

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 straight forward 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

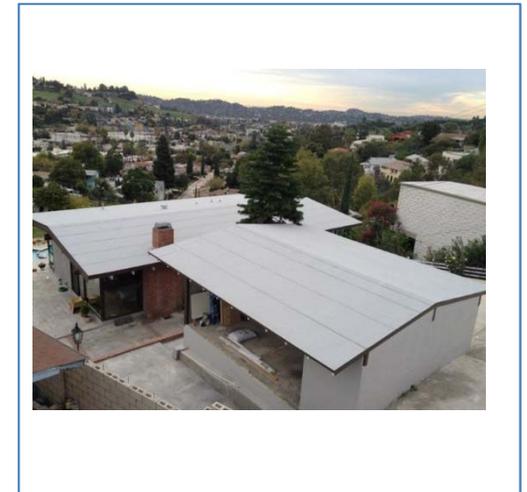
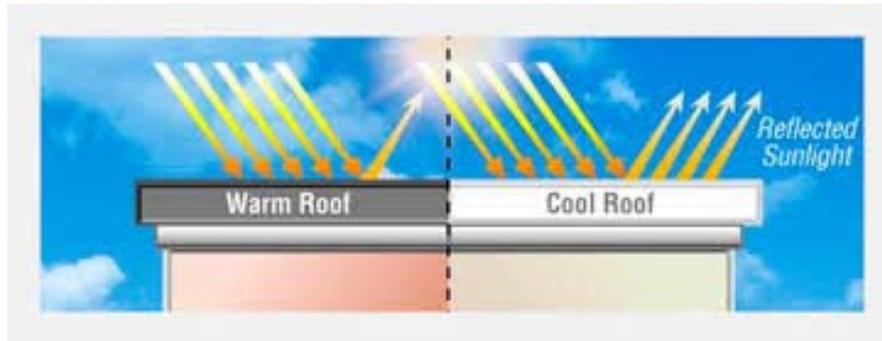
Size (kW)	Cost	PV of Energy Savings	B/C Ratio
1	\$2,464	\$8,567	3.5
2	\$4,928	\$17,135	3.5
3	\$7,392	\$23,839	3.2

Commercial

Size (kW)	Cost	PV of Energy Savings	B/C Ratio
3	\$7,392	\$12,250	1.8
5	\$12,319	\$20,843	1.7

Cool Roof Requirements

- 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



Light-colored property of a variety of roofing surfaces

Cost Effectiveness Cool Roofs

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

Averages	PV of Energy Savings	Cost	B/C Ratio
Multifamily	\$15,590	\$1,476	10.6
Nonresidential	\$2,788	\$2,276	1.2

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

CAL Green



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

The screenshot shows the City of San Mateo website. At the top, the logo "City of San Mateo California" is displayed. Navigation links include "Living", "Visiting", "Business", "City Council", "Departments", and "I Want to...". A search bar is located on the right. The main content area is titled "Sustainable Development" and features a breadcrumb trail: "You are here: Home > Departments > Community Development > Building > Sustainable Development". The page text discusses the 2016 Edition of the California Building Standards Code and the California Code of Regulations, which took effect on January 1, 2017, along with new mandatory local green building and energy code amendments. It explains that every three years, the State of California adopts new building standards organized in Title 24 of the California Code of Regulations. The Building Standards Code is a compilation of several different codes that relate to different technical aspects of buildings. Cities can adopt requirements that are above and beyond what is included in the Building Code, referred to as a "reach code". All proposed reach codes are filed with the State. A section titled "Mandatory Electric Vehicle Readiness (Green Building Code)" states that the Green Building Code amendment requires a higher number of mandatory electric vehicle ready (EV ready) parking spaces, referred to as "EV Spaces" than what is required by the State for new construction projects. An EV Space is defined as a parking space designated for immediate or future installation of EV charging equipment. An EV Space contains electrical panel capacity and conduit running from the panel to the charging space. However, it is not required to contain the actual EV charging equipment. The reasoning behind the proposed EV