



## **PUBLIC WORKS DEPARTMENT**

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### **CITY COUNCIL STAFF REPORT**

Meeting: December 3, 2024

#### Subject

Capital Improvement Program Photovoltaic Systems Design and Installation Project.

#### Recommended Action

Approve the Capital Improvement Programs Photovoltaic Systems Design and Installation Project conceptual design for three City of Cupertino facilities: Community Hall, Cupertino Sports Center, and Quinlan Community Center.

#### Executive Summary

The Capital Improvement Program (CIP) Photovoltaic Systems Design and Installation (PV) Project was approved by the City Council as part of the Fiscal Year (FY) 24-25 annual budget. This report provides scope and fiscal information on each proposed site for the PV Project

#### Reasons for Recommendation

The PV project was approved as part of the FY 2024-25 Budget. The project description included in the budget adoption and meeting details is provided in Attachment A of this report. Approval of the conceptual design for the three City locations will result in better utility rates for producing on-site clean energy.

#### *Background*

The Net Energy Metering (NEM) program is administered by the California Public Utilities Commission (CPUC) and provides credits to a building's utility bill for producing an excess of on-site clean energy. Accounts with NEM ratings are guaranteed these credits over a 20-year period. In 2023 Pacific Gas & Electric (PG&E) announced a rate decrease for electricity generated by PV systems (NEM 3) but provided a window to allow grandfathering the more economically attractive NEM 2.0 rates if interconnection applications were successfully submitted and corresponding systems operational by 2026.

The NEM 2.0 Interconnection Applications were successfully submitted to PG&E for five Cupertino facilities: Blackberry Farm Recreation and Pool facility, Community Hall,

Cupertino Library, Quinlan Community Center, and Cupertino Sports Center. This Project aims to design and build PV systems at three of the five locations.

The NEM 2.0 projects must be complete by April 15, 2026, to receive the incentive, otherwise the NEM 3.0 program, which offers reduced incentives/savings, would need to be pursued. The NEM 2.0 rates provide 75 - 80% greater compensation than NEM 3 rates for electricity that is fed back into the electrical system. The savings in utility costs for the three proposed sites are projected to be \$276,000 annually, and \$13 million over a 30-year lifespan. For more details, please see Attachment B.

*Analysis of the Three City Facilities Identified as Proposed "Sites"*

A "Programming, Cost and Funding Report" was developed to serve as the "bridging documents" for the Design-Build project. It includes technical and cost analysis data for each site. The following narratives from that report depict the proposed layouts and projected cost savings for each site.

***Quinlan Community Center***



Several options were considered for this site. Preserving significant trees and working within the aesthetics of the park were high priorities. The proposed layout provides shaded parking and a significantly shaded picnic area. It also utilizes existing roof areas, mitigating overall costs of the system. The northern carport will require some tree trimming (overall tree health will not be compromised) to maximize and maintain solar

access. The project may require shaded parking stalls be provided for some existing ADA spaces. The design of the PV System at the picnic area will respond architecturally to the layout of the picnic area (rather than have there be one large shed roof, as shown in the illustration).

The electrical expenditures at Quinlan would be reduced from approximately \$121,000 annually, to generating a revenue of almost \$33,000 annually. The lifecycle savings are projected to be \$7.3 million. The City’s costs for design and construction of \$2.5 million could be recovered in approximately nine years.

The pros and cons to the implementation of this site’s PV project are listed below.

Pro:

- The annual and lifecycle savings for this site are significant in relation to the electrical bill; this site is a large contributor to the overall project’s savings as well.
- The \$2.5 million cost for this site is significant, but it has one of the shortest payback periods.
- Using the roof areas for the installation does not require an additional structure, thus reducing initial costs.
- Installing the arrays over the parking areas and the picnic area will provide shade to users. This is a stated goal/objective in the Parks and Recreation System Master Plan.
- The net savings with implementation of this project under the NEM 2.0 interconnection application are estimated to be \$7.3 million over the 30-year lifecycle. However, under the NEM 3 rates, the lifecycle savings are projected to be \$5.3 million. Thus, NEM 2.0 rates have an approximate 28% advantage over NEM 3.

Con:

- The installation will be spread out to two parking areas, rooftops, and the Memorial Park picnic area. The electrical connections via trenching/boring conduits to multiple locations are less efficient than a single location.

Quinlan Center		Meter #0116367009 - 116367840	
Last 12 months kWh usage	383,109	Construction Cost - PV only	\$2,343,000
Last 12 months cost of electrical	\$121,336	Construction Cost - EV only	\$150,000
Cost per kWh (ave.)	\$0.32	Construction Cost - Total (PV+EV)	\$2,493,000
PV systems kWh generation	453,795	Direct Payback (IRA) funding (40%, PV only)	\$867,200
PV systems annual savings*	\$154,217	City Funding	\$1,625,800
PV systems annual electrical bill**	-\$32,881	Payback period (years, discounted cash flow)	9.21
PV systems lifecycle savings***	\$7,272,774	ROI (LC costs/payback period)	447%

**Staff recommends proceeding with the PV project at this site.**

### Cupertino Sports Center



This property allows for the PV system to be well-aligned to west and south-facing solar access. The arrays are situated to ensure they do not interfere with vehicular traffic, and to minimize impacts to the tree in the corner between the two arrays. This tree would need to be slightly trimmed to ensure maximum solar access. The small trees under the northern arrays would need to be removed.

The electrical bill at the Sports Center would be reduced from approximately \$108,000 annually to approximately \$15,000 annually, with projected lifecycle savings of \$4.4 million. The City’s costs for design and construction of \$2 million could be recovered in approximately 11 years.

The pros and cons to the implementation of this site’s PV project are listed below.

Pro:

- The annual and lifecycle savings for this site’s PV project are significant in relation to the electrical bill at this site and are a healthy contributor to the overall savings.
- Installing the arrays over the parking area and court viewing area would provide shade for the facilities users.
- Installation in the parking area effectively extends the electrical service to the parking area and facilitates the extension of the electrical service to the back

parking lot where electric vehicle charging stations are tentatively planned for installation to serve both sports center users and the Silicon Valley Hopper fleet.

- The net savings of implementing this project under the NEM 2.0 interconnection application is estimated to be \$4.4 million over the 30-year lifecycle. However, under the NEM 3 rates, the lifecycle savings are projected to be \$3.2 million. Thus, the NEM 2.0 advantage is approximately 29% over NEM 3.

Con:

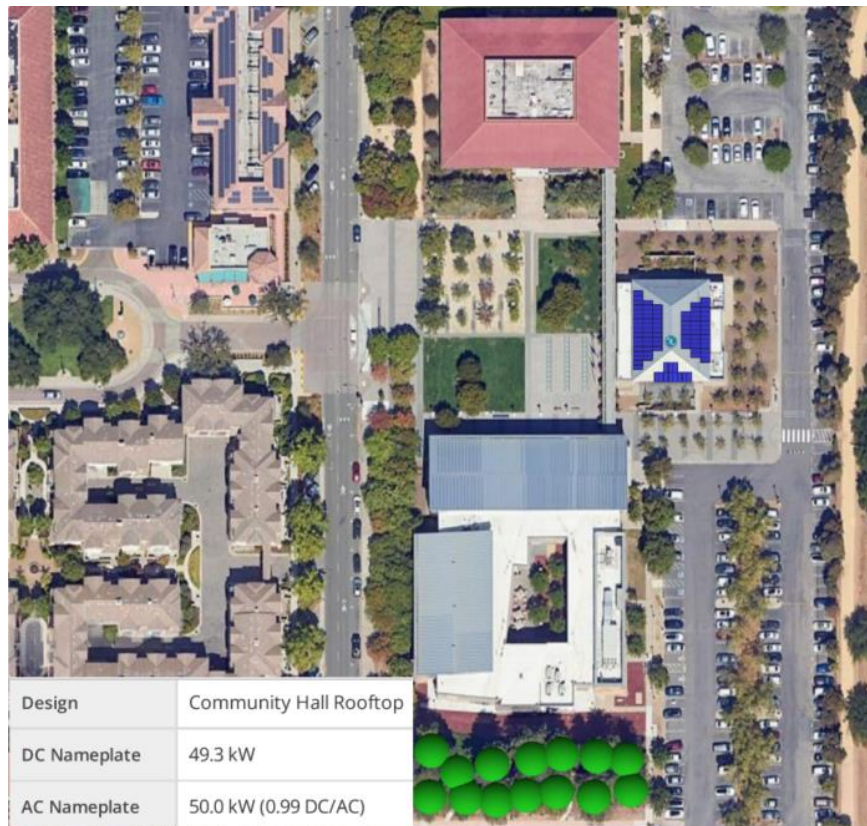
- The parking area arrays require structural support and a trenched/bored connection to the site's MPOE, which is an added cost.

Sports Center	
Last 12 months kWh usage	329,369
Last 12 months cost of electrical	\$108,143
Cost per kWh (ave.)	\$0.33
PV systems kWh generation	322,104
PV systems annual savings*	\$93,047
PV systems annual electrical bill**	\$15,096
PV systems lifecycle savings***	\$4,434,018

Meter #0116367009 - 116971849	
Construction Cost - PV only	\$1,815,000
Construction Cost - EV only	\$150,000
Construction Cost - Total (PV+EV)	\$1,965,000
Direct Payback (IRA) funding (40%, PV only)	\$726,000
City Funding	\$1,239,000
Payback period (years, discounted cash flow)	11.11
ROI (LC costs/payback period)	358%

**Staff recommends proceeding with the PV project at this site.**

*Community Hall*



Design	Community Hall Rooftop
DC Nameplate	49.3 kW
AC Nameplate	50.0 kW (0.99 DC/AC)

The installation at Community Hall is ideally situated with rooftop racking. As a result, roof penetrations will not be required as the system will clamp to the existing standing seam roof profile.

The electrical bill at Community Hall would be reduced from approximately \$40,000 to about \$10,000 annually, with projected lifecycle savings of \$1.3 million. The City's costs for design and construction of \$377,000 could be recovered in approximately seven years.

The pros and cons of implementing the PV project at this site are listed below.

Con:

- The annual and lifecycle savings for this site are not significant in relation to the electrical bill. This site is a relatively small contributor to the overall savings.

Pro:

- Installing the arrays on the standing seam roof is the easiest construction scenario of the five sites and has the least amount of added cost implications.
- The net savings of implementing this project under the NEM 2.0 interconnection application is estimated to be \$1.3 million over the 30-year lifecycle. However, under the NEM 3 rates, the lifecycle savings are projected to be close to \$1 million. Thus, the NEM 2.0 advantage is approximately 27% over NEM 3.

Community Hall		Meter #0116367009 - 116367449	
Last 12 months kWh usage	114,600	Construction Cost - PV only	\$377,000
Last 12 months cost of electrical	\$39,810	Construction Cost - EV only	\$0
Cost per kWh (ave.)	\$0.35	Construction Cost - Total (PV+EV)	\$377,000
PV systems kWh generation	66,784	Direct Payback (IRA) funding (40%, PV only)	\$150,800
PV systems annual savings*	\$29,441	City Funding	\$226,200
PV systems annual electrical bill**	\$10,369	Payback period (years, discounted cash flow)	7.15
PV systems lifecycle savings***	\$1,315,345	ROI (LC costs/payback period)	581%

**Staff recommends proceeding with the PV project at this site.**

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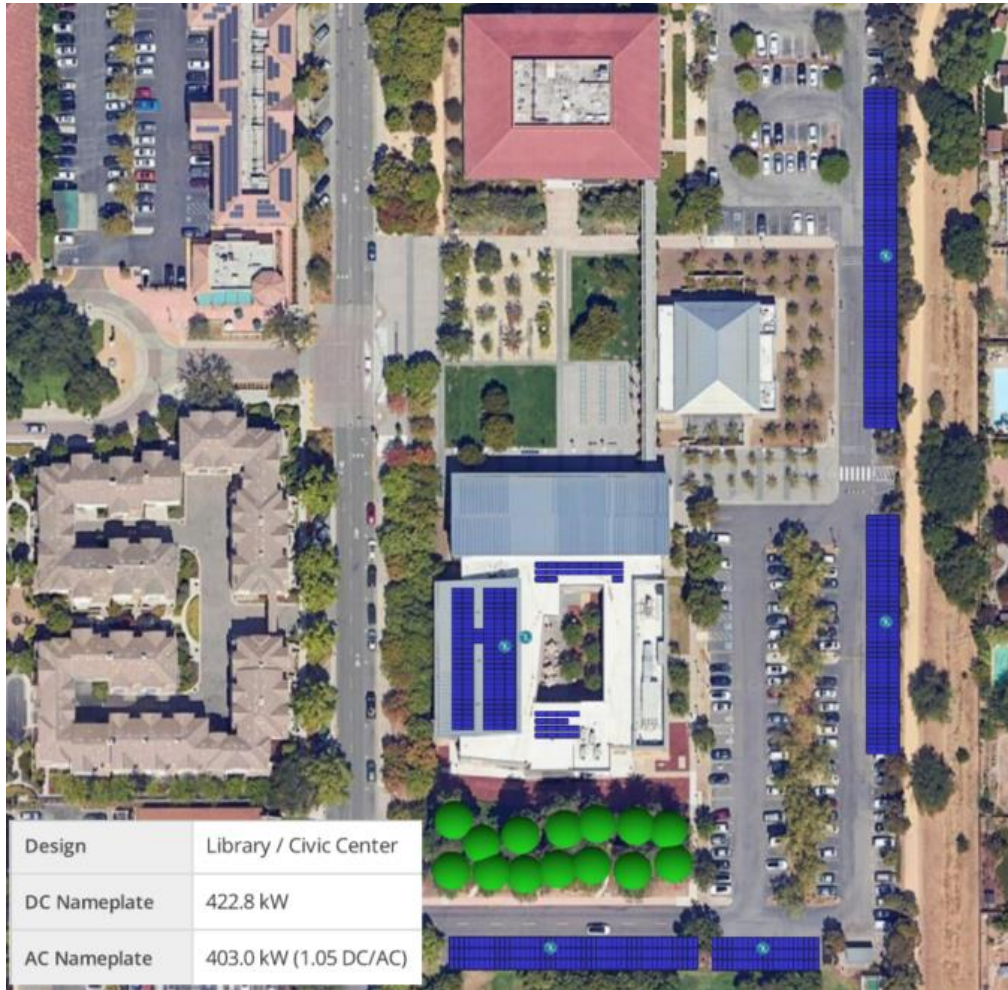
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## Cupertino Library



Several options were considered for this site. The Library roof locations have an advantageous size, but only one of the large roofs is well-oriented to the west or south. Standing seam rooftops (supporting the two largest rooftop arrays) are ideal for supporting solar facilities, as racking can be clamped to the standing seams as opposed to penetrating the roof surface. Long trenching/boring routes will be required to consolidate generation at the point of interconnection. While the proposed carport locations did consider trees, some smaller trees along the easterly edge of the Civic Center property will need to be removed or significantly trimmed to support the installation.

The electrical bill at the Library would be reduced from approximately \$325,000 annually to about \$133,000, with projected lifecycle savings of about \$10.8 million. The costs for design and construction of \$4.1 million could be recovered in approximately 11.3 years.

The notable complication for the Library site is that the tenant, the Santa Clara County Library District (SCCLD), is responsible for paying the electrical bill. The fiscal benefit of the cost savings from the PV installation would go to the SCCLD for the next twenty years unless the current lease agreement could be amended. The payback period for the project would be extended accordingly.

The pros and cons for implementation of this site's PV project are listed below.

Pro:

- The annual and lifecycle savings for this site's PV project are significant, at \$189,000 annually and \$10.8 million lifecycle savings.

Con:

- The \$4 million cost for this site's project brings the overall project budget well over the approved funding amount of \$6.3 million.
- The net savings of implementing this project under the NEM 2.0 interconnection application is estimated to be \$10.8 million over a 30-year lifecycle. However, under the NEM 3 rates, the lifecycle savings are projected to be \$10.2 million. Thus, the NEM 2.0 advantage is approximately 6% over NEM 3, and is the lowest of the five sites. This lower offset in rates is due to the library facility utilizing most of the energy being generated by the PV system, thus there would be less excess energy being created and fed into the electrical grid.
- Meeting the April 2026 deadline for completion is a critical driver for the project. This site has some of the largest arrays and the electrical components needed for these larger arrays have been experiencing extremely long lead times for material procurement/shipping. These lead times have the potential to jeopardize the completion date of the project at this site. Additionally, the size of the project will require the greatest amount of staffing, for both design and construction. Eliminating it from the current project would enable resources to be focused on other more viable sites.
- The SCCLD's priority for improvements would be to focus on the resiliency of the facility. The PV project under the NEM 2.0 interconnection application is limited to installation of the PV systems design and installation. The SCCLD would prefer to invest in a project that includes features to strengthen the resiliency of the facility, such as battery backup and microgrid connectivity.

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Library	
Last 12 months kWh usage	1,048,978
Last 12 months cost of electrical	\$322,517
Cost per kWh (ave.)	\$0.31
PV systems kWh generation	621,477
PV systems annual savings*	\$189,074
PV systems annual electrical bill**	\$133,443
PV systems lifecycle savings***	\$10,847,040

Meter #1932850108	
Construction Cost - PV only	\$3,803,000
Construction Cost - EV only	\$300,000
Construction Cost - Total (PV+EV)	\$4,103,000
Direct Payback (IRA) funding (40%, PV only)	\$1,521,200
City Funding	\$2,581,800
Payback period (years, discounted cash flow)	11.33
ROI (LC costs/payback period)	420%

**Staff recommends postponing the implementation of the PV project at this site to allow for further development of the program and to help ensure impacts to the public and other amenities is minimized. The SCCLD also supports postponing the project at this site. Refer to Attachment D.**

*Blackberry Farm Recreation and Pool facility*



Several options were considered for this site. The building roof locations are too small for a simple installation, and the solar orientation is not ideal. The proposed layout is a single continuous system that requires fewer trenching/boring paths to the electrical point of interconnection. The installation is far enough from the trees that solar access is

not impeded, and tree trimming will not be needed. Additionally, the existing netting system will provide reasonable protection for the array from golf balls. The proposed carport installation will provide shade for the parking stalls below it, requiring proportional shade coverage be provided at Americas with Disabilities Act (ADA) parking stalls. The State of California and City of Cupertino Green Energy Code for Electric Vehicle (EV) parking requirements will also require additional improvements be made, resulting in a significant amount of additional cost to the project.

The electrical bill at Blackberry Farm would be reduced from approximately \$33,000 annually, to generating a revenue of almost \$6,000 annually. The lifecycle savings are projected to be \$1.5 million. The City's costs for design and construction of \$1 million could be recovered in approximately 14 years.

The pros and cons to the implementation of this site's PV project are listed below:

Pro:

- The net savings of implementing this project under the NEM 2.0 interconnection application are estimated to be \$1.5 million over the 30-year lifecycle. However, under the NEM 3 rates, the lifecycle savings are projected to be \$910,000. Thus, the NEM 2.0 advantage is approximately 42% over NEM 3, which is the highest variance of the five sites. In short, if installation of a PV system at this site is a priority, it would be beneficial to prioritize the project now with the current potential of the NEM 2.0 rates.
- No trees would be negatively impacted by the project.

Con:

- The annual and lifecycle savings for this site are significant in relation to the electrical bill at this site, but the site is not a large contributor to the overall City savings.
- The \$1 million cost for this site's project is not the largest cost of the five sites, but it is the largest cost in proportion to the savings and therefore has the longest payback period.
- The location of the proposed carport is a relatively long distance from the main point of electric service (MPOE) for purposes of trenching/boring conduits, which raises the cost and furthers impacts during construction for this site.
- Residents expressed concern that adding EV charging stations could increase non-recreational traffic to the site.

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Blackberry Farm	
Last 12 months kWh usage	110,428
Last 12 months cost of electrical	\$32,539
Cost per kWh (ave.)	\$0.29
PV systems kWh generation	110,948
PV systems annual savings*	\$38,253
PV systems annual electrical bill**	-\$5,714
PV systems lifecycle savings***	\$1,563,642

Meter #114315284	
Construction Cost - PV only	\$956,000
Construction Cost - EV only	\$100,000
Construction Cost - Total (PV+EV)	\$1,056,000
Direct Payback (IRA) funding (40%, PV only)	\$382,400
City Funding	\$673,600
Payback period (years, discounted cash flow)	14.08
ROI (LC costs/payback period)	232%

**Staff recommends removing the PV project at this site due to the long payback period, residents’ concerns regarding increased traffic, and recommendation from the Parks and Recreation Commission.**

*Sustainability Commission*

This item was presented at the October 17, Sustainability Commission meeting. The minutes are not yet published, but the commission voted unanimously to recommend approval of the PV project, having the City Council consider these options.

- a. Approve the PV Project’s Conceptual Design for five City of Cupertino facilities: Quinlan Community Center, Community Hall, Cupertino Sports Center, Blackberry Farm, and Cupertino Library.
- b. If the above recommendation is not fully approved by the City Council due to budget constraints, then the Sustainability Commission recommends the installation of the PV project at these facilities in order of preference: Quinlan Community Center, Cupertino Sports Center, Community Hall, Cupertino Library, and Blackberry Farm.

The Sustainability Commission also requested that the City pursue a funding agreement with Santa Clara County Library District for that facility’s portion of the project.

*Community Engagement Meeting*

A public community meeting was held on October 29 at Quinlan Community Center. Minutes are not available for that meeting. Attendance was limited and the discussion was informal. Staff presented each of the concepts and responded to questions.

*Parks and Recreation Commission*

This item was presented to the Parks and Recreation Commission on November 7. The minutes are not yet published, but the commission voted unanimously to recommend approval of three of the five sites to the City Council. Below was the action taken.

Commissioner Bono motioned to recommend that City Council approve the Capital Improvement Program Photovoltaic Systems Design and Installation project's conceptual design for three City facilities: Community Hall, Cupertino Sports Center, and Quinlan Community Center. Commissioner Stanek seconded.

Chair Shearin made a friendly amendment to include the Library if there was an agreement with the Santa Clara County Library District and they would pay a substantive amount. Commissioner Bono and Commissioner Stanek accepted the friendly amendment.

The motion as amended with the friendly amendment carried unanimously.

#### *Next Steps*

Following this meeting, the next steps include:

1. With direction from the Council on the sites to include in the project, contractual negotiations with the successful Design-Build Entity will be finalized. A Request for Proposals is currently in process and will be completed in mid-December. This was preceded by a Request for Qualifications to create a list of pre-qualified applicants.
2. A design build contract to select the project Design-Build Entity is tentatively scheduled to return to the City Council for approval at a meeting in January 2025.

If this project does not move forward, existing electrical utility costs will not be reduced. The unexpended funding for the project will move to the Capital Reserve. Additionally, not approving the recommendation in this report could result in a large loss of savings for the City. If there is no Council direction provided by December 3, then the City will no longer be eligible for the NEM 3.0 application, therefore no application will be submitted, and no overall savings on the electricity bill will benefit the City.

#### Sustainability Impact

Adding solar generation reduces demand on the electrical grid and provides a foundation to support future electrification of these facilities. Electrification of existing buildings is a goal under Measure BE-3 in the City's Climate Action Plan 2.0.

#### Fiscal Impact

The PV Systems Design and Installation (budget unit 420-99-274) was approved as part of the FY 2024-25 Budget at \$6,300,000. There are no recommended changes to the budget.

The project is estimated to reduce expenditures by approximately \$276,000 annually, and approximately \$13,000,000 over the 30-year life cycle.

City Work Program (CWP) Item: No

CWP Item Description: N/A

Council Goal: N/A

California Environmental Quality Act (CEQA)

The project is categorically exempt from CEQA, CEQA Guidelines section 15301 (existing facilities) and section 15303 (construction of small structures), and/or statutorily exempt under Public Resources Code section 21080.35.

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Prepared by: Susan Michael, Capital Improvement Programs Manager

Reviewed by: Chad Mosley, Director of Public Works

Reviewed by: Tina Kapoor, Interim Assistant City Manager

Approved for Submission by: Pamela Wu, City Manager

Attachments:

A – FY 24-25 CIP Project Narratives Excerpt

B – Preliminary Cost Estimates

C – Programming Cost Funding Report

D – SCCLD Letter of Support for Postponement