DATE: September 9, 2019

AGENDA ITEM #3

TO: Environmental Commission

FROM: Callie Niday, Staff Liaison

SUBJECT: Silicon Valley Clean Energy Authority (SVCEA) 2019 Building Electrification and Electric Vehicle Infrastructure Reach Code Initiative

RECOMMENDATION:

Discuss proposed electrification Reach Codes for 2019 Energy Code and make a recommendation to City Council

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BACKGROUND

Silicon Valley Clean Energy (SVCE), along with Peninsula Clean Energy (PCE) and the San Mateo County Office of Sustainability, are supporting their municipalities to adopt building codes that will result in safer and more comfortable buildings, increase their electric vehicle charging infrastructure, and reduce their carbon footprint.

In support of municipalities and counties in SVCE and PCE service territory, SVCE and PCE are providing extensive technical assistance plus a $10,000 incentive to each city that brings reach codes to their councils.

Reach Code Adoption Process

Every three years, the State of California adopts new building standards that are organized in Title 24 of the California Code of Regulations, referred to as the California Building Standards Code. This regular update is referred to as a "code cycle." The last code cycle was adopted in 2016 and was effective as of live on January 1, 2017. The next code cycle will be adopted in 2019 and will be effective January 1, 2020. Cities and counties can adopt reach codes that require items that are above and minimum state code requirements. However, these reach codes must be filed with the State.

In addition, the California Energy Commission (CEC) requires that a cost-effectiveness study be conducted and filed in the case of local amendments to the Energy Code (Title 24, Part 6). It is required that the City demonstrate to the CEC, using a cost-effectiveness study, that the amendments to the code are financially responsible and do not represent an unreasonable burden to the non-residential and residential applicants. A cost-effectiveness study is not required for amendments to the Green Building Code (Title 24, Part 11).

Statewide Cost-Effectiveness Study for Energy Code Reach Codes

Funded by the California investor-owned utilities, the California Statewide Codes and Standards Program (Statewide Program) led the development of a cost-effectiveness study for Energy Code reach codes that examined different performance-based approaches for new construction of specific

building types. There are two kinds of reach code approaches: performance-based ordinances and prescriptive ordinances. Performance-based ordinances mandate an increase in the overall energy efficiency required but leave flexibility for the builder on how to achieve this goal. In contrast, prescriptive ordinances mandate implementation of a specific measure (such as solar panels or cool roofs). The Statewide Program's analysis focused on performance-based ordinances but some conclusions about prescriptive measures can be made from the results.

Prescriptive Codes: Require one or more specific energy efficiency measures.
Performance Codes: Require a building to perform more efficiently based on accepted computer modeling and allow trade-offs between energy efficiency measures.

Why Establish Reach Codes?
The benefits of greenhouse gas (GHG) free electricity can best be realized by electrification of new and existing buildings and transportation vehicles. Electrifying buildings and vehicles transition them away from the use of natural gas and gasoline to clean energy provided by SVCE. By developing electrification reach codes, cities can save energy and reduce GHG emissions in Santa Clara and San Mateo County. All-electric buildings are safer and healthier to live in along with being cost effective, especially when adopted at the new construction stage. It is most efficient for cities to coordinate adoption of reach codes with the adoption of the new 2019 building code, taking effect January 1, 2020.

Electric Vehicle Charging Infrastructure
Electric Vehicle (EV) charging requirements in California can generally be broken into three categories:

1. EV Charging Installed: all supply equipment is installed at a parking space, such that an EV can charge without additional equipment.
2. EV Ready: Parking space is provided with all power supply and associated outlet, such that a charging station can be plugged in and a vehicle can charge.
3. EV Capable: Conduit is installed to parking space, and building electrical system has ample capacity to serve future load. An electrician would be required to complete the circuit before charging is possible.

EV charging capacity and speed can be summarized as three categories:

1. Level 1: Capable of charging at 120V, 20A. This is a equivalent to a standard home outlet.
2. Level 2: Capable of charging at 240V, 30-40A. This is the service capacity typically used for larger appliance loads in homes
3. Level 3 (DC Fast Charging): Capable of charging at 20-400kW. This is the type of charger used for Tesla Superchargers and DC Fast Chargers at some supermarkets.

The 2019 California Green Building Code Update (Title 24, Part 11) increases requirements for electric vehicle charging infrastructure in new construction; including:

1. New one- and two-family dwellings and townhouses with attached private garages: must be Level 2 EV-capable
2. Multi-family dwellings: 10% of parking spaces must be Level 2 EV-capable
3. Non-residential: 6% of parking spaces must be Level 2 EV-capable

Building Appliance Electrification

For multiple reasons including health, safety economics and environmental benefits, there is considerable interest in mandating all-electric new construction, or "building electrification," which means that the buildings would not have any fossil fuel services. All-electric buildings have electric appliances for space heating, water heating, clothes-drying, and cooking. The interest in building electrification stems from the fact that SVCE is providing 100% carbon-free electricity and eliminating the use of natural gas can greatly reduce greenhouse gas emissions from the building sector. To date, the City does not often see all-electric buildings constructed. Mandating that all new construction be all-electric through the building reach code process has not been chosen as the appropriate path because of legal implications in proving cost-effectiveness of this approach to the CEC. The leading approach is to encourage electrification by giving builders the choice of two options:

1. achieving a higher energy efficiency level than the Energy Code using mixed fuels (natural gas and electricity); or
2. building an all-electric building at the minimum efficiency as required in the Energy Code. The Statewide Program's study analyzed this approach.

Electric Vehicle Charging Infrastructure

Local residents are showing a significant interest in electric vehicles. For example, the number of registered plug-in vehicles in Santa Clara county increased by 31% in 2018. By comparison, registrations for vehicles powered by fossil fuels shrank in 2018. It is widely known that availability of EV charging infrastructure is a critical component to EV adoption. Meanwhile, it is significantly more expensive to install charging infrastructure as a retrofit than it is during new construction. As such, ensuring that newly constructed residential and non-residential parking has ample EV charging capability will reduce long-term costs of EV infrastructure installation, while helping to increase EV adoption and decrease transportation-related greenhouse gas emissions. While California's new minimum requirements are a step forward, it is unlikely that the requirements for multi-family dwellings and non-residential buildings are enough to keep pace with expected EV growth looking towards 2030. The Statewide Program's team reviewed approaches to increase the amount of EV infrastructure in new construction buildings, while keeping construction costs as low as possible.

For more information on the Reach Code initiative, please visit:
https://www.svcleanenergy.org/reach-codes/

DISCUSSION

Staff attends monthly Member Agency Working Group (MAWG) meetings with SVCEA. The monthly updates can be found below.

SVCEA MAWG Updates (January 2019 – August 2019):

The MAWG did not meet in December 2018. City staff attended the SVCE County-wide Reach Code Working Group Launch on January 15, 2019 to learn more about the Reach Code project described above. Members of the City Manager's Office and Community Development Department attended as well.

At the January 24, 2019 MAWG meeting, the group discussed the potential for SVCEA to form a joint funding mechanism with BAAQMD and other agencies to fund EV infrastructure. SVCEA staff is currently developing an RFP and scope of work to secure a consultant to explore the EVSE market

and identify barriers, forecast infrastructure needs, and establish a mechanism to pursue grant funding. SVCEA also updated the group on youth focused programs like the Bike to the Future event, which took place in April 2019 and the creation of a student ambassador program, focused on educating students and schools about ways to reduce GHG emissions.

On March 20, 2019, SVCEA hosted a workshop on the Reach Code project to the appropriate City Staff, the Building/Developer Community and interested stakeholders. The Reach Code project is currently underway, the consultant completed the cost effectiveness study, and the initial draft of the reach codes was released in March.

At the April 25, 2019 MAWG meeting, the group discussed the release of the new PG&E rates for 2019. Sunnyvale gave a presentation on their Climate Action Playbook. The group received an update from Aimee Bailey, Director of Decarbonization and Grid Innovation, on SVCE Innovation Onramp which went live April 3, 2019. The Heat Pump Technology Days: Water Heating Meeting was held on May 9, 2019 in San Francisco. SVCEA also informed the group that the results of the cost effectiveness study for the Reach Codes project are available. SVCE is looking for input from cities and stakeholders; May 15, 2019 is the deadline to provide input before the reach code language is drafted. In May 2019, SVCEA launched a showcase design grant focused on all-electric projects within the service territory; the new all-electric Los Altos Community Center may be eligible. Also, the group announced that PG&E has delivered gas data for the Climate Action Plan.

At the May 23, 2019 MAWG meeting, SVCE presented the heat pump water heater program, which launched in June 2019. This program is offering funding for 100 residential projects including incentives for new heat pump water heaters and new solar panels. The group received an update on the showcase of all-electric design awards, which also launched in June 2019. The awards are going to be available for all-electric buildings that are already built, rather than future projects. The goal is to showcase the participating projects in SVCE's resource center. SVCE also gave an update on the jurisdictions that have sent in a letter of intent for the reach codes – including Cupertino, Milpitas, Morgan Hill, Mountain View, Campbell, Los Altos, and Sunnyvale. On May 29, 2019, the building model reach code language was shared and on June 6, 2019, the electric vehicle model reach code was discussed.

At the June 27, 2019 MAWG meeting, the group discussed the reach codes initiative with the building officials from various jurisdictions. The building officials from the City of Sunnyvale, City of Milpitas, and the City of Cupertino attended this meeting. As previously discussed, the overall goal of adopting a reach code is to increase the electrification of buildings and decrease buildings overall carbon emissions. Additional benefits of constructing a home that is all-electric is that they are the healthier, cleaner, safer, and more cost-effective option than building a home that has mixed-fuel (electricity and natural gas). Three pathways were presented at the meeting, including: pathway 1 (all-electric), pathway 2 (mixed fuel), and pathway 3 (mixed-fuel with no space and water heating). Pathway 3 would cut the carbon emissions by 80% and would still offer people the option to have comfort appliances (i.e. gas stove top and gas fire pit). In addition, the group received an update that the all-electric showcase awards are now live; applications will be accepted until July 26, 2019. SVCE will showcase the customers who have successfully constructed an all-electric home and will showcase the design elements to help support the reach code effort. The FutureFit Heat Pump Water Heater program launched on June 28, 2019 and about 115 people have already shown their interest. The Heat Pump Cost Effectiveness webinar was given on July 3, 2019.

At the July 25, 2019 MAWG meeting, Aimee Bailey introduced a new program focused on grid integration called the Virtual Power Plant (VPP) initiative. To better understand VPP functions and values, SVCE and Gridworks are releasing the Silicon Valley Clean Energy Virtual Power Plant Options Analysis Discussion Draft to generate thoughts, ideas, and feedback on possible solutions and the path to achieving those solutions in Silicon Valley. Other programs discussed at the MAWG meeting include the Innovation Onramp Program, the All-Electric Showcase Awards, and FutureFit – the heat pump water heater program. The Heat Pump Water Heater Buyers Guide can be found in Attachment A. It was announced that the City of Berkeley unanimously voted to ban natural gas for new low-rise residential buildings starting January 1, 2020. PG&E has offered to attend council meetings in support of building electrification. There is a Building Decarb Coalition webinar on August 29, 2019 called "Is a Gas Moratorium Right for You?" In addition, SVCE announced that there are existing tools on their website to help support the reach code effort, including the Model Staff Report Letter Template and informational flyers (found in Attachment B). Additional tools are currently under development, including a general slide deck for City staff use, building department checklists, a cost effectiveness informational chart, an electric vehicle cost effectiveness analysis, and an informational video. An update was given to the group that the 2018 GHG inventory is almost completed. Lastly, the Draft EV Infrastructure Joint Action Plan was discussed.

At the August 22, 2019 MAWG meeting, Don Eckert, the Director of Finance of SVCE, gave a presentation on the proposed 2019-2020 operating budget. A status update of the following programs was given: all-electric showcase awards, heat pumps, reach codes, and VPP. In addition, an announcement was made about the California Electric Vehicle Infrastructure Project (CALeVIP): SVCE formed a regional coalition with other Community Choice Aggregations and municipal utilities to try to interest the CEC in partnering on a CALeVIP program in our area. The CEC announced earlier this month that they have chosen SVCE for a CALeVIP launch in 2020, with a combined funding of $60 million! As SVCE's territory will have $12 million dedicated to it (with half coming from the CEC and half from SVCE), this program will lead to substantially more charging infrastructure installed throughout SVCE territory.

More information can be found at:

- SVCE's Webpage on CALeVIP
- CALeVIP Website
- 2020 CALeVIP Announcement Presentation from CEC

Attachments:
A. CALeVIP Grant Press Release

For Immediate Release
August 14, 2019

State Proposes $33M in New Funding for Electric Vehicle Charging in Santa Clara and San Mateo Counties

California Energy Commission to help the Peninsula and South Bay keep pace with rapid adoption of electric vehicles

Santa Clara and San Mateo Counties, Calif. - The California Energy Commission is partnering with five local energy agencies to launch an incentive project for the installation of public electric vehicle (EV) charging stations throughout Santa Clara and San Mateo counties. As more Californians choose to drive EVs and the state transitions to an electric transportation system, there is a continued need for available charging stations. This is especially the case in Silicon Valley, which has the highest rate of EV sales in the state.

The project, expected to launch in spring of 2020, is an initiative of the Energy Commission's California Electric Vehicle Infrastructure Project (CALeVIP), which works with local community partners to develop and implement regional incentive projects for charging infrastructure that supports the adoption of EVs statewide. Funding will span two to four years.

The Energy Commission is proposing to provide $21 million in incentives to Santa Clara County and $12 million in incentives to San Mateo County. City of Palo Alto Utilities, Peninsula Clean Energy, San José Clean Energy, Silicon Valley Clean Energy and Silicon Valley Power are pledging to contribute millions in matching funds to this effort, pending approval by their respective governing boards or city councils. By leveraging local investment, CALeVIP funds will further expand EV charging accessibility in the region.

"This project will help provide the necessary infrastructure for the shift to a clean, electric transportation system statewide," says California Senator Bob Wieckowski. "Adding charging options in convenient locations will make electric vehicles accessible for those unable to charge at home. This in turn will support a continued increase in EV adoption, allowing our communities to meet our climate goals, and helping everyone benefit from better local air quality."

"The lack of charging stations is one of the main reasons consumers are reluctant to make the switch to electric vehicles. We can't move the needle on EV adoption unless we aggressively expand our charging infrastructure. This state and local funding partnership would not only support the current demand in the South Bay and Peninsula, but also help meet the needs of future EV drivers," said Assemblymember Phil Ting (D-San Francisco), whose district includes northern San Mateo County.

"The Energy Commission is excited to work with all our partners on this project to increase access to convenient charging for electric vehicles in Santa Clara and San Mateo counties,"

said Commissioner Patty Monahan of the Energy Commission. "By expanding the state's charging network, CALeVIP projects like this one help the state transition to zero-emission transportation, provide cleaner air and reduce greenhouse gas emissions."

CALeVIP works to address regional needs for EV charging infrastructure throughout California, while supporting the state's goals to improve air quality, fight climate change and reduce petroleum use.

The incentive project will help increase the number of fast chargers and Level 2 chargers in public, workplace and multi-family housing locations, as well as along highway corridors.

Fast chargers provide at least 100 miles of range per hour of charging, and some can charge a battery up to 80 percent in 30 minutes. Level 2 chargers provide 15-35 miles of range per hour of charging, which is enough for most day-to-day driving.

California's goal is to get 5 million EVs on its roads by 2030 to reduce carbon emissions and to support those vehicles by installing 250,000 chargers statewide, including 10,000 direct current fast chargers, by 2025.

Santa Clara and San Mateo counties receive clean electricity from local energy providers that is at a minimum 80 percent greenhouse-gas free. Powering cars with electricity rather than fossil fuels dramatically reduces tailpipe emissions that contribute to climate change and air pollution. CALeVIP funding and the matching funds from local agencies will help Santa Clara and San Mateo counties accelerate this transition, reducing greenhouse gas emissions from the transportation sector, the leading source of emissions in Silicon Valley.

CALeVIP has several regional projects throughout the state, including projects in Fresno, Sacramento and Southern California. CALeVIP and its regional projects are implemented by the Center for Sustainable Energy and funded primarily by the Energy Commission's Clean Transportation Program (also known as the Alternative and Renewable Fuel and Vehicle Technology Program).

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About the California Energy Commission
The California Energy Commission is leading the state to a 100 percent clean energy future. It has seven core responsibilities: developing renewable energy, transforming transportation, increasing energy efficiency, investing in energy innovation, advancing state energy policy, certifying thermal power plants, and preparing for energy emergencies.

About the Center for Sustainable Energy
The Center for Sustainable Energy® (CSE) is a nonprofit offering clean energy program administration and technical advisory services. With the experience and streamlined efficiency of a for-profit operation, CSE leads with the passion and heart of a nonprofit. We work nationwide with energy policymakers, regulators, public agencies, businesses and others as an expert implementation partner and trusted resource. EnergyCenter.org

About City of Palo Alto Utilities (CPAU)
The City of Palo Alto is the only municipality in California operating a full suite of utility services, including electric and fiber optics, water, wastewater, natural gas, refuse and

storm drain services. Since 2013, the City's electric supply portfolio has been carbon neutral. For more about CPAU's EV programs, visit cityofpaloalto.org/EV

About Peninsula Clean Energy
Peninsula Clean Energy (PCE) is San Mateo County's official electricity provider. PCE (www.PeninsulaCleanEnergy.com) is a public local community choice energy program that provides electric customers in San Mateo County with cleaner electricity at lower rates than those charged by the local incumbent utility. PCE is projected to save customers more than $18 million a year. PCE, formed in March 2016, is a joint powers authority made up of the County of San Mateo and all 20 cities and towns in the County. PCE serves approximately 290,000 accounts. www.peninsulacleanenergy.com

About San José Clean Energy
San José Clean Energy is the new electricity generation service provider for residents and businesses in the City of San José, operated by the City's Community Energy Department. Governed by the City Council, it provides over 328,000 residential and commercial electricity customers with cleaner, lower carbon power options at competitive prices, from sources like solar, wind and hydropower. For more information, please visit www.SanJoseCleanEnergy.org.

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About Silicon Valley Clean Energy
Silicon Valley Clean Energy is a community-owned agency serving the majority of Santa Clara County communities, acquiring clean, carbon-free electricity on behalf of more than 270,000 residential and commercial customers. As a public agency, net revenues are returned to the community to keep rates competitive and promote clean energy programs. Member jurisdictions include Campbell, Cupertino, Gilroy, Los Altos, Los Altos Hills, Los Gatos, Milpitas, Monte Sereno, Morgan Hill, Mountain View, Saratoga, Sunnyvale and unincorporated Santa Clara County. SVCE is guided by a Board of Directors, which is comprised of a representative from the governing body of each member community. For more information, please visit SVCleanEnergy.org.

About Silicon Valley Power
Silicon Valley Power (SVP) is the trademark adopted for use by the not-for-profit electric municipal utility of Santa Clara, CA, serving residents and businesses for over 120 years. SVP provides power to nearly 55,000 customers, at rates 25 to 48 percent below neighboring communities. SVP is the only full service, vertically integrated publicly owned utility in Silicon Valley owning generation, transmission and distribution assets. See more at: http://www.siliconvalleypower.com/.

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