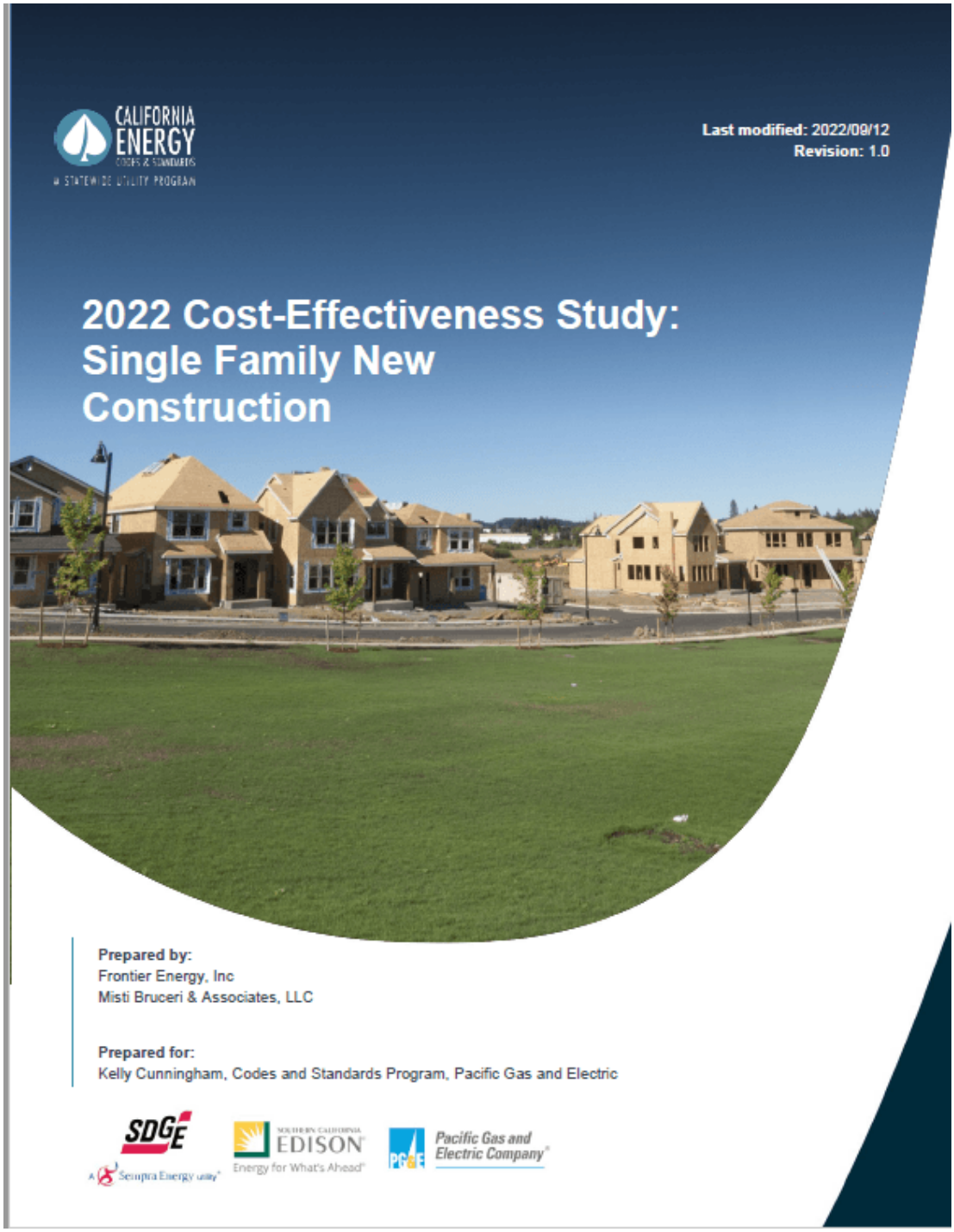
REACH CODE NEWS BRIEF: SEPTEMBER 2022

JUST PUBLISHED: 2022 SINGLE FAMILY NEW CONSTRUCTION COST-EFFECTIVENESS STUDY



The statewide Reach Codes Program has published the new 2022 Single Family New Construction Cost Effectiveness Study, which documents cost-effectiveness analysis results for traditional new detached single family and detached accessory dwelling unit (ADUs) building types.

This analysis uses two different metrics to assess cost effectiveness of the proposed upgrades: 1) Customer-based lifecycle cost (LCC) approach that values energy based upon estimated site energy usage and customer utility bill savings, or "on-bill" and 2) the Energy Commission LCC methodology, intended to capture the total value or cost of energy use over 30 years, referred to as Time-Dependent Valuation or TDV. The analysis used the two prototypes defined by the Energy Commission, a 3-bedroom, 2,100 ft^2 1-story home and a 3-bedroom, 2,700 ft^2 2-story home. The ADU prototype is a detached, 1-bedroom 625 ft^2 structure.

The Reach Codes Team evaluated three packages for mixed fuel homes and five packages for all-electric homes for each prototype and all 16 California climate zones (CZs). Packages include combinations of efficiency measures, on-site renewable energy, and battery energy storage:

- All-Electric Code Minimum: This package meets all the prescriptive requirements of the 2022 Title 24 Code. In some instances, the prescriptive minimum package did not comply with code and efficiency measures were added to meet minimum compliance requirements.
- Efficiency Only: This package uses only efficiency measures that don’t trigger federal preemption issues including envelope and water heating or duct distribution efficiency measures.
- Efficiency + NEEA Heat Pump Water Heater (Preempted): This package was evaluated for the all-electric homes only and shows an alternative design that applies water heating equipment that is more efficient than federal standards meeting the NEEA Tier 3 rating. The Reach Codes Team considers this more reflective of how builders meet above code requirements in practice.
- Efficiency + PV: Using the Efficiency Package as a starting point, PV capacity was added to offset the estimated electricity use.
- Efficiency + PV + Battery: Using the Efficiency & PV Package as a starting point, a battery system was added. For mixed-fuel homes the package of efficiency measures differed from the Efficiency Package in some climate zones to arrive at a cost effective solution.

Key findings are summarized here, while complete findings are available in the full report.

- All-electric packages have lower GHG emissions than mixed-fuel packages in all cases.
- All-electric new construction was found to be feasible and cost effective based on TDV in all cases. (In many cases all-electric code minimum construction results in an increase in utility costs and is not cost-effective On-Bill.)
- The 2022 Title 24 Code's new source energy metric (see Reach Codes Corner article below) combined with the heat pump baseline encourages all-electric construction, providing an incentive that allows for some amount of prescriptively required building efficiency to be traded off. This compliance benefit for all-electric homes highlights a unique opportunity for jurisdictions to incorporate efficiency into all-electric reach codes.
- The code compliance margins for the ADU all-electric code minimum package are lower than for the single family prototype and code compliance can be more challenging for smaller dwelling units. As a result, the Reach Codes Team does not recommend an additional efficiency requirement for all-electric ADU ordinances.
- Electrification combined with increased PV capacity results in utility cost savings and was found to be On-Bill cost effective in all cases.
- For jurisdictions interested in a reach code that allows for mixed fuel buildings, the mixed fuel efficiency, PV, and battery package was found to be cost effective based on TDV in all cases.
- Applying the CARE rates has the overall impact to increase utility cost savings for an all-electric building compared to a code compliant mixed fuel building, improving On-Bill cost-effectiveness.

The full report includes comprehensive results tables as well as complete descriptions of incremental cost assumptions. The no-cost study can be downloaded here.

UPCOMING EVENTS

October

October 4: Energy Commission 2022 EPIC Joint Symposium.

October 5: Energy Efficiency Day. https://energyefficiencyday.org/

October 6: 3C-REN training: 2022 Energy Code: Existing Buildings, Additions, and Alternations

October 12: Energy Commission Monthly Business Meeting

October 19: Central Coast Sustainability Summit. UC-Santa Barbara.

October 20: 3C-REN Training: 2022 Energy Code: Accessory Dwelling Units (ADUs).

October 25-27: VERGE 22. San Jose.

October 26: BayREN & Energy Code Ace: On-Line Training: Residential Energy Standards - Accessory Dwelling Units (ADU)



Be sure to follow us on Twitter for the latest news and information!

NEW THIS MONTH!



REACH CODES CORNER: A LOOK AT THE NEW COMPLIANCE METRICS FOR NEW CONSTRUCTION IN THE 2022 CODE

This column is a monthly feature focusing on specific topics of interest to newcomers to the reach code development community.

This month, we're looking at some of the new aspects of the 2022 Building Energy Code that reach code professionals will need to keep in mind as they move forward with planning local jurisdiction amendments. One of the most impactful developments in this cycle is the move to three compliance metrics for new construction. A design must satisfy all three, which are computed in the State-approved compliance software and are reported in the compliance documents.

For single-family new construction, these metrics are expressed as Energy Design Ratings (EDRs), an abstract scale wherein lower values represent lower energy consumption. There are three different EDR metrics in the new 2022 State Energy Code:

- **Energy Design Rating 1 (EDR1)** represents total Source Energy, and is a proxy for greenhouse gas (GHG) emissions

- **Efficiency Energy Design Rating 2 (EDR2-eff)** represents time-dependent valuation (TDV) Energy (a valuation developed by the Energy Commission to reflect the time dependent value of energy, including long-term projected costs of energy and other societal costs), excluding self-generation but including battery storage
- **Total Energy Design Rating EDR2 (EDR2-total)** represents TDV Energy, including both self-generation and battery storage

For multi-family and nonresidential new construction, the three metrics are expressed as:

- **Efficiency TDV Compliance Margin,** which accounts for all compliant end-uses but does not include the impacts of PV and battery storage
- **Total TDV Compliance Margin,** which includes compliant end-uses accounting for PV and battery storage contributions
- **Source Energy Margin** is evaluated based on fuel used for power generation, assuming utilities meet all RPS goals and other obligations projected over 30-year lifecycle

As local jurisdictions explore different reach code approaches, these requirements may impact the choices each jurisdiction makes. For instance, an approach that amends the California Energy Code (Title 24, Part 6) would need to meet a cost-effectiveness assessment to become legally enforceable and these compliance metrics would also be in play for new construction projects. A different approach, such as a measure amending a municipal health and safety code, would not trigger the use of these compliance margins or the cost-effectiveness requirement. A third alternative, adopting specific aspects of the California Green Building Code, Title 24, CALGreen, would require new construction projects to meet a different energy performance margin and install specific prerequisite measures from a prescribed list of measures.

The statewide Reach Codes Program is available with a wide range of resources and technical assistance to work with local teams to help identify the best approach for that community. Visit localenergycodes.com or email info@localenergycodes.com for specific assistance.



CCEC FORUM SESSION FOCUSES ON ACCELERATING AND DEMYSTIFYING THE REACH CODES PROCESS

A statewide panel of reach code professionals joined on Thursday, September 22, 2022 for a lively discussion of reach code issues at the 13th Annual California Climate and Energy Collaborative (CCEC) Forum.

Moderator Misti Bruceri led a highly interactive conversation that ranged from statewide to local perspectives, looking at the reach code development and adoption process with an eye toward sharing insights that would enable attendees to accelerate their own processes.

Statewide perspectives were provided by Danuta Drozdowicz, Energy Specialist with the Efficiency Division of the California Energy Commission, who is responsible for coordinating approval process of local reach code measures by the Commission, and Lawrence Garber, Program Associate with the Building Decarbonization Coalition, who shared valuable insights from the annual survey conducted statewide for jurisdictions implementing reach codes.

Local perspectives came from three professionals with jurisdictions across the state, each of whom spoke to a specific stage in the process. Cora Panturad, Sustainable Infrastructure Analyst with the County of Monterey, shared her team’s experience with

the beginning stages of the process, focusing on outreach and identifying and developing reach code language. Crystal Najera, Sustainability Manager for the City of Encinitas, shared insights about her community's experience with the development and adoption of its reach code. Demian Hardman-Saldana, Senior Planner, Sustainability & Energy for Contra Costa County, spoke about implementation aspects of adopted reach codes. The free-flowing conversation included insights from attendees as well as numerous questions.

Some of the panel's tips and takeaways included:

- In the early stages of development and adoption, have as detailed an understanding of the thinking of City Council or Board of Supervisors as possible. This will help local staff be prepared for guiding the process through development and adoption
- In the mid stages, know where the resources exist to help the local team streamline the process--whether it be a regional REN, the statewide team, other regional jurisdictions, or Commission staff
- It's critical to begin well in advance of the effective date of the ordinance and work closely with the other local departments needed for successful implementation, such as the planning and building inspection departments
- Utilize the Commission staff to identify as early as possible whether Commission approval will be needed. Drozdowicz welcomes jurisdictions reaching out to provide draft ordinances to make an early determination that Commission approval is not needed as well as furnishing a letter regarding this to local counsel.

The session materials will remain available on the Whova platform for Forum attendees.

The statewide reach codes program also staffed a table at the Forum to chat with attendees and provide an overview of available resources.



This program is funded by California utility customers and administered by Pacific Gas and Electric Company, San Diego Gas & Electric Company (SDG&E®) and Southern California Edison Company under the auspices of the California Public Utilities Commission and in support of the California Energy Commission.

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OTHER REACH CODE NEWS BRIEFS

October 2026 September 2026 August 2026
Archives