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CITY ENGINEER

1149 S. BROADWAY, SUITE 700
LOS ANGELES, CA 90015-2213

<http://eng.lacity.org>

February 11, 2022

The Honorable Nithya Raman, Chair
Information, Technology, and General Services
Los Angeles City Council

c/o Michael Espinosa
Office of the City Clerk
Room 395, City Hall
Los Angeles, CA 90012

COUNCIL FILE NO. CF 21-0683: Relative to identifying services needed to develop a full plan to retrofit municipally-owned buildings to achieve net-zero energy

Recommendation: Receive and file this report.

The Council Motion 21-0683 made the following request:

DIRECT the General Services Department, working with the Bureau of Engineering, the Recreation and Parks Department, the Los Angeles Public Library, the City Administrative Officer (CAO), and any other City departments as needed, to report within 60 days with an assessment that will identify the staffing and/or contractual services needed to develop a full cost-estimate, timeline, and plan to retrofit prioritized municipally-owned buildings to achieve net-zero energy. The assessment should build upon the previously performed energy and water audits and account for the development of a prioritization methodology to identify buildings with maximum projected benefits of retrofits; and a procurement/funding plan for immediate retrofitting of the top-ten high-priority buildings to serve as a model for the process of decarbonizing/electrifying the remainder of the City's municipal buildings going forward. The assessment should consider the advantages of pursuing a contract for retrofits through an energy service contract, a Request for Qualifications process, and a Request for Proposal process, making a recommendation on which type of procurement process the City should pursue in order to retrofit the entire municipal building portfolio. The assessment should also include an analysis of potential impacts on jobs from



building electrification, mitigations for those job losses, and explore alternatives beyond electrification that can provide immediate reductions in greenhouse gases.

Background:

The science and understanding of climate change and the impacts of human activity have advanced considerably in recent decades. In terms of the built environment, which is widely acknowledged to be a large contributor to greenhouse gas emissions, the City of Los Angeles (City) has been addressing these issues over the last twenty years with the adoption of green building practices, which has included the City Council mandated use of the United States Green Building Council's (USGBC) LEED (Leadership in Energy and Environmental Design) rating system for City funded new construction projects over 7,500 square feet, by mandating green building codes for all construction in the City, and through the 2019 "Los Angeles Green New Deal Sustainable City pLAN: Environment, Economy, and Equity". Efforts in the construction industry have also gone through a transformation with the adoption of new construction methods and new building technologies. All of these activities in the built environment contribute to a goal of a net zero carbon future.

To date, the Bureau of Engineering (BOE) has successfully certified approximately 1.9 million square feet of City facilities using the LEED rating system. Additionally, BOE is piloting net-zero energy certification in multiple projects and has recently adopted the Buy Clean California Act to address embodied carbon emissions in certain construction materials.

The City Council passed multiple motions in 2021 that address different aspects of building decarbonization in City facilities. These related motions are: CF 21-0683, the Motion addressed in this report; CF 21-1039; CF 21-0432; CF 21-0352; and CF 21-1042. These motions direct City Departments to prioritize building decarbonization and related efforts which include building electrification, net-zero energy, solar photovoltaic installations, battery storage, electric vehicle charging, electric grid renewable energy generation, and related objectives. Below is a brief summary of these related Council motions:

CF 21-1039: Municipal Solar and Storage Program / Zero Carbon Energy / LA Sustainability Plan / Net Energy Metered / Resiliency Generation Systems / Grid Connected Systems

This Motion asks the City Administrative Officer (CAO) and the Chief Legislative Analyst (CLA) to develop a process for creating a sustainable municipal solar and storage program in coordination with the relevant City Departments. Also requested is a Building Decarbonization Work Plan to assess renewable solar energy generation potential of existing municipal facilities to prioritize projects for net-energy metered systems, resiliency generation systems, or grid-connected systems.

A subsequent Council action stated the following: "DIRECT the BOE to work closely with GSD, LADWP, CAO, CLA, RAP, and other City departments, and create a Building Decarbonization Workplan assessing the renewable solar energy generation potential of existing municipal facilities, in order to prioritize projects for net-energy metered systems, resiliency generation systems, or grid-connected systems. The Workplan should identify up to 25 facilities that are strong candidates for near-term pilot distributed energy generation systems that offer a high degree of solar energy generation efficiency, high community value, and project "shovel-readiness," giving special priority to buildings in disadvantaged communities in Los Angeles. The Workplan should leverage the existing GSD asset database, existing energy audits and physical needs assessments, existing energy use data, and pursue more comprehensive projects where feasible. The Workplan should address opportunities for cost efficiency and time efficiency through strategies such as bundling of projects and should include a funding plan for expeditiously spending the FY 21-22 funds. BOE with the assistance of the other City departments should report in 90 days on progress towards this goal." This Council action also provided funding for the Building Decarbonization Workplan to BOE.

CF 21-0432: Los Angeles Zoo / Solar Generation / Battery Storage / Electric Vehicle Charging Station Expansion / Los Angeles Department of Water and Power (LADWP) Feed-In Tariff Plus Program

The Motion asks Los Angeles Department of Water and Power (LADWP) in coordination with other City departments to provide options for the generation of 3 MW or more of solar generation and 1 MW of battery storage, including the incorporation of electric vehicle charging station expansion on-site at the Los Angeles Zoo.

CF 21-0352: LA100 / Strategic Long Term Resource Plan / 2035 100% Carbon-Free Energy / Los Angeles Department of Water and Power

The Motion requests LADWP to develop a Strategic Long Term Resource Plan to achieve 100% carbon-free energy by 2035, in a way that is equitable and has minimal adverse impact on ratepayers. Priority should be given for environmental justice communities which are defined as communities scoring at or above 80th percentile on the CalEnviroScreen score.

CF 21-1042: Carbon Neutrality / 100 Percent Renewable Energy / 2035 / Los Angeles Green New Deal / LA 100 Study / Cool City Challenge / Cool Blocks / Neighborhood Council Sustainability Alliance / Climate Emergency Mobilization

The Motions requests that the City's Departments, including proprietary departments, work with the City's Neighborhood Council Sustainability Alliance, the Climate Emergency Mobilization Office, and the LA Cool City Challenge team, and report back before the end of 2022 on a "robust, world-leading plan" to achieve the "moonshot goal" of carbon neutrality without offsets in Los Angeles by 2030.

Discussion:

Following extensive discussions between City Department and Council staff, it was agreed that a master plan was needed to address the goal of net-zero energy and decarbonization of existing City buildings. The City currently has approximately 590+ existing municipal buildings that are under City Council control and are managed and maintained by the City's General Services Department (GSD). Facility uses vary and include police stations, fire stations, libraries, animal shelters, recreational facilities, emergency operation centers, individual and shared maintenance and service yard facilities operated by various departments throughout the City, and more. These City facilities are vital to the City's daily operations to provide services to constituents, and to provide critical infrastructure for the operating Departments.

These 590+ buildings are unique in their use, size, age, location, building maintenance history, solar access, electrification, and resiliency needs. On one hand, the City has highly energy-efficient LEED Platinum certified buildings that will need minimal effort to decarbonize by eliminating the use of fossil fuel burning equipment. On the other hand, the City has 30+ year-old facilities with poor building envelopes and inefficient building systems. The majority of the 590+ existing buildings are also not all electric facilities.

In order to meet the net-zero energy and carbon neutral goals for all existing municipal facilities, the BOE, in coordination with other City departments, will lead the development of a Building Decarbonization Workplan (Workplan). The BOE will conduct a thorough evaluation of all existing facility conditions for building electrification opportunities, required building energy upgrades, on-site solar energy generation viability, and battery storage needs. The Workplan development will build on existing data sets using GSD's asset management software, so that the prioritization can be an ongoing process. Additionally, the Workplan will provide an analysis of potential impacts on jobs from transforming buildings to all electric and mitigations for those jobs that may be lost from full electrification.

BOE has identified a menu of four strategies for building decarbonization of City facilities that will be considered in the Workplan. These strategies are:

Strategy I: Building Electrification

Building electrification refers to shifting to the use of electricity rather than fossil fuels for fuel needs in buildings. Building decarbonization requires elimination of the use of fossil fuel burning equipment on-site, primarily natural gas. The four major uses of natural gas in City facilities are for boilers used for space heating and swimming pool heating; for other building heating, ventilation, and air conditioning equipment (HVAC); for domestic water heating; and for cooking. Electric alternatives for this equipment are now available in the market. Under this strategy, the Workplan will identify all buildings that require replacement of fossil fuel burning equipment on-site.

Strategy II: Whole Building Energy Retrofit

A whole-building retrofit involves the evaluation of the power and energy systems of the entire building in order to substantially reduce energy usage and minimize energy losses. This may include but is not limited to the replacement of the building HVAC system, replacing electrical distribution equipment, installing new lighting fixtures, installing new fire protection systems, new plumbing, and new security systems, and implementing improvements to the building envelope such as window replacements and/or reconfiguration, new exterior wall insulation, new roof and floor insulation, and green roof installations. Most major whole building energy retrofit projects should also include building electrification, building solar installations, and electric power battery storage as part of this strategy.

The Workplan for this strategy may be divided into categories for smaller-scale energy conservation and maintenance projects versus larger-scale building envelope and equipment replacement projects, and should identify potential net-zero energy projects. Net-zero energy projects are defined as projects that generate the same amount of electricity on-site during a span of one year as the facility uses, using a renewable energy source.

Strategy III: Building Solar

On-site renewable energy sources are an important strategy in the pursuit of net zero energy buildings. Under this strategy, all buildings will be evaluated for on-site installation of photovoltaic (PV) panels, and the Workplan will identify all buildings and/or campuses that have the ability to house on-site PV panels.

LADWP and GSD are currently negotiating a Memorandum of Understanding (MOU) that identifies three approaches for installing PV on City facilities. They are Net-Energy Metering systems (NEM), Resiliency Generation Systems (RGS), and Grid-Connected Systems (GCS). The Workplan will recommend one or more of these three energy generation systems for building solar implementation. This effort will require coordination with DWP and GSD. Consideration of on-site PV panels may include but is not limited to on-site space availability, grid connection, building energy usage and demand, maintenance & operations capabilities, and the structural capacity of the existing roof.

Strategy IV: Battery Storage

On site battery storage requires a consideration of space availability, an economic analysis, and an evaluation of the critical energy loads of the facility. This strategy looks at the battery storage needs for all City facilities. The draft GSD-DWP MOU identifies a Utility Built Energy Storage System (ESS) as one alternative for installing battery storage in City facilities. All RGS projects will utilize ESS to install batteries. Projects that are not part of RGS potentially could also utilize ESS services provided by LADWP. Battery storage will provide a minimum of four hours of backup power

for each facility's critical load. Projects with photovoltaic solar installations may have the ability to provide an extended duration of backup power.

The Workplan will consider cost efficiency, time efficiency building users, building area, year built, maintenance history, Energy Use Intensity (EUI), solar potential, electric grid conditions, building electrification, and other criteria. A maintenance strategy for all potential building upgrades will also be addressed in the final Workplan.

For tracking and reporting purposes, the goal is for GSD's existing Asset Management Tool and other City datasets to be integrated and augmented for centralized, electronic-based reporting and tracking. The goal is a consolidation of the data, and the capability to track the carbon equivalent reductions, energy use reductions and other data points.

Next Steps:

BOE anticipates initiating the Workplan at the beginning of the fiscal year 2022-23. The goal is to complete the Workplan in approximately a year. The funding for the Workplan was provided in a Council action in response to CF 21-1039.

For questions, please contact Deborah Weintraub of my staff at (213) 923-6259 or at Deborah.weintraub@lacity.org.

Respectfully submitted,



Gary Lee Moore, PE, ENV SP
City Engineer

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- cc: Lauren Faber O'Connor, Mayor's Office
- Michael Samulon, Mayor's Office
- Jennifer McDowell, Mayor's Office
- Josh Nuni, Council District 4
- Jessica Caloza, Board of Public Works
- Martin L. Adams, Los Angeles Department of Water and Power
- Tony M. Royster, General Services Department
- Valerie Melloff, General Services Department
- Lisa Gabriel Matsumoto, General Services Department
- Melody McCormick, General Services Department
- B.J. Fulkerson, General Services Department
- Deborah Weintraub, Bureau of Engineering
- Steven Fierce, Bureau of Engineering
- Zohra Akhter, Bureau of Engineering