

RESOURCE ADEQUACY PROGRAM FOR THE CITY OF PASADENA

The City Council for the City of Pasadena, California ("Pasadena" or the "City"), in its capacity as the Local Regulatory Authority ("LRA") for the City's Water and Power Department (the "Department" or "PWP"), hereby adopts the following Resource Adequacy Program for the Department.¹

1. RESOURCE ADEQUACY PLANS

The Department shall be responsible for developing Resource Adequacy ("RA") Plans in accordance with the provisions of this Program to guide the procurement of capacity resources adequate to serve the requirements of Pasadena's customers consistent with Good Utility Practice and Applicable Reliability Criteria,² including reliability requirements applicable to the City. The RA Plans shall identify System capacity, Local capacity, and Flexible capacity pursuant to the requirements of the CAISO, as implemented through this Program.

The objective of the RA Plans will be to achieve a minimum of 15% Planning Reserve Margin ("PRM") over Pasadena's coincident peak Demand Forecast as adjusted by the California Energy Commission ("CEC") and to comply with Local and Flexible RA capacity obligations as determined by the CAISO. The Department will provide the CAISO with the PRM adopted herein.

1.1 Annual Resource Adequacy Plan: The Department shall prepare an Annual RA Plan each year for the following calendar year. The Annual RA Plan will identify capacity resources owned or contracted for by Pasadena sufficient to meet 115% of Pasadena's CEC-adjusted forecast of monthly coincident peak loads. If and to the extent applicable, the Annual RA Plan will also set forth the Local Capacity Area Resources procured by the Department, and it may identify one or more Local Capacity Area Resources as Listed Local RA Capacity. The Annual RA Plan will also include a listing of Flexible RA Capacity to meet applicable CAISO requirements.

By no later than June of each year, the Department shall develop a draft Annual RA Plan. The draft Annual RA Plan will be for the internal use of the Department in evaluating Pasadena's anticipated capacity needs during the subsequent calendar year and to facilitate procurement efforts by the Department as necessary.

¹ Capitalized terms not otherwise defined herein shall be defined as set forth in the Master Definitions Supplement of the California Independent System Operator Corporation's ("CAISO") Tariff as filed with the Federal Energy Regulatory Commission ("FERC").

² For the purpose of this Program, the term "Applicable Reliability Criteria" is defined as the Reliability Standards and reliability criteria established by the North American Electric Reliability Corporation ("NERC") and the Western Electricity Coordinating Council and local reliability criteria established by the CAISO, as amended from time to time.

The Department shall provide the final Annual RA Plan to the CAISO according to the schedule and in the reporting format(s) established by the CAISO. The Annual RA Plan will demonstrate procurement of RA Capacity sufficient to meet at least the minimum quantities of shown RA Capacity as specified by the CAISO, consistent with the provisions of this Program.

1.2 Monthly Resource Adequacy Plan: The Department shall prepare a Monthly RA Plan for each month of the year. The Monthly RA Plan shall identify all resources, including Local Capacity Area Resources (if and to the extent applicable), that are owned or contracted for by Pasadena and are sufficient to meet 115% of Pasadena's CEC-adjusted forecast of coincident peak load for the month covered by the Monthly RA Plan. The Monthly RA Plan will also include a listing of Flexible RA Capacity to meet applicable CAISO requirements.

The Department shall provide each Monthly RA Plan to the CAISO at least 45 days in advance of the first day of the month covered by the plan (or in accordance with the reporting schedule established by the CAISO) in the reporting format(s) established by the CAISO.

The Department may submit at any time from 45 days through 30 days in advance of the relevant month (or in accordance with applicable deadlines as may be established by the CAISO) a revision to its monthly RA Plan to correct either: (i) a discrepancy between its monthly RA Plan and the monthly Supply Plan of an RA Resource providing the Department with RA Capacity; or (ii) a deficiency in the quantity of RA Capacity provided on the monthly RA Plan. Such revisions to the monthly RA Plan must include in the revision a MW amount of RA Capacity for each day of the month that is no less than the MW amount of RA Capacity included in the original plan for each day of the month. The Department may also revise its Resource Adequacy Plan at any time from 45 days through 30 days in advance of the relevant month (or in accordance with applicable CAISO deadlines) to voluntarily add additional Resource Adequacy Capacity or remove Resource Adequacy Capacity regardless of a discrepancy or deficiency that existed as of 45 days in advance of the relevant month. In the event that such revisions must be submitted from 30 days in advance of the relevant month through the end of the month, the Department will demonstrate good cause for the change and document why it was not possible to submit the change earlier.

1.3 RA Supply Plan: For RA Resources which the Department provides Scheduling Coordinator services, the Department will prepare Annual and Monthly Supply Plans. The Supply Plans shall be submitted to the CAISO according to the schedule and in the reporting format(s) established by the CAISO. The Supply Plans will verify the agreement of the RA Resources listed in the Supply Plans to provide RA Capacity in accordance with applicable CAISO requirements during the next RA Compliance Year or month, as applicable. The Supply Plans will identify Local Capacity Area Resources as Listed Local RA Capacity and will include listings of RA Capacity resources providing Flexible RA and any other information as may be required by the CAISO.

The Department may submit, at any time from 45 days through 30 days in advance of the relevant month, a revision to its monthly Supply Plans to correct discrepancies between the

monthly Supply Plan and an RA Plan of a Load Serving Entity for which that RA Resource is providing RA Capacity. In the event of any revisions to a monthly Supply Plan from 30 days in advance of the relevant month through the end of the month, the Department will demonstrate good cause for the change and document why it was not possible to submit the change earlier.

2. DEMAND FORECASTS

The Department shall be responsible for developing Demand Forecasts, consistent with Good Utility Practice, of the maximum annual and monthly peak loads for Pasadena's Service Area according to a schedule that accommodates the use of such Demand Forecasts in the Annual and Monthly RA Plans. The Department shall provide the Demand Forecasts to the CEC if required and in accordance with the schedule(s) established by the CEC's rules or regulations.

The Department will use the CEC's adjusted forecast of monthly coincident peak demand, plus the PRM established herein, for the purposes of demonstrating RA Capacity sufficient to meet the needs of Pasadena's loads.

3. CRITERIA FOR QUALIFYING CAPACITY

The City adopts the criteria set forth below for the CAISO to use for the purpose of determining and verifying, if necessary, the Qualifying Capacity of Pasadena's RA Resources. These criteria are intended to supersede and replace the default criteria contained in the CAISO Tariff, including those provided at section 40.8 of the Tariff (or in any equivalent successor provisions). If any CAISO new criteria are adopted or existing criteria are revised, such new or revised criteria are not applicable to the Department's criteria as identified below, unless expressly incorporated herein.

The Department will provide these criteria for the CAISO's use in determining and verifying the Qualifying Capacity of RA Resources.

3.1 General Qualifications for Supplying Net Qualifying Capacity: RA Resources included in the Department's RA Plans will:

- (1) If and to the extent required under the CAISO Tariff to supply RA Capacity, be Participating Generators, Participating Intermittent Resources, System Units, and/or Participating Loads, as applicable;
- (2) Be available for testing to validate Qualifying Capacity;
- (3) Provide information reasonably requested by the CAISO to apply the performance criteria of the CAISO Tariff;
- (4) Submit Bids into the CAISO Markets as required by the CAISO Tariff;
- (5) Comply with the Department's criteria for Qualifying Capacity;
- (6) Be subject to Sanctions for non-performance as specified in the CAISO Tariff;

- (7) For a resource with contractual RA Capacity less than PMin as registered in the Master File, make the PMin available to the CAISO for commitment or dispatch at PMin, subject to applicable provisions for Bid Cost Recovery, so that the resource's RA Capacity can be utilized as required pursuant to the CAISO Tariff; and
- (8) Provide capacity and energy as necessary to meet the reliability needs of the PWP system.

3.2 Deliverability: It is acknowledged that provisions of the CAISO Tariff governing the Qualifying Capacity of RA Resources provide for reductions to "Net Qualifying Capacity" based on the quantities of capacity that are deliverable throughout the CAISO system.

For RA Resources that represent imports into the CAISO Balancing Authority Area, the Department will obtain and use an allocation of Maximum Import Capability ("MIC") on an Intertie for the RA Resource in accordance with the CAISO Tariff. The Department may engage in transfers of MIC as may be needed to efficiently obtain and utilize MIC allocations for the Department's import resources.

3.3 Qualifying Capacity Criteria: Pasadena establishes and will provide to the CAISO the criteria specified below to determine the Qualifying Capacity for the Department's RA Resources.

3.3.1 Thermal Facilities: The Qualifying Capacity of thermal generating facilities will be based on the resource's Pmax testing performance, as tested from time to time in accordance with CAISO requirements.

3.3.2 Hydroelectric Resources: The Qualifying Capacity of hydroelectric Generating Units other than Qualifying Facilities ("QFs") that are pond or Pumped Storage Hydro Units will be determined based on net dependable capacity as defined by NERC's Generating Availability Data System ("GADS"), minus variable head derate based on an average dry year reservoir level. The Qualifying Capacity of a pond or Pumped-Storage Hydro Unit that is a QF will be determined based on historic performance during the hours of noon to 11:00 p.m. The Qualifying Capacity of all run-of-river hydro units, including QFs, will be based on the net dependable capacity defined by NERC GADS minus an average dry year conveyance flow, stream flow, or canal head derate. As used in this section, the term "average dry year" reflects a one-in-five year dry hydro scenario (for example, using the 4th driest year from the last 20 years on record), using a three-year rolling average.

3.3.3 Unit-Specific Contracts: Unit-specific contracts with Participating Generators or System Units will qualify as RA Capacity subject to the verification that the total MW quantity of all contracts from a specific unit do not exceed the total Net Qualifying Capacity (MW) consistent with the Net Qualifying Capacity determination for that unit.

3.3.4 Contracts with Liquidated Damage Provisions: Firm energy contracts with liquidated damages provisions, as generally reflected in Service Schedule C of the Western Systems Power Pool Agreement or the Firm LD product of the Edison Electric Institute pro forma agreement, or any other similar firm energy contract that does not require the seller to source the energy from a particular unit and specifies a delivery point internal to the CAISO Balancing Authority Area shall be eligible to count as Qualifying Capacity. The RA Capacity shall be submitted as a Self-Schedule or Bid in the Day-Ahead Integrated Forward Market to the extent such scheduling right exists under the Firm Liquidated Damages Contract.

3.3.5 Wind and Solar: The Qualifying Capacity of all wind or solar units, including QFs, for each month will be based on their monthly historic performance during that same month using a three-year rolling average. For wind or solar units with less than three years operating history, all months for which there is no historic performance data will utilize the monthly average production factor of all units (wind or solar, as applicable) within the Transmission Access Charge (“TAC”) Area, or other production data from another area determined by the City to be appropriate if the unit is not within a TAC Area, in which the Generating Unit is located.

3.3.6 Geothermal: The Qualifying Capacity of geothermal units will be based on NERC GADS net dependable capacity minus a derate for steam field degradation.

3.3.7 Qualifying Facilities: The Qualifying Capacity of QFs will be the applicable criteria set forth in this Program for the relevant technology type.

3.3.8 Participating Loads: The Qualifying Capacity of Participating Loads shall be calculated using the reduction in demand per Dispatch methodology. The reduction in demand per Dispatch methodology calculates a resource’s Qualifying Capacity, which is static for each month of a year, based on the resource’s average reduction in demand on a per-Dispatch basis over the 36-month default Qualifying Capacity evaluation period defined in the CAISO BPM or as such evaluation period may be otherwise determined by Pasadena. Loads of Participating Loads must be available at least 48 hours, and if the Loads can only be dispatched for a maximum of two hours per event, then only 0.89 percent of Pasadena’s portfolio may be made up of such Loads.

3.3.9 Jointly-Owned Facilities: A jointly-owned facility must be either a Participating Generator or a System Unit. The Qualifying Capacity for the facility will be determined based on the type of resource as described elsewhere in this Program. In addition, the Department will provide the CAISO (in the Department’s RA Plans or as otherwise requested by the CAISO) documentation demonstrating its entitlement to the output of the jointly-owned facility’s Qualifying Capacity and an explanation of how that entitlement may change if the facility’s output is restricted.

3.3.10 Dynamically Scheduled System Resources and Pseudo-Ties: The Qualifying Capacity of a Dynamically Scheduled System Resource or a Pseudo-Tie to which Pasadena has an entitlement shall be the amount of Pasadena's capacity entitlement. Pasadena must also obtain a quantity of MIC at the relevant import Scheduling Point that is not less than the RA Capacity provided by the Dynamic System Resource or Pseudo-Tie. Eligibility as an RA Resource is further contingent upon Pasadena securing transmission through any intervening Balancing Authority Areas for the resource entitlement that cannot be curtailed for economic reasons or bumped by higher priority transmission.

3.3.11 Non-Dynamic System Resources: The Qualifying Capacity of a System Resource to which Pasadena has an entitlement that is not Dynamically Scheduled shall be the amount of Pasadena's capacity entitlement to such System resource. Such resources must be covered by Operating Reserves, unless unit contingent, in the sending Balancing Authority Area. Pasadena must also obtain a quantity of MIC at the relevant import Scheduling Point that is not less than the RA Capacity provided by the Non-Dynamic System Resource. For any Non-Dynamic System Resource, Pasadena shall use best efforts to secure or cause to be secured transmission through any intervening Balancing Authority Areas for the resource entitlement that cannot be curtailed for economic reasons or bumped by higher priority transmission. System Resources that are not unit contingent must not be subject to curtailment for economic reasons. Any inter-temporal constraints, such as multi-hour run blocks, must be explicitly identified in Pasadena's monthly RA plan, and Pasadena will not impose constraints beyond those explicitly stated in the plan.

3.3.12 Proxy Demand Resources: A Proxy Demand Resource must have the ability to (i) be dispatched for at least twenty-four hours per month, (ii) be dispatched on at least three consecutive days, and (iii) respond for at least four hours per dispatch in order to qualify as RA Capacity. The Qualifying Capacity of a Proxy Demand Resource, for each month, will be based on the resource's average monthly historic demand reduction performance during that same month during the Availability Assessment Hours established pursuant to the CAISO Tariff, using a three-year rolling average. For a Proxy Demand Resource with fewer than three years of performance history, for all months for which there is no historic data, the Department will utilize a monthly MW value as certified and reported by the Demand Response Provider; otherwise, where available, the Department will use the average of historic demand reduction performance data available, by month. Where a Proxy Demand Resource uses the load-shift methodology to calculate its Demand Response Energy Measurements, its Qualifying Capacity will exclude demand reduction performance from the consumption Resource ID.

3.3.13 Reliability Demand Response Resources: The Qualifying Capacity of a Reliability Demand Response Resource, for each month, will be based on the resource's average monthly historic demand reduction performance during that same month during the Availability Assessment Hours, as described in the CAISO Tariff, using a three-year

rolling average. For a Reliability Demand Response Resource with fewer than three years of performance history, for all months for which there is no historic data, the Department will use a monthly megawatt value as certified and reported by the Demand Response Provider; otherwise, where available, the Department will use the average of historic demand reduction performance data available, by month.

3.3.14 Distributed Generation Facilities: The Department will determine the Net Qualifying Capacity of each Distributed Generation Facility consistent with the criteria applicable to the resource and technology types set forth in this section.

3.3.15 Non-Generator Resources: The Department will determine the Qualifying Capacity of each Non-Generator Resource based on the testing of the resource's sustained output over a four-hour period; however, the Qualifying Capacity shall not exceed the resource's maximum instantaneous discharge capability.

3.3.16 Inter-Scheduling Coordinator Trades: Contracts for capacity from resources located within the CAISO Balancing Authority Area delivered via an Inter-Scheduling Coordinator Trade (SC to SC Trade) are not be considered liquidated damages contracts and will count fully for the duration of the contract, provided that the capacity is from resource(s) located within the CAISO Balancing Authority Area and is deliverable pursuant to CAISO generation deliverability criteria.

3.3.17 Exchange Contracts: The Qualifying Capacity for any exchange contract shall be the capacity that Pasadena is entitled to schedule under the exchange contract at the time of its forecast system peak. However, for an exchange contract, eligibility as an RA resource is contingent upon Pasadena securing transmission through any intervening Balancing Authority Areas for the exchange capacity entitlement that cannot be curtailed for economic reasons or bumped by higher priority transmission and having import capacity at the import Scheduling Point that is not less than the RA Capacity provided by the exchange contract.

3.3.18 Resource Adequacy Capacity Only Resources: Contracts for capacity only under which the seller has pledged to follow the CAISO's scheduling and operating protocols, including any Must Offer Obligation ("MOO"), may be a source of RA Qualifying Capacity provided that the contract specifies: (i) the generating unit(s) dedicated for the RA Capacity, (ii) that the seller shall not sell the capacity covered by the contract to any third parties, and (iii) that the seller will follow CAISO operating instructions.

3.3.19 Load Reduction or Offset Programs: Energy efficiency, conservation, and demand response or demand offset programs may be a source of RA Capacity and shall be taken off the top of Pasadena's RA Capacity requirement. The Department may

document the effects of such demand reduction or offset programs in reducing Pasadena's demands in the RA Plans.

3.3.20 Hybrid Resources: The default Qualifying Capacity of a Hybrid Resource is the sum of the individual Qualifying Capacity values for each component, not to exceed the facility's Interconnection Service Capacity.

4. AVAILABILITY OF RESOURCE ADEQUACY RESOURCES TO THE CAISO

4.1 Availability During Normal Operating Conditions: Pasadena shall utilize its RA Resources as necessary and appropriate to serve its loads and ensure the reliability of its local transmission and distribution system. In the absence of an identified need to operate a unit for the purpose of ensuring local transmission and distribution system reliability, Pasadena shall ensure that its RA Capacity complies with relevant provisions of the CAISO Tariff regarding operations, availability, market participation, and outages, as applicable. The Department and any external Scheduling Coordinators for the Department's RA Capacity will make the RA Capacity listed in Monthly Supply Plans available to the CAISO in accordance with relevant provisions of the CAISO Tariff.

4.2 Availability During System Emergencies: If the CAISO declares a System Emergency, Pasadena will make available to the CAISO any available capacity from Pasadena's RA Resources that is not required to serve Pasadena's loads and ensure the reliability of the Department's transmission and distribution system, consistent with the Market Participant responsibilities applicable during Emergencies as identified in the CAISO Tariff.

5. JURISDICTIONAL STATEMENT; PROGRAM REVISIONS

5.1 Jurisdiction: As a publicly-owned utility that is not generally subject to the jurisdiction of the FERC under Part II of the Federal Power Act or the general jurisdiction of the California Public Utilities Commission ("CPUC"), including with respect to resource planning and procurement, the City reiterates that nothing in this Program is intended to subject the City or PWP, as a Department of the City, to FERC or CPUC jurisdiction or to accede to any FERC or CPUC regulations or policies, except to the extent provided in federal or state statutes or regulations. The City reserves all of its rights with respect to its resource planning and procurement and the use of its resources (whether owned or under contract) and expressly disclaims any authority over its resource planning, procurement, and resource utilization except that established in federal or state statute or regulations and as adopted by the City Council, as the LRA for PWP. The Department does not adopt any "default" provisions of the CAISO Tariff or Business Practice Manuals related to RA, including provisions related to Qualifying Capacity, except as expressly documented in this Program.

5.2 Program revisions: Changes to the minimum PRM in this Program must be approved by the Pasadena City Council as the LRA for PWP. The General Manager of PWP

Adopted by Pasadena City Council
Month DD, YYYY

will administer this Program and may propose modifications to any other element of the Program in order to conform to applicable changes in law and policy that implement Good Utility Practice.