



DATE: December 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

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 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.

At the September 26, 2019 meeting, the group introduced the new SVCE staff members and announced the new open positions. The group discussed a status update on the current SVCE programs. A presentation on the Climate Youth Ambassador Program was given which focuses on bringing environmental awareness to elementary, middle, and high school students. To date, the group has engaged in 11 community outreach events and have talked to over 600 kids. The group intends to expand the climate youth ambassador team so they can continue to spread awareness of the climate crisis.

At the October 24, 2019 meeting, an announcement was made regarding the Energy Atlas tool for local governments. The group discussed the SVCE program updates including: reach codes, FutureFit heat pump water heater program, EV priority zones for DC fast charging, VPP, EBCE resiliency RFP, and the customer resource center. In addition, Don Bray lead a discussion on local regulatory opportunities.

At the November 2019 meeting, SVCE announced that applications for the Education Fund are now open. The Education Fund would provide students with funding for a project or competition and should focus on education and outreach. Projects should incorporate eliminating carbon emissions to fight climate change and can range from art installations and student-led events to videos, journalism

projects, student competitions, robotics and more. The reach codes progress is updated on the SVCE website daily and can be found here: <https://www.svcleanenergy.org/reach-codes/>.

Attachments:

- A. Los Altos Community Benefits Summary
- B. 11/19 Council Meeting Reach Code Discussion Update
- C. SVCE Reach Code Update

2019 Community Benefits Summary

City of Los Altos and Silicon Valley Clean Energy

In 2016, the City of Los Altos and twelve other local communities formed Silicon Valley Clean Energy (SVCE) to provide our region with clean electricity at competitive rates, reduce greenhouse gas emissions and fight climate change.

SVCE supplies electricity principally from wind, solar and hydro resources, and is helping communities switch from fossil fuels to clean electricity in buildings and transportation. Los Altos residents and businesses are receiving clean electricity, lowering emissions and saving money.

Los Altos Results - Clean, Safe, Affordable



12,200 households and businesses receiving clean electricity from carbon-free sources



\$952,000 in electricity savings for Los Altos customers



\$48,900 in cash payments to customers for generating surplus solar energy



100% of electricity used at municipal facilities sourced from renewable wind and solar



98% reduction in electric utility-related emissions (**17 million pounds** greenhouse gas emissions avoided by providing clean energy)

2019 Regional Achievements

- **19.8% reduction** in annual greenhouse gas emissions compared to 2015
- **\$28.7 million** in electricity savings for customers
- **270,000+** residential and commercial customers - a **96%** participation rate
- **537.9 million pounds** of greenhouse gas emissions avoided
- **310 megawatts** of new renewable energy projects under development
- **\$8 million** approved by SVCE Board for new electric vehicle charging stations



Silicon Valley Clean Energy in Los Altos

SVCE is working in your community to advance clean energy awareness, education and programs, including:

- Annual sponsor of Los Altos Arts & Wine Festival
- Monthly meetings with city staff
- Local building code updates
- Rebates for Heat Pump Water Heater installations
- All-Electric Showcase Awards
- Chamber of Commerce member and sponsor

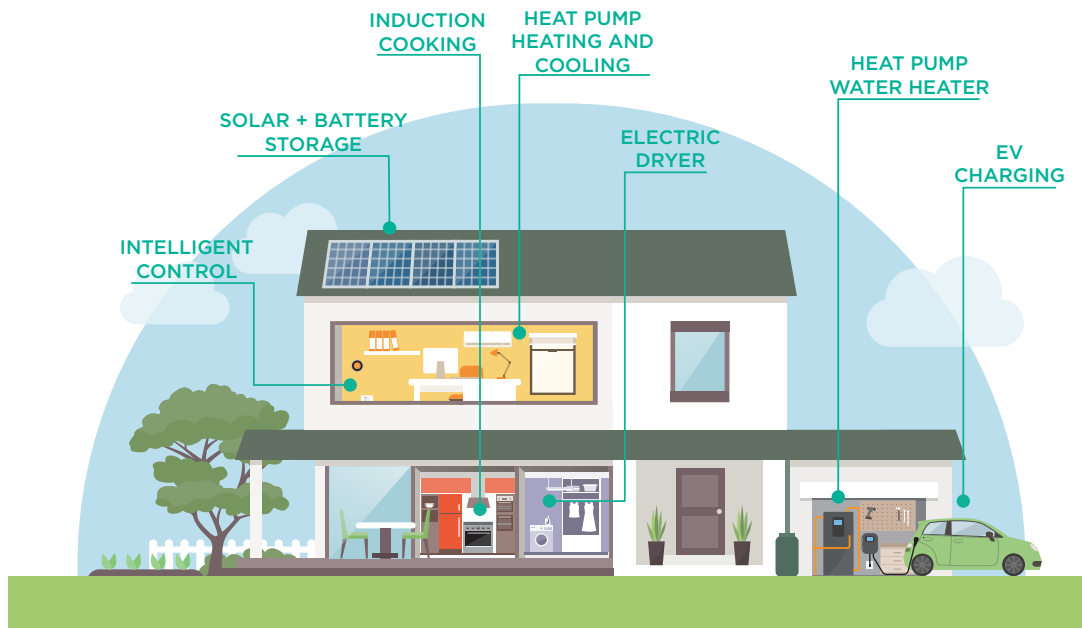


Los Altos Arts & Wine Festival

Looking Forward: The All-Electric 'FutureFit' Home

Our local communities are taking big steps to create a healthier environment and combat climate change. Transitioning from fossil fuels to clean electricity in our homes and transportation will dramatically reduce emissions and offers improved efficiency, safety and performance.


Learn more about the all-electric 'FutureFit' home at www.svcleanenergy.org/electrify.




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11/19 Council Meeting Reach Code Discussion Notes:

At the November 19th Council Meeting we presented the Commission's recommendation for Reach Building and EV Codes.

The Council provided general direction to Staff and Commission to pursue a building code for 100% electric buildings and to remove the allowance for natural gas cooking and comfort appliances in new buildings. They were concerned the proposed code needs to be clearer on what types of buildings it would apply to (e.g. all single-family & multi-family residential, commercial and office?). The council wanted more investigation on any exceptions that may need to apply for certain types of buildings (such as Menlo Park did for Life Sciences buildings) or if it would be an appeal-basis for exceptions. There was a lengthy discussion about whether to include any threshold of remodel in the reach code. If remodels were to be included there needs to be clarity on a threshold that would trigger the reach code and, if remodels were included, the Council was interested in allowing for natural gas use for cooking and comfort appliances. Overall, the Council leaned toward only applying the codes to new construction.

For the EV Reach Code, the City Council directed us to pursue increasing the single-family home requirement to include 2 level 2 EV-ready parking spaces (as opposed to 1 level 2 EV-ready and 1 EV-capable). The code also needs to clarify what happens with Multi-family EV requirements to clarify what happens with percentages that would result in partial spaces (e.g. what is 10% of 15 spaces?). There was also question about the disparity in the requirement of 1 level 2 EV-ready space per unit for building of less than 20 units but a lesser requirement for more than 20 units.

In general, there was a discussion about the need to do public outreach on the codes. In addition, there is a need to edit the proposed ordinance language for clarity and accuracy.


Member Agency	Status	Next Meeting	Date of Next Meeting	Code Language	Building Reach			EV Reach
					Encourage Gas Reduction (1 + 2 + 2A)	Limit Gas (1 + 2A)	Ban Gas (1 only)	Higher than CalGREEN
Mountain View		Approved		Begins on pg. 23			X	X
Morgan Hill		Approved		Begins on pg. 45			X	
Milpitas		Approved		Begins on pg. 1132	X			X
Monte Sereno		Approved		Begins on pg. 3	X ¹			X
Saratoga		2nd Reading	Dec. 4	Begins on pg. 33		X		X
Los Gatos		2nd Reading	Dec. 17				X	X
Los Altos		1st Reading	Jan. 23				X	
Cupertino		1st Reading	Dec. 17				X	X
Campbell		1st Reading	Jan. 21			X		
Los Altos Hills		Staff Proposal	Dec.4			X		
Santa Clara County		Staff Proposal			X			
Sunnyvale		Staff Proposal				X		
Gilroy	-	Declined						

¹Reach code proposes wiring all homes for electric appliances and battery storage

Key

Status

 Approved

 2nd Reading

 1st Reading

 Staff Proposal

 Council Briefing

Building Reach

- 1 - All-electric buildings
- 2 - Mixed fuel has higher requirements
- 2A - Mostly electric/electric heating only