2019 Electric Vehicle (EV) Charging Infrastructure Model Reach Codes Measures:

Providing Access to Power

June 6th, 2019
Today’s Objectives

• Standardize EV Language
• The Need for EV Reach Codes
• Final EV Infrastructure Code Measures
• Adoption & Implementation Tools
• Feedback
Level 1 “Trickle Charging”
Standard household outlet 15-20 Amp, 120v AC
Driving distance provided: 3-4 miles/hour

Level 2 “Standard Charging”
Equivalent to a dryer outlet. 40+ Amp, 208/240v AC
Driving distance provided (standard charging): 25-30 miles/hour

Level 3 “DC Fast Charging / SuperCharging”
24-350kW
Driving distance provided 72-1,200 miles/hour
EV Terms, PCE/ SVCE Code Definitions

**EV Capable - Some Assembly Required**
Panel capacity, raceway (conduit) only at critical areas (underground, pinch points, etc.) Definition is less stringent than CALGreen 2019

**EV Ready - Plug & Play**
Panel capacity, overcurrent protection device (breaker), Level 2 raceway, wire, receptacle (outlet) & signage. Can refer to Level 1 or Level 2

**Electric Vehicle Charging Station (EVCS) - Level 2 Charge!**
All the equipment needed to deliver electrical energy from an electricity source to the EV at Level 2
EV Interest & Adoption

- Residents very interested in adopting EVs
- PCE Survey: Interest in adopting is independent of whether they have a garage
- *Charging access is the #1 concern*

Palo Alto Resident Survey

- 7 in 10 existing EV drivers likely to get a 2nd EV
- 70% of non-EV drivers “extremely” interested in getting an EV *if they knew charging would be readily available*

75% open to obtaining an EV

36% Very likely to obtain an EV

95% Sales increase 2017 to 2018
San Mateo County
US Electric Vehicle Sales Increased by 81% in 2018

An All-Electric Ford F-150 Pickup Truck Is Happening

Lyft Increases Electric Vehicle Advocacy & Use

Uber will start paying some drivers to switch to electric cars

Drivers of electric or hybrid vehicles will get an extra dollar per trip, courtesy of Uber

GM plans electric future, to intro 20 new cars by 2023

Tesla Model 3 = 3rd Best Selling Vehicle In California In 1st Quarter
Why CA & Bay Area?

New EV vs. New Gas Car

The Chevrolet Bolt EV is $8,292 cheaper to own over 5 years.

- **Your Selection**
  - Chevrolet Bolt EV
  - $30,724

- **Similar Gas Vehicle**
  - Toyota Camry XLE/XSE
  - $39,016

**Cost Breakdown:**
- **Vehicle net Incentives, Resale**
- **Electricity**
- **Gasoline**
- **Maintenance**
- **Insurance**
EV Interest & Adoption...
Local Economic Impacts

Reduced fueling costs for residents
• By 2025 approximately 100,000 EVs in PCE and SVCE
• EV savings over gas car $1,200+/year

Reduced capital expenses
• 50,000 new housing units
• EV Reach Code <$1.5k/unit at new construction
• $7k/unit for retrofit

Savings (and costs) stay local
Local Environmental Impacts

Reduced CO2 Emissions

• By 2025 approximately 100,000 EVs in PCE and SVCE
• 5 tons per year-EV in avoided CO2 emissions

0.5M Tons CO2 per year in avoided emissions
Feedback on Draft & Response

• **EV Ready is preferred:**
  - Access to Power

• **Level 1 can be effective, reduce costs:**
  - High Level 1 to Level 2 Ratio

• **Impact on Affordable Housing:**
  - Lower power requirements
  - Incentives

• **Future Technologies:**
  - Large raceway
  - Load management

• **DC fast charging:**
  - Option for commercial sites
**EV Requirements, Summary**

**Residential**
- **Single Family:** Complete L1 + L2 EV Ready circuits
- **Multifamily Buildings (<=20 units):**
  - One L2 EV Ready circuit per dwelling unit
- **Multifamily Buildings (>20 units):**
  - 25% of units: L2 EV Ready &
  - 75% of units: L1 EV Ready
- **Affordable Housing (+ PCE/SVCE funding):**
  - 10% of units: L2 EV Ready &
  - 90% of units: L1 EV Ready

**Non-Residential**
- **Workplace/Office:**
  - 10% of parking spaces L2 EVSE &
  - 10% of parking spaces L1 EV Ready &
  - 30% of parking spaces: EV Capable or EV Ready
- **Other Non-Residential Buildings:**
  - 6% of parking spaces: L2 EVSE &
  - 5% of parking spaces: L1 EV Ready &
  - DC Fast Charging Option over 100 spaces
<table>
<thead>
<tr>
<th></th>
<th>2016 CALGreen</th>
<th>2019 CALGreen</th>
<th>PCE/SVCE Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Single Family</strong></td>
<td>Mandatory</td>
<td>Mandatory</td>
<td>2 EV spaces total:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• 1 Level 2 EV Ready circuit</td>
</tr>
<tr>
<td><strong>Two-Family</strong></td>
<td></td>
<td></td>
<td>• 1 Level 1 EV Ready circuit</td>
</tr>
<tr>
<td><strong>Townhome</strong></td>
<td></td>
<td></td>
<td><strong>“EV Capable” is more extensive than that proposed by PCE/SVCE</strong></td>
</tr>
</tbody>
</table>

Notes:
- (1) Level 2 EV Capable for one parking space per dwelling unit
- "EV Capable" is more extensive than that proposed by PCE/SVCE

**ELECTRIC VEHICLE OUTLET**
# Multifamily New Construction

<table>
<thead>
<tr>
<th>Multi-Family</th>
<th>2016 CALGreen</th>
<th>2019 CALGreen</th>
<th>PCE/SVCE Proposed</th>
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<td></td>
<td>Mandatory</td>
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</table>

- **3% of total spaces** Level 2 EV Capable for buildings with 17+ units
- **10% Level 2 EV Capable** for buildings with >20 units

**PCE/SVCE Proposed**

- **≤20 dwelling units**
  - 100% Level 2 EV Capable

- **>20 dwelling units**
  - 25% Level 2 EV Ready (10% in affordable housing)
  - 75% Level 1 EV Ready (90% in affordable housing)

Small/Medium (≤20 units): One Level 2 EV Ready per dwelling

Large (>20 units): Of all dwelling units,
- **25% Level 2 EV Ready** (10% in affordable housing)
- **75% are Level 1 EV Ready** (90% in affordable housing)
### Non-Residential, Office & Commercial

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</table>

#### Non-Residential

- **∼6%** of total spaces Level 2 EV Capable for buildings with at least 10 parking spaces

#### Office building:
- **10%** Level 2 EVSE
- **10%** Level 1 EV Ready
- **30%** EV Capable or EV Ready

#### Commercial:
- **6%** Level 2 EVSE
- **5%** Level 1 EV Ready
- Over 100 spaces: option for 80kW DC Fast Charger per 100 spaces
Affordable Housing

1. Adjusted Code Requirement
   • 10% Level 2 EV Ready (CALGreen)
   • 90% Level 1 EV Ready

2. Financial Support Program (Under Development)
   • To cover most or all of install cost above State code
   • Available in cities that adopt reach codes
   • Available during the 2020-2022 code cycle
   • Specific funding amounts are under development
   • Technical assistance on implementation, including policies such as pricing, access control, etc.
These model codes ...

Live in Title 24 Part 11 CALGreen, but can be integrated with local planning or zoning code

Draft language coming shortly and undergoing continuous improvement with your feedback

File with CA Building Standards Commission with supporting documentation

Should be reviewed and understood by your City Attorney
# Summary Timeline, EV Model Codes

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>Kickoff event for city staff</td>
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<tr>
<td>Feb</td>
<td>Statewide cost-effectiveness study draft released</td>
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<tr>
<td>Mar</td>
<td>Held four workshops</td>
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<tr>
<td>April/May</td>
<td>Draft model reach codes released, city-specific stakeholder engagements</td>
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<tr>
<td>May 15</td>
<td>Last input into model code language</td>
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<tr>
<td>May 29</td>
<td>Building model reach code language shared*</td>
</tr>
<tr>
<td>June 6</td>
<td>EV model reach code measures shared*</td>
</tr>
<tr>
<td>June 13</td>
<td>EV model reach code language released*</td>
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<tr>
<td>Summer</td>
<td>Develop city-specific formats for adoption*</td>
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<tr>
<td>Fall</td>
<td>City councils vote*</td>
</tr>
<tr>
<td>October</td>
<td>File Code with the Building Standards Commission</td>
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<tr>
<td>January 1, 2020</td>
<td>New codes supportive of all-electric buildings and EV infrastructure goes into effect</td>
</tr>
</tbody>
</table>

*Apply for and receive $10k grant from PCE or SVCE*
Adoption & Implementation: 
*Tools and Resources*
Adoption & Implementation

Public and Building Owner Resources
- Case Studies
- Website
- Homeowner Flyer
- FAQs on website
- Trainings for Environmental Advocates
- Community Advocates List
- Cost Effectiveness Presentation Tool
- Carbon Emissions Savings
- Housing Impacts
Adoption Tools & Resources

Presentation to Council
- Staff Report Template
- Reach Code Ordinance Language
- Presentation Template

Information for Council
- Carbon Emissions Savings
- Housing Impacts
- FAQs
- Cost Effectiveness Presentation
Implementation Tools & Resources

Permitting, enforcement, and inspection resources

- Permit Checklist
- Inspection Checklist
- Training for Building Department Staff
- FAQs
What are you currently doing for EV infrastructure?
Reach Code Development Timeline

- Outreach
- Research Existing State and Local Codes
- Development of Model Reach Codes
- Develop Customized EV Cost-Benefit Analysis
- Identify Tools and Processes for Adoption and...
- Provide Technical Assistance for Adoption
- Provide Technical Assistance for Implementation

Timeline:
- Feb-19
- Apr-19
- Jun-19
- Aug-19
- Oct-19
- Dec-19
- Feb-20
- Apr-20
- Jun-20

Adoption
Implementation
Next Steps

**Activities:**

- Review PCE/ SVCE EV measures with your city staff members, code language release scheduled June 13th
- Share this with important community groups and commissions
- Engage Consultation support by contacting your respective OOS/PCE/SVCE representative
- Request $10k Grant from PCE/SVCE

**Questions:**

- Is this on an internal commission schedule?
- Is this scheduled on a Council Agenda?
- Prep legal to review the proposed language.
- When does your city plan to vote on all new Title 24 language?
Reach Code Websites:
PeninsulaReachCodes.org
SiliconValleyReachCodes.org

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