

## MEMORANDUM

DATE: September 17, 2024

TO: Jeremy Pollock, LAFCo Executive Officer

FROM: Michael Hyams, Deputy Assistant General Manager, *MAH*  
CleanPowerSF and Power Resources  
Daniel Young, Manager, Customer Programs *DY*  
Russell Stepp, Utility Specialist, Customer Programs *RS*

SUBJECT: Study on Barriers to Installing Battery Energy Storage Systems  
in Residential Buildings in San Francisco

---

On behalf of the staff of the San Francisco Public Utilities Commission (SFPUC), we are providing the following comments on LAFCo's recently completed study on the barriers to installing battery energy storage systems in San Francisco residential buildings (Study). The LAFCo study was conducted with funding provided by CleanPowerSF ratepayers pursuant to the Memorandum of Understanding (MOU) executed between the SFPUC and LAFCo on May 9, 2023.

We appreciate LAFCo's collaborative work on the Study, which involved the participation and consultation of staff from LAFCo, SFPUC, the Environment Department, Department of Building Inspection and the Fire Department.

We see battery storage as one of many important technologies and tools that will support reaching and maintaining San Francisco's goal of a 100% renewable energy system by optimizing the delivery and use of variable renewable generation and improving grid stability and reliability. The residential battery storage market is still developing and faces both cost and technical challenges. By providing general background on batteries and examining some of the barriers that may be slowing their deployment in residential buildings, this report will be a helpful resource for local policymakers.

The Study specifically focused on the very important challenges faced by local building and fire officials throughout the country as battery systems become more common in urban areas. It was gratifying that the Study concluded that local building and fire officials safeguarding San Francisco are generally in

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](https://cleanpowersf.org/privacy).

**OUR MISSION:** To provide our customers with high-quality, efficient and reliable water, power and sewer services in a manner that values environmental and community interests and sustains the resources entrusted to our care.

**London N. Breed**  
Mayor

**Tim Paulson**  
President

**Anthony Rivera**  
Vice President

**Newsha K. Ajami**  
Commissioner

**Kate H. Stacy**  
Commissioner

**Dennis J. Herrera**  
General Manager



lockstep with the several comparative jurisdictions examined. We hope that the identified permitting challenges (Section 15.2) and the suggested improvements made in the report in Section 15.3.2 (specifically defining key code terms and permitting process streamlining) are helpful to the Department of Building Inspection and the Fire Department as they continue to improve permitting requirements, and processes for this new technology.

Overall, we hope the Study's review of San Francisco's fire code and permitting processes for battery energy storage will help San Francisco improve the experience of residents seeking to install these systems. Improving the permitting process and inter-agency coordination for these projects will help residents willing to invest in clean energy systems and their installers avoid unnecessary delays and cost. The Study's conclusion that local regulations and code provisions were consistent with the other jurisdictions examined, indicates that San Francisco is not out of sync, and that other factors may be involved in shaping or limiting local uptake.

To enhance the value of batteries for residential customers, the Study recommends the City "facilitate opportunities for Virtual Power Plants." Virtual Power Plants are an emerging technology that involves aggregating various customer-owned/sited equipment (e.g., solar, batteries/energy storage, heat pumps, other building systems) through monitoring and control software to respond to power market price signals. Most Virtual Power Plants are managed by a third-party aggregator who controls the participating equipment and decides when and how they operate in exchange for sharing some of the revenue they earn with their owners (subject to agreement by the owner of the equipment). While there is promise in the use of Virtual Power Plants to control customer-owned equipment for the benefit of the grid, more research needs to be done to understand their effectiveness and value to both participating customers and utilities before committing to or facilitating these arrangements, as well as the role of other incentive mechanisms (e.g., rebates, etc.) that may also be used to promote storage.

The economics of energy storage is dynamic and constantly evolving in response to government policies, technological change, and global supply chains and markets. With the California Public Utilities Commission's recent adoption of the Net Billing Tariff (sometimes referred to as Net Energy Metering 3.0) oversizing solar has become a poor investment, which batteries can help mitigate, but adding a battery significantly increases the size of the overall investment required. To better understand what may be needed to foster the market for energy storage in San Francisco, additional work could be done to examine what motivates residential and commercial customers to invest in battery storage systems in the first place (e.g., financial payback, improved electric reliability, etc.), as well as the value of storage to the utility and the grid. The SFPUC will be evaluating these drivers as it works to design new programs to serve CleanPowerSF customers.

Although some areas require further research, we believe the Study will contribute to improving the experience of residential customers seeking to install battery systems. We look forward to continuing to work with LAFCo to

identify ways we can promote the equitable, smart growth of battery storage systems in San Francisco, as the market and technologies for these devices continue to mature.