City of Arts & Innovation

# City Council Memorandum

**TO:** **HONORABLE MAYOR AND CITY COUNCIL** **DATE: DECEMBER 17, 2019**

**FROM:** **PUBLIC UTILITIES DEPARTMENT** **WARD: ALL**

**SUBJECT:** **POWER PURCHASE AGREEMENT WITH CAMINO SOLAR, LLC FOR A PHOTOVOLTAIC AND BATTERY ENERGY STORAGE PROJECT FOR A TERM OF 15 YEARS FOR AN ESTIMATED AVERAGE ANNUAL COST OF $4,780,000**

## ISSUE:

Approve the Power Purchase Agreement with Camino Solar, LLC for a Photovoltaic and Battery Energy Storage Project to provide renewable solar photovoltaic energy, battery energy storage, associated environmental attributes and capacity rights to the City for a term of 15 years for an estimated average annual cost of $4,780,000.

## RECOMMENDATIONS:

That the City Council:

1. Approve the Power Purchase Agreement with Camino Solar, LLC for a Photovoltaic and Battery Energy Storage Project to provide renewable solar photovoltaic energy, battery energy storage, associated environmental attributes and capacity rights to the City for a term of 15 years at an estimated average annual cost of $4,780,000; and

2. Authorize the City Manager, or designee, to execute the Power Purchase Agreement and all documents necessary to administer the Agreement including the ability to make non substantive changes, as well as to execute future amendments to the Power Purchase Agreement under terms and conditions substantially similar or superior to the Power Purchase Agreement or, if needed, to terminate the Power Purchase Agreement in accordance with Agreement terms and conditions.

## BOARD RECOMMENDATION:

On November 25, 2019 the Board of Public Utilities, with 8 members present, voted unanimously to recommend that City Council approve the Power Purchase Agreement between Camino Solar, LLC and the City of Riverside.

## LEGISLATIVE HISTORY:

In 2011, the California Renewable Energy Resources Act, Senate Bill (SB) X 1-2, was signed into

law by the Governor, which mandated that all electric utilities, including Riverside Public Utilities (RPU), procure increasing amounts of renewable energy primarily from in-state resources to serve its retail needs during specified compliance periods. SB X1-2, which officially created the first set of tiered Renewable Portfolio Standard (RPS) targets, requires RPU to supply 20%, 25% and 33% of retail energy needs using renewable resources by 2010, 2015 and 2020, respectively.

In 2015, the Governor signed into law, the Clean Energy and Pollution Reduction Act, SB 350, which further increased the RPS goal to 50% by 2030. This was followed in 2016 with the Governor's approval of SB 32, which required the state board to ensure that statewide greenhouse gas emissions are reduced to 40% below the 1990 level by 2030.

The Governor signed SB 100 into law in 2018, maintaining the target of 33% RPS by 2020 and setting compliance targets to 44% by 2024, 52% by 2027 and 60% by 2030. SB 100 is also known as "The 100 Percent Clean Energy Act of 2018" because it created the policy of meeting all of the State's retail electricity supply with a mix of RPS-eligible and zero-carbon resources by December 31, 2045.

Assembly Bill (AB) 2514, enacted in 2010 and amended by AB 2227 in 2012, mandates each California electric utility to evaluate the viability and cost-effectiveness of incorporating energy storage systems into the electricity grid, and to adopt Energy Storage Procurement Targets (ESPT). On September 23, 2014, City Council, upon the recommendation of city staff, adopted an ESPT of 0 Megawatts (MW) after determining that existing energy storage technologies were not yet viable or cost effective for the City. Since the first ESPT adoption in 2014, energy storage technology has matured, costs have decreased, and grid conditions have changed with increasing renewable penetration making energy storage applications more cost effective for the City. As a result, on September 26, 2017, City Council adopted the Second ESPT of 6 MW.

## **BACKGROUND:**

The City of Riverside has been very supportive of the existing renewable targets set by the State and is committed to serving its retail energy requirement using more renewable energy. In order to satisfy the current RPS targets, while anticipating more stringent RPS requirements in the future, RPU continues to explore additional cost-effective, renewable energy procurement opportunities.

Since 2012, the Board of Public Utilities (Board) and City Council have approved over 230 MW of renewable resource contracts/extensions. The City is currently contracted for 86 MW of clean geothermal energy, 46 MW of wind, and over 100 MW of solar. Per the 2018 Power Content Label, the City currently serves 34% of its power mix with renewable resources and will be on schedule to reach 44% RPS by 2020.

*Version: July 2019*

| 2018 POWER CONTENT LABEL | | |
|---|---|---|
| City of Riverside Public Utilities | | |
| http://riversidepublicutilities.com/about-rpu/rpu-power-resources.asp | | |
| **ENERGY RESOURCES** | **Power Mix** | **2018 CA Power Mix**** |
| Eligible Renewable | 34% | 31% |
| Biomass & Biowaste | 0% | 2% |
| Geothermal | 18% | 5% |
| Eligible Hydroelectric | 0% | 2% |
| Solar | 12% | 11% |
| Wind | 4% | 11% |
| Coal | 29% | 3% |
| Large Hydroelectric | 1% | 11% |
| Natural Gas | 4% | 35% |
| Nuclear | 4% | 9% |
| Other | 0% | <1% |
| Unspecified sources of power* | 27% | 11% |
| TOTAL | 100% | 100% |
| * "Unspecified sources of power" means electricity from transactions that are not traceable to specific generation sources. ** Percentages are estimated annually by the California Energy Commission based on the electricity generated in California and net imports as reported to the Quarterly Fuel and Energy Report database and the Power Source Disclosure program. | | |
| For specific information about this electricity product, contact: | City of Riverside Public Utilities<br>951-826-8545 | |
| For general information about the Power Content Label, please visit: | http://www.energy.ca.gov/pcl/ | |
| For additional questions, please contact the California Energy Commission at: | Toll-free in California: 844-454-2906<br>Outside California: 916-653-0237 | |

Figure 1: Riverside Public Utilities Power Content Label
Source: https://www.riversideca.gov/utilities/about-rpu/rpu-power-resources.asp

As the cost of solar PV declines, the amount of intermittent solar generation on the grid continues to increase. As a result, the system net load in the middle of the day has reduced significantly. At the same time, the system-wide ramping requirement in the evening has elevated considerably in order to meet the net-peak demand. The California Independent System Operator (CAISO) illustrates the impact of the solar penetration on the grid in the diagram below, which is known as the “Duck Curve”. The Duck Curve highlights the potential of over-generation during the day, which contributes to negative energy prices in the CAISO market and undesirable generation curtailments. In an effort to lessen the various negative impacts from solar and to augment operational flexibility of the resource, staff decided to pursue a hybrid configuration, coupling a battery energy storage system with a solar PV facility. The combined resource can provide the most optimal value to the City.

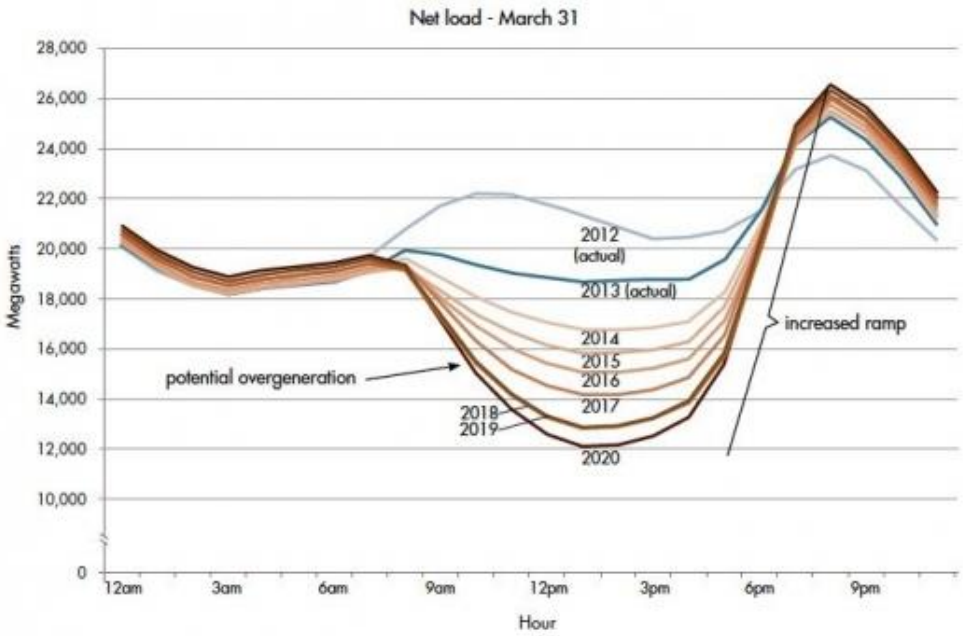


Figure 2: CAISO "Duck Curve"
Source: https://www.caiso.com/Documents/FlexibleResourcesHelpRenewables_FastFacts.pdf

## DISCUSSION:

The Camino Solar plus Storage project, a project solely between the City and Camino Solar, LLC, offers the City additional renewable energy from a 44 MW photo- voltaic facility that will aid in reaching the 60% renewable goal by 2030. The 11 MW – four (4) hour duration battery energy storage system will provide the City with extended solar hours into the evening through load shifting, and hence help alleviate the impact of the Duck Curve.

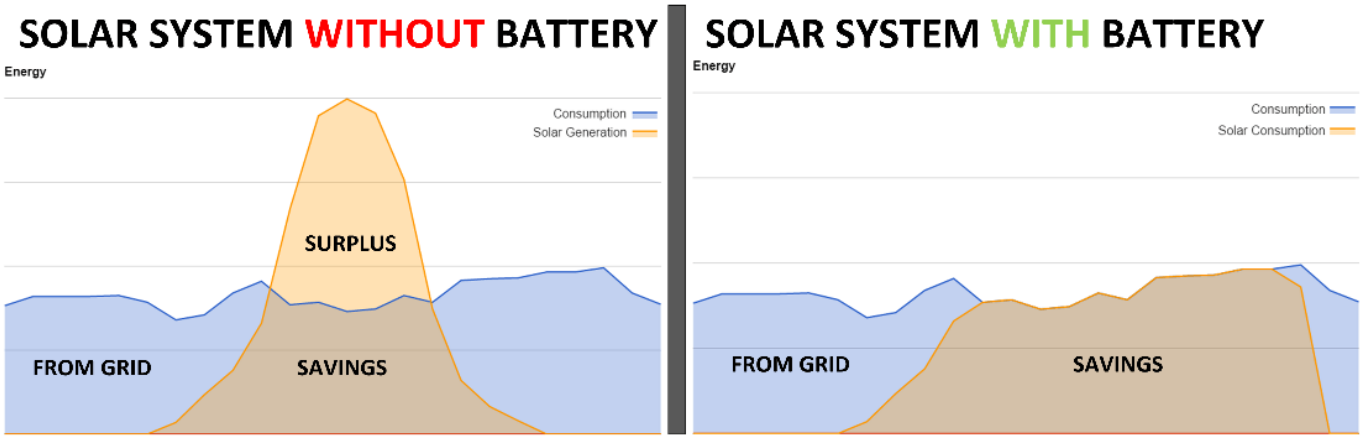


Figure 3: Comparative production curve of standalone solar versus the load shifting curve of a solar facility with energy storage.
Source: https://www.skandinaviansolar.com/how-solar-energy-works/

The battery energy storage system will enable RPU to store excess energy that the system produces during the day for use during the evening hours when market prices are higher, thus reducing RPU's costs. Energy storage will also help reduce the impacts of overproduction of electricity on the grid.

The Camino Solar plus Battery Energy Storage Project will generate approximately 147,000 Megawatt/hours (MWh) of renewable energy, or 6% of the City's RPS requirements. The 11 MW battery installation will exceed the City's 2017 ESPT of 6 MW. In addition, this project will further contribute to the City's GHG reduction efforts and strategically replace other expiring contracts.

This Power Purchase Agreement for the Camino Project also has the following desirable characteristics and favorable terms:

***Project Site and Interconnection:*** Camino Solar will be located in Kern County approximately 10 miles west of Rosamond, CA. The project will interconnect at the Whirlwind 220kV substation.

***Term of the Power Purchase Agreement:*** Fifteen-year Power Purchase Agreement commencing upon the Commercial Operation Date, anticipated in May of 2022, but absolutely no later than October 31, 2022.

***Solar Capacity and Price:*** The solar name plate capacity of the facility is 44 MW. The all-in price for the energy, capacity and environmental attributes of the solar is $27.70 per MWh, fixed over the term of the contract.

***Battery Energy Storage Capacity and Price:*** The Battery Energy Storage capacity of the facility is 11 MW with a minimum four (4) hour duration. The Battery Energy Storage Capacity price of the facility is $6.48 per kilowatt-month.

***Battery Energy Storage Replenishment:*** Camino Solar will replenish the capacity of the Battery Energy Storage System (BESS) twice during the term of this Power Purchase Agreement, once in year five (5) and another in year 10. Replenishing the system will guarantee a minimum four (4) hour duration level of energy storage capacity throughout the term of the Power Purchase Agreement and is expected to allow the Battery to store up to six (6) hours of energy after year 10.

***All-in System Price:*** The total, all-in cost of the solar PV + BESS on a $/MWh basis is expected to be $33.75/MWh over the 15-year contract term. The average CAISO revenue for this generated energy is forecasted to be $51.07/MWh, after accounting for all BESS load shifting. Overall, this Solar PV + BESS project is expected to yield a return on investment (ROI) of over 50%, before accounting for any additional system RA benefits or the implied value of the renewable energy credits (RECs).

***Performance Guarantees:*** The Power Purchase Agreement includes enforceable guarantees for the solar performance and BESS performance with penalties that result in a reduced Battery Energy Storage Capacity payment, or in more severe cases, the unilateral right to terminate.

***Mitigation of Development Risks:*** The Power Purchase Agreement includes enforceable development milestone dates with significant financial penalties of $14,850 per day if dates are missed, or in the more severe cases, the City can unilaterally terminate the Power Purchase Agreement.

***Development Security:*** Throughout the development of the project, Camino Solar will post a letter of credit in the amount of $2.7 million as Development Security.

***Performance Security:*** Upon the Commercial Operation Date, Camino Solar will replace the Development Security with a Performance Security letter of credit in the amount of $5.5 million throughout the 15 year term of the Power Purchase Agreement.

***Scheduling Coordinator Fee:*** Camino Solar will compensate the City $75,000 each year to perform Scheduling Coordinator services for the Project.

***Generation Limit:*** The project has a generator interconnection limit of 54.28 MW, giving the City the ability to schedule both the full solar capacity and discharge the battery energy storage up to 10.28 MW at the same time.

*Economic Analysis*

The full Economic Proforma assessment for the Camino Solar PV + BESS project is presented in Attachment 3. This Economic Proforma assessment is based on a detailed production cost modeling simulation analysis of the project using input CAISO market pricing and revenue assumptions that are consistent with all assumptions used in our 2018 Integrated Resource Planning (IRP) process. This assessment indicates that the Camino Solar PV + BESS project should generate a positive net revenue stream of $36.74 Million dollars over the 15-year contract term (i.e., 51% ROI), thus allowing the utility to reduce its overall power supply costs. Additional details associated with this Proforma assessment can be found in Attachment 3.

The Purchasing Manager concurs that the recommended actions are in compliance with Purchasing Resolution No. 23256, Section 702(L) which provides that competitive procurement through the informal or formal procurement process shall not be required "When the Procurement is for wholesale energy, energy ancillary services, energy transmission, wholesale water commodity, and water transmission purchase by or on behalf of the City's Public Utilities Department".

## FISCAL IMPACT:

There is no fiscal impact to the General Fund associated with this report. The annual average cost of power under the Power Purchase Agreement is estimated at approximately, $4,780,000 per year. Funding for this project will be included as part of the biennial budget process and budgeted in the Public Utilities' Power Resources Energy Account No. 6120100-422914.

Prepared by: Todd M. Corbin, Utilities General Manager
Certified as to availability of funds: Edward Enriquez, Chief Financial Officer/City Treasurer
Approved by: Al Zelinka, FAICP, City Manager
Approved as to form: Gary G. Geuss, City Attorney

Attachments:

1. Power Purchase Agreement
2. Economic Analysis
3. Unapproved November 25, 2019 Board of Public Utilities meeting minutes
4. Presentation