



Memorandum

TO: TRANSPORTATION AND ENVIRONMENT COMMITTEE

FROM: Matt Loesch

SUBJECT: MUNICIPAL MICROGRIDS STATUS REPORT

DATE: September 18, 2023

Approved

Date

9/22/23

RECOMMENDATION

Accept the status report on the Resilient and Sustainable City Infrastructure and Emergency Preparedness Enterprise Priority, focusing on the objectives and priority initiatives of the Municipal Microgrids planning, funding, and implementation efforts between March 2023 through August 2023 as part of the approved City Initiatives Roadmap.

OUTCOME

Approval of the recommendation provides the Committee with updated information on the status of the Municipal Microgrid program at City facilities, including planning efforts, funding opportunities, and implementation plans.

EXECUTIVE SUMMARY

The Municipal Microgrids Program is a workstream of the *City Infrastructure Strategy*. Our workstream is tasked with implementing sustainable resiliency at critical facilities citywide, primarily through the application of solar and battery backup power, or microgrids.

Over the last six months from March to August, 2023, our program focused on developing a staff workplan, increasing staff capacity, securing seed monies, and evaluating alternative funding sources for program implementation. Implementation is moving forward with a design-build approach for systems at Roosevelt Community Center and Happy Hollow Park and Zoo, the two most highly prioritized locations for microgrid implementation. Staff met stated programmatic goals and made critical achievements towards securing seed money, completed design plans for the two primary sites, and hired programmatic support staff.

The program still faces challenges in funding and staffing, as well as new considerations for microgrid designs under the decarbonization goals passed within the last 18 months. Staff are shifting their focus in the coming quarter toward development of a Power Purchasing Agreement

in collaboration with San José Clean Energy to build a suite of at least 30 microgrids at the City's community-serving priority microgrid locations (see Attachment A).

BACKGROUND

As directed in the 2022 Mayor's March Message, the Fiscal Year (FY) 2022-2023 Adopted Budget created a multi-departmental team led by the City Manager's Office to drive results informed by equity considerations on key resilience objectives and major capital projects in the areas of drought resilience, sea level rise, microgrid development, urban forests, seismic safety, Coyote Valley open space implementations, electrification, and rehabilitation of aging City infrastructure. This budget action created the Microgrids Program Manager in the Public Works Department to focus on microgrid development at critical City facilities, such as emergency shelters, fire stations, animal care facilities, and fleet fueling stations. Initial microgrid program updates were shared during the February 7, 2022 Transportation and Environment Committee meeting, with further Objectives and Workstream details introduced at the October 3, 2022 Transportation and Environment Committee meeting. Further microgrid program updates were subsequently presented at the March 6, 2023 Transportation and Environment Committee meeting. Our workstream is part of the *City Infrastructure Strategy*, which was approved by the Committee on June 5, 2023 and by the City Council on September 19, 2023.

Over several months in FY 2020-2021, Public Works (PW) initiated a feasibility study to assess microgrid implementation and priority at 42 critical facilities citywide, including 13 community centers, two centers which care for rare or endangered animals, 14 fire stations, three fleet fueling stations, and 12 storm and sanitary sewer pump stations. Sites were evaluated based on their necessity during emergencies, location of critical infrastructure, cost, and with an equity lens evaluating the location within or adjacent to disadvantaged communities. Results of the feasibility study identified two highly prioritized locations: 1) Roosevelt Community Center (Roosevelt) and 2) Happy Hollow Park and Zoo including the Leininger Center, Kelley Park and its adjacent pumpstation on Coyote Creek (Happy Hollow).

During the review period between March – August 2023, programmatic activities focused on developing a staff workplan, increasing staff capacity, securing seed monies, and evaluating alternative funding sources for program implementation, while moving forward with designs for Roosevelt and Happy Hollow.

Quarterly programmatic goals were measured according to the following previously established metrics:

FY 2022-2023 Quarter 4 Goals:

1. Hire Interns (2) for assisting Microgrid program.
2. Hire Associate Engineer position in PW to assist in Microgrid program.
3. Continue pre-work and prepare for upcoming Building Resilient Infrastructure and Communities (BRIC) grant opportunity.

4. Finalize capital budget proposals and begin plans for development for 2 microgrid installations through FY 2024 - 2025 (Roosevelt and Happy Hollow).
5. Finalize development of CY2023 workplan and begin 5-year Microgrids RoadMap.

FY 2023-2024 Quarter 1 Goals:

1. Begin writing Capital budget proposal documents to be considered in the development of the FY 2024-2025 Capital Budget and FY 2025-2029 Capital Improvement Program for construction of two microgrids' in FY 2024-2025 (Roosevelt and Happy Hollow); Intake and celebrate PG&E Market Access Program funds; Assess possibility of power purchase agreement (PPA) and sources of funding through San José Clean Energy.
2. Microgrids RoadMap – submit Regional Resilience Planning Grant Program (RRGP) proposal to fund its development.

ANALYSIS

During the review term, Public Works (PW) successfully met all stated programmatic goals for FY 2022-2023 Quarter 4 and FY 2023-2024 Quarter 1.

Staffing and Design-Build Work

In Quarter 4 FY 22-23, staff hired two interns in the PW Facilities Management Division to assist the Microgrids Program Manager, and one Associate Engineer to assist in the PW City Facilities Architectural Services (CFAS) Division. Through the fourth quarter of FY 2022-2023 and the first quarter of FY 2023-2024, staff worked with the selected consultant, AECOM, to develop 100% design plans for both Roosevelt and Happy Hollow. PW staff are coordinating with Parks, Recreation, and Neighborhood Services (PRNS) staff on the best approach and layout for Roosevelt to ensure updated assessments are considered. Designs for Roosevelt's microgrid system have been shared with PRNS and are currently under final review. Roosevelt's plans will be ready for bid solicitation early next quarter. Happy Hollow plans are also expected to be ready for final review and bid solicitation starting next quarter. PW will submit a budget proposal to the City Manager's Budget Office for funding of both projects during the development of FY 2024-2025 Capital Budget and FY 2025-2029 Capital Improvement Program.

Grants and Funding Requests

A capital budget amount of \$3.5M to fund construction of Roosevelt and Happy Hollow was referenced by PW during the FY 2023-2024 Capital Budget development phase, though was not considered for funding at that time. PW staff expect to amend this budget request in the FY 2024-2025 Capital Budget development phase to cover updated construction and overhead costs for these sites and at least 28 others initiated through a power purchasing agreement in collaboration with San José Clean Energy [see *Power Purchasing Agreement (PPA) Approach* below]. Staff also proactively sought alternative funding sources to implement the Microgrids

Program throughout the review period. On June 6, 2023, staff successfully reserved California Public Utilities Commission Market Access Program (MAP) rebates valuing approximately \$450,000 that are expected to become available starting February 2024. The Market Access Program funds were secured through direct efforts by the Program Manager of Microgrids. Staff will be recommending the consideration of allocating and appropriating those funds to the City's Microgrids Program and energy resiliency projects during a budget phase in FY 23-24.

Additionally, staff submitted two grant applications for two different microgrid projects during the review period: \$1.2 million in Federal Highway Administration (FHWA) Charging and Fueling Infrastructure (CFI) for the *San José Fleet and Emergency Charging Infrastructure Project* to fund microgrid-powered level 3 EV charging stations for fleet vehicles such as fire trucks; and \$650,000 in the Regional Resilience Grant Program (RRGP) Planning funds to develop a *Municipal Microgrids Roadmap and Grid Resiliency Strategy (Microgrids Roadmap)* focused on planning priority buildout and funding options for decarbonizing and providing grid resiliency at 30 critical community-serving facilities within the City (see Attachment A). Staff expect to receive notification of the grant awards in Fall 2023. Any subsequent necessary budget action to appropriate the funding will be submitted to the City Manager's Budget Office.

Staff thoroughly evaluated 12 grants during the term for funding microgrids at Roosevelt and Happy Hollow, including the Hazard Mitigation Grant Program and the Building Resilient Infrastructure and Communities (BRIC) grant programs through the Federal Emergency Management Agency (FEMA). Due to differences in grantor expectations including cost-benefit analysis, these grants were ultimately deemed ineligible funding sources to cover the City's microgrid needs as offered this year. In the coming quarter, staff will continue to evaluate new grant programs as available and work with Intergovernmental Relations team (IGR) to evaluate federal and state legislative priorities for critical infrastructure bills.

Power Purchasing Agreement (PPA) Approach

Public Works and the Community Energy Department, administrators of San José Clean Energy, evaluated the development of a Power Purchase Agreement (PPA) to fund the implementation of a suite of microgrids at 30 or more critical facilities including Roosevelt and Happy Hollow (see Attachment A). San José Clean Energy regularly enters into power purchase agreements for utility scale renewable energy. San José Clean Energy would leverage this expertise to contract with a developer to install solar and battery storage resources on critical facilities throughout San José.

The up-front construction cost for a power purchase agreement is covered either by the developer or a third-party financier, so the City does not need to make a capital investment. Instead, departments operating the facilities would pay a fixed monthly price for the resiliency benefits and energy generated by the resources over a fixed term, usually 20 years. The developer owns, operates, and maintains the resources, thereby bearing the risk associated with ownership. The aggregation of facilities into a single agreement is essential to take advantage of economies of

scale to lower individual costs of built systems. Staff will also need to generate interest from developers and attract multiple competitive offers.

The City will need to conduct high-level site studies at all critical facility locations and create a portfolio that aggregates these sites. Community Energy Department staff estimate approximately \$1 million (approximately \$30,000 per site) will be needed to contract with a consultant to assess the facilities, identify the capacity of solar and storage needed, determine the scope of work for construction and electrical improvements, and model electricity bill savings for the departments operating the facilities. This information will feed into a Request for Proposals for a power purchase agreement developer. Two other Community Choice Aggregators in the Bay Area are using this project model to deliver resiliency and cleaner energy for critical facilities in their respective service territories.¹ In the near term, staff in Public Works and the Community Energy Department will work together to identify funding sources for the \$1 million seed money, develop a Memorandum of Understanding on how funds will be used, and return to Council in winter with a funding recommendation.

Challenges and Solutions

The high up-front cost associated with design and build of microgrid systems represents the greatest challenge to implementation. Developing program base funding is again the focus of the FY 2023-2024 workplan. Staff have already, and will continue, to pursue various types of seed money opportunities, however without additional funding including support from the General Fund or another ongoing source, progress on microgrids implementation will remain slow.

Grants have the potential to offset some construction costs but have several limitations,

- Project matching is opportunistic and typically focused on achieving results in grantor-recognized disadvantaged communities, which vary depending on the grantor's expectations and the type of disadvantaged communities on which they are focused. For example, according to the California Air Resources Control Board, 46% of priority microgrid sites are in disadvantaged census tracts, but only 1.3% are recognized by CalEnviroScreen 4.0.
- The majority of grants assessed during the term require match dollars up to 30% of the grant value.
- All grants assessed will only reimburse work after completion rather than funding upfront and will not reimburse for work that begun prior to the initiation of a grant term.
- Long-term system maintenance is not an eligible expense under any grants assessed this term.

For these reasons, grants alone will not ensure a successful Microgrids Program without consistent funding from the City. The request for City funding will be submitted to the City Manager's Budget Office during the development of the FY 2024-2025 Capital Budget and FY

¹ Peninsula Clean Energy Solar and Storage for Public Buildings: <https://www.peninsulacleanenergy.com/solar-for-public-buildings/>

East Bay Community Energy Resilient Facilities: <https://ebce.org/resilient-facilities/>

2025-2029 Capital Improvement Plan and will be considered as part of the budget process, in the context of the City's overall fiscal condition and other departmental program priorities.

Power purchase agreements can help alleviate upfront costs and often roll in maintenance costs, creating economies of scale for multi-site microgrid builds. For this reason, staff will pivot Quarter 2 efforts on power purchasing agreement scope development and funding sources for a suite of at least 30 microgrids including Roosevelt and Happy Hollow (see Attachment A).

In the City of San Jose interdepartmental solar generation is treated as a utility cost, and is traditionally paid through interdepartmental utility billings, making initial analysis of expected pay-back periods critical. For some facilities it may be possible to realize net utility savings from the start, with optimal management of solar and battery resources and contingent on the negotiated price. For most facilities net utility savings may not be realized for several years. Depending on the sizing of the solar and storage and the level of resiliency desired, some facilities will not achieve net savings over the project lifetime, however the solar and battery installations would provide a greater level of resiliency to critical City facilities. Initial studies will help in estimating the payback period for each facility so that the City can weigh any additional costs that result from the projects with the added resiliency benefits they provide prior to including these sites on a bid package for a power purchase agreement.

The second biggest challenge to microgrid implementation is that new City and State climate initiatives and resulting infrastructure needs have added new considerations to the microgrid site designs and priorities that were initially assessed in spring 2021. In November 2021, the City Council set the goal of communitywide carbon neutrality by 2030, thereby accelerating Climate Smart, and in June 2022, approved the City's Pathway to Carbon Neutrality by 2030. Appliance electrification and electric vehicle (EV) adoption are the main strategies driving decarbonization of City-owned buildings and fleets. Many of the critical facilities currently being considered are in dire need of resiliency upgrades that will require increased electrical power, so power purchasing agreement scope development will include scalability for increased electric loads to the extent possible.

A third challenge to the success of the Microgrids Program is the temporary nature of the funding for the Program Manager position that leads this work. Microgrid installations are long-term capital investments that will require ongoing program administration and staff management and additional phases beyond the facilities currently identified. Public Works will request the position be made permanent beginning in FY 2024-2025.

While challenges are many, our staff is highly motivated and will achieve significant progress in the coming months is confident that the pivot to a Power Purchase Agreement approach will allow for a dramatic and successful scaling of this work.

CONCLUSION

Throughout the assessment term, Microgrids Program staff worked to build the foundation for a successful microgrids resiliency program. Staff met all stated goals for the duration of the term from March – August 2023. The biggest challenges faced by this program are surrounding the budget required to build and manage microgrid systems, and ensuring systems will meet critical facilities' electrical baseloads in a decarbonized world. Staff are working with interdepartmental partners to overcome challenges and bring emergency energy resilience to our most critical community-serving locations.

EVALUATION AND FOLLOW-UP

Staff performance measures are evaluated through the City Manager's Office Resilient and Sustainable City Infrastructure and Emergency Preparedness Enterprise Priority's quarterly sprint tracking goals:

FY 2023-2024 Quarter 2 Goals:

1. Develop Microgrids General Funding Request – Update the budget proposal to be considered in the development of the FY 2024-2025 Capital Budget and FY 2025-2029 Capital Improvement Program to cover power purchasing agreement (PPA) startup costs for a suite of microgrids and permanent Microgrids Program Manager position; continue to request Market Access Program funds are appropriated to microgrids program in late FY 2023-2024 and will be brought to City Council during one of the City's Budget phases.
2. Develop PPA purchase scope and sources of funding; Pending future Council approval staff to hire consultant to conduct high-level site studies, develop scope of work for consultant, post Request for Proposals, and score bids.
3. Evaluate and apply for any promising grant or alternative funding sources to support PPA startup costs.

While staff will update the City Manager and the Transportation and Environment Committee each quarter as part of the City Infrastructure Strategy Future in depth progress updates to Council and the Transportation and Environment Committee will be provided on an as-needed basis.

CLIMATE SMART SAN JOSE

The recommendation in this memo aligns with one or more Climate Smart San José energy, water, or mobility goals.

September 18, 2023

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COORDINATION

This memo has been coordinated with the City Attorney's Office, City Manager's Budget Office and the Community Energy Department.

/s/

MATT LOESCH

Director, Public Works

For questions, please contact Carol Boland Whattam, Program Manager of Microgrids, at (408) 839-7563.

ATTACHMENT

Attachment A: Site Map and List of 30 Community-Serving Locations for Priority Microgrid Implementation

- Exhibit A. Map of 30 Community-Serving Locations for Priority Microgrid Implementation.
- Exhibit B. List of 30 Community-Serving Locations for Priority Microgrid Implementation.