



TO: PARKS AND RECREATION COMMISSION

FROM: ED SHIKADA

DEPARTMENT: UTILITIES

DATE: April 25, 2017

SUBJECT: Discussion of Carport Solar Photovoltaic (PV) System at the Municipal Golf Course Parking Lot

ITEM TYPE: DISCUSSION

Recommendation

Staff recommends that the Parks and Recreation Commission (Commission) discuss and provide feedback on a potential installation of carport Solar Photovoltaic (PV) at the Municipal Golf Course Parking Lot and Council's future consideration of a Park Improvement Ordinance to enable this project to proceed. No action is required at this time.

Background

Community Aspirations for Local Solar

The City of Palo Alto ("City") has been a leader in facilitating local solar PV development. The city currently has over 8,000 kW of local solar capacity installed with help of utility programs developed over last two decades, providing about 1% of the City's electrical energy needs.¹

In April 2014 the Council adopted the Local Solar Plan, which set the overarching goal of meeting 4% of the City's energy needs from local solar by 2023 (Staff Report 4608, [Resolution 9402](#)). This is equivalent to developing 23,000 kW of local solar capacity by 2023. *Community Solar* was identified as one the new programs under the Local Solar Plan.² It benefits community members without access or with limited access to good solar energy and increases the range of choices available to customers. Palo Alto has a large percentage of renters, a sizable fraction of residents living in multi-family homes, and an extensive urban tree canopy that shades numerous residential and commercial rooftops. A community solar program would give these customers an opportunity, for the first time, to get their energy from local solar, an opportunity many homeowners have had simply by owning a roof with good solar access.

1 Palo Alto Solar Programs - http://www.cityofpaloalto.org/gov/depts/utl/residents/resources/pcm/solar_programs_in_palo_alto.asp

2 Community solar is defined as "a solar-electric system that, through a voluntary program, provides power and/or financial benefit to, or is owned by, multiple community members". Refer - *A Guide to Community Solar: Utility, Private, and Non-profit Project Development*, U.S. DOE and Solar America Communities Report. <http://www.nrel.gov/docs/fy12osti/54570.pdf>

In 2015 City staff formed a committee to promote PV on city facilities. The committee was charged with identifying a short list of potential municipal host sites for a community solar program. The parking lot at the Municipal Golf Course (“golf course”) has been identified as one of the most promising sites to pilot a community solar program. Though the location is within an area dedicated as parkland, staff believes the program will have minimal impacts on the park due to its location on an existing parking lot, and will provide benefits (such as shading) to golf course visitors.

Parkland Improvement Ordinance

The Palo Alto Municipal Code (PAMC) designates the municipal golf course (including the parking lot area) as “designated parkland.”³ PAMC 22.08.05 requires that before any substantial building, construction, reconstruction or development is commenced or approved upon dedicated parkland, Council must adopt an ordinance describing the plan for such improvements. The degree of construction and ongoing maintenance associated with the proposed solar carport constitute substantial construction. This staff report provides an overview of the proposed carport PV project and seeks the Commission’s guidance on eventual ordinance approval. A Commission recommendation would be obtained prior to proceeding with the project.

Discussion

Carport Solar PV Project Outline

The golf course parking lot is located at the 1875 Embarcadero Rd, Palo Alto (see Illustration 1). The proposed carport solar PV structures would cover and provide shade over the parking lot lanes (see Illustration 2). This area can accommodate about 550 kW of solar capacity and generate solar electricity to meet annual energy use of 100-200 residential customers.⁴ The output of this project would be used for a Palo Alto community solar program.

The tentative schedule is to issue a Request for Proposal (RFP) to design and construct carport solar PV at this site in summer/fall of 2017. After the RFP is issued, staff will outreach and market the program to electric customers and will seek community interest and pre-commitment. Actual construction will commence in 2018 subject to the City Council approval of the construction contract, approval of the Park Improvement Ordinance, and demonstrated community interest to be part of this pilot project.

Key pilot project design elements to be considered include:

- **Making it an attractive program for customers:** Without program subscribers, the program will be unsuccessful. Proper pricing and the value proposition to participants will be very important, and it will be important to keep this in mind when figuring out

³ The golf course was dedicated as parkland in 1996 and this dedication is codified in the PAMC Section 22.08.240 [http://library.amlegal.com/nxt/gateway.dll/California/paloalto_ca/paloaltomunicipalcode?f=templates\\$fn=default.htm\\$3.0\\$vid=amlegal:paloalto_ca](http://library.amlegal.com/nxt/gateway.dll/California/paloalto_ca/paloaltomunicipalcode?f=templates$fn=default.htm$3.0$vid=amlegal:paloalto_ca)

⁴ Assuming 350 to 700 kWh average monthly electricity consumption per residential customer.

how to address other community values. In addition to the value proposition, subscribers will seek flexibility in the term of the commitment, any rights and risks associated with subscription, and an understanding of the environmental benefits of the program before signing-up.

- **Limiting Utility Risk:** Maximizing the number of program subscribers will reduce the chance of having unsubscribed capacity in the project, which would have a small cost impact to the utility. Ensuring a good value for community solar customers will mitigate risk of program undersubscription. In addition, the utility needs to ensure the program administration time and costs are manageable and do not overly impact the customer cost and value proposition.
- **Golf Course Users:** Golf course users will benefit from shading of their vehicles. Aesthetics of the design and consistency with the overall golf course and Baylands design guidelines will be important. The on-site use of some of the energy for the golf course facilities will need to be considered, to the extent feasible. These considerations must be balanced against the overall cost of the project.
- **Community as a whole:** Community solar education and outreach opportunities, aesthetics of the PV design, and screening of panels would be important considerations for the community, to be balanced against the overall cost of the project.

Subsequent to PRC discussion, staff plans to share community solar program design guidelines with the Utility Advisory Commission (UAC) and present a proposal to Council for adoption. Preliminary outline of the program elements and community input that will be sought in the coming months is listed in *Attachment A*.

Illustration 1: Potential location for Carport Solar PV Installation

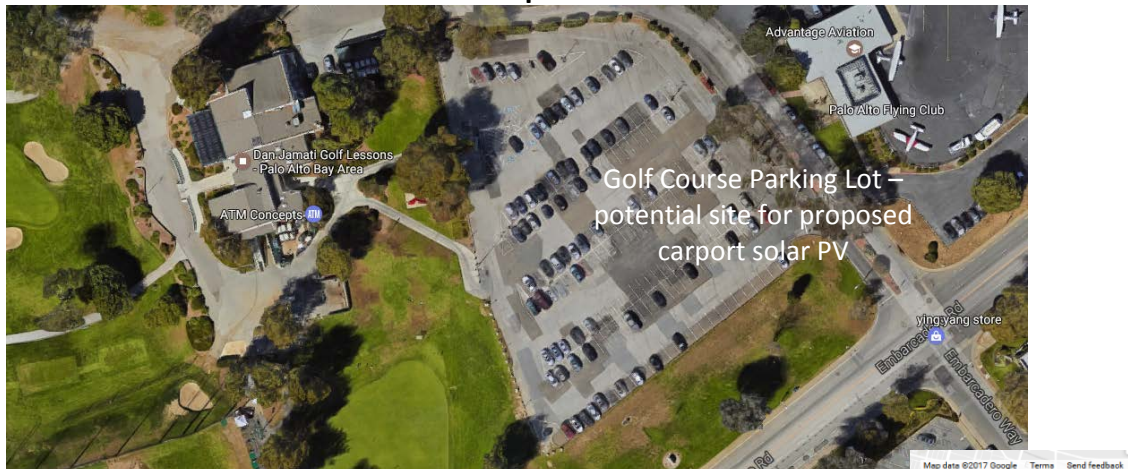


Illustration 2 - Preliminary Conceptual Design for the Carport Solar PV (550 kW) system



Land Use Considerations

The Municipal Golf Course (including parking lot area) is reserved for park, playground, recreation, or conservation purposes.⁵ Furthermore, PAMC section 22.04.160 prohibits commercial activities in parks except under certain circumstances.

The proposed carport solar PV project is consistent with current golf course uses. It would not interfere with the existing land use for the golf course and its parking lot. Currently there are about 200 parking spots available for golf course visitors and staff. Staff expects carport solar PV canopies to be placed above existing parking lot lanes with a few ground parking spaces used for solar equipment. Moreover, the solar canopies will provide shade for cars parked in the lot and would thus be an enhancement for those parking in the lot.

Although the municipal code does not specifically define the installation and use of solar carports as the type of “commercial activity” prohibited in City parks, CPAU’s agreement with a third-party developer to construct and operate carport solar PV system could be considered a commercial activity. A community solar program would also require the participation of CPAU electric customers. PAMC section 22.04.160 (b) permits commercial activity so long as it is “associated with and supportive of city programs or city-sponsored activities for which a permit has been issued by the director...”. The City is developing the proposed Community solar program as part of the City’s Local Solar Plan, which satisfies the municipal code’s requirement that the commercial activity is associated with and supportive of a city program or city-sponsored activity. Furthermore, staff plans to seek a permit for the use of golf course parking lot for the community solar project from the director of Community Services to meet PAMC requirements.

⁵ PAMC section 22.08.240.

[http://library.amlegal.com/nxt/gateway.dll/California/paloalto_ca/paloaltomunicipalcode?f=templates\\$fn=default.htm\\$3.0\\$vid=amlegal:paloalto_ca](http://library.amlegal.com/nxt/gateway.dll/California/paloalto_ca/paloaltomunicipalcode?f=templates$fn=default.htm$3.0$vid=amlegal:paloalto_ca)

Community Benefit

This project can provide several community benefits:

- It will help meet the City's local solar goal by generating about 0.1% of City's energy needs and providing solar power to 100-200 residential customers.
- Proposed project site is publicly accessible area and is close to the Baylands Natural Preserve. It will provide an opportunity to showcase local solar generation for the community, including educational information designed for children. This educational opportunity will be complementary to other programs in the Baylands area such as Water Quality Control Plant tours, EcoCenter and Baylands Nature Interpretative Centre.
- There is a potential to develop the site to be a microgrid to provide emergency power, if additional funding became available. The carport solar PV project could be paired with energy storage to provide emergency energy supply in the event of a major electricity outage. Onsite storage paired with Solar PV could also assist in meeting electric grid needs and balancing over-generation challenges. If funding for such a project materializes, Staff will explore whether an additional park improvement ordinance or other approvals would be necessary.

Resource Impact

The preliminary site assessment, feasibility studies, and initial program development costs will be funded from the Electric Utility's Distribution Fund, specifically Public Benefit Funds collected under Public Utilities Code Section 385. These are funds specifically collected for to fund energy efficiency and renewable energy projects. Project development and operational costs would be repaid by the community solar program participants. No additional funds are requested at this time.

Draft Timelines and Next Steps

Parks and Recreation Commission discussion	April 2017
Utility Advisory Commission (UAC) review of Community Solar Program Design Guidelines and Proposal to Council for adoption	Summer 2017
Select a Solar Developer through RFP Process	Winter 2018
Customer Outreach and Pre-commitment	Spring / Summer 2018
Project Approvals (including Park Improvement Ordinance for Council adoption)	Summer / Fall 2018
Construction of carport PV project	Winter 2019
Electricity flows from PV system, Community solar program launch	Spring 2019

Next Steps:

Staff plans to bring a proposal for Park Improvement Ordinance (PIO) to the PRC and recommend approval to City Council in Summer/Fall 2018 timeframe. The RFP process and subsequent customer outreach and pre-commitment will help finalize the project design and engineering drawings needed to complete the park improvement ordinance.

Policy Implications

In addition to complying with the Palo Alto Municipal Code, as discussed previously, this project conforms to the City of Palo Alto Utilities Strategic Plan objective to provide environmentally sustainable customer solutions. The proposed 550 kW carport PV project will contribute towards the Local Solar Plan and community goal of meeting 4% of electricity needs with local renewable resources.

Environmental Review

The Commission's discussion of the proposed solar carport pilot project is exempt from California Environmental Quality Act (CEQA) review as such discussion does not meet the definition of a project under Public Resources Code 21065. Council's consideration of the solar carport project could be exempt from CEQA review under Public Resources Code Section 21080.35 (CEQA does not apply to the installation of a solar energy system on the roof of an existing building or at an existing parking lot meeting certain conditions.)

Attachment – A: Outline of the Community Solar Program Elements and Community Input Sought

Attachment A: Outline of the Community Solar Program Elements & Community Input Sought

The Community Solar Program (CSP) is central part of the Council approved Local Solar Plan and goal of producing 4% of community wide energy within the community, and to provide community members without access to solar electric energy an opportunity to be part of a centrally located community solar project. To make this vision a reality, staff will be seeking community and Council input on the following elements of the CSP pilot project being considered at the Golf-course parking lot.

1. Site for Community Solar Project & Community Input

- a) After surveying over 50 potential sites, staff found the golf course parking lot as is the most promising site for a community solar project. The location is readily accessible to all community members, and could accommodate 550 kW solar project capable of serving the electricity demand of 100-200 residential customers
- b) If the idea of a centrally owned community solar project proves to be successful, and this project is over-subscribed, staff will evaluate other potential sites such as the Palo Alto Airport parking to meet community demand
- c) Solar photovoltaic system on carport at the site, will provide shading to patrons of golf course and the potential for the golf course to receive some of the energy generated
- d) Staff is engaging in conversation with the community on the suitability of this initial site at the golf course parking lot and considerations for park users such as education and outreach opportunity, aesthetics of the solar system design, and other considerations for park users (such as screening of panels).

2. Cost of Participating in Community Solar Project & Value Proposition to Subscribers

- a) Due to the relatively low cost of electricity supplied by the utility from large solar projects, the subscriber for such a local project will likely be paying a premium price for the locally generated electricity.
- b) Value proposition of the program including pricing option, term of the commitment, ownership rights and liabilities, and environmental attributes of the program will play an important role in bringing community members onboard to subscribe to the program.

- c) Several pricing options are being considered currently. UAC, Council and community members input will be sought in the coming month before proceeding further in developing this project.

3. CPAU Program Development and Implementation Considerations

a) Private Sector Development, Financing, and Ownership

- i. CPAU will execute a Purchase Power Agreement (PPA) with a private third-party solar developer to design, construct, and operate and maintain carport PV system. Long-term output purchase commitment is essential to attract capital for the construction of such a project.
- ii. Staff will consider PPA terms such as pre-payment and/or project buyback option to make project cost competitive for CSP subscribers.
- iii. These initial thoughts would be brought to UAC and Council for discussion in the coming months.

b) Underwriting project development cost and minimize adverse financial impact of none-subscribing electric rate-payers

- i. Staff will seek certain level of demonstrated interest from the community members and pre-commitment before actual construction of the project.
- ii. If due to some unforeseen reasons project is not fully subscribed after construction, remaining portion of the project output will be added to the CPAU electric portfolio.