DOCKETED	
Docket Number:	22-BSTD-07
Project Title:	Local Ordinance Applications Exceeding the 2022 Energy Code
TN #:	247525-6
Document Title:	Encinitas Residential Retrofit Memo
Description:	Plain text of Encinitas residential retrofit memo
Filer:	Danuta Drozdowicz
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	11/18/2022 2:02:29 PM
Docketed Date:	11/18/2022

CALIFORNIA ENERGY CODES & STANDARDS
A STATEWIDE UTILITY PROGRAM

Last modified: 2022/09/14
Revision: 1.0

Application of the 2019 Studies to the 2022 Energy Code:

Existing Low-Rise Residential Building Upgrades

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

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

SDGE A Sempra Energy utility
SOUTHERN CALIFORNIA EDISON Energy for What's Ahead
PG&E Pacific Gas and Electric Company

Legal Notice

This report was prepared for Pacific Gas and Electric Company and funded by the California utility customers under the auspices of the California Public Utilities Commission.

Neither PG&E nor any of its employees makes any warranty, express or implied; or assumes any legal liability or responsibility for the accuracy, completeness or usefulness of any data, information, method, product, policy or process disclosed in this document; or represents that its use will not infringe any privately-owned rights including, but not limited to, patents, trademarks or copyrights.

Acronym List

C&S – Codes and Standards

CPUC – California Public Utilities Commission

PG&E – Pacific Gas & Electric (utility)

Title 24 – California Code of Regulations Title 24, Part 6

TABLE OF CONTENTS

1 Summary & Conclusions 1
2 References 3

1 Summary & Conclusions

The California Codes and Standards (C&S) Reach Codes program provides technical support to local governments considering adopting a local ordinance (reach code) intended to support meeting local and/or statewide energy efficiency and greenhouse gas reduction goals. The program facilitates adoption and implementation of the code when requested by local jurisdictions by providing resources such as cost-effectiveness studies, model language, sample findings, and other supporting documentation.

In August 2021 the Statewide Reach Codes Team published the 2019 Cost-Effectiveness Study: Existing Single Family Residential Building Upgrades. In March of 2022 the Statewide Reach Codes Team published the 2019 Cost-Effectiveness Study: Existing Multifamily Residential Building Upgrades. These two studies focused on existing low-rise residential buildings identifying cost-effective measure and measure package upgrades in all 16 California climate zones. The studies document the estimated costs, benefits, energy impacts and greenhouse gas emission reductions that may result from implementing an ordinance to help local leadership, residents, and other stakeholders make informed policy decisions. The studies were conducted to complement the 2019 Building Energy Efficiency Standards (Title 24, Part 6), effective January 1, 2020 (California Energy Commission, 2018), but also considered metrics used in the 2022 Title 24, Part 6 update, effective January 1, 2023 (California Energy Commission, 2022).

The Statewide CASE Team reviewed the two studies for relevancy to exceed the 2022 Title 24, Part 6 requirements and found that the studies remain viable for use in the development of updated ordinances. Measures that are now required by code may reduce the number of options an applicant can use to meet the ordinance requirements in some situations.

The studies evaluated measures that local jurisdictions may consider adopting to achieve energy savings and emissions reductions beyond what will be accomplished by enforcing minimum state requirements. The analysis was based on requiring upgrades that would not otherwise be required based on the project scope and the Title 24, Part 6 code. Some common structures include triggering the requirements at major remodels, additions, or date-certain (upgrades must be completed by a specific date), or requiring certain measures based on a particular permitted work scope. Most of the recommended measures go beyond 2022 Title 24, Part 6 minimum requirements. For example, the recommended cool roof measure requires a minimum aged solar reflectance of 0.25 at time of roof replacement. This is more stringent than the Title 24, Part 6 requirement of a minimum aged solar reflectance of 0.20 in certain climate zones. Although the requirements for some measures align with the new code, they are still applicable in an ordinance that applies the measure when it is not explicitly required by Title 24 ,Part 6. As an example of this, the recommended attic insulation measure mostly aligns with the new code requirements for altered ceilings in Section 150.2(b)1J of the 2022 Title 24, Part 6. The state code requires attic insulation whenever a ceiling is altered; however, in the climate zones and building types where it was found to be cost-effective, a local ordinance may also require attic insulation even though the original project scope doesn't include any changes to the ceiling.

Below is a summary of the primary changes for additions and alterations to residential buildings in the 2022 Title 24, Part 6 code. For additional information reference the Energy Code Ace fact sheet What's Changed in 2022.[1]

- Expand the climate zones where cool roofs are required for steep-sloped and low-sloped roof replacements. [Sections 150.2(b)1Ii and 150.2(b)1Iiia]
- Add a roof deck insulation requirement for low-sloped roofs at time of roof replacement in certain climate zones. [Section 150.2(b)1Iiib]
- Prohibit electric resistance space heating equipment under certain conditions in most climate zones. [Section 150.2(b)1G]

[1] https://energycodeace.com/download/63691/file_path/fieldList/2022.Whats%20Changed.Res#:~:text=The%202022%20Energy%20Code%20is%20an%20important%20part%20of%20California's,the%20lifespan%20of%20a%20building.

- Reduce the duct leakage target from 15 to 10 percent of system airflow for altered duct and space conditioning systems in all climate zones for single family buildings. [Sections 150.2(b)1Diib and 150.2(b)1E]
- Increase the prescriptive duct insulation requirements in certain climate zones. [Sections 150.2(b)1Di]
- Reduce the trigger for prescriptive duct sealing and insulation requirements from 40-feet of new or altered ductwork to 25-feet in all climate zones for systems serving existing zones and eliminate the trigger for systems serving additions. [Sections 150.2(a) and 150.2(b)1D]
- Add a prescriptive requirement for attic sealing and insulation for altered ceilings and when an entirely new or complete replacement duct system is installed in certain climate zones. [Section 150.2(b)1J]
- Increase prescriptive attic insulation requirements for additions of 700 square feet or less in certain climate zones. [Section 150.2(a)1Bi]

Although it is not expected that these changes will substantially change the existing results, the Statewide Reach Codes Team may update the two studies over the following year to address the following items:

- Update escalation rates for electricity and gas utility tariffs in the single family study to match those used in the multifamily study, which were based on recent data from the California Public Utilities Commission (CPUC) 2021 En Banc hearings on utility costs through 2030 (California Public Utilities Commission, 2021a).
    - The impact of this change will increase cost effectiveness for fuel substitution measures and most efficiency measures.
- Evaluate impacts of future changes to net energy metering rules
- Adjust the outcomes for the renewal of the Investment Tax Credit for PV and battery storage systems.
- Evaluate if updated incremental cost adjustments are warranted, specifically for fuel substitution measures, as the market conditions evolve and reliable data becomes more available.
- Expand the evaluated fuel substitution scenarios to cover additional existing conditions and upgrade situations such as ductless space heating systems, existing systems without air conditioning, and heat pump water heaters in conditioned space.

The 2019 reports, model ordinance language and other resources are posted on the C&S Reach Codes Program website at LocalEnergyCodes.com. Local jurisdictions that are considering adopting an ordinance may contact the program for further technical support at info@localenergycodes.com.

2 References

California Energy Commission. (2018). *2019 Building Energy Efficiency Standards for Residential and Nonresidential Buildings.* CEC-400-2018-020. Retrieved from https://www.energy.ca.gov/sites/default/files/2021-06/CEC-400-2018-020-CMF_0.pdf

California Energy Commission. (2022, Feb). *2022 Building Energy Efficiency Standards for Residential and Nonresidential Buildings.* CEC-400-2022-010-CMF. Retrieved from https://www.energy.ca.gov/sites/default/files/2022-08/CEC-400-2022-010_CMF.pdf

California Public Utilities Commission. (2021a). *Utility Costs and Affordability of the Grid of the Future: An Evaluation of Electric Costs, Rates, and Equity Issues Pursuant to P.U. Code Section 913.1.* Retrieved from https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/office-of-governmental-affairs-division/reports/2021/senate-bill-695-report-2021-and-en-banc-whitepaper_final_04302021.pdf

Get In Touch

The adoption of reach codes can differentiate jurisdictions as energy efficiency and built environment decarbonization leaders and help accelerate the adoption of new equipment, technologies, code compliance, and energy savings strategies.

As part of the Statewide Codes & Standards Program, the Reach Codes Subprogram is a resource available to any local jurisdiction located throughout the state of California.

Our experts develop robust toolkits as well as provide specific technical assistance to local jurisdictions (cities and counties) considering adopting energy reach codes. These include cost-effectiveness research and analysis, model ordinance language and other code development and implementation tools, and specific technical assistance throughout the code adoption process.

If you are interested in finding out more about local energy reach codes, the Reach Codes Team stands ready to assist jurisdictions at any stage in the process.

Visit LocalEnergyCodes.com to access our resources and sign up for newsletters

Contact info@localenergycodes.com for no-charge assistance from expert Reach Code advisors

Follow us on Twitter