



**MEMORANDUM**

**TO:** Climate Action Plan (CAP) Task Force

**FROM:** Danielle Staude, Senior Planner

**VIA:** Patrick Kelly, Director of Planning and Building

**SUBJECT:** Background Material for CAP Meeting 3 (November 11, 2021), focus on Renewable Energy, Electrification and Energy Efficiency

**DATE:** October 25, 2021

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2 To prepare for the next CAP Update meeting on November 11, 2021, a subcommittee has  
3 been assembled to take a deep dive into renewable energy, electrification and energy  
4 efficiency actions identified below. However, it is also important for the CAP Task  
5 Force members to be familiar with the various policies, programs and terminology  
6 associated with the subject matter, so we are forwarding the subcommittee information to  
7 the Task Force as well.

8  
9 **General Purpose and Expected Outcome for the Subcommittee:**  
10 The subcommittee will review the draft Renewable Energy & Electrification and Energy  
11 Efficiency actions (below).

12 Additional information and presentation on information will be made at the full  
13 committee meeting in November. Presentations will include:

- 14 • Green Building Updates and Trends: Building reach code policy, fuel switching  
15 programs, and low carbon concrete materials. (Brian Reyes, Sustainability  
16 Planner, County of Marin)
- 17 • Decarbonization Coalition, tbd

18  
19 As part of reporting out to the Task Force the subcommittee will:

- 20 • Identify questions that may be helpful to answer before the Task Force meeting;
- 21 • Further investigate the actions proposed below and provide recommendations to  
22 the full committee, such as: 1) do not consider in CAP; 2) consider in CAP; 3)  
23 consider in CAP with changes/edits; and/or
- 24 • Identify other additional actions to consider based on subcommittee research.

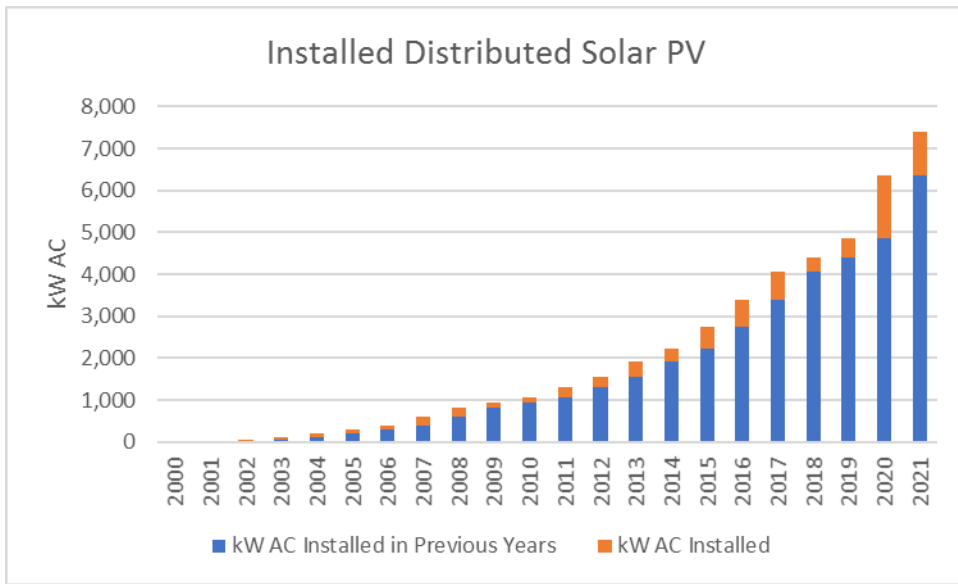
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26 **Renewable Energy Generation and Storage**

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28 Background: Mill Valley property owners have been installing distributed solar PV  
29 (primarily rooftop, but some ground mounted systems) as shown in the chart and table  
30 below. Installed solar PV more than tripled in 2020, up from 464 kW in 2019 to 1,501  
31 kW in 2020. So far in 2021 (through July 30<sup>th</sup>), 1,033 kW have been installed, at an  
32 annualized rate of 1,771 kW. The large increase in PV installation after 2019 may be due  
33 to the availability and feasibility of installing battery storage with a PV system, and the  
34 property owner’s interest in increasing the home’s resiliency and avoiding power shutoffs  
35 during PSPS events. Battery storage was installed in 72% of PV projects in 2020, up  
36 from 17% in 2019. So far in 2021, 68% of PV projects are including battery storage.

37



38

39 *Note: 2021 data is through July 30. Data is for the 94941 area and includes unincorporated areas of*  
40 *Strawberry and Tam Valley.*

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Year	kW AC Installed	Total Solar PV Projects	Projects that Include Battery Storage	% of Projects with Battery Storage
1999	3	1	0	0%
2001	14	3	0	0%
2002	46	13	0	0%
2003	60	18	0	0%
2004	77	18	0	0%
2005	89	25	0	0%
2006	92	25	0	0%
2007	237	49	0	0%
2008	190	48	0	0%
2009	144	28	0	0%
2010	127	33	0	0%
2011	218	29	0	0%
2012	245	49	0	0%
2013	372	77	0	0%
2014	328	79	0	0%
2015	515	98	0	0%
2016	631	92	1	1%
2017	665	63	0	0%
2018	340	65	4	6%
2019	464	83	14	17%
2020	1,501	239	171	72%
2021 through 7/30	1,033	152	103	68%

43 *Source: California Distributed Generation Statistics, PG&E Interconnected Project Sites Data Set,*  
44 *current as of July 31, 2021*

45 As of January 2021, the California Building Code requires all new homes and  
46 multifamily development three stories or less to include solar.

47

48 Target: The Task Force should recommend a reasonable target for annual PV installation,  
49 such as the amount installed in the last full year of data (2020) or an average of the past 5  
50 years. I can scale the recommended target to exclude the unincorporated areas.

51

52 **GHG-Free Electricity**

53 Background: In 2019, MCE supplied 72% of the electricity delivered to Mill Valley  
54 customers. 13.4% of that amount was Deep Green. For comparison, 3.6% of MCE's  
55 service area load is Deep Green. The [MCE Operational Integrated Resource Plan 2021-  
56 2030](#) states that MCE is structuring a Light Green portfolio to be approximately 95%  
57 GHG-free by 2022 and beyond.

58

59 The State's Renewable Portfolio Standard and Senate Bill 100 California's Renewable  
60 Portfolio Standard (RPS) requires California load-serving entities (LSEs) to supply their

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61 retail sales with minimum quantities of eligible renewable energy. Senate Bill 100 directs  
62 all LSEs to procure 60% of their portfolios from RPS-eligible resources by 2030, and  
63 100% of their retail sales from zero-carbon resources (or eligible renewable resources) by  
64 2045.

65  
66 Target: The Task Force should recommend a reasonable 2030 target for increasing the  
67 amount of Deep Green electricity purchased by Mill Valley customers.

68

69 **Building and Appliance Electrification**

70

71 Background on Rebate Programs: The County of Marin operates a natural gas appliance  
72 replacement program called [Electrify Marin](#). Eligible appliances include water heaters,  
73 furnaces, ranges, and cooktops. Appliance rebates range from \$250 to \$1,000; a service  
74 panel upgrade rebate is also available for \$500. Larger rebates are available for very low-  
75 income households. Additional rebates for gas-to-electric appliance upgrades are  
76 available from [BayREN](#), which includes incentives for efficient electric water heating,  
77 space heating, cooking, and clothes drying appliances. Marin County residents may  
78 receive rebates from both programs simultaneously. Marin County’s program was  
79 initially a pilot project funded by the Bay Area Air Quality Management District. The  
80 newer BayREN rebates indicate that more electrification rebate programs will be offered  
81 in the future.

82

83 Background on Green Building Ordinances: Title 24 of the California Code of  
84 Regulations contains the California Building Standards Code, which governs the design  
85 and construction of buildings, associated facilities, and equipment in the state. California  
86 updates the Building Standards Code every three years. For our purposes, Part 6 of Title  
87 24, the California Energy Code, and Part 11 of Title 24, the California Green Building  
88 Standards Code (“CALGreen”), are the most relevant. The City adopted the 2019 codes  
89 with amendments in December 2019, and these went into effect on January 1, 2020. (For  
90 more detail, see the [2019 CALGreen Code](#).)

91

92 Mill Valley Green Building Requirements: Mill Valley’s green building standards are  
93 codified in Chapter 14.48 “Green Building Standards” of the [Municipal Code](#). For the  
94 2019 code cycle, the City adopted more stringent Tier 1 requirements for additional  
95 mandatory and elective measures in the areas of planning and design, energy efficiency,  
96 water efficiency and conservation, material conservation and resource efficiency, and  
97 environmental quality. In addition, the City’s ordinance encourages all-electric and  
98 limited mixed-fuel buildings by requiring higher energy efficiency standards for  
99 conventional mixed-fuel buildings. These standards will be superseded by the new 2022  
100 code. The City may adopt more restrictive standards than what is required by the state  
101 code.

102

103 All types of renovations are subject to Green Building standards and are scaled based on  
104 the scope of the project. Note that Mill Valley is more aggressive than state Green  
105 Building (CalGreen) requirements, both in level (tier 1) but also in that it applies to major  
106 renovations as well as new homes. Energy efficiency components can only be applied if

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107 the Energy Commission supports the cost-benefit analysis provided by the local  
108 jurisdiction at the time of the adoption of the Green Building ordinance. This is to ensure  
109 that the requirements are not a financial burden to the local community.

110  
111 *Minor Additions and Alterations:*

112 Qualifying Projects: Apply checklist only to the alteration and/or addition

- 113 • Non-Residential: Additions 1,000 sq ft or more OR \$200K or more valuation
- 114 • Single-Family-Residential: Additions less than 50% (defined below). For an  
115 example of the overall process, [click here](#). For the Green Building Checklist, [click](#)  
116 [here](#).

117  
118 *New Construction and Major Remodels (Residential and Non-Residential)*

119 New construction and newly constructed buildings, including new or replacement  
120 buildings and major remodels. “Major remodel” includes structural modifications and  
121 additions which are greater than 50% of either (1) the current square footage of such  
122 dwelling or (2) the current exterior roof structure and exterior walls of such dwelling.

123  
124 Requirements for New Construction and Major Remodels:

- 125 • Single Family-Residential: Tier 1, including Division A4.2 at 15%. For an  
126 example of the overall process, [click here](#). For the CalGreen checklist, [click here](#).
- 127 • Non-Residential: Tier 1, excluding Division 5.2 Energy Efficiency
- 128 • Multi-Family Residential: Tier 1, including Division A4.2 at 10%.

129  
130 EV Ready (as part of a series of Green Building Reach Codes): The City of Mill Valley  
131 has also adopted the EV Ready reach code, which requires new and major remodels to  
132 provide EV readiness for Level 2 EV charging at a residence.

133  
134 Sustainable Materials: Some Task Force members have expressed interest in this area.  
135 This would be an area that could be further researched, providing guidance to add  
136 objective details to the existing Multi-Family and [Single-Family Design Guidelines](#) (last  
137 page) that state:

138  
139 *Guideline 20 - Application of sustainable design principles*

140  
141 *a. Site and building design should be efficient. To the extent consistent with*  
142 *other design considerations, designs should be creative and innovative in their*  
143 *use of materials and methods to minimize resource consumption.*

144  
145 *b. Materials should be considered which protect the natural environment from*  
146 *long-term harm. To the extent possible, materials should be used which are long-*  
147 *lived and use minimal energy in their manufacture, have high recycled content,*  
148 *and minimal non-renewable material content.*

149  
150 *c. Sourcing of local materials is encouraged.*

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152 Next Green Building Update:

153 The next code update, the 2022 Building Standards Code, must be adopted by the end of  
154 2022 and will go into effect on January 1, 2023. For newly constructed homes, the  
155 [proposed new energy standards](#):

- 156
- 157 • Establish energy budgets based on efficient heat pumps for space or water
  - 158 heating to encourage builders to install heat pumps over gas-fueled HVAC units.
  - 159 • Require homes to be electric-ready, with dedicated 240-volt outlets and space
  - 160 (with plumbing for water heaters) so electric appliances can eventually replace
  - 161 installed gas appliances.
  - 162 • Allow exceptions to existing solar PV standards when roof area is not available
  - 163 (such as for smaller homes).

164

165 For newly constructed commercial buildings:

- 166 • Establish solar PV and battery standards for select businesses. Systems are sized
- 167 to maximize onsite use of solar energy and avoid electricity demand during times
- 168 when the grid must use gas-powered plants.
- 169 • Improve energy efficiency standards.

170

171 As of September 2021, fifty local governments in California have passed a zero-emission  
172 building ordinance that goes beyond state requirements. Ten jurisdictions, including the  
173 [Town of Fairfax](#), have adopted an ordinance requiring newly constructed buildings to be  
174 all-electric. A list of these local governments with links to their ordinances [here](#).  
175 Unfortunately, the descriptions are not entirely accurate. For instance, it stated that Mill  
176 Valley requires all newly constructed residential buildings to be all electric.

177

178 Target: If the Task Force desires to include the ordinances described in “Building and  
179 Appliance Electrification” above, they should indicate the year the ordinances are to be  
180 adopted. Note that the Building Code will be updated by the end of 2022.

181

182

183 **Energy Efficiency Programs**

184

185 Background: There are many energy efficiency programs available. See the [County of](#)  
186 [Marin’s page](#) for links to current programs.

187

188 Target: Mill Valley has been reducing electricity consumption an average of 1.2%  
189 annually since 2005, and natural gas consumption 0.7%. We typically assume the same  
190 reduction rate for this action.

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192

193 **Cool Pavement and Roofs**

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195 Background: The City’s green building regulations contain Tier 1 standards for cool roofs  
196 and methods to reduce the heat island effect for nonroof areas, such as planting shade  
197 trees over paved areas, using high albedo materials, using open grid or pervious  
198 pavements, and undergrounding parking. These are elective measures. The applicant  
199 must choose a prescribed number of elective measures to conform to the ordinance.

200

201

202 **Low Carbon Concrete (part of a series of Green Building Reach Codes)**

203

204 Background: The County of Marin has developed a [Low Carbon Concrete Ordinance](#)  
205 with practical requirements for the composition of concrete that maintains adequate  
206 strength and durability for the intended application and at the same time reduces  
207 greenhouse gas emissions. The code includes pathways for compliance with either  
208 reduced cement levels or lower-emission supplementary cementitious materials. More  
209 information is available [here](#). For jurisdictions interested in adopting a similar ordinance,  
210 the project team developed a [Code Amendment Toolkit](#).

211

212

213 **Streetlights**

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215 Background: As of May 2020, the City had converted 79% of its streetlights to LED.

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