City of San Mateo
Reach Code Adoption
BayREN
June 2017 Forum
Background

• Climate Action Plan (CAP) approved by City Council in April 2015

• CAP recommended solar-ready and EV-ready policies that ended up included in State’s 2016 code update (effective 1/1/2017)

• City Council considered more advanced policies for CAP but did not want to include those measures at time of adoption

• Gave direction to staff to study more advanced measures and bring back for consideration
Policy Development Process

• Joint effort between Building Department and Sustainability Staff in City Manager’s Office

• Consultants Team:
  – Green Building Consultant, Integrated Design 360, to advise on process and measures
  – Building Science Engineers, TRC Consultants, for Cost-Effectiveness Analysis

• Stakeholders:
  – Sustainability Commission
  – Development Community

• Year-Long process from conception to adoption
• Total Cost to City $100,000
• Adopted Code only in effect for current Building Code cycle (3-year life span)
Goals for Reach Code

- Consistent with the recommendations of the Climate Action Plan
- Clear and straightforward requirements
- Consistent triggers amongst the proposed requirements
- Create policy that is progressive and development friendly
Policy Research History

• California Energy Commission requires cost benefit analysis for any “reach” measure
• Staff researched cost-effectiveness for broad list of energy-efficiency measures
• Climate Zone 3 has a very mild climate which allows for limited reach code opportunities
• Staff gathered approaches from multiple cities
  – Solar mandate form -- % energy use vs. minimum size system
  – Electric Vehicle installation policies – readiness vs. installation
Summary of Measures Analyzed

• Energy Efficiency Measures Compared to Standard Title 24 Budget
  – Lighting controls and measures
  – Building envelope and insulation
  – Heating, ventilation, and air conditioning
  – Domestic hot water (on-demand and compact systems)

• Solar Measures
  – Solar photovoltaics
  – Solar hot water

• Green Building Code Measures
  – EV charging infrastructure
  – Indoor water use
Stakeholder Outreach

• Sustainability Commission review
• Developer workshop and 1:1 meetings with development community
• Outreach to PG&E on infrastructure implications
• No stated concerns on solar or cool roof policy for Energy Code Amendment
  – Solar Thermal alternative was critical for multifamily developer acceptance
• Concerns about EV-requirement in Green Building Code
  – Electricity capacity needed for EV-readiness requirement – PG&E transformer sizing issue
  – Does sufficient demand exist to merit requirements?
  – Mandatory install vs. readiness?
Adopted Energy Code Measures

- Mandatory solar installations (minimum size system) for all new developments

- Mandatory Cool Roofs for low-sloped roofs for commercial and multifamily developments
Solar Mandate (Residential)

- New Single Family Buildings
  - Minimum of a 1 kilowatt PV system
- New 3 to 16 Unit Multi-Family Buildings
  - Minimum of a 2 kilowatt PV system
- New 17+ Unit Multi-Family Buildings
  - Minimum of a 3 kilowatt PV system
- Alternative:
  - Projects may provide a solar hot water system (solar thermal)
Solar Mandate (Non-Residential)

• New Buildings < 10,000 sqft
  – Minimum of a 3 kilowatt PV system

• New Buildings > 10,000 sqft
  – Minimum of a 5 kilowatt PV system

• Alternative
  – Projects may provide a solar hot water system
    (solar thermal)
# Solar Mandate

## Cost Effectiveness Analysis

### Residential

<table>
<thead>
<tr>
<th>Size (kW)</th>
<th>Cost</th>
<th>PV of Energy Savings</th>
<th>B/C Ratio</th>
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</thead>
<tbody>
<tr>
<td>1</td>
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<td>$8,567</td>
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<tr>
<td>2</td>
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<tr>
<td>3</td>
<td>$7,392</td>
<td>$23,839</td>
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</table>

### Commercial

<table>
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<tr>
<th>Size (kW)</th>
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<th>PV of Energy Savings</th>
<th>B/C Ratio</th>
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</thead>
<tbody>
<tr>
<td>3</td>
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<td>$12,250</td>
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<tr>
<td>5</td>
<td>$12,319</td>
<td>$20,843</td>
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</table>
• Mandates aged solar reflectance increase from 0.63 to ≥ 0.70 for multi-family and commercial low-sloped roofs
• Single-family residential is excluded and was not shown to be cost-effective
Cost Effectiveness
Cool Roofs

Little or no additional costs, sometimes cost savings with cool roofs since tint adds costs

<table>
<thead>
<tr>
<th>Averages</th>
<th>PV of Energy Savings</th>
<th>Cost</th>
<th>B/C Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multifamily</td>
<td>$15,590</td>
<td>$1,476</td>
<td>10.6</td>
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<tr>
<td>Nonresidential</td>
<td>$2,788</td>
<td>$2,276</td>
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</table>
Electric Vehicle Policy Issues

• Delayed adoption due to stakeholder concerns on electrical capacity requirements
• Worked with PG&E to understand comments
• May require upgrading to larger transformer at time of full install – could add $15,000 to $30,000 extra cost at that time
• Added infeasibility exemption to cover extreme cases
• No cost-effectiveness requirement needed to adopt
• Cost estimated to be $4,000 per space
Adopted Green Building Code Measures

• Mandatory EV readiness for additional spaces for new commercial and multifamily developments (10% of total parking)

• Mandatory laundry to landscape diverter valves for new single family construction
Policy Approval Process

• Sustainability Commission review and recommendation to City Council

• City Council Public Hearing for Approval of Ordinances amending Energy Code and Green Building Code

• Submittal of Energy Code Ordinance to CEC for review

• 60-day Public Comment period through CEC

• CEC Review and Adoption of Energy Code
  – If CEC recommends changes, revised ordinance has to return to City Council for approval

• Approvals only apply to current Building Code cycle and will need to be revisited with next code update
Implementation

• Policies passed City Council and CEC unanimously with no opposition
• Effective Date January 1, 2017
• Handout from Building Department created that includes all local code amendments
• Developed web page outlining requirements
• To date, no stated concerns or compliance issues