IDeAs Z2 DesIgn FAcIlIty, San Jose (Credit: David Wakely)

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San José Reach Code Public Review

July 10, 2019

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Agenda

- Introductions
- Why San José is Pursuing a Reach Code
- Reach Code Development Process
- Review Proposed Reach Code

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A People-Centered Plan for a Low-Carbon City

Why is San José Pursuing a Reach Code?

Goals for 2030

- 47% of homes are all-electric
- 37,975 zero net carbon (ZNC) homes
- 70M sf of ZNC commercial buildings
- 61% of all passenger vehicles are electric
- 668 MW of solar installed

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A People-Centered Plan for a Low-Carbon City

Building Electrification

- 47% of homes are all-electric
- 37,975 zero net carbon (ZNC) homes
- 70M sf of ZNC commercial buildings

EV charging infrastructure

- 61% of all passenger vehicles are electric

Solar PV

- 668 MW of solar installed

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Why Pursue Building Electrification?

- Electrification provides immediate GHG reduction
- Electrification allows more rapid future GHG reduction
- Electrification improves indoor air quality
- All-electric buildings are **generally** less expensive

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Why Improve EV Charging Infrastructure?

- San José has the highest share of EV sales in the U.S.
- San José only at about 25% of 2025 infrastructure needs
- Electric cars provide immediate GHG reductions
- Electric cars allow more rapid future GHG reduction

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Why Promote Solar PV?

- Solar PV installations support decarbonization of electricity supply
- Solar PV installations in San José are declining
- Solar PV is an important part of a resilient building stock

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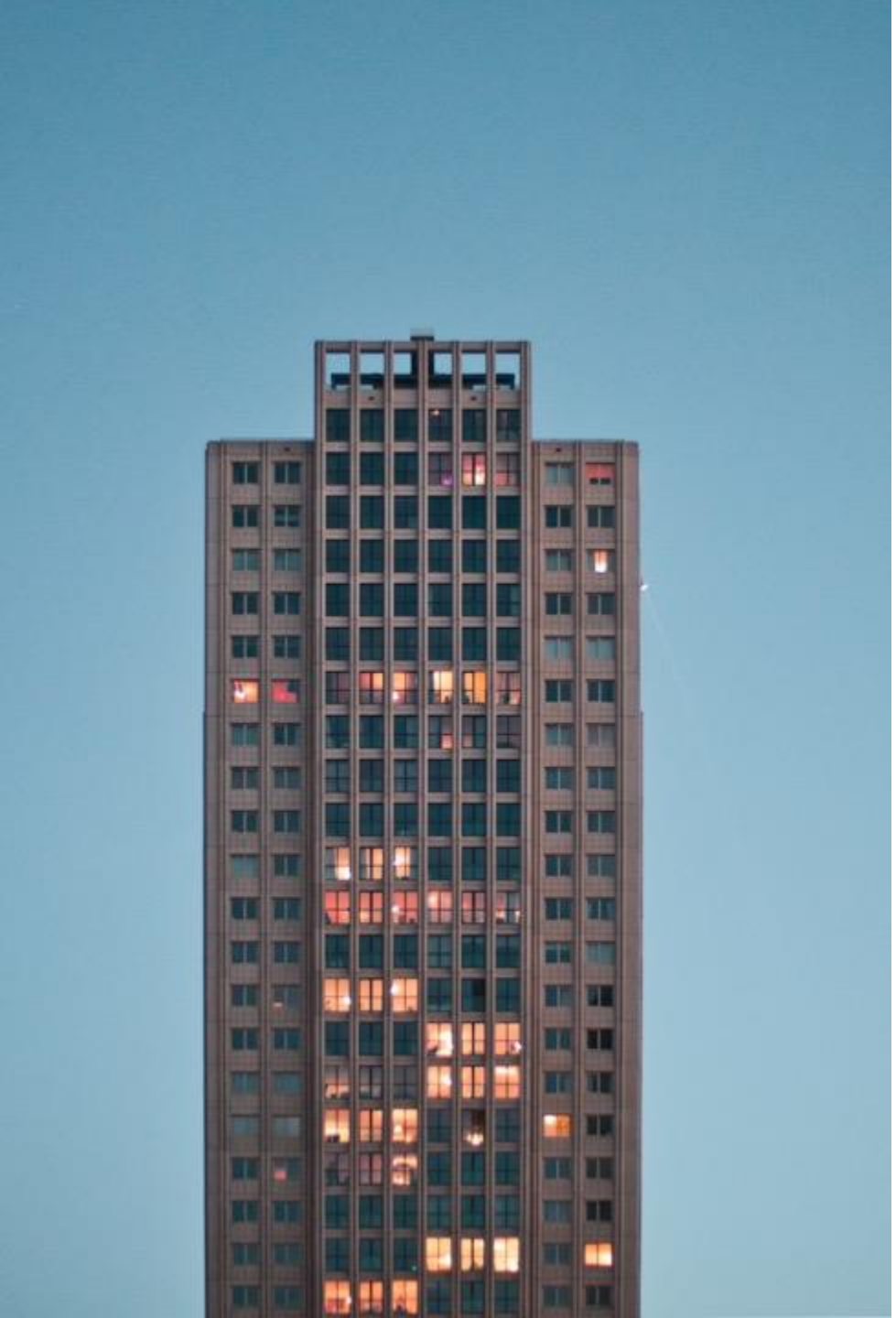

What is a Reach Code?

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Minimum Base Codes

- Set minimum levels of efficiency for building design and construction

Minimum Base Codes

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Minimum Base Codes

- Set minimum levels of efficiency for building design and construction

Reach Codes

- Overlays the base code
- Includes additional requirements, such as:
  - Energy efficiency
  - Water efficiency
  - Electrification
  - EV charging infrastructure
  - Solar PV

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Minimum Base Codes

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  - Water efficiency
  - **Electrification**
  - **EV charging infrastructure**
  - **Solar PV**

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City		Measures
Alameda County	2018	Solar PV
City of Brisbane	2017	Cool Roof, Solar PV
City of Chula Vista	2018	Outdoor Lighting
City of Del Mar	2018	Energy Efficiency
City of Davis	2017	Energy Efficiency, Solar PV
City of Fremont	2017	Lighting, Solar PV
City of Healdsburg	2017	Energy Efficiency
City of Lancaster	2018	Solar PV
Marin County	2017/8	Energy Efficiency
Mill Valley	2017	Energy Efficiency
City of Novato	2017	Energy Efficiency
City of Palo Alto	2016	Energy Efficiency, Solar PV, EV
Town of Portola Valley	2017	Energy Efficiency
City of San Francisco	2016	Solar PV or Solar Thermal
City of San Mateo	2016	Cool Roofs, Solar

Courtesy TRC, PCE & SVCE

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Alameda County	2018	Solar PV
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City of Fremont	2017	Lighting, Solar PV
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Marin County	2017/8	Energy Efficiency
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City of Novato	2017	Energy Efficiency
City of Palo Alto	2016	Energy Efficiency, Solar PV, EV
Town of Portola Valley	2017	Energy Efficiency
City of San Francisco	2016	Solar PV or Solar Thermal
City of San Mateo	2016	Cool Roofs, Solar

Over 40 communities are considering reach codes

Courtesy TRC, PCE & SVCE

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Reach Code Regional Effort

NRDC
NATURAL RESOURCES DEFENSE COUNCIL

PENINSULA CLEAN ENERGY

DNV·GL

BUILDING DECARBONIZATION COALITION

EAST BAY COMMUNITY ENERGY

TRC
Results you can rely on

BAYREN

SILICON VALLEY CLEAN ENERGY

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CALIFORNIA ENERGY CODES & STANDARDS

A STATEWIDE UTILITY PROGRAM

Title 24, Parts 6 and 11
Local Energy Efficiency Ordinances

Cost-effectiveness Study: Low-Rise Residential

CALIFORNIA ENERGY CODES & STANDARDS

A STATEWIDE UTILITY PROGRAM

Title 24, Parts 6 and 11
Local Energy Efficiency Ordinances

Cost-effectiveness Study: Low-Rise Residential

Prepared for:
Kelly Cunningham
Codes and Standards Program
Pacific Gas and Electric Company

Prepared by:
Frontier Energy, Inc.
Misti Bruceri & Associates, LLC

Last Modified: March 15, 2019

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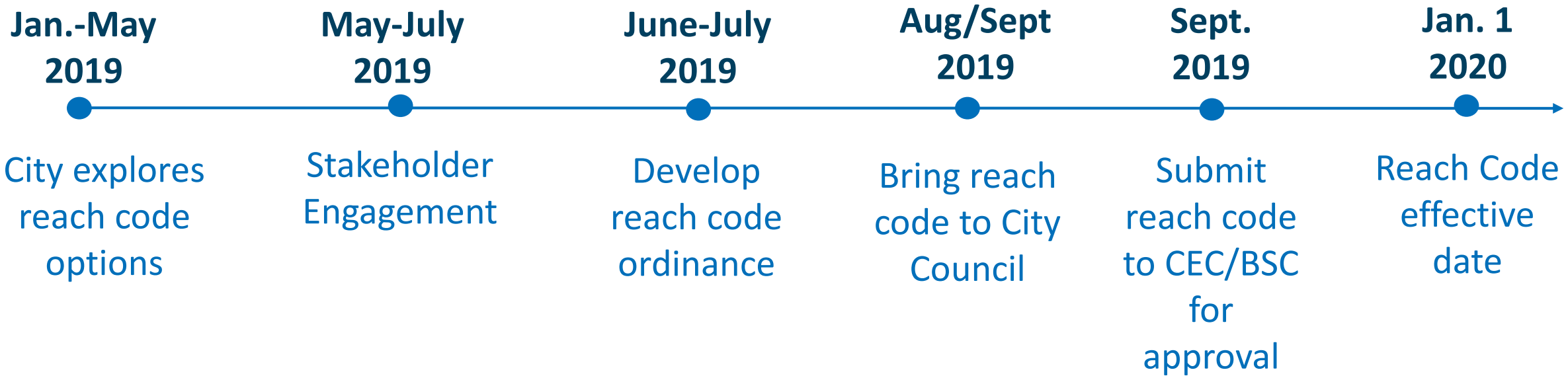
San José Reach Code Development Process & Timeline



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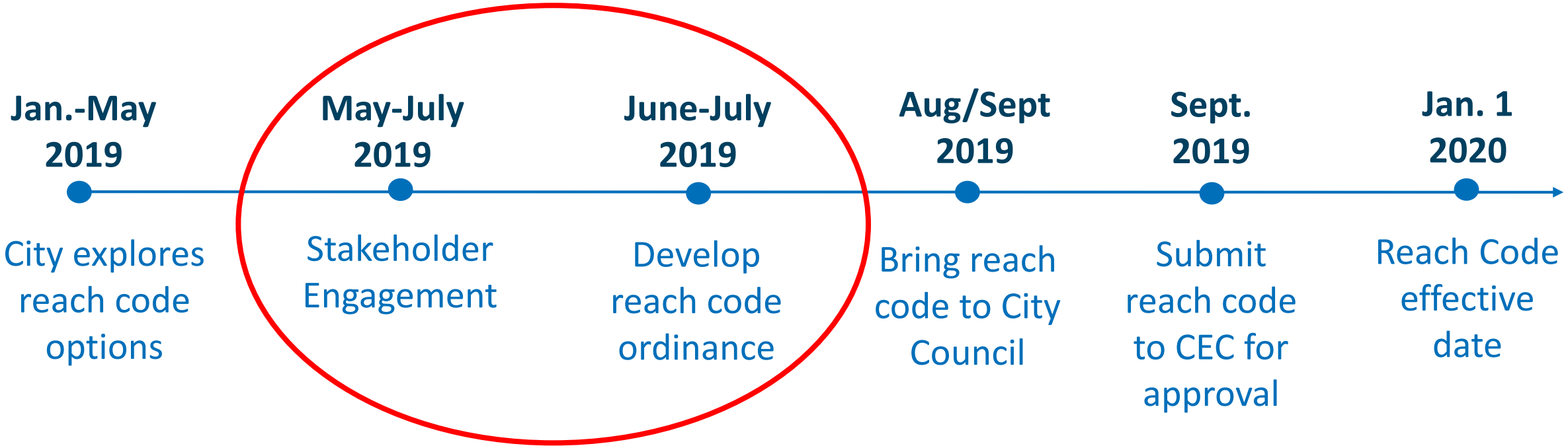
San José Reach Code Development Process & Timeline



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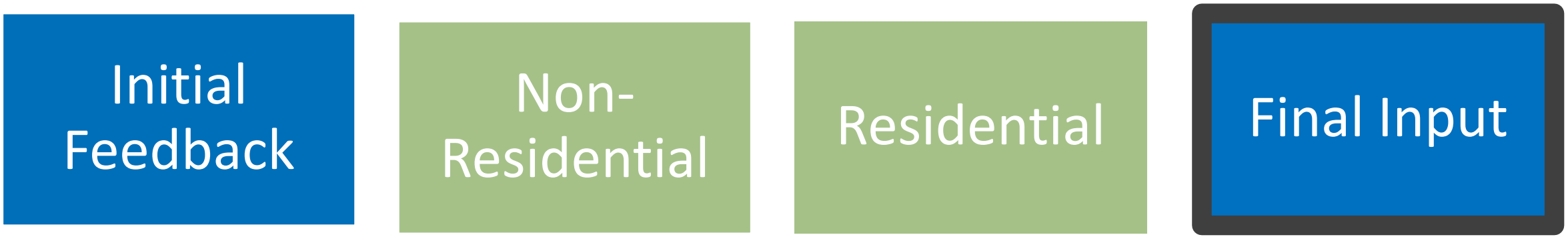
San José Reach Code Stakeholder Meetings



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What's already included in the Title 24?

	2016	2019
Building Electrification	None	Electrification-ready water heating for low-rise residential
Electric Vehicle Charging Infrastructure	EV parking requirements for single family, multifamily and commercial (San Jose CALGreen)	More extensive EV parking requirements
Solar PV	Solar readiness for single-family, multi-family (up to 10 stories) & low-rise commercial (except healthcare)	+ Mandatory PV for low-rise residential

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Reach Code Requirements

- Building Electrification
- Electric Vehicle Charging Infrastructure
- Solar PV

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	2019 Base Code	Draft San Jose Reach Code	Code Language Location
Low-Rise Residential	• Electrification-Ready water heating	• 25% greater efficiency for mixed fuel projects • 0% for all-electric	• Section 150.1(b)
High Rise MF / Hotel / Motel	• None	• 7% greater efficiency for mixed fuel projects • 0% for all-electric	• Section 140.1
Office	• None	• 14% greater efficiency for mixed fuel projects • 0% for all-electric	• Section 140.1
Retail	• None	• 15% greater efficiency for mixed fuel projects • 0% for all-electric	• Section 140.1

	2019 Base Code	Draft San Jose Reach Code	Code Language Location
Low-Rise Residential	• Electrification-Ready water heating	• 25% greater efficiency for mixed fuel projects • 0% for all-electric	• Section 140.1(b)
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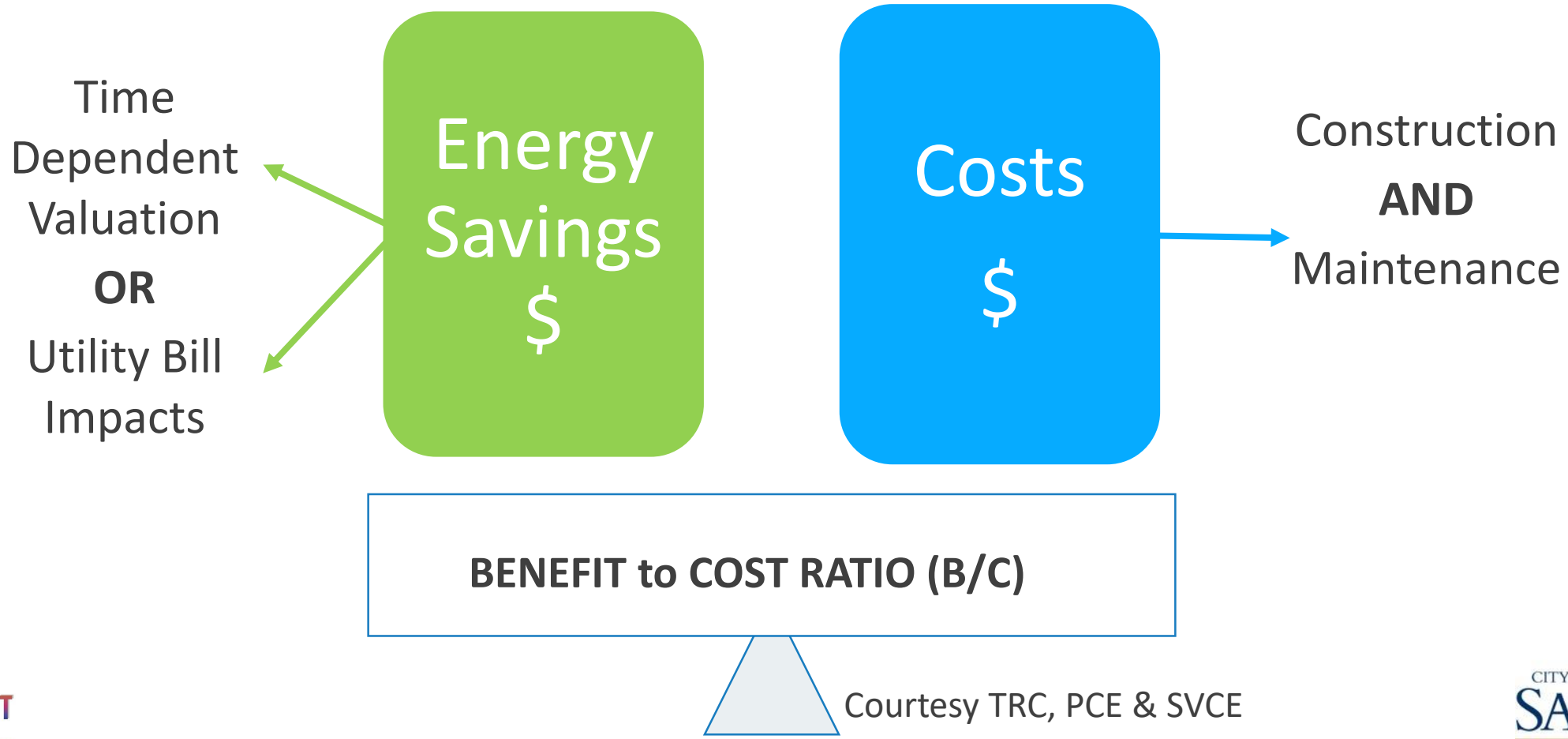
Determining Cost Effectiveness



Courtesy TRC, PCE & SVCE

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Cost of All Electric

Building Type	Incremental First Cost of All-Electric Building
Medium Office Prototype	-$1.45/sf
Medium Retail Prototype	+$0.21/sf
Small Hotel (High-Rise Multifamily)	-$30.16/sf
Single-Family Home	-$5,349/unit
Low-Rise Multifamily Dwelling Unit	-$2,337/unit

	2019 Base Code	Draft San Jose Reach Code	Silicon Valley / Peninsula Clean Energy Model Code
Low-Rise Residential	• Electrification-Ready water heating	• 25% greater efficiency for mixed fuel projects • 0% for all-electric	• 25% greater efficiency for mixed fuel projects • *Electrification Readiness*
High Rise MF / Hotel / Motel	• None	• 7% greater efficiency for mixed fuel projects • 0% for all-electric	• 7% greater efficiency for mixed fuel projects • *Electrification Readiness*
Office	• None	• 14% greater efficiency for mixed fuel projects • 0% for all-electric	• 14% greater efficiency for mixed fuel projects • *Electrification Readiness*
Retail	• None	• 15% greater efficiency for mixed fuel projects • 0% for all-electric	• *14%* greater efficiency for mixed fuel projects • *Electrification Readiness*

Reach Code Options

Electric Vehicle Charging Infrastructure

- Building Electrification
- **Electric Vehicle Charging Infrastructure**
- Solar PV

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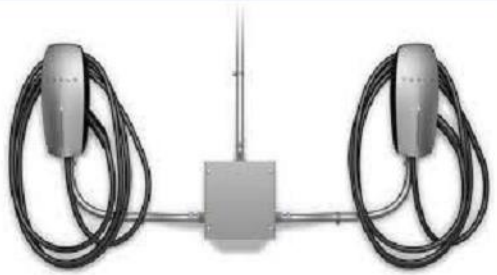
EVCI Definitions

Electric Vehicle Charging Infrastructure

Level 1		15-20 Amp, 120v AC (standard household outlet) Driving Distance provided: 3-4 miles/hour
Level 2		40+ Amp, 208/240v AC Driving Distance provided: 25-30 miles/hour
DC Fast Charge		80-400 Amp, 200-600v DC Driving Distance provided: 125-1000 miles/hour

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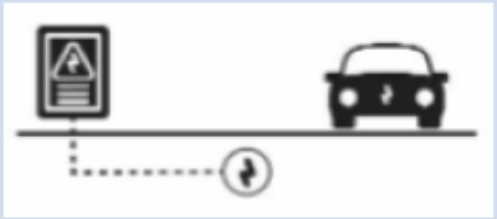
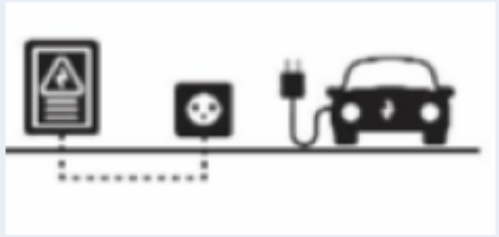
EVCI Definitions

Electric Vehicle Charging Infrastructure

EV Capable *(Some assembly required)*		Raceway (conduit), electrical capacity (breaker space)
EV Ready *(Plug & Play)*		Raceway (conduit), electrical service capacity, overcurrent protection devices, wire and outlet (i.e. full circuit)
EV Supply Equipment (EVSE) Installed *(Level 2 Charge!)*		All the equipment needed to deliver electrical energy from an electricity source to the EV

Courtesy TRC, PCE & SVCE

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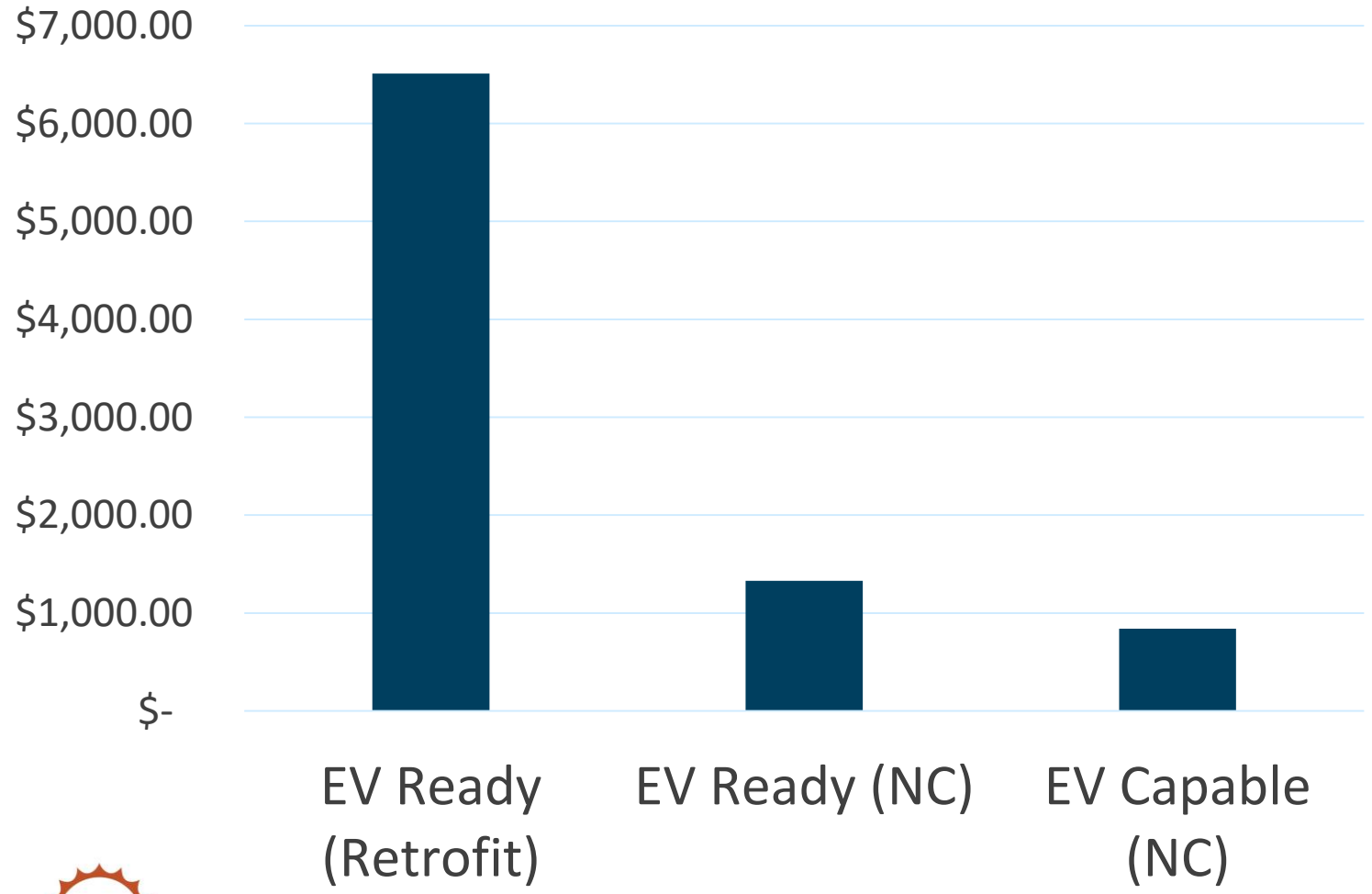
	2019 Base Code	Draft San Jose Reach Code	Code Language Location
Single Family	• 1 EV Ready	• 1 EV Ready	• Section 4.106.4.1
Multifamily	• 3% for 17 or more spaces	• 50%* EV Ready or EVSE (25% Level 2, 75% Level 1) • Remainder EV Capable	• Section 4.106.4.2 (LR) • Section 5.106.5.3 (HR)
Office	• 4-10% spaces EV Ready	• 10% spaces EVSE • 40% spaces EV Capable (with reserved capacity)	• Section 5.106.5.3
All Other Non-Res	• 4-10% spaces EV Ready	• 10% spaces EVSE • 40% spaces EV Capable (with reserved capacity)	• Section 5.106.5.3

	2019 Base Code	Draft San Jose Reach Code	Silicon Valley / Peninsula Clean Energy Model Code
Single Family	• 1 EV Ready	• 1 EV Ready	• 1 Level 2 EV Ready • *1 Level 1 EV Ready*
Multifamily	• 3% for 17 or more spaces	• 50%* EV Ready or EVSE (25% Level 2, 75% Level 1) • Remainder EV Capable	• *100% spaces EV Ready***
Office	• 4-10% spaces EV Ready	• 10% spaces EVSE • 40% spaces EV Capable (with reserved capacity)	• 10% spaces EVSE • *10% spaces EV Ready* • 30% spaces EV Capable
All Other Non-Res	• 4-10% spaces EV Ready	• 10% spaces EVSE • 40% spaces EV Capable (with reserved capacity)	• 6% spaces EVSE • 5% spaces L1 EV Ready

EVCI – Cost of New vs. Retrofit (Parking Lot)

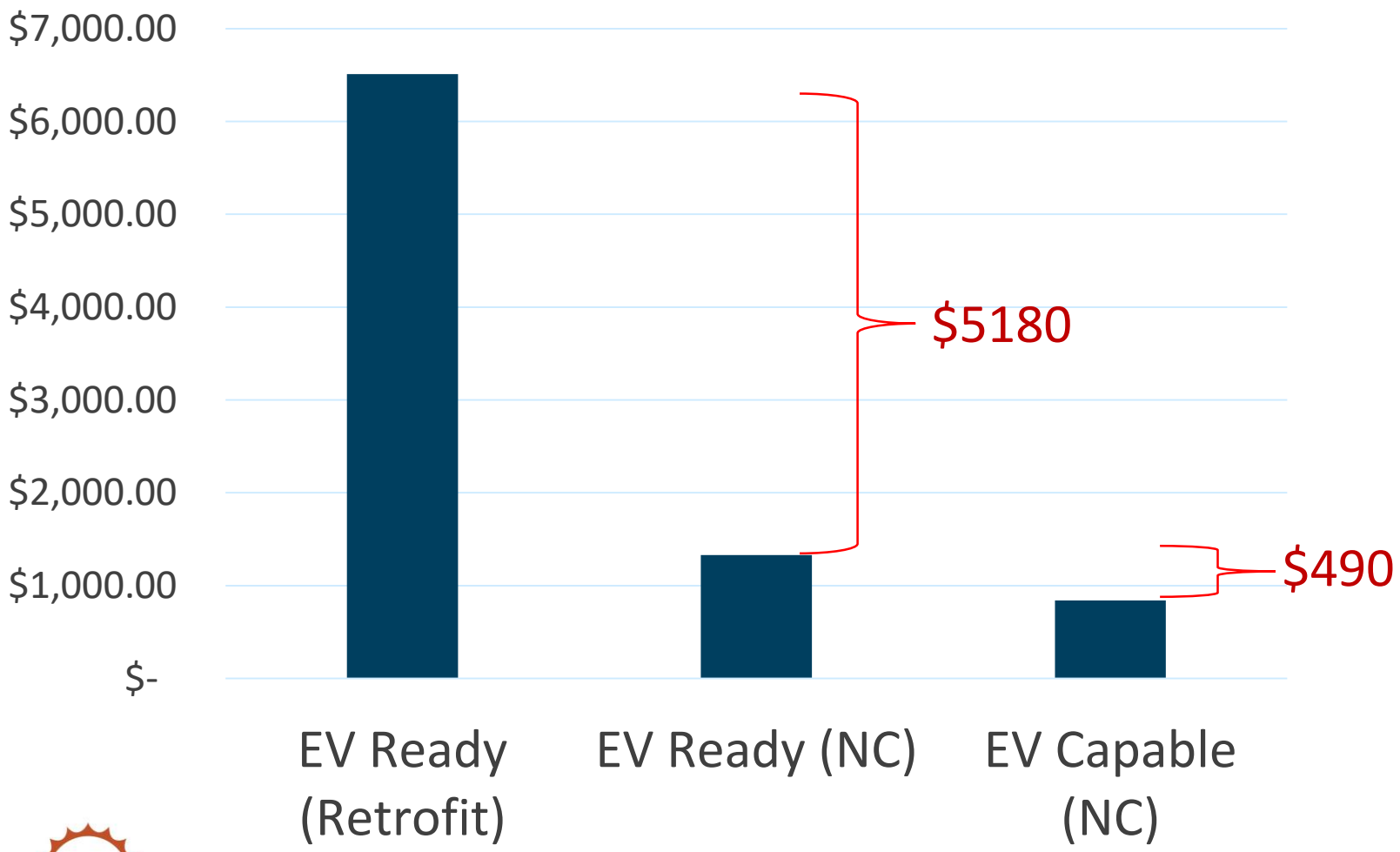
Electric Vehicle Charging Infrastructure



"Driving Plug-In Electric Vehicle Adoption with Green Building Codes" by Energy Solutions, PG&E, ARB.
(Graphic courtesy TRC, PSE & SVCE)

EVCI – Cost of New vs. Retrofit (Parking Lot)

Electric Vehicle Charging Infrastructure



"Driving Plug-In Electric Vehicle Adoption with Green Building Codes" by Energy Solutions, PG&E, ARB.
(Graphic courtesy TRC, PCE & SVCE)

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A People-Centered Plan for a Low-Carbon City

Solar

- Building Electrification
- Electric Vehicle Charging Infrastructure
- Solar PV

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	2019 Base Code	Draft San Jose Reach Code	Code Language Location
Low-Rise Residential	• Solar PV -OR- • Solar-Ready	• Same	• Section 110.10 (a) 1 & 2
High Rise MF	• Solar-Ready up to 10 stories	• Solar-Ready for all	• Section 110.10 (a) 3
All Other	• Solar-Ready except healthcare or over 3 stories	• Solar-Ready for all	• Section 110.10 (a) 4

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	2019 Base Code	Draft San Jose Reach Code	Silicon Valley / Peninsula Clean Energy Model Code
Low-Rise Residential	• Solar PV -OR- • Solar-Ready	• Same	• 3 or 5 kW PV System
High Rise MF	• Solar-Ready up to 10 stories	• Solar-Ready for all	• 3 or 5 kW PV System
All Other	• Solar-Ready except healthcare or over 3 stories	• Solar-Ready for all	• 3 or 5 kW PV System

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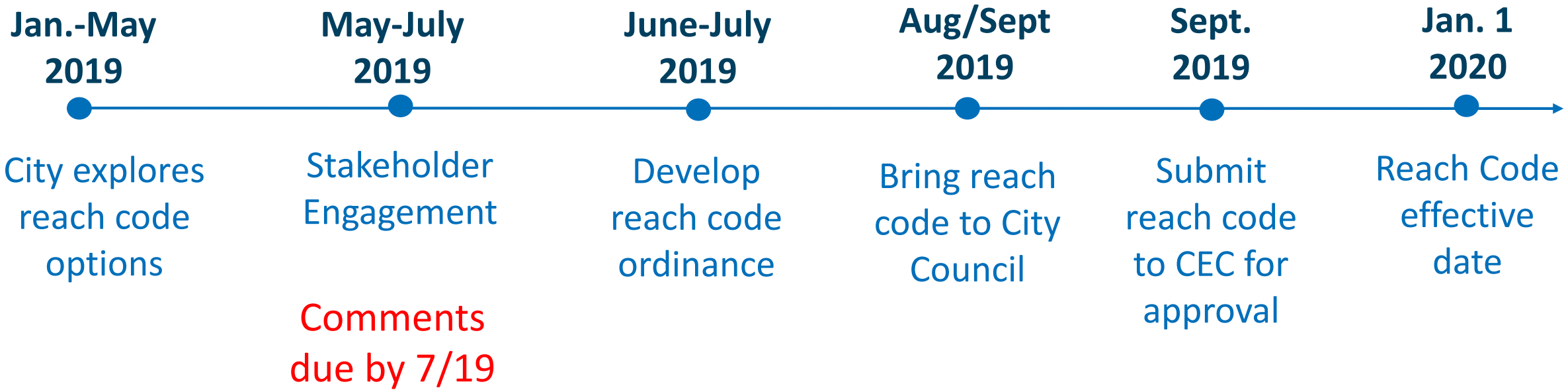
Next Steps



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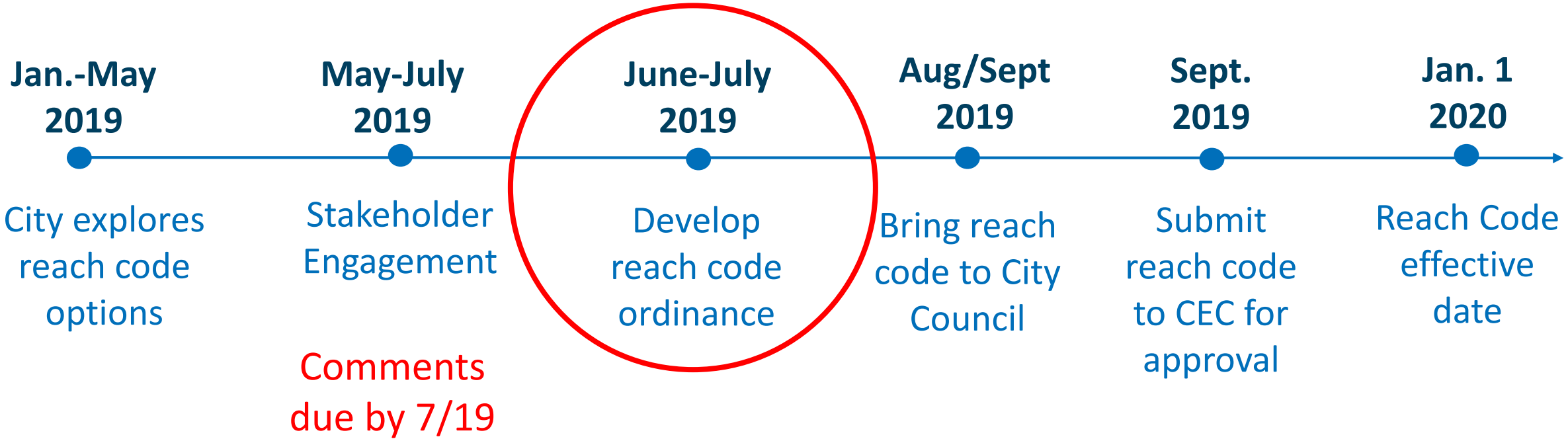
Next Steps



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Thank You!

Contact Information:

- energy@sanjoseca.gov
- City Reach Code Webpage: www.sjenvironment.org/reachcode

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