



PASADENA WATER AND POWER

December 20, 2016

John Mathias
California Energy Commission
1516 Ninth Street MS-20
Sacramento, CA 95814
John.Mathias@energy.ca.gov

Re: Pasadena Water and Power Compliance Report on AB2514 Compliance For 2014-2016 Compliance Period

Dear Mr. Mathias:

Pursuant to the requirements of Assembly Bill 2514 (Skinner, Chapter 469, Statutes of 2010) ("AB2514"), Pasadena Water and Power ("PWP") hereby submits this report to the California Energy Commission ("CEC") regarding the energy storage system targets and policies adopted by PWP's governing board, the City of Pasadena City Council ("Pasadena City Council"), and the efforts expended to date by PWP to meet those targets and policies.

On October 6, 2014, pursuant to AB2514, the Pasadena City Council agreed with PWP staff's recommendation to forgo establishing and meeting energy storage targets during the compliance period ending 2020. Staff's analysis projected that currently available energy storage technologies would not be viable nor cost-effective by 2020. Attached is a copy of the Agenda Report (Attachment 1).

However, PWP has actively investigated new energy storage opportunities, both independently and through its membership in the Southern California Public Power Authority (SCPPA), specifically, SCPPA's Energy Storage Group and Renewable Working Group:

1. In March, 2014, PWP Power Supply Division staff initiated discussions with PWP's Water Division staff to investigate incorporating an electric energy storage component (pumped storage) in the City's share of a multi-city Recycled Water Project. However, due to the operational limitations of the project's recycled water output (700AcreFeet/Year (AFY)) and regulatory prohibitions on the disposal of excess recycled water, such a dual purposed, recycled water/energy storage project was deemed unfeasible;
2. Power Supply staff also discussed with Water Division staff the possibility of converting one, some, or perhaps even all, of the City's many treated water (potable) reservoirs into pumped storage energy storage facilities. Once again, however, none of the reservoirs

was deemed a viable candidate. Although the reservoirs are, in principle, operated as half of a working pumped storage facility since the water stored in them is pumped in from wells located throughout the City, none of the reservoirs' discharge can be captured as electrical energy due to site restrictions and/or mechanical and geographic limitations;

3. In December, 2014, PWP contacted a number of energy storage vendors to discuss a possible partnership to bid into SCE's AB2514 energy storage RFP. Staff thought that due to its location within the SCE service territory, the Department's local power plant site might offer some strategic benefits to SCE. Although a preliminary partnership agreement was reached with one vendor, SCE selected other projects to meet their procurement targets;
4. SPPA's Renewable Working Group issues an annual Request For Proposals (RFP) for renewable energy projects, including a Request For Information (RFI) for storage projects, which receives hundreds of responses every year. A copy of that RFP/RFI is attached (attachment 2) hereto. While most responses address renewable energy generation projects alone, an increasing number of responses are for storage projects and renewable-plus-storage projects. The Energy Storage Working Group goes even deeper, bringing in storage technology vendors, storage project developers, storage control and analysis software vendors, and fellow utilities for detailed discussions.

As PWP looks forward to the next AB2514 compliance period, PWP is heartened by the continuing improvement in energy storage technologies and related systems as well as the continued decline in the cost of those systems.

On a related note, PWP has reached 30% renewables under California's Renewable Portfolio Standard (RPS) program and is working diligently to meet the next RPS target of 50% by 2030. PWP currently anticipates that many, if not all, of those renewables will be intermittent. It is anticipated that integrating this intermittent energy will require some level of smoothing and shaping for PWP to maintain its reliable and affordable electric service to Pasadena. PWP anticipates that energy storage systems will play an important role in this integration.

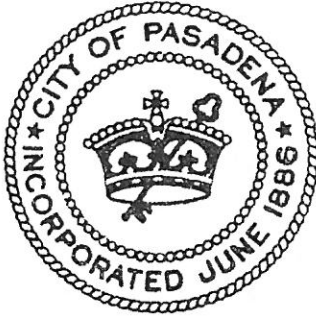
Please contact Gurcharan Bawa, PWP's Interim General Manager, with any questions about this report. He can be reached at 626-744-7598 and gbawa@cityofpasadena.net.

Sincerely,



Gurcharan Bawa
Interim General Manager
Pasadena Water and Power

Attachment: PWP Agenda Report dated October 6, 2014
SPPA Request for Proposals for Renewable Energy Resources (Including
Request For Information for Energy Storage Projects)



Agenda Report

October 6, 2014

TO: Honorable Mayor and City Council

THROUGH: Municipal Services Committee (September 23, 2014)

FROM: Water and Power Department

SUBJECT: AB2514 ENERGY STORAGE SYSTEM PROCUREMENT TARGETS AND POLICIES

RECOMMENDATION:

It is recommended that the City Council:

1. Find that the proposed action is not a project subject to the California Environmental Quality Act (CEQA) as defined in Section 21065 of CEQA and Section 15378 of the State CEQA Guidelines and, as such, no environmental document pursuant to CEQA is required for the project;
2. Find that it is not appropriate at this time to establish procurement targets for energy storage systems to be procured by Pasadena Water and Power ("PWP") due to lack of cost-effective viable options.
3. Direct PWP staff to continue to look for appropriate opportunities to encourage the cost-effective deployment of viable energy storage systems, and to make new recommendations to the City Council regarding cost-effective and viable energy storage system procurement targets and policies, if any, at least once every three years.

EXECUTIVE SUMMARY:

Assembly Bill 2514 (2010, Skinner) ("AB 2514") requires that publicly-owned utilities commence a process to determine appropriate targets, if any, for the utility to procure viable and cost-effective energy storage systems by March 1, 2012, and that their governing boards such as the City Council set appropriate procurement targets, if any, by October 1, 2014 for energy storage systems to be procured by December 31, 2016, and December 31, 2021. The City Council may also consider a variety of possible policies to encourage the cost-effective deployment of energy storage systems, including refinement of existing PWP procurement methods to properly value energy storage systems. The City Council must reevaluate the policies and procurement targets, if any, at least once every three years.

The City Council directed PWP to initiate the evaluation process as part of the Integrated Resource Plan Update adopted by the City Council on March 5, 2012. PWP subsequently initiated a review of energy storage system research conducted by leading institutions, including the Electric Power Research Institute (“EPRI”), Department of Energy (“DOE”), Sandia National Laboratories, Southern California Edison, Black & Veatch, DNV KEMA, Navigant Consulting, and others. PWP actively participated in the Southern California Public Power Authority (“SCPPA”) Energy Storage Working Group. The working group issued an energy storage Request for Proposals (“RFP”) and licensed energy storage evaluation software from Navigant Consulting. PWP conducted its own analysis of energy storage viability and cost-effectiveness for the Pasadena system utilizing the Navigant software (see attached report).

Based on work completed to date, PWP has not identified a specific need or any viable energy storage technologies that are cost-effective at a scale that is practical for PWP. Therefore, it is recommended that the City Council not establish specific targets at this time.

However, the energy storage industry is still in its early stages. As technologies evolve their cost-effectiveness is expected to improve over the coming years. PWP will continue to monitor developments in energy storage system technology and cost, and will present updated recommendations regarding energy storage system procurement targets and policies to the City Council at least once every three years.

BACKGROUND:

According to AB 2514, the term “energy storage system” means commercially available technology that is capable of absorbing energy, storing it for a period of time, and thereafter dispatching the energy.

An “energy storage system” must be *cost effective* and:

- reduce emissions of greenhouse gases,
- reduce demand for peak electrical generation,
- defer or substitute for an investment in generation, transmission, or distribution assets, or
- Improve the reliable operation of the electrical transmission or distribution grid.

The legislative policy embodied in AB 2514 was enacted to expand the use of energy storage systems to:

1. Assist in integrating increased amounts of renewable energy resources into the electrical transmission and distribution grid in a manner that minimizes emissions of greenhouse gases;
2. Optimize the use of the significant additional amounts of variable, intermittent, and off-peak electrical generation from wind and solar energy that will be entering the California power mix on an accelerated basis;

3. Reduce costs to ratepayers by avoiding or deferring the need for new fossil fuel-powered peaking power plants and avoiding or deferring distribution and transmission system upgrades and expansion of the grid;
4. Reduce the use of electricity generated from fossil fuels to meet peak load requirements on days with high electricity demand and potentially avoid or reduce the use of electricity generated by high carbon-emitting electrical generating facilities during those high electricity demand periods, which could have substantial co-benefits from reduced emissions of criteria pollutants¹; and,
5. Provide the ancillary services² otherwise provided by fossil-fueled generating facilities to reduce emissions of carbon dioxide and criteria pollutants.

Evaluation Process

Since initiating the investigation into energy storage systems in March of 2012, PWP has reviewed energy storage system research and documentation prepared by others, and has been involved with SCPA in several efforts. The most notable of these efforts included participation in the SCPA Energy Storage Working Group, and the SCPA RFP for Energy Storage.

Through the RFP, and the SCPA RFI for Generation Replacement and Future Resources, PWP and other SCPA participants have received and reviewed several innovative energy storage proposals providing real world data to validate the analysis. PWP has also had discussions, through SCPA and directly, with several energy storage vendors and consultants, and with the California Energy Storage Alliance. PWP reviewed the reports and filings of other utilities, including Southern California Edison (“SCE”), Pacific Gas & Electric (“PG&E”), San Diego Gas & Electric (“SDG&E”), and other municipal utilities.

AB 2514 does not define “cost-effective.” For purposes of this analysis, PWP used the following minimum criteria:

1. The product or service must fill an existing or anticipated unmet need, and
2. Must have a benefit-to-cost ratio ≥ 1 , and
3. The benefits must accrue proportionately to the parties that pay the costs³.

¹ Criteria pollutants include carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide. Criteria pollutants are the only air pollutants with national air quality standards that define allowable concentrations of these substances in ambient air.

² Ancillary services support the reliable operation of the transmission system as it moves high voltage electricity (generally >100 kV) from power plants to retail customers. Current ancillary services in the CAISO market include: regulation, spinning reserve, non-spinning reserve, voltage support, and black start.

³ For example, if it is determined that an energy storage system installed in Pasadena could provide hundreds of millions of dollars of net benefits to the CAISO system (of which PWP load is only about 1%), but there is no way for PWP customers to recover the remaining cost of the energy storage system from the other 99% of CAISO customers if PWP were to install it, then by this definition, it would not be cost effective for PWP, even if the benefit-to-cost ratio were >1 for the CAISO.

Benefit-to-cost ratio is defined as the net present value (“NPV”) of all direct, quantifiable benefits divided by the NPV of the direct, quantifiable costs of a defined energy storage system providing specific grid (or distribution/customer) services over its lifetime. To be cost effective, the energy storage product or service generally must be less expensive (or more effective) than alternative means of providing the same product or service.

Need for Energy Storage

Many of the applications and uses that energy storage systems can provide are also provided in other proven and more cost-effective ways. PWP has the ability to provide those products from existing generation (e.g., the Glenarm/Broadway power plants) as well as the option to purchase them from the California Independent System Operator (“CAISO”) market at lower cost than energy storage. Some services provided by energy storage can also be achieved through conservation, demand-side management and rate design (e.g., time-of-use rate structures).

PWP has not identified specific distribution upgrades that could cost-effectively be deferred through the use of energy storage systems. If, at some point in the future, radial distribution feeders experience voltage fluctuations or other power quality issues as a result of a high penetration of local solar installations, electric vehicle charging, or other distribution network transformation, energy storage systems on the distribution network or for customer energy management services may provide a cost-effective alternative to other distribution system infrastructure improvements.

Cost Effectiveness

PWP, through the SCPPA Energy Storage Working Group, interviewed several consultants in search of a reasonably priced model to help evaluate the cost-effectiveness of energy storage technologies. The group considered at least three different models, and chose to license the Navigant SCPPA Energy Storage Tool (“ES Tool”). Based on user-configurable input data, the tool determines the net present costs and benefits of potential energy storage resources. According to Navigant, the tool has gone through extensive review and usage. Sandia National Labs and the DOE conducted formal peer reviews of the framework.

PWP considered the various technologies and functions that energy storage can provide, and narrowed the list to those that PWP believed would have the highest potential viability and best fit for PWP by 2016 and by 2021. The technologies that were modeled by PWP using the ES Tool included:

1. Compressed Air Energy Storage (above ground),
2. Compressed Air Energy Storage (below ground),
3. Pumped Hydro Storage,
4. Flywheel Energy Storage,
5. Advanced Lead Acid Batteries,

6. Lithium Ion Batteries, and
7. Thermal Energy Storage.

Results

Compressed Air Energy Storage (“CAES”) and Pumped Hydro were the only potentially cost-effective technologies identified by the ES Tool. However, in order to provide the highest value services necessary to be cost effective, the storage facility would need to be located within the City’s limits. It is unlikely that opportunities exist within the City to develop such technologies at a viable and cost-effective scale. There may be future cost-effective opportunities to secure such resources outside of Pasadena to help integrate PWP’s portfolio of renewable resources.

Based on work completed to date, PWP has not identified any viable energy storage technologies that are cost-effective at a scale that is practical for PWP at this time. The energy storage industry is still in its early stages, with many technologies still evolving, and cost-effectiveness is expected to improve rapidly over the coming years. PWP has not identified a need at this time that would justify the expense of energy storage to its customers. Unless a clear need and cost-effective application are identified, setting energy storage procurement targets could lead to unnecessary costs that would increase rates.

PWP staff will continue to look for appropriate opportunities for energy storage systems as it executes its Integrated Resource Plan, and procures future renewable and conventional energy. PWP staff will continue to work with SCPPA to evaluate various energy storage technologies through solicitation of proposals for energy storage systems as standalone offers as well as in conjunction with renewable and conventional energy projects.

PWP will report to the California Energy Commission (“CEC”) as required by AB 2514 with respect to energy storage system procurement targets and policies that may be adopted (or not) by the City Council, and if such targets and/or policies are ever adopted, PWP’s compliance with such. Any reports made by PWP to the CEC pursuant to AB 2514 will be made available to the public by the CEC and/or PWP on their respective websites.

Other Municipal Utility Results

PWP has reviewed work performed by other municipal utilities, including an extensive report prepared by the Sacramento Municipal Utility District that concluded energy storage is not yet cost-effective and that no procurement targets should be set. To date, four other public utilities (Anaheim, Palo Alto, Lodi, and Truckee Donner) have also filed resolutions and/or reports with similar recommendations.

Some municipal utilities, including the Los Angeles Department of Water and Power and the Imperial Irrigation District, are expected to recommend establishing energy storage procurement targets. Unlike PWP, each of these utilities has a large service territory

and operates its own electrical balancing area. The targets these two utilities choose to set may not be entirely based on pre-established determinations of cost effectiveness or need.

The City of Redding has recommended extending its Ice Bear thermal energy storage program and has set procurement targets of 3.6 MW for 2016 and 4.4 MW for 2020. PWP expects there may be three or four other municipal utilities that will set modest procurement targets, but informal polling of the California Municipal Utilities Association's 39 members indicates that the majority are likely to find energy storage is not cost-effective at this time, and will decline to set procurement targets.

COUNCIL POLICY CONSIDERATION

The proposed action will help PWP achieve regulatory compliance and is consistent with the City Council's goal to maintain fiscal responsibility and stability by seeking cost-effective means to meet the City's conservation and sustainability goals and to provide a high level of public service.

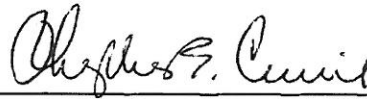
ENVIRONMENTAL ANALYSIS:

The proposed non-adoption of energy storage system procurement targets is an administrative action that would not cause either a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment. The proposed action is for the City to comply with AB 2514 by not adopting energy storage system procurement targets at this time because energy storage has not been found to be cost-effective for PWP. No physical construction is contemplated or would be authorized, by the actions proposed in this staff report. Therefore, the proposed action is not a "project" subject to CEQA, as defined in Section 21065 of CEQA and Section 15378 of the State CEQA Guidelines. Since the action is not a project subject to CEQA, no environmental document is required.

FISCAL IMPACT:

There is no fiscal impact as a result of this action, and it will not have any indirect or support cost requirements. The anticipated impact to other operational programs or capital projects as a result of this action will be none.

Respectfully submitted,



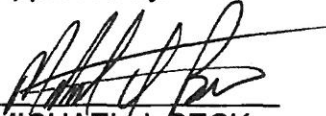
PHYLLIS E. CURRIE
General Manager
Water and Power Department

Prepared by:



Leesa Nayudu
Resource Planning Manager

Approved by:



MICHAEL J. BECK
City Manager

ATTACHMENT: PWP AB 2514 Energy Storage Systems Evaluation Report



SOUTHERN CALIFORNIA PUBLIC POWER AUTHORITY
Request for Proposals for Renewable Energy Resources
(Includes Request for Information for Energy Storage Projects)

Issuance Date: January 1, 2016
Response Deadline: December 31, 2016

Introduction

The Southern California Public Power Authority (SCPPA) is soliciting competitive proposals for renewable energy projects or products consistent with the California Renewable Energy Resources Program (Public Resources Code sec. 25740 et seq.) and the California Renewables Portfolio Standard Program (Public Utilities Code sec. 399.11 et seq.), including amendments enacted in 2011 by passage of California Senate Bill X1 2 (SBX1 2), and energy storage projects. SCPPA is targeting proposals for renewable resources with commercial operation or delivery starting in 2017 and beyond, but resources commencing operation or delivery sooner will be considered. RFP responses may propose (i) project ownership by SCPPA, (ii) a power purchase agreement with an ownership option or (iii) a power purchase agreement without an ownership option. Effective January 1, 2016 this Request for Proposals (RFP) replaces all previous RFPs for renewable energy or energy storage projects posted by SCPPA.

Background

SCPPA, a joint powers authority (JPA) and a public entity organized under the laws of the State of California, was created pursuant to the Government Code of California and a Joint Powers Agreement for the purpose of planning, financing, developing, acquiring, constructing, operating and maintaining projects for the generation or transmission of electric energy and associated products and services. SCPPA is a "Cafeteria Style" JPA where the Member Agencies have the ability to 'opt-in' to the projects they are interested in. SCPPA can procure resources on behalf of Member Agencies with one or more participants.

SCPPA is governed by its Board of Directors, which consists of a representative from each of its Member Agencies. The management of SCPPA is under the direction of an Executive Director who is appointed by the Board.

Member Agencies are twelve publicly owned utilities that supply electric energy within Southern California, including the municipal utilities of the cities of Anaheim, Azusa, Banning, Burbank, Cerritos, Colton, Glendale, Los Angeles, Pasadena, Riverside, and Vernon, and the Imperial Irrigation District (Member Agencies). Anaheim, Azusa, Banning, Cerritos, Colton, Pasadena, Riverside and Vernon are in the California Independent System Operator's (CAISO) Balancing Authority; the Los Angeles Department of

Water and Power (LADWP), Burbank and Glendale are in the LADWP Balancing Authority; and the Imperial Irrigation District operates its own Balancing Authority.

Member Agencies' electric utilities are governed by their respective city councils or other locally elected governing bodies. Many Members established voluntary renewable targets before SBX1 2 went into effect, including the percentage of renewable energy they wish to obtain within their portfolio. Some have set targets as high as 40% by the year 2020. Most of our Members have already exceeded their interim targets of 20% renewable energy and are now updating their objectives to meet 33% by 2020 as mandated by SBX1 2 and an even higher renewables target of 50% by 2030 as per the recently enacted SB350 sets.

SCPPA has an active working group focused on renewable energy development. This group, with representation from all twelve of the Member Agencies, meets twice a month and has reviewed over eight hundred sixty (860) individual proposals since 2007. As a result, around 1,700 MW of capacity is now being or will be delivered through SCPPA resources in support of its members' renewable objectives.

Ownership Participation

SCPPA is well positioned and experienced in facilitating joint ownership structures for renewable power or other projects for the benefit of its Member Agencies. SCPPA can acquire an ownership interest in a project and sell 100% of the output to interested Member Agencies at its cost. SCPPA would also consider power purchase agreements, either with or without an option to purchase the project during the term of the agreement or energy prepayment structures. There is a strong preference by most of the Member Agencies for optionality to purchase a project during the term of the power purchase agreement.

RPS and EPS Compliance

SCPPA continues to seek cost effective resources to support its members' Renewable Portfolio Standard (RPS) objectives for 2017 and beyond. This rolling RFP¹ seeks to find a best combination of projects or products to deliver energy from facilities that will be RPS compliant (pursuant to Public Utilities Code Sections 399.16 (b)(1) and (b)(2), i.e., energy and associated RECs in Portfolio Content Category 1, which is strongly preferred, or Portfolio Content Category 2) and compliant with the emissions performance standard (EPS) regulations adopted by the California Energy Commission (20 Cal. Code of Regulations section 2900 et seq.) upon COD and throughout the term of the agreement.

This rolling RFP also seeks to find the best combination of projects or products to store energy, including for the purpose of integrating RPS-compliant intermittent renewable energy into our members' systems.

SCPPA requires that during the term of any agreement, the Seller shall assume the risk of maintaining and bringing the facility or project into compliance should there be a change in law that renders the facility non-compliant with either RPS or EPS. Since this is one of the critical elements of a renewable project or product for SCPPA, please describe how this risk would be assumed and addressed by Seller.

SCPPA will consider Renewable Energy Credit (REC) only proposals for any term.

¹ See discussion of "rolling RFP" in Proposal Delivery Requirements.

Proposal Delivery Requirements

One electronic copy of your proposal must be e-mailed to renewablesrfp@scppa.org or delivered on CD or USB flash drive to the address below by no later than 12:00 p.m. on December 30, 2016:

Southern California Public Power Authority
Attention: 2016 Renewable RFP
1160 Nicole Court
Glendora, California 91740

For general questions, please call the SCPPA offices at (626) 793-9364.

Clarification questions regarding this RFP may be addressed to renewablesrfp@scppa.org

SCPPA members seek tangible and timely opportunities to add renewable technologies to their generation portfolios and/or add storage facilities to their operations and thus will not entertain research or speculative proposals.

Since this is a "rolling RFP," proposals may be submitted at any time during the calendar year 2016. SCPPA reserves the right to review all proposals throughout the process of this rolling RFP, to contact proposers at any time to start negotiations, and to execute one or more agreements before the deadline for delivery of proposals.

Respondents who have previously submitted proposals for consideration and have not received formal regrets notifications from SCPPA may submit updates or revisions to the previous submittals with clearly noted reference to the prior submittal(s) and identify proposed changes, all under a new Transmittal Letter.

Newly submitted proposals by a prior Respondent may make reference to prior submittals for any required elements that have not changed (such as experience) rather than resubmitting boilerplate information.

No contact may be made with the Board of Directors, Committee Members, or SCPPA Member Agencies concerning this Request for Proposals.

All information received by SCPPA in response to this Request for Proposals is subject to the California Public Records Act and all submissions may be subject to review in the event of an audit.

Required Elements of Proposals

- 1. Transmittal Letter:** Provide a brief statement of the Respondent's understanding of the work to be done and commitment to perform the work as scheduled, including a summary of any exceptions taken to the RFP requirements, statement of work, specifications, and reference to any proposed contractual terms and conditions required by the Respondent. An officer authorized to bind must sign the proposal on behalf of the Respondent and must include the following declarations on the Transmittal Letter:

"This proposal is genuine, and not sham or collusive, nor made in the interest or in behalf of any person not herein named; the respondent has not directly or indirectly induced or

solicited any other respondent to put in a sham bid, or any other person, firm or corporation to refrain from submitting a proposal; and the respondent has not in any manner sought by collusion to secure for themselves an advantage over any other respondent."

2. Applicant Information: Provide the legal name of the company or entity making the proposal, the legal structure or form of the entity (e.g., Corporation, or LLC), physical address, e-mail address, telephone, and names and titles of individuals authorized to represent the Respondent.

3. Renewable Category: Clearly identify the proposal as one or more of a combination of the following eligible renewable energy resource electricity products:

- a. Wind, including all air-flow technologies involving a turbine of any type
- b. Geothermal, including all temperature gradient technologies
- c. Biomass, including dedicated waste feedstock or energy crops
- d. Biomethane, including landfill, digester gases and gas conversion or gasification technologies where the conversion to electricity occurs on the same premises as the source of fuel
- e. Biomethane of pipeline quality to be delivered and consumed at SCPPA's conventional thermal facilities on the Southern California Gas Company system. Bidders should include in their offers a NAESB base contract and a transaction confirmation proposing term, quantities, point(s) of delivery, price and other relevant terms. Bidders please note that offers will need to comply with the current edition of the California Energy Commission Renewable Portfolio Standard Eligibility Guidebook (presently version 8). Biomethane resources from California are highly recommended. A brief statement describing bidder's experience in conducting natural gas and biomethane transaction are encouraged
- f. Hydro, including all mass-in-motion technologies involving fluids and hydro efficiency improvements
- g. Solar, including all photo-voltaic and photo-optic technologies where light is directly converted to electricity
- h. Solar Thermal, including all concentration technologies where a heat transfer medium is used to generate electricity
- i. Municipal Solid Waste (MSW) or Waste to Energy technologies that can demonstrate the absence of incineration and are able to obtain certification as a Renewable Resource by the California Energy Commission
- j. Fuel cell utilizing a renewable fuel
- k. Permanent Load Shifting (PLS), including energy storage and permanent load-shifting technologies with a total round-trip efficiency generally greater than eighty percent (80%)
- l. Environmental attributes not bundled with energy (Renewable Energy Credits)

4. Energy Storage Solutions (ESS):

SCPPA member utilities have a strong interest in the continued evaluation and analysis of the rapidly developing energy storage market. All types of energy storage technologies are open for consideration to be added into SCPPA member resource portfolios, if they are determined to be cost effective. In order to meet this need, SCPPA is conducting an energy storage request for information (RFI) where respondents can assist SCPPA members to better understand the current energy storage market landscape. In addition to the RFI, respondents are encouraged to submit ESS proposals or include future energy storage options to renewable energy project proposals to SCPPA.

5. Project Details: Clearly identify the proposed project, including the following information:

- a. **Project Description:** Project name and location, and phases of development if applicable.
- b. **Contract Quantity:** In MW and GWh/year, and by project phase if applicable, including nameplate rating and proposed amount of energy to be delivered. Please provide all MW increment options available for the project.
- c. **Energy Price (variable):** Expressed in nominal dollars (as of the year of COD) in \$/MWh, and itemized by cost components if applicable; the Energy Price, best and final, will start on the Commercial Operation Date (COD) and may include fixed price annual escalation rates or index plus fixed price component. Please provide all pricing structure options available, including a prepayment option.
- d. **Energy Price (fixed):** Expressed in nominal dollar value (as of the year of COD) in \$/MWh, with no escalation thereafter.
- e. **Index Energy Price Plus Fixed REC Price:** Expressed in nominal value (as of the year of COD) in \$/MWh with no escalation thereafter for the value of the RECs plus a price based on a published market index for the value of the energy.
- f. **Delivery Term:** Minimum term is 1 year with no maximum as the various Member Agencies are seeking both short-term and long-term delivery of energy. Please provide all delivery term options available.
- g. **Energy Availability:** Maximum and minimum monthly capacity factors, seasonal shapes, resource availability profile (i.e., 8760 wind profile of availability), reliability indices (reliability of the distribution system distribution indices to potentially Forced Outage Ratios or Planned Outage Ratios of generators), dispatchability (by unit or phase if applicable) and scheduling requirements/limitations, if any; any rights for SCPPA to perform full or partial dispatch.
- h. **Buyer's Step in Right:** Include SCPPA's requirement in the proposal that the Buyer may assume or cure any default by developer in the land lease.
- i. **Point of Delivery (POD):** Cost of transmission to a delivery point shall be included in the Cost of Energy to one of the following locations where one or more of the SCPPA Members can receive energy:
 - i) Marketplace
 - ii) Westing
 - iii) NB
 - iv) Barren Ridge/Beacon
 - v) Crystal 500 kV
 - vi) Eldorado 500 kV
 - vii) Navajo 500 kV
 - viii) Intermountain Power Project Station (IPP) switchyard
 - ix) CAISO Grid (with preference of SP15)
 - x) Mead 230 kV
 - xi) Mead 500 kV
 - xii) Midpoint Victorville-Lugo
 - xiii) Blythe-Knob
 - xiv) Mirage 230 kV
 - xv) Palo Verde 500 kV switchyard & ISO's Palo Verde/Hassayampa 500 kV tie with SRP BAA
 - xvi) Imperial Valley 230 kV
 - xvii) Perkins 500 kV
 - xviii) McCullough
 - xix) North Gila 69 kV (ISO 69 kV tie with APS BAA)

The above listing represents locations where Member Agencies may have existing capacity rights. Other delivery points may be identified by Respondents on the condition that any and all associated costs of transmission ancillary services and scheduling are included up to the Point of Delivery.

Note: Project evaluations will include the full cost of delivery to the customers of SCPPA Members within Southern California. The point of delivery to the CAISO must indicate whether the project qualifies for Resource Adequacy and/or Local Capacity Requirement capacity benefits.

- j. **Environmental Attributes:** Ensure that SCPPA shall receive any and all environmental attributes associated with the generating facility and the energy output, including but not limited to renewable energy credits and air emission credits or offsets (i.e., Greenhouse Gas Credits, at the location of source and for the gross output of the plant or otherwise credited).
- k. **Combustion:** For any proposals that involve combustion technologies, provide details on the forecasted emissions, emissions controls, and compliance with applicable emissions regulations.
- l. **Category of Environmental Attributes:** Specify whether the project qualifies for Portfolio Content Categories 1, 2 or 3 ("bucket 1, 2 or 3") under the California Public Resources Code (CPRC) and how the project would comply with the CPRC and any future interpretations of relevant statutes by the California Energy Commission.
- m. **Capacity Rights/Shared Facilities:** Ensure that SCPPA shall receive any and all capacity rights associated with the project and/or its produced energy.
 - i) Identify any energy and/or associated project capacity to be provided/committed to parties other than SCPPA.
 - ii) Identify any project supporting/associated facilities that require shared use or third party access rights, such as intermediate distribution infrastructure, control rooms, or other intermingled facilities. Describe any controls or provisions to assure the continuation of the described project capacity, e.g., for wind proposals any adjacent or future proposals encroaching on turbine spacing or airflow; for hydro proposals any limitations or regulations on water flow, diversion or water reservoir level maintenance requirements; and other potential impacts on the proposed project.
- n. **Ownership Options:** If the proposal includes an offer of ownership to SCPPA, describe the proposed ownership, terms and conditions, floors and ceilings for purchase prices at different option dates, beginning after ITC capture and up to the end of the term, and operational structures (e.g., 100% SCPPA-owned turn-key, corporation, general partnership, limited partnership).
 - i) In the case of an offer of initial ownership to SCPPA, a purchase price at Commercial Operation Date (COD) shall be specified (and expressed as \$/kW) along with an estimate of all recurring owner costs, including but not limited to operation and maintenance costs, taxes, lease payments, royalties, and insurance.
 - ii) In case of an offer of a Power Purchase Agreement (PPA) with a purchase option, the proposal shall include (a) a delivered energy price, in \$/MWh for the energy, environmental attributes and capacity (as Cost of Energy within Section 5.c.), (b) a buyout price or detailed formula to calculate such a buyout price for each future date on which a buyout would be offered; and (c) conditions for buyout, such as expiration of tax credits or other project events.
 - iii) For PPAs, terms up to the life of the facility will be considered.
 - iv) In order to get the lowest cost PPA by utilizing its low cost financing capability, when applicable, SCPPA would prefer to have the option to prepay for energy at the commercial operation date or use similar structures in any PPA.
 - v) No changes to a PPA will be expected during project financing or a change in control event.
- o. **Project Plan to Commercial Operation Date:** Identify the proposed commercial operation date with a satisfactory major milestone schedule that includes at least the following:

- i) Proposed schedule for obtaining and developing site access and control through executed leases, fee purchases, approvals, or other means.
- ii) Details of any prior or existing settlements made for environmental mitigation and clearly identified post-construction or pass-forward mitigation obligations that would be forwarded to SCPPA in the event a contract is executed (e.g., reserve or offset land for environmental habitat or reconstruction).
- iii) Proposed schedule for obtaining construction and operational permits and licenses, and construction financing.
- iv) Proposed construction schedule, including major equipment purchasing, anticipated Factory Acceptance Testing of major components, Site Tests, commencement of test-energy and Commercial Operation Date (COD).
- v) For projects or operations requiring water or make-up water, description of the water supply requirements and provisions for supply.
- vi) Proposed schedule or application status to acquire necessary transmission and interconnection service.
- vii) Description of whether and to what extent any environmental studies have been carried out with respect to the proposed project and how compliance with the California Environmental Quality Act (CEQA), which is a requirement before an agreement can be executed by SCPPA, might be effectuated, including, if the Project is located outside California, how Title 14 Section 15277 of the California Administrative Code is or will be addressed by the project.
- p. **Future Energy Storage Options:** Identify any energy storage solutions that can be included with the renewable energy project at some time in the future.
- q. **Applicable to Renewable Energy Projects only:** Please provide as much information as possible in the Preliminary Term Sheet in Appendix B (posted as a separate document below).
- r. **Applicable to Energy Storage Solutions only:** Provide the equivalent information, to the extent possible, for 5(a) through 5(n) above. In addition, please provide as much information as possible in the table in **Appendix A** (posted as a separate document below).
- s. **Financing and Tax Equity Investor:** Describe how the project will be financed such as; by parent company, backflip leverage, or some sort of Yieldco Structure.
- t. **Credit Support and Security:** Express in nominal dollars the amount of Performance Assurance provided from execution of the Power Purchase Agreement through COD and the amount of Performance Assurance provided after Commercial Operation Date as a letter of Credit, cash, or guaranty.
- u. **Buyer Operational Reliability Curtailment:** Express in MWh per year or hours per year the amount Buyer can curtail without compensation.

- 6. Experience:** Respondent will clearly identify project participants and management team including those responsible for design, construction, permitting, operations and maintenance.
- a. Describe your firm's organizational structure, management qualifications, and other contract related qualifications, including number of years the firm has been in business.
 - b. Specify key employees and describe their experience with the development, construction, finance closing, commercial operation, and maintenance of similar projects as proposed by Respondent in response to this RFP.
 - c. Provide current financial statements of all entities involved as Project participants or as part of the management team. This shall include items such as audited financial statements (not more than twelve months old) annual reports, FERC Form 1, and any other applicable financial information. If none of the above is available, Respondent shall provide verifiable financial statements for the past

- three (3) years if available, and Respondent's Dunn & Bradstreet identification number, where available.
- d. Provide a commitment statement for the retention and use of key employees as proposed, their availability to initiate and sustain the proposal, as well as planned supplemental employees if key employees are not available to assure project delivery.
 - e. Indicate any and all pending litigation that could affect the viability of Respondent's proposal or Respondent's financial stability.
 - f. Identify existing projects in commercial operation that Respondent has developed and/or operates. Provide a list of references for similar projects completed, including a contact person, phone number and address.
 - g. State whether Respondent will use subcontractors to perform services pursuant to the contract. Should the use of subcontractors be included, Respondent shall provide the same assurances of competence for the subcontractor, plus the demonstrated ability to manage and supervise the subcontracted work. Subcontractors shall not be allowed to further subcontract with others for work on this program. The provisions of this contract shall apply to all subcontractors in the same manner as to the Respondent.
 - h. Describe the project/generation technology and technical resource data, including any studies or reports regarding the resource.

Terms and Conditions

1. If selected, SCPPA desires to enter into exclusive negotiations with respondent as may be facilitated through an execution of a Letter of Intent (LOI), Exclusivity Agreement or other agreements.
2. SCPPA reserves the right to cancel this RFP at any time, reject any and all proposals and to waive irregularities, if any.
3. SCPPA shall determine at its sole discretion the value of any and/or all proposals including price and non-price attributes.
4. Proposals may be sub-divided or combined with other proposals, at SCPPA's sole discretion.
5. SCPPA shall perform an initial screening evaluation to identify and eliminate any proposals that are, for example, not responsive to the RFP, do not meet the minimum requirements set forth in the RFP, are not economically competitive with other proposals, or are submitted by Respondents that lack appropriate creditworthiness, sufficient financial resources, or qualifications to provide dependable and reliable services for this RFP.
6. SCPPA reserves the right to submit follow up questions or inquiries to request clarification of information submitted and to request additional information from any one or more of the Respondents.
7. SCPPA reserves the right, without qualification and in its sole discretion, to accept or reject any or all proposals for any reason without explanation to the Respondent, or to make any award to that Respondent, who, in the opinion of SCPPA, will provide the most value to SCPPA and its Members.
8. SCPPA may decline to enter into any potential engagement agreement or contract with any Respondent, terminate negotiations with any Respondent, or to abandon the request for proposal process in its entirety.

9. Those Respondents who submit proposals agree to do so without legal recourse against SCPPA, its Members, their directors, officers, employees and agents for rejection of their proposal(s) or for failure to execute or act on their proposal for any reason.
10. SCPPA shall not be liable to any Respondent or party in law or equity for any reason whatsoever for any acts or omissions arising out of or in connection with this RFP.
11. SCPPA shall not be liable for any costs incurred by any Respondents in preparing any information for submission in connection with this RFP process or any and all costs resulting from responding to this RFP. Any and all such costs whatsoever shall remain the sole responsibility of the Respondent.
12. SCPPA may require certain performance assurances from Respondents prior to entering into negotiations for work that may result from this RFP. Such assurances may potentially include a requirement that Respondents provide some form of performance security.
13. Prior to contract award, the successful Respondent may be asked to supply a detailed breakdown of the applicable overheads and fringe benefit costs that are part of the labor rates and other direct costs associated with the services to be performed.
14. SCPPA Members, either collectively or individually may contact Respondents to discuss or enter into negotiations regarding a proposal. SCPPA is not responsible or liable for individual Members interactions with the Respondent which are not entirely conducted through SCPPA or at SCPPA's option or election to engage the Respondent as defined within the RFP.
15. Submission of a Proposal constitutes acknowledgement that the Respondent has read and agrees to be bound by the terms and specifications of this RFP and any addenda subsequently issued by SCPPA.
16. Information in this RFP is accurate to the best of SCPPA's and its Members' knowledge but is not guaranteed to be correct. Respondents are expected to complete all of their due diligence activities prior to entering into any final contract negotiations with SCPPA.
17. SCPPA reserves the right to reject any Proposal for any reason without cause or explanation. SCPPA reserves the right to enter into an agreement with more than one Respondent, to choose not to contract with any Respondent with respect to one or more categories of services, and to choose to suspend this RFP or to issue a new RFP that would supersede and replace this RFP.
18. SCPPA reserves the right to negotiate definitive agreements including but not limited to power purchase agreements and other agreements with a Respondent with any and all terms and conditions that SCPPA and/or its Members deem appropriate or desirable, whether or not such terms or conditions are specifically set forth in this RFP.

Additional Requirements for Proposal

1. **Consideration of Responses:** Submitted proposals should be prepared simply and economically, without the inclusion of unnecessary promotional materials. Proposals should be submitted on recycled

paper that has a minimum of thirty percent (30%) post-consumer recycled content and duplex copied (double-sided pages) where possible. (Applicable when LADWP is a potential project participant)

2. **Insurance, Licensing, or other Certification:** If selected, the Respondent will be required to maintain sufficient insurance, licenses, or other required certifications for the type of work being performed. SCPPA or its Members may require specific insurance coverage to be established and maintained during the course of work and as a condition of award or continuation of contract.
3. **Non-Discrimination/Equal Employment Practices/Affirmative Action Plan:** If selected, the Respondent and each of its known subcontractors may be required to complete and file an acceptable Affirmative Action Plan. The Affirmative Action Plan may be set forth in the form required as a business practice by the Department of Water and Power of the City of Los Angeles which is SCPPA's largest Member. (Applicable when LADWP is a potential project participant)
4. **Prevailing Wage Rates:** If selected, the Respondent will be required to conform to prevailing wage rates applicable to the location(s) where any work is being performed. Workers shall be paid not less than prevailing wages pursuant to determinations of the Director of Industrial Relations as applicable in accordance with the California Labor Code. To access the most current information on effective determination rates, Respondent shall contact:

Department of Industrial Relations
Division of Labor Statistics and Research
PO Box 420603, San Francisco, CA 94142-0603
Division Office Telephone: (415) 703-4780
Prevailing Wage Unit Telephone: (415) 703-4774
Web: <http://www.dir.ca.gov/dlsr/DPreWageDetermination.htm>

5. **Child Support Policy:** If selected, Respondent may be required to comply with the City of Los Angeles Ordinance No. 172401, which requires all contractors and subcontractors performing work to comply with all reporting requirements and wage earning assignments and wage earning assignments relative to court ordered child support. (Applicable when LADWP is a potential project participant)
6. **Supplier Diversity:** Respondents shall take reasonable steps to ensure that all available business enterprises, including Small Business Enterprises (SBEs), Disadvantaged Business Enterprises (DBEs), Women-Owned Business Enterprises (WBEs), Minority-Owned Business Enterprises (MBEs), Disabled Veteran Business Enterprises (DVBES), and other Business Enterprises (OBEs), have an equal opportunity to compete for and participate in the work being requested by this RFP. Efforts to obtain participation of these business enterprises may reasonably be expected to produce a twenty-five percent (25%) participation goal for SBEs. For the purpose of this RFP, SCPPA's Supplier Diversity program is modeled after that of the Los Angeles Department of Water and Power. Further information concerning the Supplier Diversity Program may be obtained from the Supply Chain Services Division of the Los Angeles Department of Water and Power. (Applicable when LADWP is a potential project participant)
7. **Equal Benefits Ordinance:** If selected, the Respondent may be required to comply with the City of Los Angeles requirements of the Equal Benefits Ordinance ("EBO"), codified at Los Angeles Administrative Code ("LAAC") §10.8.2.1, which requires the Respondent who provide benefits to

employees with spouses to provide the same benefits to employees with domestic partners. (Applicable when LADWP is a potential project participant)

- 8. Contractor Responsibility Ordinance:** If selected, the Respondent may be required to comply with the City of Los Angeles requirements of the Contractor Responsibility Ordinance ("CRO"), codified at LAAC §10.40 et seq., which requires the Respondent and each of its subcontractors to comply with all federal, state, and local laws regarding health and safety, labor and employment, wage and hours, and licensing laws, which affect employees. (Applicable when LADWP is a potential project participant)
- 9. Sweat-Free Procurement Ordinance:** If selected, the Respondent may be required to comply with the requirements of the Sweat-Free Procurement Ordinance ("SFPO"), codified at LAAC §10.43 et seq., which requires the Respondent and each of its subcontractors to shun sweatshop practices and adhere to workplace and wage laws. (Applicable when LADWP is a potential project participant)
- 10. Iran Contracting Act of 2010:** If selected, the Respondent may be required to comply with California Public Contract Code Sections 2200-2208, wherein all bidders submitting proposals for, entering into, or renewing contracts with Buyer for goods and services estimated at one million dollars (\$1,000,000) or more are required to complete, sign, and submit the "Iran Contracting Act of 2010 Compliance Affidavit". (Applicable when LADWP is a potential project participant)
- 11. Los Angeles Municipal Lobbying Ordinance:** If selected, the Respondent may be required to comply with the requirements and prohibitions established in the Los Angeles Municipal Lobby Ordinance if the Respondent qualifies as a lobbying entity under Los Angeles Municipal Code Section 48.02. (Applicable when LADWP is a potential project participant)
- 12. SCPPA-Furnished Property:** SCPPA or a Member's utility drawings, specifications, and other media furnished for the Respondent's use shall not be furnished to others without written authorization from SCPPA or the applicable Member(s).
- 13. Contractor-Furnished Property:** Upon completion of all work under any agreement developed as a result of this RFP, ownership and title to reports, documents, drawings, specifications, estimates, and any other document produced as a result of the agreement shall automatically be vested to SCPPA and no further agreement will be necessary for the transfer of ownership to SCPPA. SCPPA has the sole right to distribute, reproduce, publish, license, or grant permission to use all or a portion of the deliverable documentation, work product or presentations as it determines in its sole discretion.