2022-23 Reach Codes Initiative

Advancing safer, healthier and more affordable buildings and vehicles

City Staff Meeting - February 17, 2022

Team Introductions

LEADERSHIP

Peninsula Clean Energy

Rafael Reyes

Blake Herrschaft

Phillip Kobernick

Silicon Valley Clean Energy

Zoe Elizabeth

Peyton Parks

Peter Mustacich

East Bay Community Energy

Eryn Kim

Beckie Menten

COLLABORATORS

Santa Clara County

Breann Boyle

San Mateo County

Alero Moju

CONSULTANTS

TRC

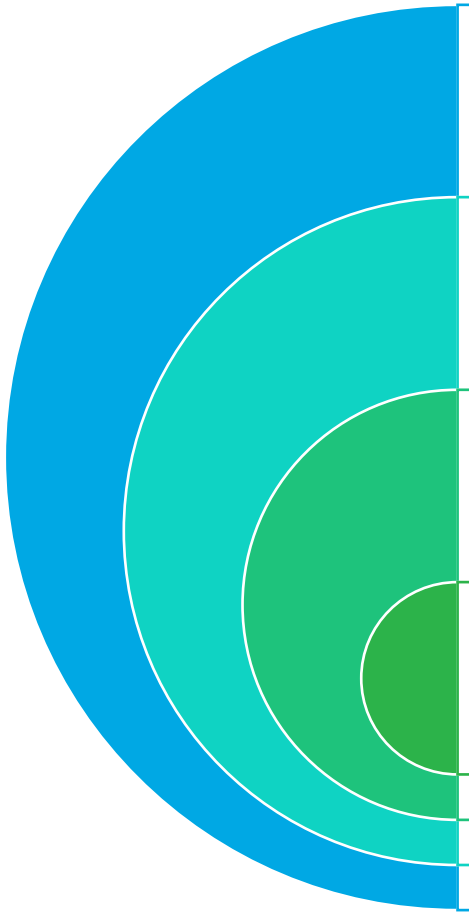
Farhad Farahmand

Mayra Vega

DNV

Thor Frantz

2022-23 Initiative Goals and Objectives



Electrify	• Emissions reductions • Economical • Healthy air • Job creation
Continue	• Re-adopt by Jan 2023 • Avoid enforcement gaps
Simplify	• Less complex code language • Reduce permitting barriers
Expand	• New city participation • Existing buildings policy and programs

Tools, Services, and Resources

1. **Model Codes**, the topic of discussion today
2. **Stakeholder meetings**
   - Please reach out when you would like support, with dates in mind, and we will do our best to support you.
   - We may hold regional public meetings for efficiency and for ‘strength in numbers.’
3. **Tech assist via email / phone**
   - Code customization
   - Permit simplification support, for example
     - Share state-mandated expedited review requirements and resources
     - Share city staff trainings for electrification technologies
     - Develop application resources specifically for electrification projects
4. **BayAreaReachCodes.Org**
   - Templates (i.e., staff reports, PPT decks) for city staff to leverage will become available Q1 2022
   - Cost-effectiveness studies as they become available (March through May 2022 for initial draft results)
5. **New Adopters in PCE/SVCE service area:** $10k grant for city-staff time if reach codes are brought to a vote at your Council

Collaborator Resources

Reach Codes Newcomers Webinar Series

- Hosted by Statewide Reach Codes Program, BayREN, and CCEC
- Registration Link
- Next meeting Feb 22 on Reach Code Process and Timing
- Future meetings cover cost-effectiveness, ordinance options, and implementation

BayREN Existing Buildings Resources

- Policy Calculator
- Energy Atlas building stock energy data
- Engineering Technical Assistance for municipal building efficiency and electrification

Meeting Overview

Objectives

- Deep dive into model code language
  - Building electrification
  - EV infrastructure
- Briefing on Existing Building Electrification
- Feedback and discussion on how to enhance model code

Agenda

1.	Recap of Industry and Community stakeholder events	5 min
2.	Building electrification, existing building strategy + Guest Speaker: Kevin Jackson	30 min
3.	Building electrification, new construction code + Breakout session	30 min
4.	Electric vehicle charging infrastructure code + Breakout session	30 min
5.	Open discussion	20 min

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SILICON VALLEY CLEAN ENERGY

Feedback from Feb 15/16 Stakeholder Meetings

Building Industry

- Electrical capacity concerns
  - Electrical code formulas may be overly conservative
  - Automatic Load Management for EV charging is new to the industry and should be more readily invoked
- Requests and suggestions for existing building code language

Community

- Further resources necessary for public outreach and education
- Grid capacity concerns
- Environmental degradation of renewable power plants and EV batteries
- Request for code requirement of routing EV chargers through the multifamily meter

Existing Building Electrification

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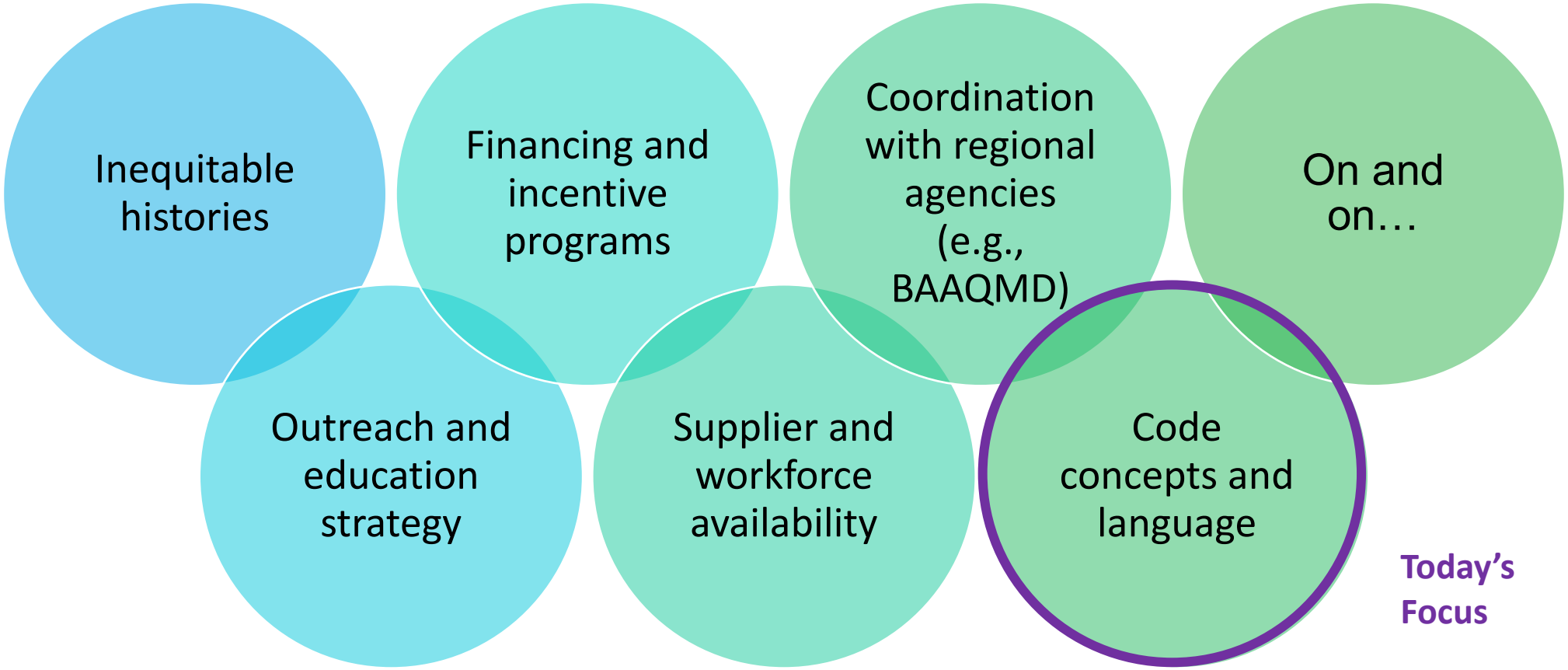
Poll

Existing Buildings Policy

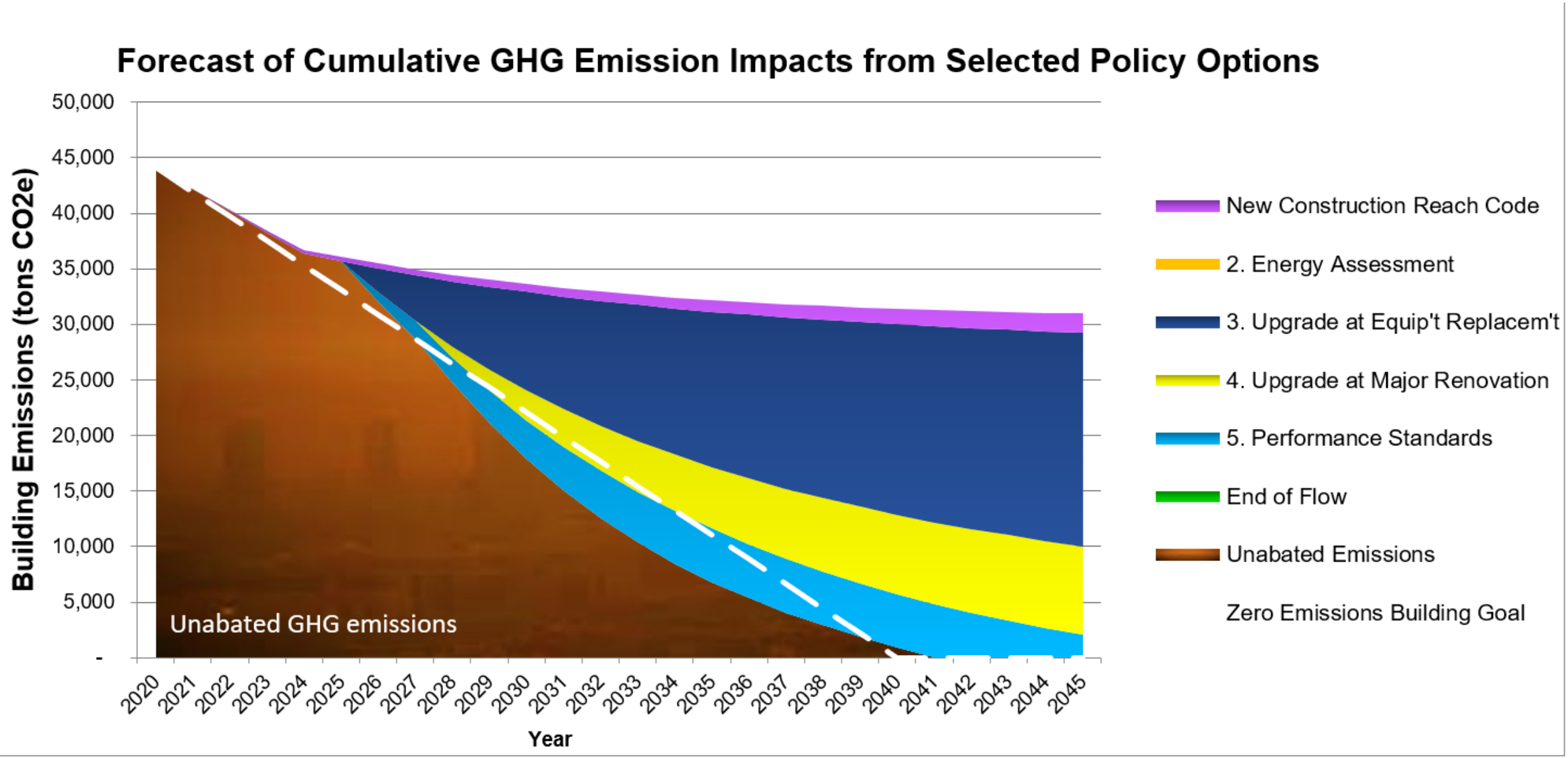


Reflections on Existing Building Policies

Kevin Jackson, AICP
Planning & Building Director
City of Piedmont
120 Vista Avenue, Piedmont, CA 94611
Tel: (510) 420-3039

Google “Piedmont Reach Code”
https://www.piedmont.ca.gov/services___departments/planning___building/about_building_/reach_code_information

BayREN Policy Calculator



Existing Building Code Approaches

DRAFT

EAST BAY COMMUNITY ENERGY | PENINSULA CLEAN ENERGY | SILICON VALLEY CLEAN ENERGY

Decreasing owner financing access, increasing equity considerations

Building Types

Municipal and Commercial
- Owner access to financing
- Partially electric-ready
- Regular maintenance and replacement
- Construction management

Multifamily
- Owner access to financing
- Regular maintenance and replacement
- Construction management

Single Family
- Some owners have access to financing

Time certain ← → No Missed Opportunities

Appliance Upgrade Code Triggers

Building Performance Standards
- Periodic benchmarking report
- Emissions or energy metric
- Penalties / fees

Time of Permit Menu Options
- Major Alteration
- Burnout

Time of Permit Electric-required
- Major Alteration
- Burnout

Monitoring → Incentivizing → Mandating

Time of Sale Models

Energy Assessments
- Increases market transparency

Transfer Tax Rebate
- Emissions measures among menu of other important requirements (e.g. seismic)

Code Compliance
- Fees / penalties
- May be tied to business licenses or rental licenses

Existing Building Code Approaches

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Appliance Upgrade Code Triggers

Building Performance Standards
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- Emissions or energy metric
- Penalties / fees

Time of Permit Menu Options
Major Alteration | Burnout

Over $25k

Time of Permit Electric-required
Major Alteration | Burnout

Laundry, Kitchen & Panel Readiness

Monitoring → Incentivizing → Mandating

Time of Sale Models

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Piedmont

Existing Building Code Approaches

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> 20k ft2

Time certain ← → No Missed Opportunities

Appliance Upgrade Code Triggers

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Chula Vista

Time of Permit – Electric Required, Burnout

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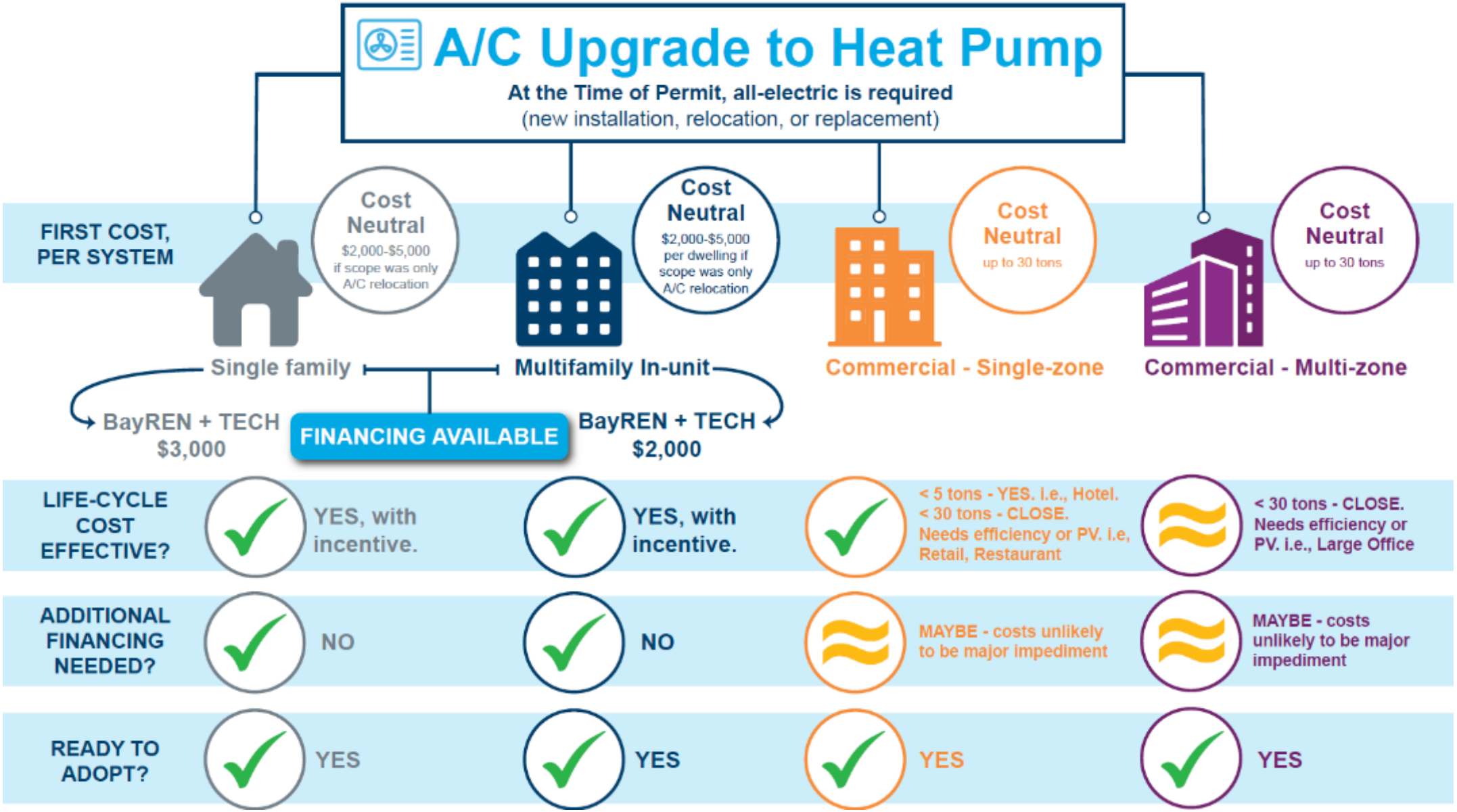


Resources and Next Steps

Equitable Approaches

- Existing Building Electrification Strategy – City of Berkeley
- Equitable Electrification Framework – Greenlining Institute
- Equitable Development Scorecard – The Alliance for Advancing Regional Equity
- Tenant Impact Recommendations – Natural Resources Defense Council for Los Angeles
- Zero Cities Project – Urban Sustainability Director's Network

Model Codes

- Building Performance Standards – Institute for Market Transformation, used by Denver
- Building Performance Standards, Local Government Processes, and Grid Implications – Local Government Sustainable Energy Coalition
- Time of Permit – Menu Option – Statewide Reach Codes Program, draws from Chula Vista
- Time of Permit – Electric-Required – TBD on BayAreaReachCodes.Org

Webinar on Existing Building Electrification: **Date TBD**

2022-23 Initiative Timeline

Existing Buildings

January
Kickoff

February
Begin on-going outreach

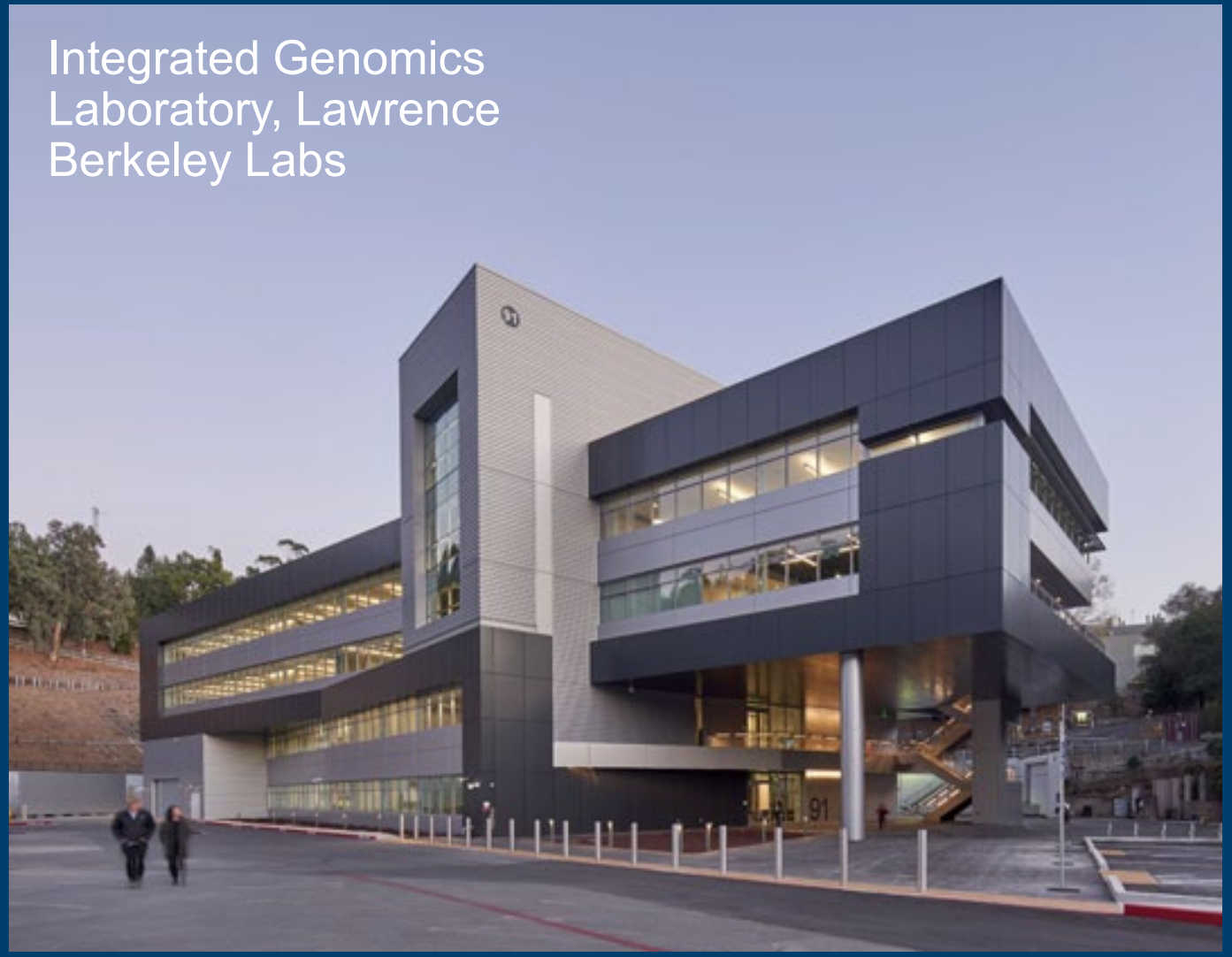
March 22
10A-12P
Existing Building-specific meeting

April-May
1st draft of tools, permitting codes

September-October
Local adoption

January 1, 2023 (or later)
Codes take effect

New Construction Building Electrification



Source: Rutherford + Chekene

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Building Electrification – New Construction

Code Approach	Pros	Cons
All-Electric Municipal Ordinance ***Posted on BayAreaReachCodes.org***	• Most effective • Flexible (i.e., time-certain or existing buildings policies can be included) • Avoids triennial cycle	• Limited efficiency options

Building Electrification – New Construction

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CALGreen – All-Electric amendment	• Effective	• Requires triennial update or more if intervening cycle • Limited efficiency options

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Energy Code – All-Electric + efficiency amendment	• Effective • May include efficiency and load management	• Requires CEC approval

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~~Energy Code – Electric-preferred amendment~~	• May include efficiency and load management	• ~~CA Energy Code is already electric-preferred~~ • Requires CEC approval • ~~Enforcement complexity~~

Building Electrification – New Construction

All-Electric Municipal Ordinance

All-electric construction required

- Also restricts extension of any existing gas infrastructure

New construction definition

- If either of the below are replaced over 3 years for purposes other than repair or reinforcement
  - 50% of above-sill framing, or
  - 50% of foundation

Optional exceptions

- Infeasible to construct according to CA Energy Code
- “Public interest”
- Technology-specific exceptions expiring in 2025
- Electric-readiness required
  - Pre-wiring
  - Physical space

Review Code Language (screenshare)

Breakout Discussion

How do these codes reflect your city's aspirations?

What policies would decarbonize new construction best?

What analysis would your Council or City Manager like to see?

EV Charging Infrastructure Code

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EV Infrastructure – New Construction

Code Approach	Pros	Cons
Zoning Code amendment ***Posted on BayAreaReachCodes.Org***	• Flexible (i.e., time-certain policy can be included) • Developer is aware at time of land-use permit • Alignment with other land use regulations	• Should comprehensively replicate or exceed all CALGreen mandatory req's
CALGreen amendments	• May be adopted simultaneously with CALGreen All-electric building amendments	• Complex strikethrough/underlines • Requires triennial adoption

Considerations

- How does your city commonly perform on-site EV infrastructure inspections?
- What is the best approach given your city's staff and community culture?

EV Code Terminology

Speed

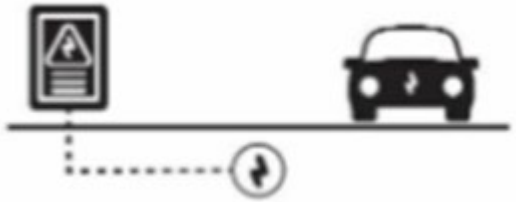
Level 1
3-4 miles per charging hour

Level 2
10-20 miles per charging hour

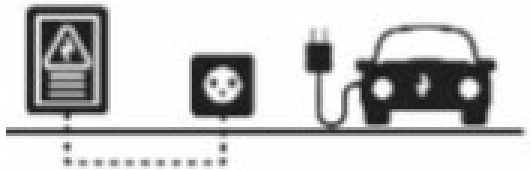
Level 3
150+ miles per charging hour

Readiness

EV **Capable**

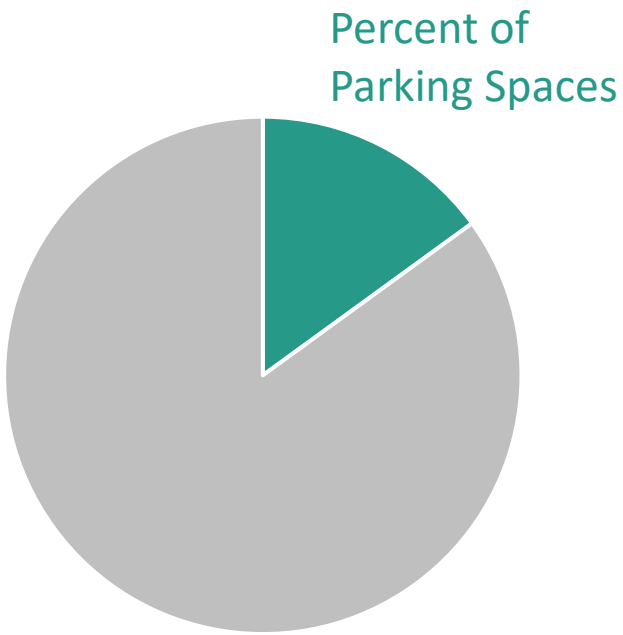


EV **Ready**

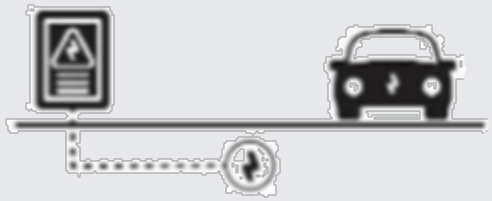


EV **Charging Station**

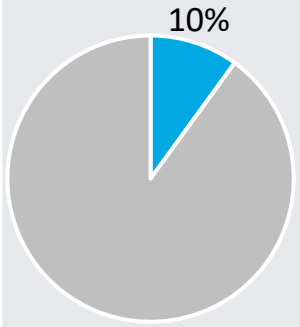
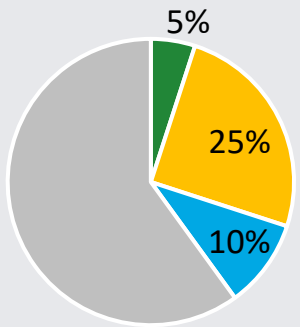
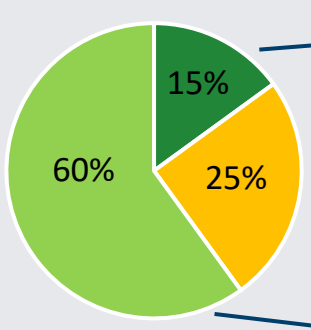
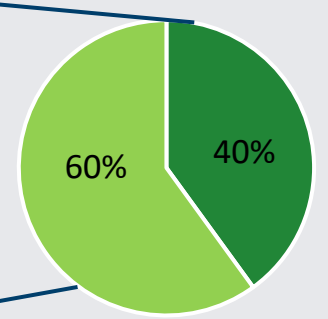
Number



EV Infrastructure – New Construction

	2019 CALGreen	2022 CALGreen	Model Code
	Mandatory	Mandatory	
Single Family Homes and Two-Family Townhomes	(1) Level 2 EV Capable for one parking space per dwelling unit 	2 EV spaces total: • 1 Level 2 EV Ready circuit • 1 Level 1 EV Ready circuit	

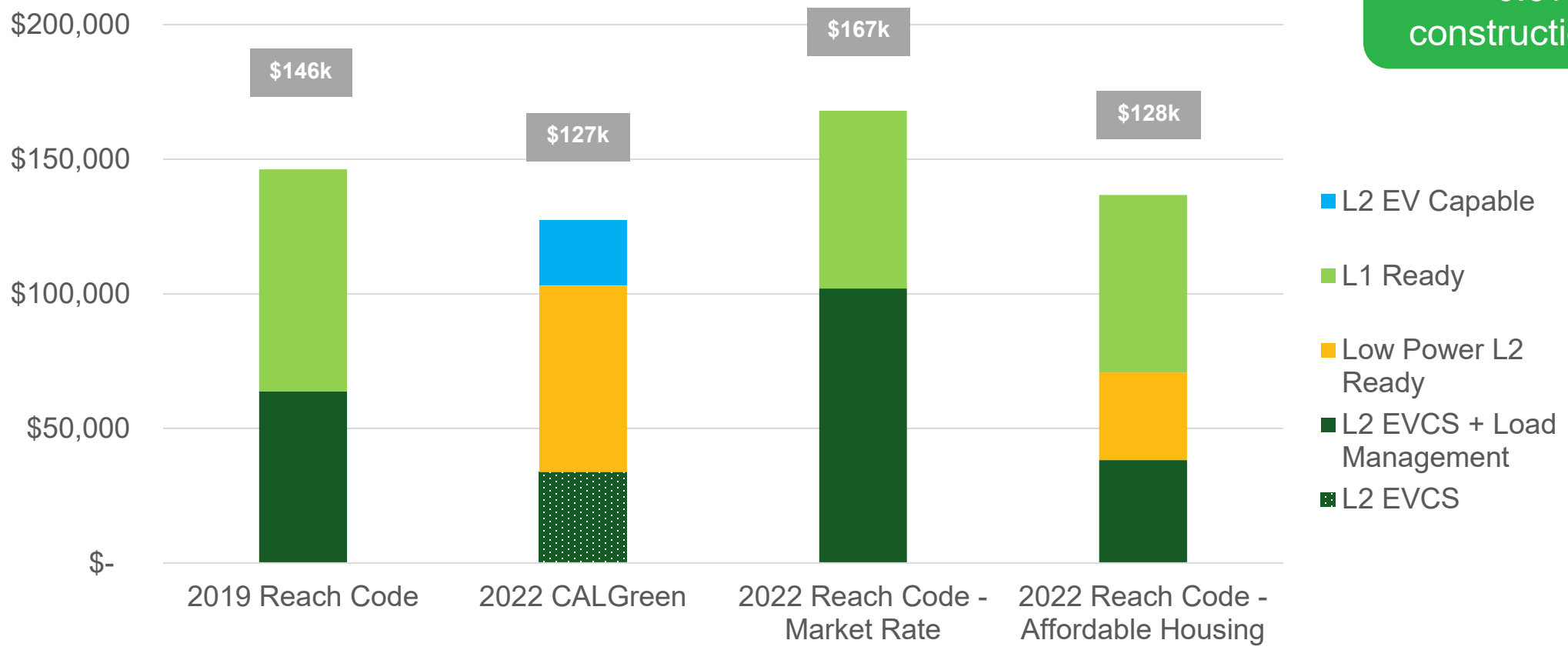
EV Infrastructure – New Construction

	2019 CALGreen	2022 CALGreen	Model code
	Mandatory	Mandatory	
Multi-Family	% of Parking Spaces	% of Parking Spaces	% of *Dwelling Units with* Parking Spaces
			 
	10% Level 2 EV Capable	**5%** Level 2 EVCS **25%** Level 2 EV Ready (low-power) **10%** Level 2 EV Capable	Entirely affordable housing: **15%** Level 2 EVCS **25%** L2 EV Ready (low-power) **60%** Level 1 EV Ready Other: **40%** Level 2 EVCS **60%** Level 1 EV Ready

LOAD MANAGEMENT ENCOURAGED

100% Access Doesn't Need to Cost More

EV Infrastructure Cost for 100-Dwelling Multifamily Building

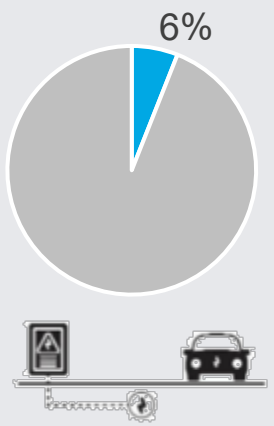
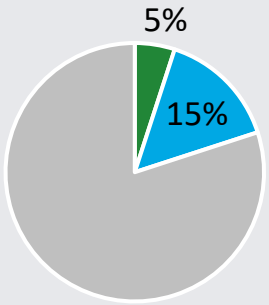
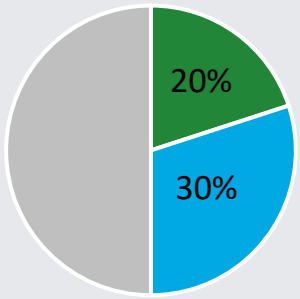
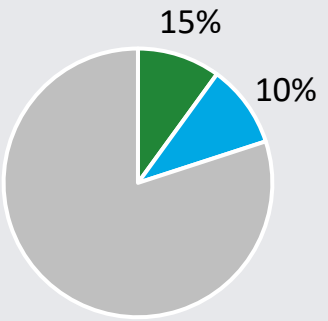


Each scenario is ~0.3% of construction cost

% of dwellings with access	100%	40-60%	100%	100%

Source: Turner and Townsend, 2021

EV Infrastructure – New Construction

	2019 CALGreen	2022 CALGreen	Model Code	
	Mandatory	Mandatory		
Non-Residential	 **6%** Level 2 EV Capable	 **5%** Level 2 EVCS **15%** Level 2 EV Capable	 Offices: **20%** Level 2 EVCS **30%** Level 2 EV Capable	 All other: **10%** Level 2 EVCS **10%** Level 2 EV Capable

LOAD MANAGEMENT ENCOURAGED

EV Infrastructure – Existing Buildings

Alterations or additions

- **Single Family –** Parking additions or electrical panel upgrades must meet new construction requirements

- **Multifamily** →
- **Nonresidential** →

When new parking facilities are added, or electrical systems or lighting of existing parking facilities are added or altered and the work requires a building permit, ten percent (10%) of the total number of parking spaces added or altered shall be EVCS.

Time certain policy

- By January 1st, 2025, multifamily and nonresidential properties shall upgrade existing EV Capable spaces required by the locally adopted codes at the time the building was permitted to a minimum of Level 1 EV Ready.

Review Code Language (screenshare)

Breakout Discussion

What EV policies make most sense for your city?

What EV infrastructure analysis would your Council or City Manager want to see?

2022-23 Initiative Timeline

New Construction

January
Kickoff

February
Begin on-going outreach

March-May
Cost effective studies

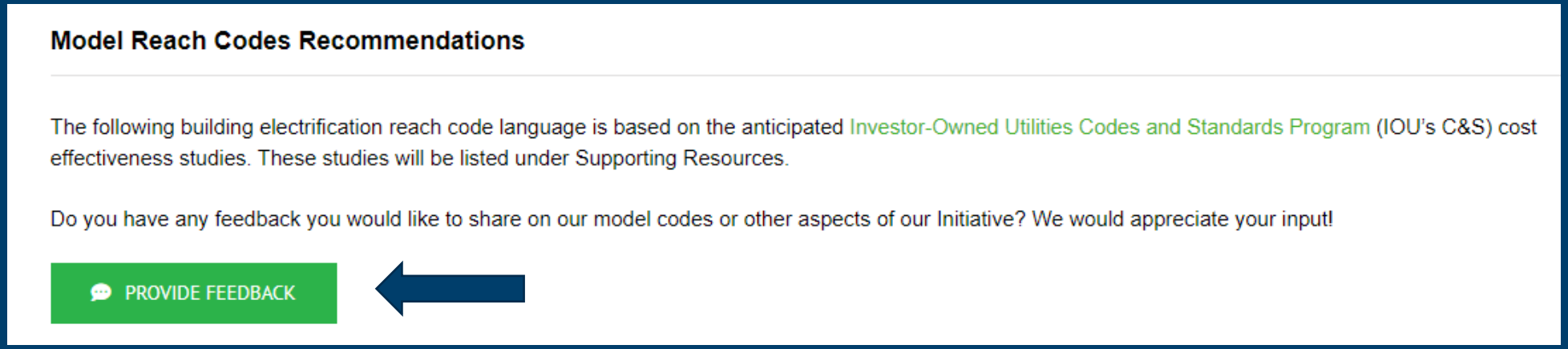
June
2nd draft reach codes, outreach

September-October
Local adoption

January 1, 2023
Codes take effect

Please share your opinions

Please review the codes posted on BayAreaReachCodes.org and share feedback



- What opportunities and challenges do you expect in 2022-23?
- Are the code concepts appropriate for your City/County?
- What support will you need more/less of?

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Thank you!
Next Meetings:

March 8 – ICC Tri-Chapter briefing

March 9 – CALBIG briefing

Date TBD – City Staff: Deep Dive into Existing Building Electrification

2022 CA Energy Code

New Construction

- Heat pumps are prescriptive baseline
  - Residential
    - Space heating in climate zone 3, 4
    - Water heating in climate zone 12
  - Nonresidential – most building types include one or both of water heating and space heating
- Residential
  - Performance credit for all-electric design
  - Electric-ready pre-wiring required for gas appliances
  - Higher ventilation rate for gas stoves
- Nonresidential - Solar PV and Battery Storage prescriptively req'd

Existing Buildings

- Prohibits newly installed ducted electric resistance space heating
- Code language simplifications to enable heat pump space heating and water heating systems

2022 CALGreen

Energy Efficiency

- Compliance margin assumes both heat pump space heating and water heating
- Mixed-fuel compliance path allowed (e.g., with battery storage)
- Does not mandate or encourage on electric cooking/laundry

EV Infrastructure

Multifamily	EV Capable (L2)	EV Ready (Low-power L2)	EVSE (L2)	Total
Mandatory	10%	25%	5%	**40%**

Non-residential	EV Capable (L2)	EVSE (L2 + Load Management)	Total
Mandatory	15%	5%	**20%**

Note: Non-residential includes EV Capable (make-ready) requirements for Medium- and Heavy-duty EVs in new grocery, warehouse, and retail buildings.

Source: 2022 CALGreen CEC Hearing