CITY OF CUPERTINO

PUBLIC WORKS DEPARTMENT

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# PARKS AND RECREATION COMMISSION STAFF REPORT

Meeting: November 7, 2024

## Subject

Capital Improvement Program Photovoltaic Systems Design and Installation project

## Recommended Action

Recommend that City Council approve the Capital Improvement Program Photovoltaic Systems Design and Installation project's conceptual design for five City facilities: Cupertino Library, Community Hall, Cupertino Sports Center, Blackberry Farm, and Quinlan Community Center.

## Executive Summary

This report provides scope and fiscal information on each proposed site of the Photovoltaic Systems Design and Installation (PV) Capital Improvement Program (CIP) project.

## Background Information

The PV project was approved by the City Council as part of the Fiscal Year (FY) 24-25 annual budget. The PV project description included in the budget adoption and meeting details is attached (Attachment A).

The Net Energy Metering (NEM) program is administered by the California Public Utilities Commission and provides credits to a building's utility bill for producing excess on-site clean energy over a 20-year period. In 2023 PG&E announced a rate decrease for electricity generated by photovoltaic (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.

## Reasons for Recommendation

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 all five locations.

NEM 2.0 projects must be completed by April 15, 2026 to receive the incentive. Otherwise, the NEM 3.0 program, that offers reduced incentives/savings, would need to be pursued. NEM 2.0 provides 75 - 80% greater compensation than NEM 3 rates for electricity that is fed back into the electrical system. The savings in utility costs are projected to be $500,000 annually, and $26.5 million over a 30yr lifespan. For more detail, please see attachment B.

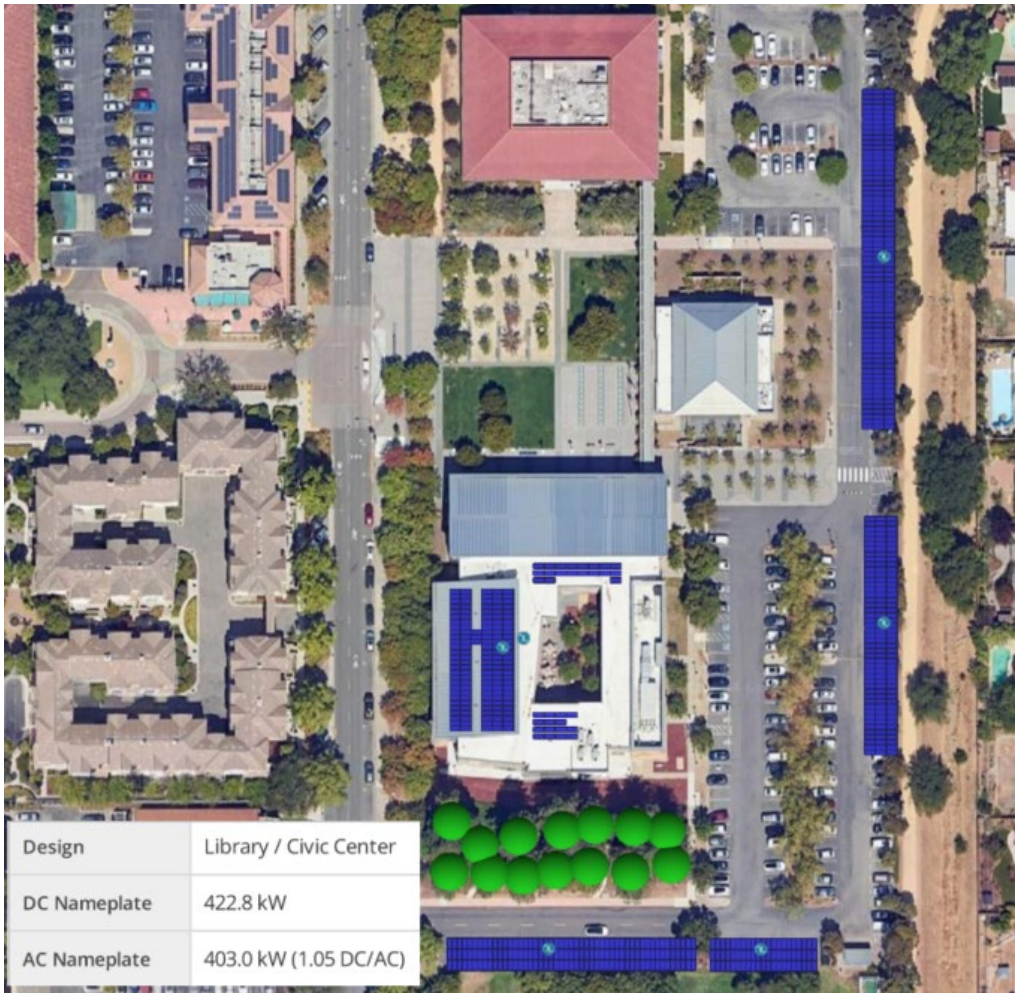
The City CIP staff is compiling a Conceptual Design Report that includes technical and cost analysis data for each site. The following narratives from that report depict the proposed layouts and projected cost savings at each site.

***Cupertino Library***

A number of 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, 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 point of interconnection. While the proposed carport locations took the trees into consideration, some smaller trees will need to be removed or significantly trimmed to support the installation.

The electrical bill at the Library would be reduced from ~$325K annually to ~$120K annually, with projected lifecycle savings of $11.7 million. The City's costs for design and construction of $2.6 million could be recouped in just approximately 11 years.

The complication for the Library site is that the tenant, the Santa Clara County Library District (SCCLD), pays the electrical bill. The fiscal benefit of the cost savings from the photovoltaic installation would go to the SCCLD for the next twenty years. The payback period for the project would be extended accordingly.



| 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 | 621477 |
| PV systems annual savings* | $202,501 |
| PV systems annual electrical bill** | $120,016 |
| PV systems lifecycle savings*** | $11,701,727 |

| Meter #1932850108 | |
|---|---|
| Construction Cost - PV only | $3,801,000 |
| Construction Cost - EV only | $300,000 |
| Construction Cost - Total (PV+EV) | $4,101,000 |
| Direct Payback (IRA) funding (40%, PV only) | $1,520,400 |
| City Funding | $2,580,600 |
| Payback period (years, discounted cash flow) | 10.65 |
| ROI | 453% |

*Blackberry Farm Recreation and Pool facility*

A number of 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 trees that tree trimming will not be needed to ensure solar access, and existing netting system will protect array from golf balls. With system shading parking stalls, proportional shade coverage will need to be provided on ADA parking stalls. The State and Cupertino green energy code for EV parking requirements are under review and may be substantial.

The electrical bill at Blackberry Farm would be reduced from costing ~$33K annually to generating a revenue of almost $6K annually (because the PV system would generate slightly more than the demand, and thus selling power back to PG&E). The lifecycle savings are projected to be $1.6 million. The City's costs for design and construction of $675K could be recouped in approximately 14 years.


| 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 | 110948 |
| PV systems annual savings* | $38,253 |
| PV systems annual electrical bill** | -$5,714 |
| PV systems lifecycle savings*** | $1,587,032 |

| Meter #114315284 | |
|---|---|
| Construction Cost - PV only | $955,500 |
| Construction Cost - EV only | $100,000 |
| Construction Cost - Total (PV+EV) | $1,055,500 |
| Direct Payback (IRA) funding (40%, PV only) | $382,200 |
| City Funding | $673,300 |
| Payback period (years, discounted cash flow) | 13.99 |
| ROI | 236% |

*Quinlan Community Center*

A number of options were considered for this site. Preserving significant trees and working within the aesthetics of the park were high priorities. This layout provides maximal shaded parking and significantly shaded picnic area. Utilizes existing roof areas, mitigating overall costs of the system. Northern carport will require some tree trimming (overall tree health will not be compromised, however) to maintain solar access and may require shade be provided for some existing ADA stalls. The picnic area structure will be designed to respond architecturally to the layout of the picnic area (rather than one large single shed roof as shown in the illustration).

The electrical bill at Quinlan would be reduced from costing ~$122K annually to generating a revenue of almost $33K annually (because the PV system would generate slightly more than the demand, and thus selling power back to PG&E). The lifecycle savings are projected to be $7.4 million. The City's costs for design and construction of $1.6 million could be recouped in approximately 9 years.


| Quinlan Center | |
|---|---|
| Last 12 months kWh usage | 383,109 |
| Last 12 months cost of electrical | $121,336 |
| Cost per kWh (ave.) | $0.32 |
| PV systems kWH generation | 453795 |
| PV systems annual savings* | $154,217 |
| PV systems annual electrical bill** | -$32,881 |
| PV systems lifecycle savings*** | $7,398,086 |

| Meter #0116367009 - 116367840 | |
|---|---|
| Construction Cost - PV only | $2,341,500 |
| Construction Cost - EV only | $150,000 |
| Construction Cost - Total (PV+EV) | $2,491,500 |
| Direct Payback (IRA) funding (40%, PV only) | $936,600 |
| City Funding | $1,554,900 |
| Payback period (years, discounted cash flow) | 8.85 |
| ROI | 476% |

*Cupertino Sports Center*

This system is well-aligned to the west and south-facing solar access. The northern array is split around north-south site access path to allow for any traffic which could interfere with the carport array. The tree in the corner between the two arrays would ideally be slightly trimmed to ensure maximum solar access, and trees under the northern arrays would need to be removed.

The electrical bill at the Sports Center would be reduced from ~$108K annually to ~$15K annually, with projected lifecycle savings of $4.5 million. The City's costs for design and construction of $1.3 million could be recouped in approximately 11 years.

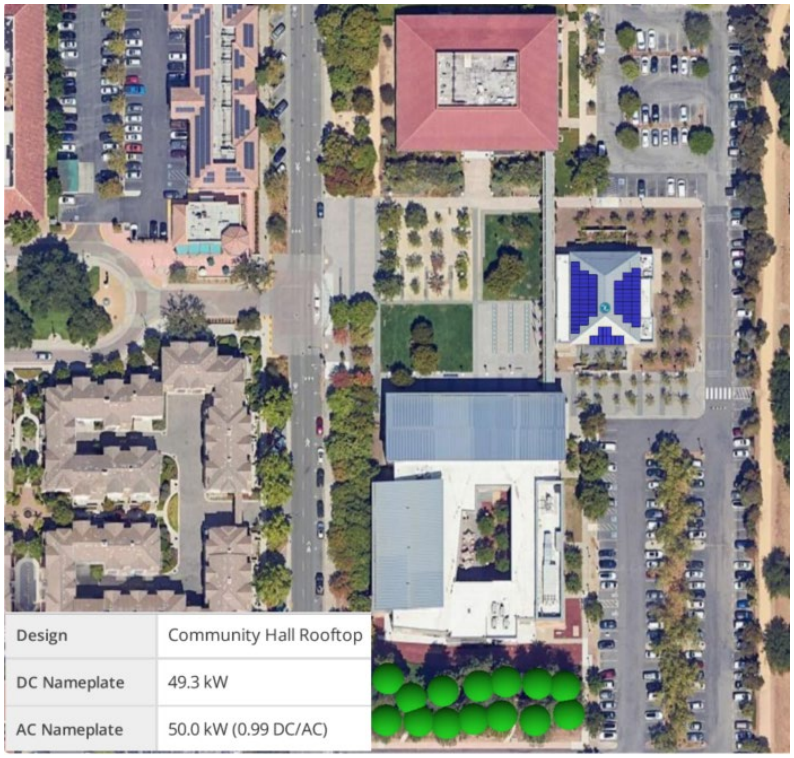

| Sports Center | |
|---|---|
| Last 12 months kWh usage | 329,369 |
| Last 12 months cost of electrical | $108,143 |
| Cost per kWh (ave.) | $0.33 |
| PV systems kWH generation | 322104 |
| PV systems annual savings* | $93,047 |
| PV systems annual electrical bill** | $15,096 |
| PV systems lifecycle savings*** | $4,511,620 |

| Meter #0116367009 - 116971849 | |
|---|---|
| Construction Cost - PV only | $1,812,300 |
| Construction Cost - EV only | $150,000 |
| Construction Cost - Total (PV+EV) | $1,962,300 |
| Direct Payback (IRA) funding (40%, PV only) | $724,920 |
| City Funding | $1,237,380 |
| Payback period (years, discounted cash flow) | 11.06 |
| ROI | 365% |

*Community Hall*

This is an ideally oriented system with rooftop racking. Roof penetrations will not be required, as the system will be able to clamp to the existing standing seam roof profile.

The electrical bill at Community Hall would be reduced from ~$40K annually to ~$10K annually, with projected lifecycle savings of $1.3 million. The City's costs for design and construction of $1.3 million could be recouped in approximately 7 years.




| Community Hall | |
|---|---|
| Last 12 months kWh usage | 114,600 |
| Last 12 months cost of electrical | $39,810 |
| Cost per kWh (ave.) | $0.35 |
| PV systems kWH generation | 66784 |
| PV systems annual savings* | $29,441 |
| PV systems annual electrical bill** | $10,369 |
| PV systems lifecycle savings*** | $1,336,267 |

| Meter #0116367009 - 116367449 | |
|---|---|
| Construction Cost - PV only | $376,950 |
| Construction Cost - EV only | $0 |
| Construction Cost - Total (PV+EV) | $376,950 |
| Direct Payback (IRA) funding (40%, PV only) | $150,780 |
| City Funding | $226,170 |
| Payback period (years, discounted cash flow) | 7.13 |
| ROI | 591% |

This item was presented at the October 17 meeting of the Sustainability Commission. The Commission minutes are not yet published, but the Sustainability Commission voted unanimously to recommend to City Council to approve the Capital Improvements Program (CIP) Photovoltaic Systems Design and have the City Council consider the below options:

a. Approve the Installation 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 Photovoltaic Facilities in order of preference: Quinlan Community Center, Cupertino Sports Center, Community Hall, Cupertino Library, and Blackberry Farm.

The Commission also requests that the City of Cupertino pursue a funding agreement with Santa Clara County Library District for that facility's portion of the project.

This item was also shared with the community in a public meeting held on October 29 at Quinlan Community Center. Minutes are not available from that meeting. [This staff report is submitted for review prior to that meeting taking place. Comments from that meeting may be shared with the Commission during the presentation.]

Following this Commission's meeting, the next steps for the project are:

1. City Council meeting in December 2024 for approval of the design intent for each facility.
2. City Council meeting in January 2025 for award of Design-Build Entity contract (Request for Proposals is currently in process, following a Request for Qualifications to create a list of pre-qualified applicants.)

Sustainability Impact

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

Fiscal Impact

The Photovoltaic 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.

California Environmental Quality Act

The Project is Categorically Exempt as Class 1, Existing Facilities Under the California Environmental Quality Act (CEQA) Guidelines Section 15301 and on a Separate and Independent Basis is Exempt as Class 3, Construction of Small Structures, Under CEQA Guidelines Section 15301.

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Prepared by: Susan Michael, Capital Improvement Program Manager
Reviewed by: Chad Mosley, Director of Public Works

Attachments:
A – FY 24-25 CIP Project Narratives Excerpt
B – PV project costs savings