPUC will publish a limited range of the unit specific data to the CPUC website to allow for stakeholders to understand the inputs to reliability modeling. The CPUC will maintain confidentiality for the MasterFile data.

Specifications of data: Please provide these files in .csv format. The CAISO is requested to submit data to the CPUC via the Commission's SFTP application, accessible via the link here: https://cpucftp.cpuc.ca.gov/.

8. Flexible Capacity Needs Assessment Data and Allocations

The CPUC requests the CAISO provide the CPUC with the following information:

a. Complete LSE responses to the CAISO data request made pursuant to Tariff section 40.10.1.2, asking for information on each wind, solar, and behind the meter resources owned, in whole or in part, by the LSE or entity under contractual commitment to the LSE for all or a portion of its capacity.
b. Work papers used to add together wind, solar and behind-the-meter resources contained in the LSE data request responses.
c. The time-shifted minute-by-minute variable energy output profiles used to calculate variable energy profiles. Please indicate which if any actual facilities are taken as models for the output data.
d. Work papers used to scale the production data.
e. The time-shifted 2022 minute-by-minute load data used to calculate the flexible capacity requirement.
f. Work papers used to develop the monthly ISO minute-by-minute forecast from the CEC Integrated Energy Policy Report (IEPR) 1-in-2 monthly peak load forecast (Mid Demand Scenario, with mid AAEE) and/or from the CEC hourly load forecast (Mid Demand with mid AAEE and mid AAFS).
g. The ISO's simulated minute-by-minute forecast of net load curves for the time frame of the annual study.
h. Work papers used to calculate the minute-by-minute net load curves.
i. The monthly peak load ratios used in the Flexible need equation.
j. Work papers used to calculate the Seasonal Percentages Needed in each Category.
k. Work papers used to allocate the CPUC its Flex RARs.

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[1] GRDT and IRDT Definitions file posted to the CAISO website here: http://www.caiso.com/Documents/GRDTandIRDTDefinitions.xls

l.   Any new or additional data or workpapers in the 2024 assessment process that are not identified above and that would be considered necessary for Energy Division to review.

Specifications of data: Please provide the data listed above in .xlsx or SAS file format and include any additional information that would enable CPUC to understand and replicate the underlying calculations in the spreadsheets or data files.

9. Access to CAISO Customer Interface for RA (CIRA)

CPUC staff requests live access to the CIRA database for a limited number of CPUC staff. This access is necessary (as opposed to requests for periodic data reports) in order to enable coordination with the CAISO Reliability Requirements process and to enable CPUC enforcement of RA program rules. Due to the complexity of the RA program, and differing submission requirements and formats, CPUC staff needs to verify the form and content of information submitted to the CAISO and to review automated or manual communication between the LSE and CAISO through the CIRA system.

Specifications of Data:

CPUC staff requests the ability to do the following actions:

1.   Log securely into the CIRA system as needed throughout the month.
2.   Review and export uploaded RA Filing data (both year ahead and month ahead) from all SCs that submit RA Plan data to CAISO (both CPUC jurisdictional and non-jurisdictional) on as needed basis by CPUC staff.
3.   Review and export supply plan data submitted by all SCs that submit supply plans for RA compliance to CAISO whether the LSE being supported is CPUC jurisdictional or non-jurisdictional.
4.   Review and export CEC forecasts uploaded by CEC staff for all LSEs whether CPUC jurisdictional or non-jurisdictional. Review of all calculations performed in CIRA to calculate RA obligations for LSEs.
5.   Review and export any filing status, cross validation results, error logs, or communication/compliance logs developed by CIRA pertaining to RA plan data submitted by any SC for an LSE to CAISO.

Time period of data requested:

CPUC staff expects the CAISO to provide ongoing access to CIRA.

10. Energy Management System (EMS) Data

The CPUC requests the CAISO provide the CPUC with monthly actual hourly EMS load data for each month of 2023.

Specification of the Data:
The monthly files should include actual hourly EMS load data for the subareas used in the CAISO internal load forecast process, including the following fields. Data will be provided in .xlsx format. Please do not include commas in the load data.

CAISO Data Field	**Description**
Dates	Date and time as mm/dd/yyyy hh:00
Date	Date as mm/dd/yyyy
HR	Hour ending, as integer
PGE-BA w/o Pump Ld	PG&E Bay Area load without pump load
PGE-BA Pump Ld	PG&E Bay Area pump load

PGE-NBA w/o Pump Ld	PG&E non-Bay Area load without pump load
PGE-NBA Pump Ld	PG&E non-Bay Area pump load
SCE w/o Pump Ld	SCE load without pump load
SCE Pump Ld	SCE pump load
SDGE	SDG&E load
VEA	VEA load
CAISO Total	Total CAISO area load

11a. Capacity Procurement Mechanism (CPM) and Capacity Solicitation Process (CSP) Results:

The CPUC now has access to CAISO's CIRA application and does not need the CAISO to provide this CSP result. However, if CIRA becomes inaccessible or if the data contained therein becomes inaccurate, CAISO will provide the CSP information to the CPUC at a time mutually agreeable by the parties.

The CPUC requests the CAISO provide the CPUC with the monthly, intra-monthly and annual CSP and CPM data. The CPUC would like these data in order to identify if CAM resources are bidding into the CSP. Additionally, the CPUC would like to examine the effectiveness of the CSP as it relates to CPM designations. The CSP data will include all bids that were locked into the CSP after the adjustment period ended. This would be the finalized offer set that gets locked in after the CAISO validates that the offer is not shown on a supply plan. The CPM designation data may overlap with a CSP bid or they may be without one.

The CPUC requests three types of files:

i.   One annual file - The annual data should include any CPM designations that came out of the YA validation processes and all locked in CSP bids that were submitted in the YA CSP process.

ii.   Twelve monthly files - The monthly data should include any CMP designation, made in the prior month for the coming month, in addition to locked in CSP bids, submitted in the prior month for the coming month (whether they were designated or not).

iii. Twelve intra-monthly files - These files will include the results of the CSP bids and CPM designations for the each identified time period. The intra-monthly data should include data from the prior month that was designated intra-monthly for the prior month.

Specifications of data: Please provide the data listed above in .xlsx format. The format of the data should include the following fields:

a.) **Resource ID -** this should include all resources that bid into the monthly CSP and any resource that was assigned a CPM designation that may have not bid into the CSP

b.) **Type of CSP or CPM** (if resource did not submit through CSP) - monthly, intra-monthly, or annual

c.) **System MW Amount** - the generic MW amount the resource bid into the CSP. If the resource did not bid in system MW, then leave blank

d.) **Flexible MW Amount -** the flexible MW amount the resource bid into the CSP. If the resource did not bid in flexible MW, then leave blank

e.) **Flexible Category** - the flexible category designation of the flexible MW entered in the bid. If the resource did not bid in flexible MW, then leave blank.

f.) **Bid Price** - reflect the price of the bid. If no bid was submitted, leave blank.

g.) **Designated** - If the resource was designated a CPM, then select Y. If no, then select N.

h.) **CPM Event Covered** - If the resource was designated, show the CPM event covered.

i.) **Duration of the Designation** - If the resource was designated a CPM, reflect the duration of the designation. (e.g., 30 days, 60 days, 90 days)

j.) **Date of the Designation** - reflect the date the designation was noticed

k.) **Accepted or Declined CPM Designation** - reflect whether the resource's SC accepted or declined the designation. Only applies if the resource was exceptionally dispatched.

Note - If the CAISO is not able to access these data through CIRA, the CPUC requests access to any data that is available that would allow for an assessment of the CSP (e.g., data made available to DMM).

11b. Capacity Procurement Mechanism (CPM) Settlement Data:

Please provide the CPUC with the following information for all CPM designations for 2023 in .xlsx format:

Trade_DATE – In this data set, the only use of the Trade_DATE is to track the month and year.

Charge_Name – Has the following three categories:

BA_MTH_RSRC_CPM_CAP_HRLY_AVG_DESIGNATED@QUANTITY – The MW quantity

BA_MTH_RSRC_CPM_CAP_PMT@PRICE – The CPM price ($/MW-year)

BA_MTH_RSRC_CPM_STLMT@AMOUNT – Total payment (price x quantity), expressed as a negative number

Attribute1 - Business Associate ID (for CAISO Settlements use)

SC_ID - SC Short Name that corresponds to Attribute1 (Business Associate ID)

Attribute2 - Resource Name

Attribute17 - Bill Period Start Date

Attribute18 - Bill Period End Date

Attribute22 – CPM Type

Interval_Total – The total quantity, amount or price associated with Charge_Name

11c. Reliability Must Run (RMR) Cost Data:

The CPUC requests fixed and variable cost information related to all new RMR designations for 2022 and 2023. The CAISO does not have settlement data disaggregated in a way that currently meets the CPUC's request. The CPUC and CAISO staff will continue to discuss how to meet the CPUC's request.

12. Reliability Event Reports Sent to the Western Electricity Coordinating Council (WECC)

The CPUC requests that CAISO send to the CPUC the following three reliability event reports based on the specific event types listed for each:

(a) Appendix C: Brief Template sent to WECC for all CPUC jurisdictional PTOs.

(b) EOP-004 event reports sent to WECC for the following specific event types:
1. BES Emergency requiring public appeal for load reduction
2. BES Emergency requiring manual firm load shedding
3. BES Emergency resulting in automatic firm load shedding
4. Loss of firm load
5. System separation (islanding)

6. Generation loss

(c) OE-417 report sent to WECC when initiated by the CAISO (rather than a single PTO) or if the event impacts more than one PTO for the following specific event types:

1. Uncontrolled loss of 300 Megawatts or more of firm system loads for more than 15 minutes from a single incident

2. Load shedding of 100 Megawatts or more implemented under emergency operational policy

3. Loss of electric service to more than 50,000 customers for 1 hour or more

4. Fuel supply emergencies that could impact electric power system adequacy or reliability

Specifics of data: The completed event report sent to WECC following a reliability event.

13. Energy Market Settlement Data for Demand Response and Energy Storage Resources (PDR/RDRR/PDR-LSR, NGR/LESR/DDR, Pumped Storage Hydro, Hybrid):

The CPUC requests energy market settlement data related to demand response and energy storage resource performance covering 2023. The CPUC requests a summary file of any resource payment or charge with these specifications.

Resources covered by this item: Broad market participation models and resource types reflecting demand response and energy storage resources include the PDR and NGR models (PDR/RDRR/PDR-LSR and NGR/LESR/DDR), pumped storage hydro, and hybrid resources. Please include resources under those categories -or- under specific market participation models and resource types actually used by demand response and energy storage resources.

Specifications of settlement data file (CAISO native field name in parentheses):

a.) Trade Date (TRADE_DATE)

b.) Scheduling Coordinator ID (BA_ID, conversion to Scheduling Coordinator ID is provided separately)

c.) Resource ID (ATTRIBUTE2)

d.) Settlement types, MW or MWh quantities, and dollars (CHARGE_NAME), all at 5-minute granularity unless otherwise specified:

Day-ahead scheduled quantity (DA_SCH_QUANTITY), hourly

Day-ahead energy payment (DA_AMOUNT), hourly

Fifteen-minute market instructed imbalance energy (FMM_IIE_QUANTITY)

Fifteen-minute market instructed imbalance energy payment or charge (FMM_IIE_AMOUNT)

Five-minute market instructed imbalance energy (RTD_IIE_QUANTITY)

Five-minute market instructed imbalance energy payment or charge (RTD_IIE_AMOUNT)

Standard ramping energy (SRE_QUANTITY)

Total expected energy (EXP_ENRGY_QUANTITY)

Uninstructed energy (UIE_QUANTITY)

Uninstructed energy payment or charge (UIE_AMOUNT)

Metered energy (METER_QUANTITY)

e.) Settlement data (INTERVAL_TOTAL and INT01–INT300)

For 2023 data, the CPUC requests provision of the T+12B data from 1/1/23 through 12/31/23 for the prescribed resources. The CPUC also requests provision of the T+70B data for 07/01/23 through 10/31/23 only for Demand Response resources (PDR/RDRR/PDR-LSR). Files will be provided in .csv format. To save space, if a resource has not cleared at all in a day (a) for a given settlement type (d), the field will be omitted from the data file.

14. CPUC Jurisdictional Load Serving Entity (LSE) Annual and Monthly Deficiency Notices

The CPUC currently has access to CIRA as a Local Reliability Authority (LRA), which allows the CPUC to see LSE deficiencies directly after the submission deadlines. CPUC also receives direct notification of deficiencies, though CAISO and CPUC continue to coordinate which CPUC e-mail addresses should receive these notifications. If CIRA becomes inaccessible (or the data within CIRA become inaccurate) and if the direct notification functionality becomes inoperative, CPUC requests that CAISO notify CPUC of any LSE RA deficiencies as indicated in Table 1 at the end of this document.

Please provide a table containing the following information for LSEs with system RA deficiencies:

- a.) Month
- b.) SCID – SCID of deficient LSE
- c.) TAC – TAC in which deficiency exists
- d.) REQ – System RA requirement in TAC
- e.) DR – System DR credit in TAC
- f.) ADJ_DR – Adjusted system DR credit in TAC
- g.) RMR – System RMR credit in TAC
- h.) CAM – System CAM credit in TAC
- i.) TOT_ADJ – Total system credit adjustment in TAC
- j.) REQ+PRM – RA requirement in TAC, adjusted for PRM
- k.) ADJ_OBL – REQ+PRM minus TOT_ADJ
- l.) Local RA – Total local RA shown by LSE in the TAC
- m.) System RA – Total non-local system RA shown by LSE in the TAC
- n.) Total RA – Sum of Local RA and System RA.

Please provide a table containing the following information for LSEs with local RA deficiencies:

- a.) Month
- b.) SCID – SCID of deficient LSE
- c.) TAC – TAC in which deficiency exists
- d.) REQ – Local RA requirement in TAC
- e.) DR – Local DR credit in TAC
- f.) CAM – Local CAM credit in TAC
- g.) TOT_ADJ – Total local credit adjustment in TAC
- h.) ADJ_OBL – REQ minus TOT_ADJ
- i.) Local RA – Total local RA shown by LSE in the TAC.

Please provide a table containing the following information for LSEs with flexible RA deficiencies. Please include all flex categories, even if LSE is not deficient in all categories:

a.) Month

b.) SCID – SCID of deficient LSE

c.) TAC – TAC in which deficiency exists

d.) CATEGORY – Flex category

e.) OBL – Flexible RA requirement for given category

f.) SHOW – LSE flexible RA showing for given category

g.) QUAL – Qualified flexible RA showing for LSE in given category

h.) SHORT/LONG – QUAL minus OBL.

15. Local Capacity Study Data

Access to the following data requires executing a separate non-disclosure agreement for qualified individuals. In order to better evaluate the results of CAISO's annual Local Capacity Study, the CPUC requests that the CAISO send dispatched base case PSLF files used for each local area and sub-area. This will include flat files of the generators and MW being dispatched in the power flow study to mitigate the N-1 and N-1-1 (or other studied) contingencies for each local area and sub-area in the draft and final studies. These files should be sent for the draft LCR study and the final LCR study, according to the schedule in Table 1. The term "LCR study" incorporates all timeframes for which CAISO assesses local capacity. Other files can be provided in SPSS .sav format.

16. Local Residual Analysis

Access to the following data requires executing a separate non-disclosure agreement for qualified individuals. If the CAISO executes an annual year-ahead CPM, then the CPUC requests the CAISO provide the base case or proof of need for the impacted local area or sub-area within one calendar week of posting CPM designation report . Data format will be determined at the time of request.

17. Capacity Procurement Mechanism (CPM) and Reliability Must Run (RMR) Designation Capacity and Costs Allocations

Please provide the CPUC with the following information for all CPM and RMR resource adequacy credits for 2023 and year-ahead 2024, if any, that were not provided pursuant to the 2022 Subpoena:

1.) RA capacity allocations for each month of the designation.

CPUC requests allocations for individual jurisdictional LSEs to provide the allocations to LSEs for use in the RA compliance process.

CPUC believes that in order to fully analyze relative allocations and ensure fairness for California ratepayers, it is also necessary to have access to individual allocations for non-jurisdictional LSEs. CPUC and CAISO agree that they will continue to discuss a resolution to this request.

18. Notices of Intent to Retire, Mothball, or Return to Service

From time to time, the CAISO receives notices from generating resources about the planned retirement or mothballing of certain resources. The CAISO posts a list of these resources pursuant to its Generator Management Business Practice Manual. The list provides stakeholders with information regarding requests to change a resource status from active to retired, mothballed, or otherwise unavailable to the grid. In addition, there is an RSS feed available to the public which provides automatic notification when the list is updated. This is available at: http://www.caiso.com/Pages/GlobalRSS.aspx.

Under Section 41.2.1 of the CAISO Tariff, as approved by FERC on September 27, 2019, an intent to retire or mothball must be documented by a notarized affidavit (e.g., *Notice of Generating Unit Retirement or Mothball Including Rescission of Retirement or Mothball)* that provides the reason for the change in status, among other information. The CPUC requests these notarized affidavits as described in Table 1 at the end of this document.

Upon request by the CPUC, the CAISO will also provide the CPUC with copies of all letters or other notifications received from generating resources or the owners of generating resources related to the intent to retire the resource(s), mothball the resource(s), or return the resource(s) to service. This information will allow CPUC to remain appraised of market conditions affecting RA capacity as they arise.

19. California Energy Commission (CEC) Subpoena Data

Please provide the CPUC with all files sent to the California Energy Commission pursuant to the latter's subpoena of CAISO. This information will allow CPUC to more closely monitor CEC development of the RA load forecast, by ensuring CPUC has access to the same data as CEC.

20. Resource Adequacy Availability Incentive Mechanism (RAAIM) Data

Please provide the CPUC with a list of resource adequacy availability incentive mechanism (RAAIM) Availability Incentive Payments and Non-Availability Charges assessed in 2022 and 2023.[2] The list should identify the month of the Availability Incentive Payments and Non-Availability Charges, the resource penalized or rewarded, and the amount of the Availability Incentive Payments and Non-Availability Charges. Data will be provided in .xlsx format.

The format of the data should include the following fields (but omit fields where the data is zero):

   a) SCID

   b) Resource ID

   c) Month

   d) Availability Incentive Payments or Non-Availability Charges

21. Demand Response Registration System (DRRS) Information

Energy Division seeks to better understand DR registration activity, particularly the frequency of movement of individual service accounts between Resource IDs. This information will aid in determining Net Qualifying Capacity values and in assessing total available capacity within a given month and between months. Given the volume of data, the CPUC will make specific tailored requests by Distribution Resource Provider (DRP) and month and year for a reporting of Location IDs (with service accounts and their effective dates), cross referenced with Registration IDs (with their effective dates) and Resource IDs. Delivery date and data format will be discussed at the time of request.

22. Price Taker Export Analysis Underlying Data

CPUC requests the underlying data for analyses that the CAISO conducts regarding the resources supporting Price Taker (PT) exports. This information will enable CPUC to assess market conditions and identify potential concerns regarding export activity. Please provide these data upon request according to the schedule in Table 1. This information will be provided in .xlsx format, to the extent possible.

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[2] Most of the 2022 data was delivered pursuant to the prior year's subpoena but since the last delivery falls into the next year, including 2022 data on this 2023 subpoena request to ensure completeness.

23. Use Limited Resource Information

CPUC requests information associated with the "Use Limited Resource" flag in the MasterFile, for each resource that has this tag. This information will enable Energy Division to better understand the use limitations of resources and will also aid in refining the Maximum Cumulative Capacity Buckets. The data will be provided in .csv format.

24. Wheeling Transactions

CPUC requests information regarding wheeling transactions through the CAISO Balancing Authority Area, which will enable CPUC to better understand imports and exports. Please provide in .xlsx format the following information, according to the schedule in Table 1.

This request is divided into three parts.

Part a: Identifying wheeling transactions in settlements data

The import and export legs of a wheel are already provided under item #5: Settlement Quality Meter Data. However, the import and exports pairs are not evident. The CPUC requests the CAISO to provide information that will identify the import and export legs of a wheel through the CAISO Balancing Authority Area. These data will be provided in an .xlsx format.

Part b: Identifying priority wheels

Based on CAISO market policy proposed in 2021, scheduling coordinators must notify the CAISO 45 days ahead of the month with the MW quantity of the wheel for the month and confirm that the load serving entity has procured monthly firm peak transmission service to serve the contract to the CAISO boundary from an external balancing authority area. This will identify high priority wheeling transactions through the CAISO Balancing Authority Area. The CPUC requests a copy of such information provided by these scheduling coordinators. These data will be provided in .xlsx format.

Part c: Request for analysis backup

CPUC requests the underlying data for public analyses that the CAISO conducts regarding wheeling transactions. Please provide these data upon request according to the schedule in Table 1. This information will be provided in .xlsx format to the extent possible.

25. Counting Firm Load as Contingency Reserves by Investor-Owned Utilities

CPUC requests information regarding instances in which CAISO directs the investor-owned utilities to count firm load as contingency reserve under emergency conditions, after verifying the firm load shed is available within 10 minutes. This will enable CPUC to better understand market conditions during system contingencies. Please provide an .xlsx file with the following information upon CPUC request, according to the schedule in Table 1.

Please provide a separate record for each investor-owned utility in each instance when one or more investor-owned utilities were directed to count firm load as contingency reserve.

IOU: Investor-owned utility that received the notice

EVENT_START: Date and time of notice to start counting firm load as contingency reserve (mm/dd/yyyy hh:mm)

EVENT_END: Date and time of notice to stop counting firm load as contingency reserve (mm/dd/yyyy hh:mm)
MW: Amount of firm load that investor-owned utility was directed to count as contingency reserve, in megawatts

CPUC also requests CAISO filings submitted to NERC and WECC information regarding instances in which CAISO directs the investor-owned utilities to count firm load as contingency reserve under emergency conditions, after verifying the firm load shed is available within 10 minutes.

26. Market Battery State of Charge

CPUC requests five-minute state of charge data for all batteries under the NGR market participation model (NGR/LESR). This information will aid in understanding storage operations and in determining the availability of battery capacity during grid-constrained periods, regardless of actual dispatch. The data will be provided in .csv format and should include the following:

a.) TRADE_DT

b.) TRADE_HR

c.) TRADE_INT

d.) RESOURCE_ID

e.) RTD_SOC

27. Generation Resource PNODE Longitude/Latitude

CPUC requests monthly updates of latitude/longitude information on all generation resource PNODES in the CAISO balancing area for which this data is available. This information will aid in understanding geographic capacity development patterns and in evaluating potential weather and environmental stressors affecting the availability of resource capacity. The data will be provided in .xlsx format and should include the following:

a.) RES_ID (resource or PNODE)

b.) LATITUDE_FF

c.) LONGITUDE_FF

28. Ancillary Services Market Settlement Data for Demand Response (DR) and Energy Storage Resources (PDR/RDRR/PDR-LSR, NGR/LESR/DDR, Pumped Storage Hydro, Hybrid)

CPUC requests ancillary services settlement data related to demand response and energy storage resource performance covering 2023. CPUC requests a summary file of any resource payment or charge with these specifications. Along with energy settlements in item #13 this information will aid in understanding market participation use cases, how they may affect the availability of RA capacity during grid-constrained periods, and trends in capacity resources' reliance on CAISO market revenues.

Resources covered by this item: Broad market participation models and resource types reflecting demand response and energy storage resources include the PDR and NGR models (PDR/RDRR/PDR-LSR and NGR/LESR/DDR), pumped storage hydro, and hybrid resources. Please include resources under those categories -or- under specific market participation models and resource types actually used by demand response and energy storage resources.

Specifications of settlement data file

The format of the data should include the following fields:

a.) TRADE_DATE

b.) BA_ID

c.) RES_ID

d.) RES_TYPE

e.) ED_TYPE

f.) MSS

g.) ENTITY_TYPE

h.) CHARGE_NAME including:

a. Day-ahead Spinning Reserve

b. Day-ahead Non-Spinning Reserve

c. Day-ahead Regulation Up Capacity

d. Day-ahead Regulation Up Mileage

e. Day-ahead Regulation Down Capacity

f. Day-ahead Regulation Down Mileage

g. Real-time Spinning Reserve

h. Real-time Non-Spinning Reserve

i. Real-time Regulation Up Capacity

j. Real-time Regulation Up Mileage

k. Real-time Regulation Down Capacity

l. Real-time Regulation Down Mileage

m. Flexible Ramp Up Uncertainty

n. Flexible Ramp Down Uncertainty

o. Flexible Ramp Forecast Movement

p. Black Start

q. Voltage Support

r. Uplift Payments for Exceptional Dispatch

s. Bid Cost Recovery

i.) CHARGE_DESC

j.) NUM_INTERVALS

k.) INTERVAL_TOTAL

l.) INT001–INT300

Files will be provided in .csv format. To save space, if a resource has not cleared at all in a day (a) for a given settlement type (h), the field will be omitted from the data file.

29. Identification of Co-located Storage Resource Configurations

CPUC requests information necessary to identify energy storage as part of a co-located resource configuration participating in the CAISO market. This information will help the CPUC to understand the advantages and disadvantages of co-located batteries to provide grid reliability and grid services compared to standalone and hybrid energy storage resources.

Until publicly available, the CPUC requests a mapping of all Resource IDs to points of interconnection (POI). POI will help to identify co-located resources. The data will be provided in .xlsx format and should include the following:

a. Resource ID

b. POI

30. Meter Data for Hybrid Energy Storage with a Variable or Intermittent Component

CPUC requests operational data necessary to understand the performance of energy storage configured as part of a hybrid resource participating in the CAISO marketplace. This information will help the CPUC to

understand the realized advantages and disadvantages of hybrid batteries to provide grid reliability and grid services compared to standalone and co-located energy storage resources.

Hybrid resources are required to submit this data per the CAISO's Hybrid Resources Phase 2 initiative, implemented on February 1, 2023. The CAISO will monitor the quality of this new data stream upon implementation. The CPUC requests five-minute meter operational data for each battery component of a hybrid resource with a variable/intermittent component, reported by market participants to the CAISO. The data fields should be submitted in .csv format and should include:

    a. Trade date

    b. (hybrid) Resource ID

    c. Component IDs

    d. FUEL_TYPE (corresponding to component ID)

    e. Meter data for intervals 1–300

31. Proxy Demand Response Commitment Cost Offers

On a monthly basis, the CPUC requests information on the commitment cost offers for both start-up and minimum load associated with Proxy Demand Response Resources (PDR) starting from January 1, 2023, through December 31, 2023, according to the timeline in Table 1. The CPUC requests information on both capped and pre-capped commitment cost offers for PDR resources, as available. Consequently, the CPUC needs the full scope of this data to assess all PDR costs considered by the market in order to evaluate costs throughout the market process. The data should be provided in .csv format.

32. Data on Projects in the Interconnection Queue, Interconnection Customers, Deliverability Allocations, and Project Status

On a quarterly basis, the CPUC requests information on project name, project queue numbers, planned online date, resource status, and proposed or confirmed resource ID for active projects in the interconnection queue. The CPUC is requesting resource status and planned online date in order to gain a better understanding on phased projects and whether projects are fully online. Data fields should include information on the following, until otherwise publicly available. The data will be submitted as two files on the 15th day of the month following the reporting quarter. To account for the timing of the execution of the 2023 subpoena, the files submitted on July 15 will include data for both Q1 and Q2 2023. The data will be provided in .xlsx format:

File 1:
    a. Project Name
    b. Interconnection Customer Legal Entity Name
    c. Interconnection Customer Legal Entity Parent Company, if available
    d. Primary Contact Information (including e-mail or phone number, if available) of Interconnection Customer
    e. Queue Number
    f. Transmission Plan Deliverability Status (If PCDS, include percent or MW of status)
    g. Active Material Modification (Y/N)
    h. Project location if available (latitude/longitude)

File 2:
  a. Resource ID(s)
  b. Project Name
  c. Queue Number
  d. Status of Project (New Resource Implementation): Active, Sync OK, COMX, COD (Note: If the project has not started the NRI process, it will not have a project status)
  e. Planned Online Date (specified by the developer)

Schedule for Delivery of Requested Information

Please provide the requested information to the CPUC, by the Close of Business ("COB") according to the following schedule:

Table 1 Submission Dates (effective after the execution of subpoena and the due date for any objections to the production of responsive information has passed)

Item	Delivery Date to CPUC
1. Resource Adequacy (RA) Import Allocations	If CIRA access is not available or data in CIRA are inaccurate, please provide data within three business days of the date when CIRA becomes inaccessible, or the data become inaccurate.
2. Supply Plans Filed by Generators and Monthly Supply Plan Validations for RA Resources	If CIRA access is not available or data in CIRA are inaccurate, please provide data as follows: Monthly supply plan files and initial validation files within three calendar days of the RA Filing due date. Please provide final validation files no less than four calendar days before the start of the compliance (trade) month. For annual supply plans and supply plan validations, provide files at the following times: (1) within 10 calendar days after the annual RA submission filing due date, and (2) within 10 calendar days after the CAISO due date for revisions to annual supply plans.
3. List of Units Confirmed to Provide RA to the CAISO	If CIRA access is not available or data in CIRA are inaccurate, please provide data within three business days of the date when CIRA becomes inaccessible, or the data become inaccurate.
4. Economic Bids and Self-Schedules	For 2023 economic bids and self-schedules, please provide data for all CAISO resources, including all generation, load, imports, and exports on a monthly basis, by the last day of the month (or the next business day) following the reporting month. Data will be provided in .csv format. On a case-by-case basis, the CPUC may request additional bid information, as full bid segments during specified seven-day-twenty-four-hour periods. Delivery dates for such a request will be negotiated separately pursuant to the request.

5. CAISO Settlement Quality Meter Data (SQMD)	Please provide data monthly, according to the schedule below. Data will be provided in .csv format.

Trade Date	Resource	Publication date	Delivery date
1/1/2023 – 12/31/2023	CAISO generato imports, exports load	T+12B	End of following month (or the next business day). For example: • First delivery: Jan 2023 Trade Dates by Mar 1, 2023 • Last delivery: Dec 2023 by Jan 31, 2024
1/1/2023 – 12/31/2023	CAISO generato imports, exports load	T+70B	Three months in arrears, by the end of the month (or the next business day). For example: • First delivery: Jan 2023 Trade Dates by May 31, 2023 • Last delivery: Dec 2023 Trade Dates by May 2, 2024

6. Access to Outage Management System (OMS) Application	Ongoing, immediately.

7. Monthly Master File Data	Please provide the Master File on a monthly basis, in .csv format. Specifically:

January 25	July 25
February 24	August 24
March 24	September 25
April 25	October 24
May 24	November 28
June 23	December 27

Dates are aligned between items 7, 23 and 24.b.

8. Flexible Capacity Needs Assessment Data and Allocations	Please provide all data relative to the draft analysis (all items in Item 9) within 12 business days of posting the draft assessment. Please provide all data relative to the final assessment (all items in Item 9 that were modified since the draft assessment) within five business days of posting the final assessment. Data will be provided in .xlsx or SAS file format.
9. Access to CAISO Customer Interface for RA (CIRA)	Ongoing, immediately.

10. Energy Management System (EMS) Data	The monthly 2023 data should be provided to the CPUC by the 25th of each month for the prior month. Data will be provided in .xlsx format. Please do not include commas in load data.
11a. Capacity Procurement Mechanism (CPM) and Capacity Solicitation Process (CSP) Results	If CIRA access is not available or data in CIRA are inaccurate, please provide data as follows: Provide monthly CSP/CPM data on coming compliance month by the 4th day of each month. Provide annual data by November 14, 2023, for 2023 YA requirements. Provide intra-monthly data on the prior compliance month by the 4th day of each month.
11b. Capacity Procurement Mechanism (CPM) Settlement Data	Please provide data quarterly, within 60 calendar days after the quarter. Provide the latest settlement statement available. Data will be provided in .xlsx format.
11c. Reliability Must Run (RMR) Cost Data	Once CPUC and CAISO staff have resolved how to meet CPUC's request, please provide data quarterly, within 60 calendar days after the quarter. Provide the latest settlement statement available.
12. Reliability Event Reports Sent to the Western Electricity Coordinating Council (WECC)	Please provide WECC reliability reports to staff the next business day after delivery to WECC.
13. Energy Market Settlement Data for Demand Response (DR) and Energy Storage Resources (PDR/RDRR/PDR-LSR, NGR/LESR/DDR, Pumped Storage Hydro, Hybrid)	Please provide monthly by the last day of the month following the reporting month. For 2023 data, the CPUC requests provision of the T+12B data from 1/1/23 through 12/31/23 for the prescribed resources. Files will be provided in .csv format. If a resource has not cleared for a given settlement type, the field will be omitted from data file.

Table for item 13:

Reporting Data	Resource	Publication date	Delivery date
1/1/2023 – 12/31/2023	DR and Energy Storage (PDR/RDRR/ PDR-LSR, NGR/LESR, Pumped Storage Hydro, Hybrid)	T+12B	End of following month (or the next business day). For example: • First delivery: Jan 2023 Trade Dates by Mar 1, 2023 • Last delivery: Dec 2023 by Jan 31, 2024

The CPUC also requests provision of the T+70B demand response data only for 07/01/23 through 10/31/23.

Reporting Data	Resource	Publication date	Delivery date
1/1/2023 – 12/31/2023	DR (PDR/RDRR/PDR-LSR)	T+70B	Three months in arrears, by the end of the month (or the next business day). For example: • First delivery: Jan 2023 Trade Dates by May 31, 2023 • Last delivery: Dec 2023 Trade Dates by May 2, 2024

14. CPUC Jurisdictional Load Serving Entity (LSE) Annual and Monthly Deficiency Notices	If CIRA access is not available (or data in CIRA are inaccurate) and if the direct notification functionality becomes inoperative, please provide data within five business days following the relevant annual or monthly RA filing deadline.
15. Local Capacity Study Data	For cases that are in PSLF format, data will be provided within one business day of posting the final draft. For cases that are in other formats, such as .sav (and thus require conversion), data will be provided within 10 business days of posting the final draft.
16. Local Residual Analysis	Provide information within 1 calendar week of posting CPM designation report. Data format will be determined at the time of request.
17. Capacity Procurement Mechanism (CPM) and Reliability Must Run (RMR) Designation Capacity Costs and Costs Allocations	1. For the year ahead RMR extension process, the CAISO will provide the resource adequacy credits prior to the annual resource adequacy showing deadline. 2. For new RMR contracts (intra-year), the CAISO will provide the resource adequacy credits four business days after the Federal Energy Regulatory (FERC) filing or effective date, whichever is later. 3. For year ahead CPM, or any other CPM that is effective a minimum of 90 days or longer, the CAISO will provide the resource adequacy credits prior to the T-45 filing submission deadline for the month in which the credits will be active.
18. Notices of Intent to Retire, Mothball, or Return to Service	Please provide a notarized affidavit (e.g., *Notice of Generating Unit Retirement or Mothball Including Rescission of Retirement or Mothball)* within five business days of receipt by the CAISO Regulatory Contracts group. Upon request by CPUC, please provide other letters or notices to CPUC within five business days of receipt by the CAISO Regulatory Contracts group.
19. California Energy Commission (CEC) Subpoena Data	Please provide CEC Subpoena files to CPUC on the same schedule as CAISO provides the files to CEC.

20. RA Availability Incentive Mechanism (RAAIM) Data	Please provide Settlement Quality Meter Data for the remainder of 2022 and full year 2023 per the schedule below. Data will be provided in .xlsx format.

Trade date	Publication data	Delivery date
1/1/2022 – 12/31/2022	T+70B	Five months in arrears, by the end of the month (or the next business day). For example: • First delivery: Jan 2022 Trade Date May 31, 2022 • Last delivery: Dec 2022 Trade Date May 2, 2023 [Note: Most of the 2022 data was delivered pursuant to the prior year's subpoena but since the last delivery falls into the next year, including 2022 data on this 2023 subpoena request to ensure completeness.]
1/1/2023 – 12/31/2023	T+70B	Five months in arrears, by the end of the month (or the next business day). For example: • First delivery: Jan 2023 Trade Date May 31, 2023 • Last delivery: Dec 2023 Trade Date May 2, 2024

21. DR Registration System (DRRS) Information	Delivery time is dependent upon data request volume and will be discussed pursuant to a CPUC request.
22. Price Taker Export Analysis Underlying Data	Please provide, upon request, the underlying analysis CAISO used within three business days. The data will be provided in .xlsx format.
23. Use Limited Resource Information	Quarterly (January 25, May 24, July 25, October 24, 2023). The data will be provided in .csv format. *Dates are aligned between items 7, 23 and 24b.*
24. Wheeling Transactions	The following data will be provided in .xlsx format. **Part a:** Identifying wheeling transactions in settlements data Information pairing the import and export legs of a wheeling transaction will be provided on the same timeline as the settlement data in #5. **Part b**: Identifying priority wheels

The CPUC requests the CAISO provide information from scheduling coordinators on the following schedule, which is 5 business days after the T-45 resource adequacy and supply plans are due to the CAISO:

RA compliance month and year	Submission deadline to the CAISO	Delivery date to the CPUC (5 business days later)
July 2023	05/17/2023	05/24/2023
August 2023	06/16/2023	06/23/2022
September 2023	07/18/2023	07/25/2023
October 2023	08/17/2023	08/24/2023
November 2023	09/18/2023	09/25/2023
December 2023	10/17/2023	10/24/2023
January 2024	11/17/2023	11/28/2023
February 2024	12/18/2023	12/27/2023

Dates are aligned between items 7, 23 and 24.b.

Part c: Request for analysis backup.

Upon CPUC request, please provide within three business days.

25. Counting Firm Load as Contingency Reserves by Investor-Owned Utilities	For 2023, upon CPUC request, please provide data within ten business days of any instance in which one or more investor-owned utilities were asked to count firm load as contingency reserve. Data, in .xlsx format, will be provided for January 1, 2022, through December 31, 2022, by May 27, 2023, or within five business days of closing of the period for objections to the subpoena, whichever is later.
26. Market Battery State of Charge	Please provide quarterly by the last day of the month following the reporting month. The data will be provided in .csv format.
27. Generation Resource PNODE Longitude/Latitude	Please provide monthly by the last day of the month following the reporting month. The data will be provided in .xlsx format.
28. Ancillary Services Market Settlement Data for DR and Energy Storage Resources (PDR/RDRR/PDR-LSR, NGR/LESR/DDR, Pumped Storage Hydro, Hybrid)	Please provide monthly by the last day of the month following the reporting month. The data will be provided in .csv format.

29. Identification of Co-located Storage Resource Configurations	Until publicly available, please provide monthly by the last day of the month following the reporting month. The data will be provided in .xlsx format.
30. Meter Data for Hybrid Energy Storage with a Variable or Intermittent Component	At T+70B after implementation of the CAISO's Hybrid Resources Phase 2 initiative, CAISO will evaluate the accuracy and quality of the meter data received. Once this evaluation is completed and the data quality is deemed satisfactory, please provide monthly by the last day of the month following the reporting month. The data will be provided in .csv format.
31. Proxy Demand Response Commitment Cost Offers	Please provide monthly by the last day of the month following the reporting month. The data will be provided in .csv format.
32. Data on Projects in the Interconnection Queue, Interconnection Customers, Deliverability Allocations, and Project Status	Please provide quarterly. The data will be submitted as two files on the 15th day of the month following the reporting quarter. The data will be provided in .xlsx format.

Reporting Data	Data to Be Delivered	Delivery Date
Q1	Q1	As soon as practicable, but no earlier than 04/15/23
Q2	Q1 and Q2	07/15/23
Q3	Q3	10/15/23
Q4	Q4	01/15/24

Should full production of any information item not be possible within these time frames, please provide whatever partial information is available, together with a brief explanation of the circumstances preventing full production on that date, identify the date on which full production of the requested information will be made, and fulfill production of the remaining documents by such date.

APPENDIX A

Fields for System RA Validation File

RA Validation Status	Please indicate whether the facility is committed in an RA Filing
Supply Validation Status	Please indicate whether the facility is committed in a generator supply plan
RA LSE	The name of the LSE who is claiming the facility as RA capacity
Resource ID	The Scheduling Resource ID of the facility
SCID/Scheduling Coordinator ID	The Scheduling Coordinator for the facility
Effective Start Date	The earliest date the facility is committed for RA in eitehr the supply plan or RA Filing
Effective End Date	The latest date the facility is committed for RA in eitehr the supply plan or RA Filing
RA Capacity (MW)	MW amount of capacity that the RA Filing claims is committed from this unit
Supply Capacity (MW)	MW amount of capacity that the Supply Plan claims is committed from this unit
Comments	Description of error or warning

Fields for Flexible RA Validation File

RA Validation Status	"Passed"= LSE gets credit for RA Capacity MW "Error"= LSE does not get credit for RA Capacity MW
Supply Validation Status	"Pass" or "Warning"= Resource ID is committed for Supply Capacity MW "Error"= Resource ID is not committed for Supply Capacity MW
RA LSE	The name of the LSE claiming the facility as RA capacity
Resource ID	The facility's identification used for scheduling
SCID/Scheduling Coordinator ID	The Scheduling Coordinator for the facility
Effective Start Date	When the RA Capacity MW starts
Effective End Date	When the RA Capacity MW ends
RA Flex Category	Flexible Capacity category shown on LSE's RA plan
Supply Flex Category	Flexible Capacity category shown on supplier's supply plan
RA Flexible Capacity (MW)	Flexible RA Capacity shown on LSE's RA plan
Supply Flexible Capacity (MW)	Flexible RA Capacity shown on supplier's supply plan
Comments	Description of error or warning

APPENDIX B

Generator RDT Definitions and Business Rules

Generator RDT - RESOURCE
All Fields

Operating Ramp Rate Curve - RAMPRATE

Column Name	Column Code	Unit		Definition	Can be Null?	Business Rule A Ramp (RAMP) curve must exist for all Generators and TG resources	Tips for making a change (All changes should be made through the UI or API unless specified here)
Segment Type	SEG_TYPE			RAMP	N		
Segment Number	SEG_NUM	Integer		Point numbers between the PMin and PMax of the Generating Unit output. The point numbering starts at 1. Up to 5 points allowed.	N	- First point must be 1 - Point numbering must be sequential - A minimum of 2 points is required - No more than 5 points (representing 4 segments) allowed	The RAMP curve refers to the set (all segments) of ramp data. Submit the RAMP curve data as it should look in its final form: - The RAMP curve in the uploaded GRDT will overwrite the entire existing RAMP curve in the database (if no validation errors occur)
Operating Level	RAMP_MW_OUTPUT	MW		The Generating Unit MW output of point i. The first point (1) of MW output must begin at the Generating Unit's PMin. The last point (n) of MW output must end at the Generating Unit's PMax.	N	- Value of the first point must equal MIN_GEN - Value of the last point must equal MAX_GEN	- **Delete a segment**: delete the row and renumber the remaining segments. - **Add a segment**: insert a new row with the required data (see business rules) and renumber the segments. - **NOTE (1):** Do not cross out an existing segment to indicate it is unwanted; delete the row. - **NOTE (2): The RAMP curve is required and cannot be deleted**
Worst Operational Ramp Rate	RAMP_MIN_RATE	MW/minutes		The maximum ramp rate under the worst operating condition of the Generating Unit between point (i) and the point (i+1). The minimum ramp rate of the last point should = the previous one. This requires providing the minimum ramp rate of the first point (1)	N	- Must be <= RAMP_MAX_RATE for the same point - RAMP_MIN_RATE of the last 2 points must be equal	
Best Operational Ramp Rate	RAMP_MAX_RATE	MW/minutes		The maximum ramp rate under the best operating condition of the Generating Unit between point (i) and the point (i+1). The maximum ramp rate of the last point should = the previous one. This requires providing the maximum ramp rate of the first point (1) at PMin and last point (n) at PMax.	N	- Must be 0.1 or greater - Must be >= RAMP_MIN_RATE for the same point - Cannot be greater than the tested ramp rate (if unit was tested for Ancillary Services) - RAMP_MAX_RATE of the last 2	

Heat Rate Curve - HEATRATE

Column Name	Column Code	Unit		Definition	Can be Null?	Business Rule A Heat (HEAT) curve must exist for all Generators and TG resources	Tips for making a change (All changes should be made through the UI or API unless specified here)
Segment Type	SEG_TYPE	text		HEAT	N		
Segment Number	SEG_NUM	Integer		The point numbers between the PMin and PMax of the Generating Unit output. The point starts at 1. Up to 11 points are allowed. Note: The Heat Rate, Emission Rate, and Average Cost must include the data at the bottom and top of each Forbidden Region and exclude the data within the Forbidden Region.	N	- First point must be 1 - Point numbering must be sequential - A minimum of 2 points is required - No more than 11 points allowed	The HEAT curve refers to the set (all segments) of heat data. Submit the HEAT curve data as it should look in its final form: - The HEAT curve in the uploaded GRDT will overwrite the entire existing HEAT curve in the database (if no validation

Heat Rate Operating Level	HEAT_MW_OUTPUT	MW	The Generating Unit output of point 1. The first point (1) of MW output must start at the Generating Unit's PMIN. The last point (n) of MW output must end at the Generating Unit's PMAX.	N	- Value of the first point must equal MIN_GEN - Value of the last point must equal MAX_GEN - A break-point cannot fall within a Forbidden region - A break-point cannot fall within a Regulation range	errors occur) - **Delete a segment**: delete the row and renumber the remaining segments. - **Add a segment**: insert a new row with the required data (see business rules) and renumber the segments. - **NOTE (1):** Do not cross out an existing segment to indicate it is unwanted; delete the row.
Heat Rate	HEAT_HEAT_RATE	BTU/KWh	For gas-fired units only, the average heat rate of the Generating Unit on point (i). If value at point (i) is not available, linear interpolation can be used to approximate the value. Heat rate must be provided at the first point (1) (PMin), the last point (n) (PMax). A heat rate segment may contain a Forbidden Region, but cannot overlap. If not a gas-fired unit, leave blank and instead complete the Average Heat Cost field. For NGR the field is not applicable and must be 0.	Y	- Heat Rate must be provided if FUEL_TYPE = GAS - Heat input must be monotonically increasing: [(HEAT_RATE * HEAT_MW_OUTPUT/ 1000) in segment (i+1) must be greater than (HEAT_RATE * HEAT_MW_OUTPUT/ 1000) in segment (i)]	- **NOTE (2): The HEAT curve is required and cannot be deleted**
Heat Emission Rate	HEAT_EMISSION_RATE	lbs of NOx/MWh	The emission rate of the Generating Unit on point (i). If value at point (i) is not available, linear interpolation can be used to approximate the value. Emission rate must be provided at the first point (1) (PMin), the last point (n) (PMax). A heat rate segment may contain a Forbidden Region, but cannot overlap.	Y		
Average Cost	HEAT_AVG_COST	$/MWh	Use this value for non-gas fired units instead of Heat Rate. The average cost of the Generating Unit on point (i) in $. If value at point (i) is not available, linear interpolation can be used to	Y	- Average Cost must be provided if FUEL_TYPE is not GAS.	

Startup Curve - STARTUP						
Column Name		**Column Code**	**Unit**	**Definition**	**Can be Null?**	**Business Rule** A Startup (STRT) curve must exist for all Generators and TG resources	**Tips for making a change** (All changes should be made through the UI or API unless specified here)
Segment Type	SEG_TYPE	Text		STRT	N		
Segment Number	SEG_NUM	Integer		The segment numbers corresponding to cooling time of the unit. The segment starts at 1. Normally, there are 3 segments (hot, warm and cold).	N	- First segment must be 1 - Segment numbers must be sequential	The STRT curve refers to the set (all segments) of startup data. Submit the STRT curve data as it should look in its
Registered Cooling Time	STRT_DOWN_TIME	Minutes		The amount of time the Generating Unit must be off (in minutes) within sequence (i). The first down time must be zero to account for a unit which has just shut down.	N	- Value in first segment must be 0 - Value must increase with each sequential segment (if more than one segment exists)	final form: - The STRT curve in the uploaded GRDT will overwrite the entire existing STRT curve in the database (if no validation errors occur)
Startup Time	STRT_STARTUP_TIME	Minutes		Startup Time is the time (in minutes) it takes a resource to achieve	N	- Value must increase with each	- **Delete a segment**: delete the row and renumber the remaining segments.
Startup Cost	STRT_STARTUP_COST	Dollars ($)		The startup cost of non-natural gas fired Generating Units (in dollars) from the cooling time (i) to cooling time (i + 1). The last segment represents the startup cost (in dollars) from cooling time (n) to infinity. For NGR the field is not applicable and must be 0.	Y	- Value must increase with each sequential segment - Either Startup Cost or Startup Fuel must be provided - May not exceed 150% of unit's	- **Add a segment**: insert a new row with the required data (see business rules) and renumber the segments. - **NOTE (1):** Do not cross out an existing segment to indicate it is unwanted;
Start-Up Aux	STRT_STARTUP_AUX	MWh		The electrical power used by a Generating Unit during startup. The	Y		
Start-Up Fuel	STRT_STARTUP_FUEL	Million BTU		The fuel use (in mBTU per start) expected for the startup of a	Y	- Either Startup Fuel or Startup	
Start_Up Major Maintenance Adder	STRT_STARTUP_MMA			A resource-specific adder value per start-up, if applicable, determined by Potomac Economics	Y		

Generator RDT Definitions and Business Rules

Forbidden Operating Region - FORBIDDEN OPR REGION							
Column Name	**Column Code**	**Unit**		**Definition**	**Can be Null?** (If curve is	**Business Rule** (If curve is defined)	**Tips for making a change** (All changes should be made through the UI or API unless specified here)
Segment Type	SEG_TYPE	text		FRBD for Forbidden Region For NGR, Forbidden Region is not applicable.	N		
Segment Number	SEG_NUM	Integer		This number represents a given forbidden region. Segment number 1 should be the forbidden region at the lowest level in the operating range. Segment numbers should correspond to sequential regions along the operating range, ending with segment (n) at the highest operating level.	N	- First segment must be 1 - Segment numbers must be sequential - No more than 4 segments (representing 4 forbidden regions are allowed)	**Deleting all forbidden regions for a resource cannot be done through the UI/API; a request must be submitted to RDT@caiso.com** The FRBD range data in the uploaded GRDT will overwrite the entire existing set of Forbidden ranges in the database (if no validation errors occur)
Lower MW of Forbidden Region	FRBD_LOW_MW_OUTPUT	MW		The lower MW output of the forbidden range of the current segment. The forbidden region should be inside of segment (i); meaning a forbidden region cannot cross two segments and the segment cannot be overlapped. Note: forbidden regions cannot include nor overlap regulation ranges or heat segments.	N	- Must be >= MIN_GEN+0.1 - A Heat curve break-point (Heat Rate Operating Level) cannot fall within a Forbidden region	- **Delete a range:** if more than one range exists and a range needs to be removed, this can be done by submitting the new set of forbidden ranges.
Upper MW of Forbidden Region	FRBD_HIGH_MW_OUTPUT	MW		The upper MW output of the forbidden region of the current segment. The forbidden region should be inside of segment (i); meaning a forbidden region cannot cross two segments and the segment cannot be overlapped. Note: Forbidden regions cannot include nor overlap regulation ranges or heat segments	N	- Must be <= MAX_GEN - 0.1	- **Add a range:** insert a new row with the required data (see business rules) and renumber the segments. - **NOTE:** Do not cross out an existing segment to indicate it is unwanted;
Forbidden Region Crossing Time	FRBD_CROSSING_TIME	Minutes		The time in minutes a generator needs to move through the Forbidden Region.	N	- Must be an integer (whole number), 1 or greater	

Regulation Range - REGULATION							
Column Name	**Column Code**	**Unit**		**Definition**	**Can be Null?** (If curve is defined)	**Business Rule** The Regulation (REG) curve must exist if CERT_REG is set to Y	**Tips for making a change** (All changes should be made through the UI or API unless specified here)
Segment Type	SEG_TYPE	text		REG for Regulation Range	N		
Segment Number	SEG_NUM	Integer		two are submitted, then segment number 1 must describe the lower range and segment number 2 must describe the upper range.	N	- First segment must be 1 - 2 segments allowed	A Regulation range cannot be removed through the UI/API. A request must be submitted to RDT@caiso.com
Lower MW for Regulation	REG_LOW_MW_OUTPUT	MW		Lower level of the Regulation Range.	N	- Must be >= MIN_GEN	
Higher MW for Regulation	REG_HIGH_MW_OUTPUT	MW		Higer level of the Regulation Range.	N	- Must be <= MAX_GEN	

Regulating Ramp Rate - REG RAMP							
Column Name	**Column Code**	**Unit**		**Definition**	**Can be Null?** (If curve is defined)	**Business Rule** The Regulation Ramp (RREG) curve must exist if CERT_REG is set to Y	**Tips for making a change** (All changes should be made through the UI or API unless specified here)
Segment Type	SEG_TYPE	text		RREG for Regulation Range Ramp Rate	N		
Segment Number	SEG_NUM	Integer		One regulation ramp rate applies to both regulation ranges, if more than one regulation range exists.	N	- 1 Segment allowed	A Regulation ramp curve cannot be removed through the UI/API. A request must be submitted to RDT@caiso.com
Worst Regulation Ramp Rate	RREG_MIN_RATE	MW/Minute		The maximum Regulation Ramp Rate for the segment under the worst condition.	N	- Must be > 0	
Best Regulation Ramp Rate	RREG_MAX_RATE	MW/Minute		The maximum Regulation Ramp Rate for the segment under the best condition.	N	- Must be <= Best Operating Ramp Rate (RAMP curve) - Must be <= the tested Regulation ramp rate	

Generator RDT Definitions and Business Rules

	Operating Reserve Ramp Rate - OP RES RAMP					
Column Name	Column Code	Unit	Definition	Can be Null? (If curve is defined)	Business Rule The Operating Reserve Ramp (ROPR) curve must exist if any of these flags are set to Y: CERT_SPIN, CERT_NSPIN_DAM, or CERT_NSPIN_RTM	Tips for making a change (All changes should be made through the UI or API unless specified here)
Segment Type	SEG_TYPE	text	ROPR for Operating Reserve Ramp Rate	N		
Segment Number	SEG_NUM	Integer	One ramp rate range covers procurement of both Spinning and Non-Spinning reserve.	N	- 1 Segment allowed	An Operating Reserve Ramp curve cannot be removed through the UI/API. A request must be submitted to RDT@caiso.com
Worst Operating Res Ramp Rate	ROPR_MIN_RATE	MW/Minute	The maximum Operating Ramp Rate under the worst condition.	N	- Must be > 0	
Best Operating Res Ramp Rate	ROPR_MAX_RATE	MW/Minute	The maximum Operating Ramp Rate under the best condition.	N	- Must be <= Best Operating Ramp Rate (RAMP curve) - Must be <= the tested Spin or Non-Spin ramp rate	

APPENDIX C

Appendix C
Brief Report Template

Registered entities are requested to use the Brief Report template as a guideline for submitting event information to their applicable RE and NERC in accordance with **Appendix A** (Target Time Frames for Completion of Brief Reports, Event Analysis Reports, and Lessons Learned). The template may also be used for less significant events.

Template Instructions:
Reported Event Title: Provide a title that will be used to identify the event. The title should include the date of the event (YYYYMMDD), entity name, substation name, or location as appropriate.

Submittal Date: Date Brief Report was first submitted.

Subsequent Submittal Date: Date Brief Report was updated.

Initial, Interim, or Final Report: Identify if the Brief Report is the first (initial), interim, or a final report. The first report can be a final report in accordance with the timelines in Appendix A.

Item 1 – Entity Name and NCR Number: Entity name and NERC Compliance Registry (NCR) number submitting the report.

Item 2 – Provide contact information about the entity, a contact person.

Item 3 – Provide the local date, time, and time zone when the event occurred.

Item 4 – Brief Description: Provide a short summary of what happened, when it happened, and where, if applicable. This description is not intended to describe the causes and conditions surrounding the event.

Item 5 – Proposed Event Categorization (e.g., 1a, 2b): See the list of categories in Step 1 of the process.

Items 6-12 and Questions 6–12: If the event did not involve generation, frequency, transmission facilities, load, and/or inverters, questions 6–12 may be left blank.

Item 6 – Generation Tripped Off-line: Provide a total megawatt loss (gross).

Item 7 – Frequency: Provide the frequency prior to event, minimum and maximum frequency immediately following the event, and the settling frequency.

Items 8-9 Load/Customers Impacted: Provide the firm and interruptible MW amount of load impacted (if any). The load that was disconnected from the system by utility/entity equipment opening. Load loss due

to the response of voltage sensitive load and load that is disconnected from the system by end-user equipment is not included. Do not use change in area load as the load loss.

Item 10 – List Transmission, Substation, Generation, and Demand that Experienced a Forced Outage (Excluding Successful Automatic Reclosing): Provide start time, end time, and total outage time for each affected generation, substation equipment, transmission, and/or demand facilities. Describe the bus configuration (e.g. straight, ring, breaker and a half) and specify the voltage level for each substation equipment loss. Specify the voltage level for each transmission loss. Provide MW loss and Peak MW loss for generation loss and load loss, respectively.

Item 11 – Describe any Emergency Actions Required to Maintain Reliability of the BES: If an operating limit was exceeded, what actions were taken by the system operators to return the system to a secure state? For 1h EMS event, please include mitigating controls used to monitor the BPS including any notifications made to external entities (e.g. Reliability Coordinator, Balancing Authority, and/or neighboring Transmission Operators). Please advise if you contacted the vendor and what details they have provided.

Item 12 – List Inverters that Experienced either Momentary Cessation or Tripping: Please provide the affected facility name, the number of affected inverters, total MW loss, outage duration, and the type of loss (momentary cessation or tripping)

Item 13 – Sequence of Events: The sequence of events should provide a chronological timeline of the actions that took place leading up to and through the event. The sequence of events is intended to assist in causal analysis and should not include potential causes or narratives attempting to identify the impact of various activities throughout the event.

Item 14 – Identify Contributing Causes of the Event to the Extent Known: If the event consists of more than one event, please provide contributing causes to each event (e.g., Event 1: line-to-ground fault which was followed by Event 2: failure to trip). For every event, continue to ask 'why' to help determine the contributing causes. Consider design, equipment, human performance, management practices, procedures, communication, training, weather, configuration, vendor, or anything that may have contributed to the event(s).

Item 15 – Identify any Protection System Misoperations to the Extent Known: If a Protection System operated during the event, the operation should be reviewed to ensure the Protection System operated correctly. If it is believed that the Protection System did not operate as expected and possibly reported through PRC-004, it should be identified in this section. If the operation is still being analyzed, it should be noted. The outcome of that analysis should be used to update this report and the fact that a PRC-004 report was made when such information becomes known.

Item 16 – Identify any GADS, DADS, TADS, or Misoperation Reports that Will Be Submitted: Identify any loss of generation, demand, or BES Transmission lines related to the event that qualify for reporting through the Generator Availability Data System (GADS), Demand Response Availability Data System

(DADS), or Transmission Availability Data System (TADS). Also identify any Protection System misoperation reports that will be submitted.

Item 17 – Narrative: Provide a detailed description of the event utilizing the sequence of events, one-line diagrams, available data, and any assumptions, as necessary. The narrative should explain the what, when, how, and where aspects of the events in detail, as well as the impact. The narrative should describe the potential causes of events, measures that, if existed, could have prevented the event, corrective measures taken after the event, and any extent of condition[1] identified.

Item 18 – If a One-line Diagram is Included, Please Provide an Explanation: One-line diagrams and pictures streamline the review process and simplify understanding of events. Please provide where applicable.

Item 19 – Identify the Significance and Duration of any Monitoring and Control Event (i.e., Loss of BPS Visibility, Loss of Data Links, etc.): Provide the number of minutes control and/or monitoring was lost and the extent of the loss (e.g., complete loss of EMS, or lost 40 percent visibility and control).

Item 20 – Provide any Corrective Actions that were Identified: These are the things your company will do or has done to prevent a similar event from occurring in the future.

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[1]Reviewing the potential for identified problem to impact other processes or equipment.

Brief Report Template

Reported Event Title:	

Event Date:		Submittal Date:	
Subsequent Submittal Date:		Initial, Interim or Final Report:	

Region(s):	
1. Entity Name:	
NCR Number:	

2. Contact Person:		Phone Number:	

Email:	
3. Date of Disturbance	

Time of Disturbance		Time Zone:	

4. Brief Description of Event

5. Proposed Event Categorization: (e.g., 1a, 2b, 3c)	
6. Generation Tripped Off-line (MW)	

7. Frequency

Just prior to disturbance (Hz)		Immediately following disturbance (Hz MAX)	
Settling (Hz)		Immediately following disturbance (Hz MIN)	

8. Demand Interrupted

Firm (MW)					
Interruptible (MW)					

9. Number of affected customers

Firm		Interruptible	

10. List Transmission, Substation, Generation, and Demand that Experienced a Forced Outage (Excluding successful automatic reclosing)

Transmission Lines				
Line Name	Voltage Level	Start time of outage	End time of outage	Total outage duration time
Substation Equipment					
Station Name (including station configuration)	Type (e.g. breaker, transformer, bus, relay, CT, PT)	Voltage Level	Start time of outage	End time of outage	Total outage duration time
Generation Equipment					
Unit Name	Fuel Type	MW Loss	Start time of outage	End time of outage	Total outage duration time
Demand			
Peak MW Loss	Start time of outage	End time of outage	Total outage duration time

11. Describe any Emergency Actions Required to Maintain Reliability of the BES
    For 1h EMS event, please include mitigating controls used to monitor the BPS including any notifications made to external entities (e.g. Reliability Coordinator, Balancing Authority, and/or neighboring Transmission Operators). Please advise if you contacted the vendors and what details they have provided.

12. List Inverters that Experienced either Momentary Cessation or Tripping

Facility Name	Number of Affected Inverters	Note Momentary Cessation or Trip	Total MW Loss	Outage Duration

13. Sequence of Events

Time	Event

14. Identify contributing causes of the event to the extent known

15. Identify any Protection System Misoperations to the extent known

16. Identify any GADS, DADS, TADS, or Protection System Misoperations Reports that will be submitted

17. Narrative
Explain the what, when, how, and where aspects of the events in detail, as well as the impact. Describe the potential causes of events, measures that could have prevented the event, corrective measures taken after the event, and any extent of condition identified.   • For 1h EMS event, please review Addendum for Category 1h Events   • If substation equipment failure occurred, please see the Failed Equipment Addendum, fill out the appropriate section, and send it with the Brief Report

18. If a one-line diagram is included, please provide an explanation

19. Identify the significance and duration of any monitoring and control event, such as loss of BPS visibility, loss of data links, etc

20. Provide any corrective actions that were identified

PROOF OF SERVICE BY MAIL

I am employed with the California Public Utilities Commission, and I am over 18 years of age. My business address is 505 Van Ness Avenue, San Francisco, California 94102.

On March 30, 2023 I caused to be sent by email and by U.S. Mail the following document(s):

SUBPOENA DUCES TECUM

by depositing in a U.S. mailbox in stamped sealed envelopes, and by sending via email to the address and email address below.

> Mr. John Spomer. Senior Counsel
> California Independent System Operator Corporation
> 250 Outcropping Way, Folsom CA 95630
> jspomer@caiso.com

Executed under penalty of perjury under the laws of the State of California, on this 30th day of March, 2023 at San Francisco, California.

/s/   *Marybelle C. Ang*
_____
Marybelle C. Ang