



San Francisco Local Agency Formation Commission

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July 15, 2022

TO: LAFCo Commissioners

FROM: Jeremy Pollock, Executive Officer

SUBJECT: Item 5 – Review of LAFCo Analysis of CleanPowerSF 2020 Integrated Resource Plan

The California Public Utilities Commission (CPUC) requires CleanPowerSF to submit an Integrated Resource Plan (IRP) every two years, with the submission of their new IRP due by November 1, 2022. To support LAFCo's participation in the process of drafting the new CleanPowerSF IRP, this memo summarizes LAFCo's comments and questions on the 2020 IRP and CleanPowerSF's responses.

LAFCo benefited greatly from Vanir's technical expertise in reviewing the 2020 IRP, and with the expiration of Vanir's contract, LAFCo should look for other subject matter experts to assist in reviewing the 2022 IRP.

LAFCo's comments were grouped into five main categories:

- Timeline
- Selected Portfolio
- Reliability and Resiliency
- Cost Analysis
- CleanPowerSF Programs

Timeline

The 2020 IRP had a very compressed schedule for public comments:

- 8/14/20: CleanPowerSF posted a summary of the IRP
- 8/18/20: CleanPowerSF posted the full IRP
- 8/21/20: Deadline for public comments
- 8/25/20: SFPUC approved the IRP
- 9/1/20: CleanPowerSF submitted the IRP to the CPUC

However, LAFCo and CleanPowerSF continued their review of the IRP after it was submitted:

- 10/2/20: CleanPowerSF met with Vanir, LAFCo's renewable energy consultant, to review the IRP and LAFCo's comments
- 10/8/20: CleanPowerSF provided additional written responses to LAFCo

CPSF stated that their originally planned schedule for 2020 provided more time for stakeholder review, but delays by the CPUC in issuing guidelines for the IRP required them to compress the schedule.

Because of the compressed schedule for the 2020 IRP, LAFCo requested that CleanPowerSF publish a draft schedule for the 2022 IRP that initiated stakeholder engagement at least four months prior to the CPUC submission deadline and provided adequate time to solicit and incorporate stakeholder feedback.

We appreciate that CleanPowerSF conducted their initial community workshops in June, four months prior to the submission deadline, and that they intend to provide four weeks for the written public comment period for the IRP, which is anticipated to begin in late August or early September.

Selected Portfolio

LAFCo and Vanir supported CPSF's selection of the "Accelerated Case" portfolio as the preferred portfolio to be submitted in the IRP because it met CleanPowerSF's program goal of supplying customers with greenhouse gas (GHG) free electricity by 2025 on an annual basis. Vanir also agreed that the IRP's feasibility studies and cost-benefit analysis demonstrated rate savings and overall financial stability.

Vanir and CPSF discussed the details of the locations of proposed renewable energy resources to clarify what percentage would be located in San Francisco and in the nine-county Bay Area. The challenges of presenting this data highlighted how some information of interest to stakeholders is not captured in the IRP, such as behind-the-meter solar power in San Francisco.

Vanir also asked clarifying questions on details of which PUC-owned properties were included as planned sites of renewable projects and apparent discrepancies between the IRP and CPSF's Local Renewable Energy Report. CPSF clarified that most of these sites required additional feasibility work and could be supplanted by more feasible projects on properties not owned by the PUC. CleanPowerSF included these local renewable projects in the IRP analysis as representative proxies that would deliver similar power output for similar costs as the potential projects in the region.

Reliability and Resiliency

LAFCo identified that many public commenters expressed interest in seeing CleanPowerSF improve reliability and resiliency, particularly in preparation for potential Public Safety Power Shutoffs (PSPS) or other unplanned interruptions.

CPSF described their efforts on using battery storage for resiliency and highlighted how their principal focus was to use battery storage for shifting local demand by storing solar power generated during midday for use during the evening peak-demand period. They also noted how this use for shifting demand may partially conflict with resiliency for unplanned outages, because batteries that are dedicated purely for backup must remain fully charged at all times.

PSPS events were not currently impacting San Francisco, and CPSF stated they would develop a communication protocol if future PSPS impacts their energy supply systems.

Cost Analysis

Vanir asked for additional details on how the estimated costs of renewable projects and rates in the IRP were determined and asked about what rebates or subsidies were included in the assumptions.

CleanPowerSF stated that they used the Levelized Cost of Energy (LCOE) for the local renewable projects that captures all project costs over its lifetime and normalize it for the total electricity produced to allow for comparisons between different technology types.

CleanPowerSF clarified that most of the projects included in the IRP would not be eligible for the CPUC's Self-Generation Incentive Program (SGIP), which provides incentives to support existing, new, and emerging distributed energy resources and their potential impacts to the IRP. CleanPowerSF stated that they would explore how they could help increase awareness of the SGIP and support participation by San Francisco residents, businesses, and community organizations. They also clarified where IRP presentations described the cost savings from use of the Investment Tax Credit (ITC).

CleanPowerSF Programs

Vanir asked for additional details on ratepayer programs, particularly those targeting disadvantaged communities and hard-to-reach populations.

CleanPowerSF pointed to the “Focus on Disadvantaged Communities” section of the IRP narrative provides an overview of the programs under development that are targeted at low-income customers and Disadvantaged Communities. CleanPowerSF also stated that their Equity Working Group was developing an Equity Framework.

Attachments:

- 9/10/2020: Vanir Memo to LAFCo: CleanPowerSF 2020 Integrated Resource Plan Review
- 8/21/2020: LAFCo and Vanir comments on CleanPowerSF 2020 Integrated Resource Plan
- 10/8/2020: CleanPowerSF Responses to LAFCo’s Comments and Questions



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MEMORANDUM

To: Bryan Goebel, Executive Officer, SF LAFCo
SF LAFCo Commissioners

From: Jenny Whitson, Program Manager
Nicole Amweg, Deputy Program Manager
Rosemarie Ampil, Renewable Energy/ Energy Efficiency Technical Support
Michael Burns, Project Finance Analyst

Date: September 10, 2020

Subject: CleanPowerSF 2020 Integrated Resource Plan Review

Mr. Goebel and Commissioners,

As requested, Vanir is pleased to present to you with our review findings of CleanPowerSF's 2020 Integrated Resource Plan (IRP) and our recommended feedback for CleanPowerSF to consider for a potential Addendum update to the IRP or for consideration in the next IRP cycle in 2022.

Background

CleanPowerSF is obligated, every two years, to file an IRP (Attachment B) to the California Public Utilities Commission (CPUC) that follows CPUC Filing Requirements and specifically in accordance with Decision (D.) 18-02-018, D.19-11-016, and D.20-03-028. For the 2020 IRP Filings, CleanPowerSF was required to file on or before September 1, 2020 as a load service entity (LSE) since they are an organization that directly serves retail electric to customers. Community choice aggregators (CCA) are a relatively new type of LSE and LSEs are typically responsible not only for procuring electricity for their retail customers, but also for procuring various capacity reservations as necessary to guarantee reliable operation of the system. The IRP is a roadmap for serving their customers' energy demand, energy resource planning, and investment over the next 20 years.

The 2020 IRP summary documents were posted on CleanPowerSF's website on August 14, 2020 and the full draft document was made available for public comment on August 18, 2020. Public comments were accepted until midnight on Friday, August 21, 2020.

The 2020 IRP was submitted to the California Public Utilities Commission (CPUC) on September 1, 2020 following the San Francisco Public Utilities Commission's review and its approval on August 25, 2020.



The Vanir team reviewed CleanPowerSF’s 2020 IRP and provided preliminary feedback to the Commissioners on August 21, 2020 (Attachment C) and we provide additional findings and feedback in this memo and presentation overview (Attachment A).

Review Findings

Vanir identified four categories to comment on during its review of the IRP Documents, which were reoccurring themes in the Public Written Comments (Attachment D). Vanir has outlined its review findings below, recommending CleanPowerSF expand upon or provide clarification with either an Addendum to the 2020 IRP or incorporate the feedback into the 2022 IRP given the necessary lead time to accomplish the IRP’s intent and proposed action plan.

1. Selected Portfolio

CleanPowerSF modeled four cases of portfolios for the IRP:

- Base Case;
- Accelerated Case;
- Time Coincident Case; and
- 46 Million Metric Tons (MMT) Case.

Base on cost-effectiveness and emissions criteria, CleanPowerSF submitted the Accelerated Case as the Preferred Conforming Portfolio, as it meets CleanPowerSF’s program goal of supplying customers with greenhouse gas (GHG) free electricity by 2025 on an annual basis. Vanir supports the Accelerated Case under the premise that extensive feasibility studies and cost-benefit analysis are performed for each identified new project, being mutually exclusive, and demonstrate rate savings and overall financial stability.

According to the map of CleanPowerSF’s New Renewable Energy Projects shown on their IRP website page, our team calculated the percentage of projects local to the Bay Area in their existing portfolio, new projects in the Accelerated Case portfolio, and updated total for their overall portfolio in the table below. Our team identified discrepancies between the total megawatts (MW) listed on the IRP website page, the IRP table summaries, and the IRP narratives and have requested clarification of the totals and percentages in our recommendations.

| Existing Projects | New Projects | Overall Portfolio w/ Preferred Case |
|---|---|---|
| <ul style="list-style-type: none"> • Local Bay Area- 185 MW • California- 272.9 MW • Total: 457.9 MW • % in Local Bay Area- 40% | <ul style="list-style-type: none"> • Local Bay Area- 108 MW • California- 350 MW • Total: 458 MW • % in Local Bay Area- 24% | <ul style="list-style-type: none"> • Local Bay Area- 293 MW • California- 622.9 MW • Total: 915.9 MW • % in Local Bay Area- 32% |



CleanPowerSF indicated the Base Case did not meet the City and County's required GHG and sustainability goals. The Time Coincident Case requires more resources with the hourly parameters, resulting in excess generation and market resale. However, this case can be revisited in future years as ordinances, and building codes become more stringent to require renewable energy for non-residential buildings (not just solar ready), electrification for all new construction projects, building decarbonization for existing buildings, and broadly implemented energy efficiency programs.

2. Reliability and Resiliency

The IRP indicated that CleanPowerSF issued a Request for Offer (RFO) in August 2019 for resource adequacy and energy procurement; yet, remains in active negotiations. The concern is whether the Accelerated Case proposed in the Action Plan section would be achievable within less than five years and if it meets the resource adequacy and system reliability commitments.

In the IRP's Public Written Comments (Attachment D), several commenters noted that resiliency improvements are limited for local generation, which raises the issue of whether CleanPowerSF considered the City's resiliency program in its portfolio design and has conducted comprehensive vulnerability and resiliency assessments for the sites of the proposed new projects. In addition, there is a strong concern that CleanPowerSF address system reliability for extended Public Safety Power Shutoffs (PSPS), and unplanned shutdowns due to maintenance or natural disaster. In light of the current public health and climate emergency, this is a viable public concern to be addressed.

3. Cost Analysis

Under the Cost and Rate Analysis section, quantitative information to support each Preferred Portfolio was insufficient. The cost analysis did not provide a rate analysis to determine how each portfolio impacts residential and non-residential rates. CPUC's IRP template requires evidence to demonstrate how each Preferred Portfolio will affect costs to the ratepayers.

It is unclear whether CleanPowerSF is required to perform a local needs analysis or assessment on how each case will meet the local capacity needs, projected in the CAISO transmission Plan for the Greater Bay Area.

Additionally, it was not clear how the cost assumptions were determined for the build-out of the new projects and if rebates or subsidies were included in the cost assumptions, aside from the investment tax credits (ITC).

4. CleanPowerSF Programs

The CleanPowerSF Programs information included in the IRP was limited. The IRP mentioned that CleanPowerSF continues to develop new ratepayer programs, inclusive of disadvantaged communities and hard-to-reach populations – with financing and offerings for multi-family residential however, did not provide any specifics.



In addition, one of CleanPowerSF's core program goals is affordability and public commenters emphasized the importance of the program remaining affordable. But without mention of strategies to reduce project costs, energy procurement savings, low-cost energy efficiency and demand response programs for ratepayers, or detailed cost analysis in the IRP, it's difficult to scrutinize the proposed project portfolios and this could potentially decrease public confidence and participation in the program.

Recommendations for Consideration

In support of SF LAFCO's duties as an oversight committee to ensure CleanPowerSF maintains financial stability and supply security for the residents of San Francisco, Vanir proposes the following recommendations that focus on cost and project viability. We recommend that the SF LAFCo ask CleanPowerSF to do the following:

- Provide cost analysis for each proposed case, itemizing: offsets attributed to ITC; escalation rates from power purchasing contracts; debt service; and other additional costs that are expected to be captured in calculating the all-inclusive generation rate.
- Demonstrate any fiscal impact on the rate for each Preferred Portfolio from potential barriers, such as reducing CleanPowerSF's Resource Adequacy (RA) capacity procurement obligations. Consider also expanding potential barriers to include:
 - Market and commodity price risks;
 - Variance from estimated load forecasts;
 - Curtailment;
 - Adoption of customer and community programs;
 - Customer participation/ opt-out rate;
 - Unplanned resource allocation costs;
 - Legislative changes; and
 - PCIA increases.
- Provide information on the average lead time to implement a solar and storage program to meet each phase of the Accelerated Case, inclusive of the California Environmental Quality Act (CEQA) timeframe, and as a possible design-build turnkey project.
- Propose a 3-year project schedule to meet portfolio requirements on time, incorporating necessary lead times for mandatory requirements (i.e., CEQA) and bottle-neck items (e.g. supply chain).
- Identify customer programs in response to public concerns, i.e. disadvantaged communities, energy savings and efficiency, and Public Safety Power Shutoffs (PSPS).
- Local resource development programs consistent with a final (or updated) Local Renewable Energy Buildout Plan that incorporates feedback from CleanPowerSF's stakeholder engagement, additional community outreach efforts, and any other energy policies that may be established by the SFPUC.



- Confirm if CleanPowerSF was required to perform a local needs analysis or assessment on how each case would meet the local capacity needs, projected in the CAISO transmission Plan for the Greater Bay Area.

SF LAFCo IRP Oversight

Vanir recommends that the SF LAFCo request that CleanPowerSF provide advance notification and schedules for future draft IRPs. It is suggested that Stakeholder Engagement be 8 months prior (January 2022) to the next IRP Cycle Deadline of September 1, 2022. This will allow adequate time for SF LAFCo to review the schedule and participate, provide feedback, and enable CleanPowerSF to solicit stakeholder feedback, at least six months prior (i.e. by March of 2022) to the 2022 CPUC Filing Deadline.

In addition to participating in the Stakeholder Engagement Process, Vanir recommends CleanPowerSF issue draft IRP documents to the SF LAFCo Commissioners 1 month in advance for review, before publishing for public comment.

Thank you.



San Francisco Local Agency Formation Commission

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August 21, 2020

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TO: Barbara Hale, Assistant General Manager, Power Enterprise,
Michael Hyams, Director, CleanPowerSF
San Francisco Public Utilities Commission

CC: LAFCo Commissioners

FROM: Bryan Goebel, Executive Officer
Jenny Whitson, LAFCo Renewable Energy Consultant

SUBJECT: 2020 Integrated Resources Plan

We write to you on behalf of the San Francisco Local Agency Formation Commission (SF LAFCo) to provide comments and questions on the draft 2020 Integrated Resources Plan. The following feedback is preliminary and based on an initial review of the plan by our Renewable Energy Consultant, Vanir, who the LAFCo recently contracted with to help better fulfill our Commission’s oversight role of CleanPowerSF pursuant to Ordinance 146-07. Vanir and their team, led by Jenny Whitson, Program Manager, will continue to provide peer review of CleanPowerSF’s major plans going forward, as well as contribute expertise to LAFCo staff and LAFCo Commissioners.

We have submitted some of the following online, but due to character limits, provide our full comments and questions here.

CleanPowerSF 2020 Integrated Resource Plan- Public Comments Due 8/21/2020

Please provide your feedback on staff's recommended preferred portfolio selection for CleanPowerSF's 2020 IRP submission to the California Public Utilities Commission.

The SF LAFCo commends CleanPowerSF for submitting the 38 MMT Accelerated Case to meet the program goal of supplying customers with greenhouse gas (GHG) free electricity on an annual basis by 2025, five years before the Board of Supervisor’s 2030 goals. The SF LAFCo is providing the following feedback on the Draft 2020 Integrated Resources Plan (IRP) as it relates to the preferred portfolio selection.

1. Confirm what percentage of the renewable energy portfolio will be located in the City before and after the development of the identified Planned Resources for the 38 MMT Preferred Portfolio and what percentage of the portfolio will be located in the nine-county Bay Area region.

2. The new build projects listed in Table 28 of the 2020 IRP do not align with the projects identified in the Local Renewable Energy Report, and it is unclear if there is overlap or if the new build projects are in addition to the ones identified in the Local Renewable Energy Report.
3. The IRP should describe if battery storage systems will support grid reliability (islanding, backup power, etc.) and confirm the total Megawatt Hours (MWh) for the energy storage projects.
4. The IRP should confirm if CleanPowerSF is evaluating available incentive programs, such as the CPUC's Self-Generation Incentive Program (SGIP), which provides incentives to support existing, new, and emerging distributed energy resources and their potential impacts to the IRP. Specifically, it is unclear if CleanPowerSF assumed any SGIP rebates for battery storage. The magnitude standalone 4hr battery impact shown in Figure 1 of the IRP reflects a significant portion of the portfolio in the year 2023 and the IRP should describe how that system will be funded.
5. The 2018 IRP included and the Local Renewable Energy Report for CleanPowerSF identified the Sunol Valley site as a highly suitable site. However, the 2020 IRP includes a footnote stating the 14 MW of solar and 7 MW of storage potential was derived from analysis of a lower suitability site in Sunol. CleanPowerSF should confirm if the Sunol Valley site is currently being considered as low or high suitability.
6. The cost assumptions identified in Table 8 of the Draft 2020 IRP Report are unclear. For instance, it is unclear if the utility-scale projects capture all related costs – including entitlements, development to point of connection, operations, maintenance, and replacement.
7. The CleanPowerSF 2020 IRP Presentation dated August 13, 2020, does not successfully convey how the \$55/MWh average cost was determined on Slide 12 of the IRP Preferred Portfolio Presentation.

Given that CleanPowerSF will update its IRP every two years, what do you think the SFPUC's goals and priorities should be for CleanPowerSF and its ongoing energy resource planning work?

1. The SF LAFCo strongly encourages CleanPowerSF to emphasize the importance of system reliability and the impacts of Public Safety Power Shutoffs (PSPS) in the IRP, particularly addressing vulnerable populations who rely on electricity for their mobility, eating, and breathing needs in addition to other critical facilities.
2. The SF LAFCo strongly encourages CleanPowerSF to prioritize the rollout of programs to support local project investment, particularly in disadvantaged and vulnerable communities.
3. The SF LAFCo recommends CleanPowerSF include a resiliency approach to their overall preferred portfolio and any systems and infrastructure the portfolio relies upon.

CleanPowerSF core program goals are affordability, environmental stewardship, local investment, and rate and financial stability. How should CleanPowerSF manage trade-offs between these goals?

1. The SF LAFCo recommends including a timeline for implementing programs in development focused on disadvantaged communities.
2. The IRP should describe how CleanPowerSF is proactively addressing PG&E's Power Charge Indifference Adjustment (PCIA), including PG&E's Fee predictions and how PCIA rules may affect their costs and planned resources. Additionally, CleanPowerSF should inform the SF LAFCo of PCIA Working Group meetings and receive regular updates.
3. CleanPowerSF should describe how programs, such as a FiT (Feed-in Tariff) program, may impact the IRP and preferred portfolio.
4. The IRP Presentation Slide 7 states that one of the goals is to optimize a portfolio that achieves program goals and delivers competitively priced energy products. However, it is unclear if the impact of policy, tax credits, and other subsidies were considered.

Do you have thoughts or recommendations for improving our IRP process going forward?

1. The SF LAFCo respectfully requests that CleanPowerSF publish a Draft IRP schedule for the 2022 IRP, including a milestone for engaging and consulting with internal and external stakeholders at least four months before the CPUC submission deadline. The SF LAFCo requests that CleanPowerSF ensure the next IRP planning process provides adequate time to solicit and incorporate stakeholder feedback and take into account local decision-making structures.

Anything else you would like to share?

1. Due to the late release of the 2020 IRP Draft, the SF LAFCo will be submitting additional written feedback to CleanPowerSF for future discussions during SF LAFCo regular meetings. The SF LAFCo would like CleanPowerSF to confirm if they will be issuing an Addendum to the 2020 IRP and, if so, what their timeline for submitting will be.
2. The SF LAFCo respectfully requests to be notified by CleanPowerSF when the solicitation process begins for any of the identified planned resources noted in the IRP slated for early 2021. Additionally, the SF LAFCo requests CleanPowerSF provide SF LAFCo with copies of all draft and final solicitation documents in addition to solicitation responses.

The Vanir team will provide a more comprehensive review of the 2020 IRP at the September 18, 2020 LAFCo Commission meeting. We respectfully request that CleanPowerSF provide a written or verbal response to the LAFCo's comments before then. We look forward to working with CleanPowerSF and the SFPUC to help achieve its goals and continue providing clean, affordable, accessible energy to all San Franciscans.

Date: October 8, 2020

To: SF LAFCo Commissioners
Bryan Goebel, Executive Officer, SF LAFCo

From: Michael Hyams, Deputy Manager, CleanPowerSF
Kiara Hermann, Utility Analyst, CleanPowerSF

Subject: Responses to LAFCo's Comments and Questions on CleanPowerSF's 2020 Integrated Resource Plan

This memorandum serves as the SFPUC's response to comments and questions on CleanPowerSF's 2020 Integrated Resource Plan submitted by the San Francisco Local Agency Formation Commission's (LAFCo) Executive Officer and Renewable Energy Consultant, Vanir, on August 21, 2020. This memorandum includes the questions submitted on behalf of LAFCo (in bold) and SFPUC staff's responses.

- 1. Confirm what percentage of the renewable energy portfolio will be located in the City before and after the development of the identified Planned Resources for the 38 MMT Preferred Portfolio and what percentage of the portfolio will be located in the nine-county Bay Area region.**

Response:

To answer this question, we prepared Table 1 below. Since the question does not provide specific dates defining "before" and "after," we have used 2019 and 2030.

Table 1. Actual and Projected Local Renewable Energy (Megawatt-hours, MWh)

| Energy (MWh) | 2019 (Before) | | 2030 (After) | |
|---------------------|---------------|------------|--------------|------------|
| | MWh | % of Total | MWh | % of Total |
| San Francisco | 98 | 0.004% | 33,400 | 1.09% |
| 9-Bay Area Counties | 345,825 | 12.8% | 158,115 | 5.14% |

In the 38 MMT Preferred Portfolio (the Accelerated Case), by 2030 CleanPowerSF's contracts with existing renewable resources will have expired. The IRP did not assume that CleanPowerSF would extend contracts for this existing renewable energy capacity. What is shown in the table in 2030, therefore, represents only new capacity that would be added to the CleanPowerSF portfolio by that time. CleanPowerSF will contract with

CleanPowerSF is a program of the San Francisco Public Utilities Commission (SFPUC), an enterprise department of the City and County of San Francisco.

CleanPowerSF is committed to protecting customer privacy. Learn more at cleanpowersf.org/privacy.

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existing Bay Area resources, if available and cost-effective. Additional renewable development opportunities beyond those on City-owned property may also exist in the Bay Area region and the SFPUC will continue to pursue such opportunities through regular power supply solicitations.

Not included in the table above are about 48 MW of behind-the-meter solar and other small-scale generation capacity located in San Francisco on customer premises. These on-site generating facilities are either owned or leased by customers and are principally used to off-set the customers' own electricity usage. In Fiscal Year 2019-20, these customers collectively generated about 1,865 MWh of excess solar energy in San Francisco, delivered to the grid and compensated by CleanPowerSF under its Net Energy Metering program. To avoid confusion, this energy is not reported in the table above or in CleanPowerSF's IRP as these projects do not meet the California Energy Commission's metering requirements for reporting electricity supply on the Power Content Label.

2. The new build projects listed in Table 28 of the 2020 IRP do not align with the projects identified in the Local Renewable Energy Report, and it is unclear if there is overlap or if the new build projects are in addition to the ones identified in the Local Renewable Energy Report.

Response:

Table 28 in the IRP report contains all the new build projects for CleanPowerSF's Accelerated Case using the California Public Utilities Commission's (CPUC) nomenclature per the instructions in the CPUC's IRP template. The projects identified in the Local Renewable Energy Report are aggregated in the Bay Area Solar and Bay Area Storage rows in the table. This total, 81 MW of solar and 27 MW of storage, represents all the in-City and Bay Area projects identified as High and a subset of projects identified as Medium Suitability in the Local Renewable Energy Report. In addition to these projects, the IRP Analysis included an additional 14.1 MW of solar and 7 MW of storage. This capacity is associated with sites which were analyzed as part of the Local Renewable Energy Report but received a lower ranking due to competing usage at the sites, not technical feasibility. This capacity was included in the IRP analysis as representative of comparable development opportunities in the region that aren't on City-owned property, which could be developed by a third party under a through Power Purchase Agreement (PPA) with CleanPowerSF. As noted in the Local Renewable Energy Report, additional feasibility work needs to be completed to ascertain exactly how many and which of the local renewable energy projects can be developed, and an RFP needs to be issued to identify project contractors and final project costs, so these local capacity values should be considered illustrative at this time. The SFPUC will continue to procure renewable energy capacity to meet the targets in CleanPowerSF's IRP, and potentially more, from the 9-Bay Area counties through its renewable energy solicitations.

Table 2 below lists the projects used in the IRP analysis and their suitability finding in the Local Renewable Energy Report. As noted, SFPUC staff used these as illustrative examples of local project costs.

Table 2. Local Renewable Energy Report Sites Used to Inform IRP Project Capacity and Cost Assumptions

| Facility | MW | Suitability |
|--|--------------------------------|-------------|
| Stanford Heights Reservoir | 1.06 | High |
| Summit Reservoir | 1.23 | High |
| Sunol Golf Course | 40 MW Solar; 20 MW Storage | High |
| Sutro Reservoir | 2.76 | High |
| University Mound Reservoir – North Basin | 4.26 | High |
| College Hill Reservoir | 1.56 | Medium |
| Laguna Honda Hospital | 1.38 | Medium |
| Sunol Water Treatment Plant | 1.14 | Medium |
| Sunset Reservoir – South Basin | 5.67 | Medium |
| Tesla Portal | 2.95 | Medium |
| University Mound Reservoir – South Basin | 5.17 | Medium |
| Western Star Lease (Sunol) | 14.1 MW Solar; 7 MW Storage | Low |

3. The IRP should describe if battery storage systems will support grid reliability (islanding, backup power, etc.) and confirm the total Megawatt Hours (MWh) for the energy storage projects.

Response:

The battery storage systems will support grid reliability. However, the examples you note – islanding, backup power – are not services that support “grid reliability”, but rather services that support end-user electric reliability when the grid is down. Services that support grid reliability would include, for example: providing Resource Adequacy capacity, ancillary services, peak load reduction, and black start capability.¹ As described further below, the IRP assessed the contributions the batteries could make to system Resource Adequacy and peak load requirements.

¹ Resource Adequacy capacity means that the electric resource is capable of providing electricity to the grid during periods of peak demand. Ancillary services refer to power system functions that help grid operators maintain a reliable electricity system. Ancillary services maintain the proper flow and direction of electricity, address imbalances between supply and demand, and help the system recover after a power system event. Black start capability means the electricity generating resource is able to help bring the regional grid back to normal operations following an outage.

As detailed in CleanPowerSF's Local Renewable Energy Report, the sites examined were evaluated for their suitability to provide grid electricity supply to the CleanPowerSF program. One of the criteria we used to evaluate the suitability of City-owned sites for developing projects to serve CleanPowerSF was that the site did not have a significant amount of customer demand, which would make it more suitable for a "behind-the-meter" project that directly serves the customer's demand.

In the next phase of our work to develop projects on the sites identified in the Local Renewable Energy Report, we will further assess the potential benefits and feasibility of deploying the batteries for back-up power or local grid reliability uses. However, it is important to note that some of these applications for batteries can conflict with one another. For example, if you are charging and discharging the battery daily to move renewable energy from hours when there is excess energy supply to hours when there is a greater demand for energy on the grid, the battery may not be available to provide back-up services, especially if the outage happens after the battery has discharged its stored energy. Our principal focus in the IRP was regular utilization of the batteries for load shifting to meet aggregate CleanPowerSF program demand (storing and discharging solar energy from the middle of the day to other times when CleanPowerSF's demand forecast indicated the program could use it).

The Reliability Analysis and Diablo Canyon Power Plant Replacement sections of the IRP narrative discuss how the addition of battery storage to CleanPowerSF's portfolio contributes to systemwide grid reliability. SFPUC staff evaluated the system reliability of the proposed IRP portfolios using their contributions to CleanPowerSF's projected Resource Adequacy (RA) obligation using the current counting methodology and hourly delivery profiles compared to CleanPowerSF's forecasted demand shape.

The addition of battery storage resulted in a more reliable portfolio under both metrics. The Effective Load Carrying Capacity (ELCC)² of battery storage facilities is currently projected to be nearly 100% for all months through the planning horizon,³ which is significantly higher than solar by itself. For example, the September ELCC of solar is currently 14%. Under the 38 MMT modeling assumptions, this value drops to 4.6% in 2030. This means that each megawatt (MW) of storage capacity contributes significantly more to meeting CleanPowerSF's future RA obligation and system electric reliability than a solar project would by itself. In fact, the difference between the ELCC of the two technology types is expected to increase over the next 10 years, making energy storage an important part of ensuring that our renewable electricity supply supports a reliable grid over the next ten years.⁴

As noted above, the storage in the CleanPowerSF portfolio can charge during hours when there is excess generation on the grid and shift that generation to other hours of the day when less renewable generation is available, particularly during the evening ramp and overnight hours. Storage is not a generating resource; it may charge from a paired hybrid or co-located renewable energy facility or from the grid in the case of standalone storage. CleanPowerSF's Accelerated Case contains battery storage that is both paired with solar and "standalone" with the ability to discharge the battery's full capacity up to 4-hours or 8-hours at a time (i.e., 4-hour duration storage and 8-hour

² ELCC is a measure of a resource's monthly RA contribution and is expressed as a percentage of project nameplate capacity, or the maximum power a project is capable of generating.

³ The CPUC's ELCC projections for use in the IRP Analysis (For Information Only) can be found here: ftp://ftp.cpuc.ca.gov/energy/modeling/ELCC_assumptions_used_within_the_Resource_Data_Template.xlsx

⁴ It is expected that the RA value (ELCC) of battery storage will also diminish as more battery capacity is added. This will require the development of new and complementary technologies, particularly longer duration energy storage.

duration storage). The maximum amount of energy each storage type included in the Accelerated Case is capable of discharging to the grid in a single charge/discharge cycle is as follows:

- 315 MW of 4-Hour duration energy storage: 1,240 MWh
- 15 MW of 8-Hour duration energy storage: 120 MWh

Of note since the completion of these reports is a proposal that could impair the cost-effectiveness, affordability and feasibility of connecting distributed energy resources, like solar and storage to the distribution grid. Pacific Gas & Electric Company (PG&E) filed a new Wholesale Distribution Tariff (WDT) proposal at the Federal Energy Regulatory Commission. The WDT governs the interconnection of load and resources to the PG&E-owned distribution grid. PG&E's proposal would impose barriers to distributed energy resource aggregations and distributed storage resources.⁵

- 4. The IRP should confirm if CleanPowerSF is evaluating available incentive programs, such as the CPUC's Self-Generation Incentive Program (SGIP), which provides incentives to support existing, new, and emerging distributed energy resources and their potential impacts to the IRP. Specifically, it is unclear if CleanPowerSF assumed any SGIP rebates for battery storage. The magnitude standalone 4hr battery impact shown in Figure 1 of the IRP reflects a significant portion of the portfolio in the year 2023 and the IRP should describe how that system will be funded.**

Response:

SFPUC staff accounted for known incentives that apply to utility-scale "in-front-of-the-meter" renewable energy and battery storage projects. SFPUC staff did not assume SGIP rebates would be available for the battery storage included in the IRP because these in-front-of-the-meter project types are not eligible for the SGIP, which is a program that incentivizes customer self-generation.

As instructed by the CPUC, SFPUC staff used the CPUC-provided costs⁶ for all technologies analyzed in the CleanPowerSF IRP, except for the local project assumptions developed for the Local Renewable Energy Report. Again, the projects analyzed in the Local Renewable Energy Report were focused on in-front-of-the-meter grid supply projects that are not eligible for SGIP rebates. The IRP analysis demonstrated that the level of battery storage investment included in the Accelerated Case was cost-effective relative to the level of investment featured in the other IRP cases analyzed. This storage development would be funded through CleanPowerSF's rates and appears as a cost in CleanPowerSF's wholesale power purchasing budget, in the near term, and the CleanPowerSF Capital Plan if the asset is ultimately owned by CleanPowerSF.

While SFPUC staff did not include SGIP assumptions in the CleanPowerSF IRP compliance filing, it is exploring how it can leverage the SGIP program within San Francisco. As SFPUC reservoirs, which represent the bulk of High Suitability in-City

⁵ See PG&E's September 15, 2020 filing, Proposed Rate and Non-Rate Changes to the Wholesale Distribution Tariff, FERC Electric Tariff Volume No. 4 and Related Service Agreements for Wholesale Distribution Service, eLibrary No. 20200915-5001 and associated errata, eLibrary No. 20200916-5119.

⁶ The CPUC Inputs and Assumptions Document which includes costs by technology type is available at: <ftp://ftp.cpuc.ca.gov/energy/modeling/Inputs%20%20Assumptions%202019-2020%20CPUC%20IRP%202020-02-27.pdf>

projects, do not take electricity or gas service from PG&E, they may not qualify for the program. The CleanPowerSF program can, however, help increase awareness of the SGIP and support participation by San Francisco residents, businesses, and community organizations.

- 5. The 2018 IRP included and the Local Renewable Energy Report for CleanPowerSF identified the Sunol Valley site as a highly suitable site. However, the 2020 IRP includes a footnote stating the 14 MW of solar and 7 MW of storage potential was derived from analysis of a lower suitability site in Sunol. CleanPowerSF should confirm if the Sunol Valley site is currently being considered as low or high suitability.**

Response:

The Sunol Valley Golf Course is considered a high suitability site, but as noted above, additional feasibility work is required. Previous analysis suggests that up to 40 MW of solar may be developed at the site. The SFPUC owns a number of other facilities in Sunol which were evaluated as part of the Local Renewable Energy Report and Included in IRP modeling. These are listed in Table 3 above. One of these other sites is the Western Star Lease area, which is currently occupied by a nursery and may undergo site use changes in the future. Due to the uncertainty surrounding the availability of the site for renewable development in the near-term, Western Star Lease was ranked lower than other SFPUC properties in Sunol. SFPUC staff believe that absent the competing usages, Western Star Lease could be a good candidate for renewable energy development and representative of other opportunities in the region. It was included in the IRP analysis as a proxy for these potential projects that could be developed on other sites within the region.

Now that the CleanPowerSF IRP has been submitted, SFPUC staff will continue to assess the feasibility of sites identified in the Local Renewable Energy Report and explore other opportunities to develop projects. We will be developing a Request for Proposals (RFP) for the highest suitability sites identified in the Local Renewable Energy Report. This work is expected to start in the coming months and will involve more technical site evaluation and identification of site-specific conditions and needs as well as community engagement. This will allow SFPUC staff to refine development potential and cost effectiveness assumptions for the sites and ultimately issue an RFP for the development of the most suitable projects.

- 6. The cost assumptions identified in Table 8 of the Draft 2020 IRP Report are unclear. For instance, it is unclear if the utility-scale projects capture all related costs – including entitlements, development to point of connection, operations, maintenance, and replacement.**

Response:

The costs identified in the Local Project Costs table are the Levelized Costs of Energy (LCOE) for the local projects. The LCOE captures all costs (capital, financing, operations, maintenance) over a project's lifetime or contract term and normalizes it by total electricity production over the period. This allows for more direct comparisons of different technology types.

7. The CleanPowerSF 2020 IRP Presentation dated August 13, 2020, does not successfully convey how the \$55/MWh average cost was determined on Slide 12 of the IRP Preferred Portfolio Presentation.

Response:

The \$55/MWh figure represents the average cost per MWh of CleanPowerSF energy supply costs in FYE20. The total is inclusive of all energy supply costs including energy and attributes, RA capacity, and California ISO market costs.

8. The SF LAFCo strongly encourages CleanPowerSF to emphasize the importance of system reliability and the impacts of Public Safety Power Shutoffs (PSPS) in the IRP, particularly addressing vulnerable populations who rely on electricity for their mobility, eating, and breathing needs in addition to other critical facilities.

Response:

Thank you for the comment and the input. The SFPUC will consider and prioritize vulnerable populations as it develops new programs and services to support on-site power supply and resilience.

9. The SF LAFCo strongly encourages CleanPowerSF to prioritize the rollout of programs to support local project investment, particularly in disadvantaged and vulnerable communities.

Response:

The SFPUC is committed to local investment and ensuring that historically underserved, disadvantaged, and vulnerable communities have equitable access to the benefits provided by local clean energy investment. To support investment within San Francisco, we are actively developing supply- and demand-side programming for CleanPowerSF customers. Many of these programs also include additional provisions for low-income customers. The Focus on Disadvantaged Communities section of the IRP narrative provides an overview of the programs under development that are targeted at low-income customers and Disadvantaged Communities.

These programs include:

- Disadvantaged Communities Green Tariff and Community Solar Green Tariff programs
- GoSolarSF incentives for low-income customers and a low-income inverter replacement program currently under development
- Energy efficiency programming to support food services, including food pantries and community support centers
- Installation of electric vehicle charging infrastructure, with a prioritization of multifamily residential buildings in Disadvantaged Communities

CleanPowerSF's Equity Working Group is also developing an Equity Framework that will support integrating equity into all aspects of CleanPowerSF operations.

10. The SF LAFCo recommends CleanPowerSF include a resiliency approach to their overall preferred portfolio and any systems and infrastructure the portfolio relies upon.

Response:

Thank you for the comment and the input. SFPUC staff look forward to further discussions with LAFCo and its consultant regarding the development of measures, including customer programs, that will improve San Francisco's energy resiliency. To the extent these solutions involve the distribution of power, the acquisition by the City of PG&E's electric distribution system within San Francisco would significantly increase the control that the City has over local project siting and improve the affordability and feasibility of connecting renewable energy facilities to the distribution system for local resiliency.

11. The SF LAFCo recommends including a timeline for implementing programs in development focused on disadvantaged communities.

Response:

As described in the IRP, SFPUC staff are preparing an application to the CPUC to implement a Disadvantaged Communities Green Tariff and Community Solar Green Tariff for CleanPowerSF customers. In order to participate in the CPUC's program, the application must be submitted by January 1, 2021. After submission of the Advice Letter, SFPUC staff anticipate that CPUC approval will take approximately 6 months. After program approval, implementation will be dependent on the contracting and project development timelines of new renewable and solar projects.

SFPUC staff is targeting submission of the food services energy efficiency program described on page 41 of the IRP narrative to the SFPUC for approval in the next few months. Following SFPUC approval, staff will file an Advice Letter with the CPUC to approve the program for funding from ratepayer public purpose funds. SFPUC staff anticipates that CPUC approval will take at least 6 months. During that time, SFPUC staff plan to prepare an RFP for energy efficiency services. SFPUC staff anticipate program launch will occur in 2022, but this timeline will be dependent on CPUC approval of CleanPowerSF's application.

In addition to these two programs that are in development, the SFPUC recently collaborated with the SF Department of the Environment to submit a grant application to develop and pilot a Virtual Power Plant (VPP) at affordable housing buildings. The VPP grant application proposes to package energy demand flexibility from a portfolio of multifamily and mixed-use buildings as a distributed energy resource for a retail seller of electricity. The overarching goal of the project is to provide a market-based solution to building decarbonization by unlocking the full capabilities of demand side energy resources through grid-interactive technologies and performance-based smart contracts. By developing the business case and demonstrating revenue-grade measurement and verification, this project seeks to develop and demonstrate a sustainable financial model that can help spur future investment in grid-interactive demand flexibility.

12. The IRP should describe how CleanPowerSF is proactively addressing PG&E's Power Charge Indifference Adjustment (PCIA), including PG&E's Fee predictions and how PCIA rules may affect their costs and planned

resources. Additionally, CleanPowerSF should inform the SF LAFCo of PCIA Working Group meetings and receive regular updates.

Response:

In the CPUC's IRP filing instructions, Investor Owned Utilities including PG&E were directed to address changes, including the possibility of future allocations of energy from their resource portfolios to other retail sellers that may result from a CPUC decision on the PCIA Working Group 3 issues. However, other Load Serving Entities, like CleanPowerSF, were instructed to not make any assumptions on future CPUC PCIA decisions in CPUC Decision (D.) 20-03-028⁷ and in the CPUC Resource Data Template.⁸

In CleanPowerSF's IRP modeling, only direct costs associated with the energy included in each portfolio were considered. In 2030, approximately 28% of the Accelerated Case energy supply comes from renewable energy facilities already in operation. While SFPUC staff included costs for acquiring these resources in CleanPowerSF's IRP, the IRP narrative acknowledges that there is still uncertainty regarding future PCIA resource allocations to CCAs, which could potentially meet some or all of this identified need. It is unclear at this time how such allocations might impact CleanPowerSF's energy portfolio costs.

It is uncertain how PCIA fees and rule changes will affect CleanPowerSF IRP plans at this time. SFPUC staff is working closely with other CCAs to advocate on behalf of ratepayers in the PCIA proceeding to ensure that PCIA costs are not unfairly shifted to CCA customers. SFPUC staff will plan to provide regular updates on the PCIA at LAFCo meetings and keep the LAFCo Executive Officer informed of opportunities to provide public comment or other support for CCA positions on the PCIA. Additionally, interested LAFCo members and members of the public can subscribe to the CPUC's PCIA proceeding listserv at the following link: <https://www.cpuc.ca.gov/PCIA/>. Information on public meetings, comments, and CPUC Decisions are sent to the Service List.

13. CleanPowerSF should describe how programs, such as a FiT (Feed-in Tariff) program, may impact the IRP and preferred portfolio.

Response:

Analysis conducted to support a future Feed-in-Tariff program estimates that a FiT could cost-effectively support as much as 10 MW of potential new solar capacity within San Francisco over the next ten or so years. The generation from these 10 MW represents about 0.005% of CleanPowerSF's projected energy supply in 2030 under its IRP Preferred Portfolio. While the potential capacity under a FiT is significant relative to the existing solar energy capacity in San Francisco, due to the relatively small amount of energy that may be produced, the 10 MW is not likely to have a significant impact on the composition or total costs of the Preferred Portfolio identified in the IRP analysis.

Additional time and analysis will be required to provide estimates of how other programs may impact CleanPowerSF's power supply and demand.

⁷ D.20-03-028, CoL 34, p.103 Available at: <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M331/K772/331772681.PDF> [Accessed 10/2/2020]

⁸ Available at: <ftp://ftp.cpuc.ca.gov/energy/modeling/Resource%20Data%20Template.xlsx> [Accessed 10/2/2020]

- 14. The IRP Presentation Slide 7 states that one of the goals is to optimize a portfolio that achieves program goals and delivers competitively priced energy products. However, it is unclear if the impact of policy, tax credits, and other subsidies were considered.**

Response:

As noted in our response to question number 4 above, SFPUC staff considered and accounted for all known applicable tax credits and other subsidies available for new in-front-of-the-meter renewable development in the CleanPowerSF IRP analysis. Slide 23 in the August 13, 2020 presentation posted on CleanPowerSF's IRP web page includes resource costs used in the IRP with and without the Investment Tax Credit (ITC).^{9, 10} CleanPowerSF's IRP narrative also discusses that the Accelerated Case has lower costs than the Base Case in part because more new resources are developed in advance of the scheduled ITC step-down to meet CleanPowerSF renewable goals sooner. New projects were also modeled to be contracted PPAs and have included accelerated depreciation in the cost assumptions where appropriate.

- 15. The SF LAFCo respectfully requests that CleanPowerSF publish a Draft IRP schedule for the 2022 IRP, including a milestone for engaging and consulting with internal and external stakeholders at least four months before the CPUC submission deadline. The SF LAFCo requests that CleanPowerSF ensure the next IRP planning process provides adequate time to solicit and incorporate stakeholder feedback and take into account local decision-making structures.**

Response:

SFPUC staff recognizes that there was limited time for stakeholders to review and comment on its 2020 Integrated Resource Plan filing and that more time would be ideal. The CleanPowerSF IRP team provided as much time as possible for stakeholders to review and understand the IRP analysis and recommendations, given the schedule imposed by the CPUC. CleanPowerSF provided the CPUC with feedback on how it can improve its IRP process to ensure that CleanPowerSF and other CCAs have an appropriate amount of time to engage with stakeholders prior to submitting the compliance filing.

This year, SFPUC staff provided a CleanPowerSF IRP schedule to both the SFPUC and the LAFCo that included time for stakeholder review. However, the schedule SFPUC staff prepared was significantly disrupted by delays by the CPUC in issuing the guidelines staff needed to commence plan analysis and writing. Despite staff's efforts to plan ahead, we were unable to allow for more review time due to late changes in the CPUC's filing requirements that compressed our portfolio modeling and IRP narrative development timeline. SFPUC staff was not able to develop a CPUC-compliant IRP for CleanPowerSF that also met San Francisco's electricity supply goals until the CPUC released its final IRP templates (on June 15) and guidelines (which trickled in even as late as August 28th, one business day before the IRP was due). We documented the

⁹ The Investment Tax Credit (ITC) is a federal tax credit available to investment in solar power facilities and co-located energy storage facilities.

¹⁰ See document titled "CleanPowerSF 2020 IRP Analysis, Findings & Results" posted at: <https://www.cleanpowersf.org/resourceplan>

challenges the CPUC's timeline posed for IRP completion, review, and approval in the Lessons Learned section of the IRP narrative. SFPUC staff will continue to advocate for a CPUC schedule that includes finalizing assumptions, requirements, and templates well in advance of the IRP filing deadline to allow CleanPowerSF and other entities more time for stakeholder review and feedback.

- 16. Due to the late release of the 2020 IRP Draft, the SF LAFCo will be submitting additional written feedback to CleanPowerSF for future discussions during SF LAFCo regular meetings. The SF LAFCo would like CleanPowerSF to confirm if they will be issuing an Addendum to the 2020 IRP and, if so, what their timeline for submitting will be.**

Response:

The SFPUC appreciates the feedback received by stakeholders and the LAFCo consultants. This feedback will be used to inform on-going planning work, renewable energy solicitations, developing customer programs, and the next IRP cycle. The SFPUC plans to continue working on the implementation of recommendations listed in the Local Renewable Report and Integrated Resource Plan as well as developing customer program offerings outside of the CPUC's IRP process. SFPUC will not be issuing an addendum to CleanPowerSF's 2020 IRP Compliance Filing, which was required to be submitted to the California PUC on September 1, 2020.

- 17. The SF LAFCo respectfully requests to be notified by CleanPowerSF when the solicitation process begins for any of the identified planned resources noted in the IRP slated for early 2021. Additionally, the SF LAFCo requests CleanPowerSF provide SF LAFCo with copies of all draft and final solicitation documents in addition to solicitation responses.**

Response:

To protect the integrity of the competitive solicitation process and prevent the disclosure of confidential and proprietary information, the SFPUC will not be providing LAFCo with draft solicitation documents or bids received while the solicitation is open or under way. However, SFPUC staff will notify LAFCo when future long-term resource solicitations are issued. The solicitation materials will be made available to the public on the Energy Vendors page of CleanPowerSF's website¹¹ and on SFBid.¹² CleanPowerSF is subject to the California Public Records Act which allows an agency, under some circumstances, to decline to disclose records that constitute "trade secrets" (Cal.Govt Code §6276.44; Cal. Civil Code §§3426; Evidence Code §1060.). Information included in solicitation responses, including proprietary financial data, pricing, and operational characteristics constitute a trade secret (Cal. Civil Code §3426.1), and are marked by respondents as such. Providing bid materials to LAFCo during the solicitation process could undermine CleanPowerSF's ability to protect confidential trade secrets or other information that if disclosed would be harmful to the City's interests, including but not limited to liability for failure to protect the bidders' trade secrets.

¹¹ The Energy Vendors page can be accessed at: <https://www.cleanpowersf.org/energyvendors>

¹² SFBid can be accessed at: <https://sfbid.sfwater.org/>