CITY OF MILPITAS
AGENDA REPORT
(AR)

Item Title:	Introduce Ordinance No. 65.148 Adopting by Reference the 2019 California Energy Code with Amendments; introduce Ordinance No. 65.149 Adopting by Reference the 2019 California Green Building Standards Code with Amendments; and Set a Public Hearing on December 3, 2019 for Adoption of the Ordinances
Category:	Community Development
Meeting Date:	11/5/2019
Staff Contact:	Sharon Goei, 408-586-3260; Bill Tott, 408-586-3263
Recommendation:	1. Following the City Attorney's reading of the title, move to waive the first reading beyond the title and introduce Ordinance No. 65.148 amending Chapter 11 of Title II of the Milpitas Municipal Code adopting by reference the 2019 California Energy Code with amendments. 2. Following the City Attorney's reading of the title, move to waive the first reading beyond the title and introduce Ordinance No. 65.149 amending Chapter 19 of Title II of the Milpitas Municipal Code adopting by reference the 2019 California Green Building Standards Code with amendments. 3. Set a public hearing on December 3, 2019, pursuant to California Government Code Section 50022.3, for adoption of the Ordinances.

Executive Summary:

Staff recommends adopting local amendments to the 2019 California Energy Code pertaining to building electrification, mixed fuel construction, and solar photovoltaic systems, and the 2019 California Green Building Standards Code pertaining to electric vehicle (EV) charging for new residential and non-residential construction. These local amendments, referred to as reach codes, would exceed the requirements in the 2019 state codes to more effectively combat climate change and meet established state targets for reducing greenhouse gas emissions (GHG). The proposed reach codes for Milpitas provide pathways/options and offer a balanced approach to new residential and non-residential construction. They were largely based on the model code amendment initiated by Silicon Valley Clean Energy and incorporate adjustments as a result of outreach and stakeholder input from the Milpitas community. Adopting the proposed reach codes will help reduce GHG emissions for new construction, improve indoor air quality and the safety of our building stock, support affordable housing, and stimulate the use of electric vehicles in the Milpitas community.

In order to make amendments to the California Building Standards Code, the City must make express findings that the amendments and modifications are reasonably necessary because of local climatic, geological or topographical conditions. These findings are contained in the proposed ordinance.

This report provides an overview of: 1) the reach code adoption process; 2) statewide cost-effectiveness studies for electrification reach codes for new residential and nonresidential buildings; 3) regional reach code focus and local engagement efforts; 4) benefits to low-income communities; and 5) proposed Milpitas reach code amendments to the California Energy Code and Green Building Standards Code (CALGreen) for the 2019 triennial code adoption cycle.

Background:

The City of Milpitas has demonstrated leadership in sustainability, especially over the past seven years in which the City installed 895 kW of solar photovoltaic panels at three City facilities including the Sports Center, adopted its first Climate Action Plan (CAP) for reducing greenhouse gas emissions (GHG) through 2020 (an

update is planned for 2020), and launched a community scale carbon-free electricity endeavor through participation in the Silicon Valley Clean Energy (SVCE) program.

Through the SVCE community choice energy provider of carbon-free electricity (with opt-up to 100% renewable electricity), almost 97% of Milpitas resident and businesses now enjoy receiving carbon-free electricity and over $1.2 million savings in on-bill charges while significantly reducing GHG. While these savings and reductions in GHG represent significant actions, more needs to be done to minimize climate change and meet State established GHG reduction targets.

The most recent State target was set by Governor Brown's Executive Order EO B-55-18, signed on September 10, 2018, which establishes the goal for the state to be carbon neutral as soon as possible, and no later than 2045.

Based on the City and state goals to reduce GHG emissions, electrification retrofits will be necessary and ultimately required for renovation of existing buildings and new buildings constructed under current standards. Addressing electrification now in new buildings avoids hardships for tenants and retrofit costs for building owners in the future and acknowledges the GHG impacts under current construction practices, especially when considering the benefits of building and transportation electrification when paired with carbon-free electricity that is provided by SVCE.

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 on January 1, 2017. The next code cycle will be adopted in 2019 and will be effective January 1, 2020. Cities and counties have the authority to adopt local amendments ("reach codes") that require new development projects to exceed minimum requirements in the California Energy Code and California Green Building Standards Code (also known as CALGreen).

The City of Milpitas is participating in the Silicon Valley Clean Energy reach code grant offering, which will provide $10,000 to the City for presenting reach codes to the City Council for consideration. Please see Attachment H for the SVCE Letter of Interest for the $10,000 grant.

Analysis:

Proposed Code Amendments

A. Energy Code

New to the 2019 California Energy Code is an all-electric pathway for energy efficiency compliance. This all-electric pathway is NOT a reach code amendment but one of two general paths that developers and builders can choose from to provide enhanced electrification and GHG reduction. The other pathway is where reach codes can be provided, and utilizes mixed fuel construction in new buildings, with some paths using more electrification and some using less. Please see the proposed ordinance Attachment A for the Energy Code amendment language regarding the various mixed fuel options that can be found in the proposed ordinance. Staff has also prepared a summary of the reach code technical information in an easier-to-digest format in Attachment C. The summary shows the various performance and prescriptive pathways that are available under the proposed reach code amendments to the Energy Code.

Regarding solar photovoltaic mandatory requirements for non-residential buildings, new buildings with less than 10,000 square feet floor area need to provide a minimum 3-kW solar photovoltaic system. New buildings with 10,000 square feet floor area or more need to provide a minimum 5-kW solar photovoltaic system. The reach code also provides an alternative to the solar photovoltaic system by providing a solar hot water system (solar thermal) for non-residential buildings. These requirements were adapted as part of the model reach code to provide the ability for projects to offset added electrical load on the utility grid.

The proposed reach code is largely based on the model code amendment developed by Silicon Valley Clean Energy, which has been vetted through considerable research and public review. Staff also incorporated adjustments in the proposed reach code as a result of stakeholder input from the Milpitas community. The proposed reach codes for Milpitas provide pathways/options and offer a balanced approach to new residential and non-residential construction.

B. Green Building Standards Code (CALGreen)

It is widely known that availability of electric vehicle (EV) charging infrastructure is a critical component to EV adoption. Retrofitting existing buildings with EV charging infrastructure is significantly more expensive than it is during new construction.

EV reach codes will ensure that newly constructed buildings have ample EV charging capability to reduce long term costs of EV infrastructure installation while helping to increase EV adoption and decrease transportation related GHG emissions which account for approximately 50% of total GHG emissions.

The proposed reach code amendments will provide a higher percentage of charging infrastructure in new construction through a combination of Level 1 and Level 2 circuits with varying readiness. Please see Attachment B for the code amendment language and Attachment D - Summary of proposed Green Building reach codes for more details on the proposed EV charging reach code amendments.

Costs/Benefits of Proposed Amendments

A. Statewide Cost-Effectiveness Study

Funded by the California Investor-Owned Utilities (IOUs) such as Pacific Gas and Electric (PG&E), the California Statewide Codes and Standards Program (Statewide Program) completed cost-effectiveness studies for new residential and non-residential construction, for use statewide in the current building code cycle. The reach code cost-effectiveness study for nonresidential new construction is posted at https://peninsulareachcodes.org/wp-content/uploads/2019/09/2019-NR-NC-Cost-Effectiveness-Study-2019-07-25.pdf. The residential cost-effectiveness study is posted at https://peninsulareachcodes.org/wp-content/uploads/2019/09/2019-Res-NC-Reach-Codes.pdf. The proposed Milpitas reach codes are based on data in these studies, specific to Climate Zone 4. These studies are required for California Energy Commission (CEC) review and approval of amendments to the California Energy Code.

B. Project Feasibility

While the environmental benefits of reach codes for building electrification and EV charging have been well-documented, there have been concerns expressed by the development community on the financial impact on project feasibility due to increased construction costs associated with reach codes.

According to the statewide cost-effectiveness studies noted in the previous section, all-electric buildings offer savings on “first” construction costs for all building types when compared to mixed fuel buildings in all climate zones.

These same studies do account for the increased “first” construction costs for mixed fuel construction, but the Nonresidential and Low Rise Residential New Construction cost-effectiveness studies above found all mixed fuel building prototypes in Climate Zone 4 to be cost-effective when using the time dependent valuation of energy (TDV) methodology. This methodology intends to capture the “societal value” or cost of energy use including long term projected costs such as the cost of providing energy during peak periods of demand, projected costs for carbon emissions, and grid transmission impacts. Energy use is valued differently depending on the fuel (natural gas, electricity), time of day, and season. Electricity used (or saved) during peak periods has a much higher value than electricity used (or saved) during off-peak periods. This is the methodology used by the Energy Commission in evaluating cost-effectiveness for efficiency measures in reach codes.

C. Building Electrification

The interest in building electrification and renewable energy is partially derived from the impetus provided by Silicon Valley Clean Energy (SVCE) which has been providing 100% carbon-free electricity for the City of Milpitas since June 2018. Greenhouse gas emissions (GHG) has been reduced by 59.3 million pounds from June to September 2018. Further elimination of natural gas usage through building electrification would greatly reduce greenhouse gas emissions. Building emissions of GHG account for approximately 35% of total GHG emissions.

Other benefits of electrification and renewable energy include on-bill savings for SVCE customers, cleaner, heathier indoor air quality, and greater safety due to the elimination of toxic and potentially lethal products of gas combustion such as carbon monoxide. For these reasons, there is considerable interest in promoting higher levels of all-electric new construction, or "building electrification," which is now available for the first time through the pathway provided by the 2019 Energy Code.

SVCE has taken the lead in Santa Clara County for researching and developing prototype standards for the reach codes, Staff have worked closely with SVCE and its consultants to interpret and apply the 2019 cost-effectiveness studies for low-rise residential and nonresidential new construction to the Milpitas reach code. The proposed electrification reach code for Milpitas is in alignment with the requirements of the California Energy Commission (CEC) for cost-effectiveness in terms of both construction costs and on-bill costs of consumers. In addition, the cost-effectiveness analysis show that all-electric buildings are usually less expensive to construct than mixed-fuel buildings.

D. Electric Vehicle Charging Infrastructure (EVCI)

Based on an analysis by consultants at the New Buildings Institute, of additional costs of implementing various EV infrastructure measures for a 92,000 square foot multi-family building and a 100,000 square foot office (nonresidential) building, each with 100 parking spaces, staff developed the table below for proposed EV infrastructure reach code requirements for Milpitas.

The table illustrates how additional EV infrastructure requirements could impact first construction costs as compared to the base 2019 CALGreen code using the proposed EV infrastructure reach code requirements for Milpitas. It also shows what the additional cost of the Milpitas EV infrastructure reach code would add to the project cost, expressed as a percentage of the total project cost. The result is a very low percentage.

EV Infrastructure Additional Construction Costs for a Multi-Family and a Non-Residential Office Building

	Multi-family 2019 CALGreen	Multi-family Reach Code	Non-Residential Office 2019 CALGreen	Non-Residential Office Reach Code
EV Capable Spaces[1]	10	35	6	20
EV Ready Spaces[1]	0	20	0	10
EV Installed Spaces[1]	0	0	0	5
Total Cost of EV Capable (w/ 8A capacity)	$ 9,900	$ 34,650	$ 5,940	$ 19,800
Total Cost of EV Ready	-	$ 26,600	-	$ 13,300
Total Cost of EV Installed	-	-	-	$ 24,750
Total EVCI Cost	$ 9,900	$ 61,250	$ 5,940	$ 57,850
Total Cost less CALGreen		$ 51,350		$ 51,910
Total Project Cost[2]		$ 23,000,000		$ 30,000,000
Additional Cost of reach code over 2019 CALGreen as a percentage of Total Project Cost[3]		0.22%		0.17%

Notes:

[1]Costs per space: Capable $990; Ready $1330; Installed $4950.

[2]Assumed $250/sf for a 92,000 sf MF development and $300/sf for a 100,000 sf NR office building.

[3]Additional utility infrastructure costs may be incurred (transformer, switch gear) but are not included.

Note that while construction costs will be incurred, there are numerous state and federal incentive and rebate programs available to offset or reduce the "first" costs. One such program is posted at the Bay Area Air Quality Management District website http://www.baaqmd.gov/funding-and-incentives/businesses-and-fleets/charge.

Staff have worked closely with SVCE and the Statewide Program's team to establish new construction EV requirements which are more in-line with local EV adoption trends, while providing flexibility for the developer and keeping construction costs as low as possible.

Documentation provided by SVCE indicates that transportation emissions of GHG are approximately 50% of total GHG emissions.

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.

Recent data compiled through surveys of potential electric vehicle customers and other sources indicates that the availability of EV charging infrastructure is a critical component to EV adoption. It is significantly more expensive to install charging infrastructure as a retrofit than 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, while keeping construction costs as low as possible.

E. Low-Income Communities

A recent study by U.S. Environmental Protection Agency (EPA) scientists shows that low-income communities are disproportionally affected by air pollution. It is imperative that clean fuel options such as electricity produced using solar, wind and hydro power are incorporated into Milpitas' low-income housing community to promote reduction of indoor and outdoor air pollution.

EV charging requirements have been perceived by some to be incongruent with low-income housing needs; however, recent studies suggest otherwise. EVs and hybrids are becoming more affordable and their fuel costs are considerably lower than fossil fuel powered vehicles. Recent market research suggests that prices are falling at a dramatic rate due to lowering battery costs and government rebate programs. According to a CB Insights Report, the general industry consensus is that EVs will reach price analogy with fossil fuels, possibly as early as 2021. The report can be found at https://www.cbinsights.com/research/report/electric-car-race/#8.

Further lowering upfront costs, the California Clean Vehicle Rebate Project offers rebates of up to $4,500 with additional rebates for low-income buyers for purchase or lease of new eligible battery electric vehicles. Compared with $2,550 per year for fossil fuel vehicles, a similar EV will save the average user an estimated $10,000 in fuel costs over 10 years at current fuel and PG&E utility rates.

For these reasons, accelerating the rate of EV charging access infrastructure through the proposed Milpitas reach codes is just as relevant if not more critical to low-income below market rate housing as market-based or commercial projects.

Reach Code Efforts in Other Jurisdictions

Current regional reach code efforts are focused on residential and non-residential new construction and electric vehicle infrastructure (EVCI), to incentivize or require the following:

- All-electric buildings for new construction
- Mixed fuel (e.g. natural gas and electric) buildings, including electrification readiness
- Additional EVCI requirements for all building types to further prepare for current and future anticipated electric vehicle (EV) uptake

Nineteen cities, including eight in the Bay Area including San Francisco, Oakland, and Fremont, adopted reach codes in the current 2016 code cycle for electrification, solar photovoltaic, and electric vehicle infrastructure.

According to the CEC, over 45 Bay Area cities have adopted or are considering reach codes, with a focus on encouraging or requiring building and/or transportation electrification for implementation in the 2019 building code cycle. Bay area cities include the following:

- 8 in Alameda County
- 19 in San Mateo County
- 14 in Santa Clara County
- 5 in Sonoma County

Please refer to Attachment I for a list and comparison of reach code efforts in other cities.

Milpitas Public Outreach

A. Comments at Community Meetings

Staff conducted a series of outreach and engagement meetings with stakeholders and community members on the proposed reach codes. These include the August 15 Community Development Roundtable initial discussion, August 21 presentation to the Energy and Environmental Sustainability Commission, and September 12 and October 7 in-depth discussions with Milpitas staff, SVCE representatives, developers, and community members.

The feedback from the outreach meetings was generally supportive, with most support garnered from design professionals who have done all-electric buildings, Milpitas residents who acknowledged the growing climate change crisis and applauded our reach code efforts. Support was expressed by others to promote electrification in construction practices.

However, larger developer/builders voiced general concerns over the possibility of increased construction costs and market forces that they felt are more favorable toward the use of natural gas appliances, particularly cooking appliances. Heightened concerns were expressed over the proposed EV charging infrastructure reach code initially proposed by City staff. In response, SummerHill Apartment Communities presented an alternative proposed EV reach code that was endorsed by Lyon Living. This proposal was reviewed by staff and the current version represents a blend of the initial staff proposal and the alternative developer proposal. These adjustments were felt to be a reasonable compromise given the real-world specific calculations and information provided by SummerHill and endorsed by Lyon Living.

See Attachment E for SummerHill's comments, their EV infrastructure proposal, and Lyon Living's comments.

B. Other Stakeholder Comments

Pacific Gas and Electric (PG&E) forwarded an e-mail letter (Attachment F) to the City stating its commitment to helping communities achieve their energy goals and welcomed the opportunity to support the City of Milpitas' efforts to promote efficient and cost-effective electrification in new construction.

The Western Propane Gas Association (WPGA) forwarded an e-mail letter (Attachment G) to the City stating the belief that reach codes disincentivize propane as a complementary fuel source to electric. The letter elaborates on the reasons why the WPGA holds this belief. In response, the proposed Milpitas Energy reach code includes mixed-fuel buildings, which includes propane and natural gas. The all-electric pathway is certainly there, but it is not mandated to use this option for any of the various buildings and occupancy types.

Effective Date of Code Amendments

The Energy Code amendments pertaining to building electrification and mixed fuel construction are required to be approved by the California Energy Commission (CEC). For these amendments to be approved by the CEC, they must: 1) be at least as stringent as the statewide code; 2) be cost effective as defined by standards set by the CEC; 3) be submitted and approved by the CEC; and 4) not preempt federal appliance regulations. Upon approval by the CEC, the Energy Code amendments are filed with the California Building Standards Commission (BSC). This portion is a ministerial review and documentation process only.

The Energy Code amendments become effective and enforceable by the City on the date of approval by the CEC. If adopted by the City Council on December 3, 2019, staff projects that the Milpitas amendments to the Energy Code will become effective and enforceable in February or March 2020 given the 60-day public comment period required by the CEC review/approval process.

The CALGreen amendments pertaining to EV charging do not require submittal and approval by the CEC. If adopted by the City Council on December 3, 2019, these amendments will become effective on January 1, 2020 along with the 2019 CALGreen.

Policy Alternative:

Alternative 1: Adopt the 2019 California Energy Code and/or Green Building Standards Code as written without local amendments (reach codes).

Pros: No additional work is needed. The section for amendments would be removed from each Ordinance.

Cons: Without reach codes, it would be increasingly difficult to achieve some of the established goals in the Milpitas Climate Action Plan that is slated to be upgraded in 2020. Also, the opportunity to participate with other local jurisdictions in the efforts to accelerate Energy and Green Building Code requirements to achieve the state mandated goals for greenhouse gas emission reductions by 2020, 2030, and 2050, would be lost.

Instituting accelerated levels of building electrification and electric vehicle charging requirements with this code cycle will have lasting impacts as buildings constructed under this code cycle will have significant carbon reductions for the 30-40-year life span of the buildings. An added benefit to enacting the reach codes now is the avoidance of the higher costs to retrofit buildings later, and the inconvenience to tenants.

Reason for Not Recommending: This alternative is not recommended because of the loss of opportunity to increase the City's efforts toward achieving a higher, earlier use of renewable energy, and the reduction of GHG emissions.

Fiscal Impact:

There is no cost to the City other than administrative staff time and expense.

California Environmental Quality Act:

The action being considered has no potential for causing a significant effect on the environment and is exempt from the California Environmental Quality Act (CEQA) pursuant to CEQA Guidelines Section 15061(b)(3).

Recommendations:

1. Following the City Attorney's reading of the title, move to waive the first reading beyond the title and introduce Ordinance No. 65.148 amending Chapter 11 of Title II of the Milpitas Municipal Code adopting by reference the 2019 California Energy Code with amendments.
2. Following the City Attorney's reading of the title, move to waive the first reading beyond the title and introduce Ordinance No. 65.149 amending Chapter 19 of Title II of the Milpitas Municipal Code adopting by reference the 2019 California Green Building Standards Code with amendments.
3. Set a public hearing on December 3, 2019, pursuant to California Government Code Section 50022.3, for adoption of the Ordinances.

Attachments:

A. Ordinance No. 65.148 – adopting by reference the 2019 California Energy Code with amendments
B. Ordinance No. 65.149 – adopting by reference the 2019 California Green Building Standards Code with amendments
C. Summary of proposed Energy reach codes (proposed amendments to the 2019 California Energy Code)
D. Summary of proposed Green Building reach codes (proposed amendments to the 2019 California Green Building Standards Code)
E. SummerHill comments, EV infrastructure proposal, and Lyon Living comments
F. PG&E letter
G. WPGA letter
H. SVCE Letter of Interest (LOI) for $10,000 Reach Code Grant
I. Reach Code Efforts in Other Cities