REACH CODE NEWS BRIEF: JANUARY 2022

NOW AVAILABLE! NEW NONRESIDENTIAL ALTERATIONS COST EFFECTIVENESS STUDY



Just published, this study analyzes cost-effective combinations of measures that exceed the minimum state requirements (the 2019 Building Energy Efficiency Standards) for alterations to nonresidential and high-rise multifamily (HRMF) buildings. The Reach Codes team modified seven different Department of Energy (DOE) building prototypes for the following buildings:

- Medium Office
- Stand-alone Retail
- Warehouse
- Quick-service Restaurant (QSR) and Full-service Restaurant (FSR)
- High rise Multi-Family (HRMF)
- Small Hotel

The team also created three vintages for each building type: 1980s (buildings constructed prior to 1990), 1990s (buildings constructed between 1990-1999), and 2000s (buildings constructed during the 2000 era). Analyses included electrical retrofits, efficiency, solar PV, and battery measures for each prototype, as well as the following measure packages:

- **All-electric Code Min:** This package replaces any gas equipment with electric, code-minimum equipment, including HVAC, Storage Water Heater (SHW), and appliances. Upgrade electrical infrastructure as-required. The baseline for this package is a gas code-minimum equipment replacement, including HVAC, SHW, and appliances.
- **All-electric Code Min (2022 TDV):** This package includes the All-electric Code Min measures, with cost-effectiveness calculations done using 2022 TDV multipliers. The baseline for this package is the same as the all-electric Code Min Baseline, except with 2022 TDV multipliers.
- **All-electric + PV:** This package also contains the All-electric Code Min package, including a solar PV array, plus battery storage for FSR and QSR only. The Baseline for this package is the same as the All-electric Code Min Baseline.
- **All-electric + PV (2022 TDV):** This package consists of the All-electric + PV package, with cost-effectiveness calculations done using 2022 TDV multipliers. The baseline for this package is the same as the All-electric Code Min Baseline, except with 2022 TDV multipliers.
- **Electric HVAC and SHW:** This package is specifically for the restaurant prototypes, and it replaces gas space and water heating equipment with

electric code-minimum equipment. Kitchen appliance electrification is excluded.

- **All-Electric + Efficiency:** This package adds efficiency measures to the All-Electric Code Min package, except in restaurants where it adds efficiency measures to the Electric HVAC and SHW package.
- **Existing buildings + Common Sense measures**: This package contains common sense efficiency measures that are relatively easy to implement due to having low cost and/or the appropriate personnel on-site applied to the existing mixed-fuel building with existing HVAC and SHW equipment.

The study includes detailed cost-effectiveness results for each of these measures and measure packages across all the building types and climate zones. While results are nuanced by vintage, Climate Zone, and utility, the overarching takeaways by prototype using the assumptions in this report are summarized below:

- **Medium Office:** Code minimum electrical retrofits are cost effective when combined with PV, with more widespread cost effectiveness using 2022 Title 24 compliance software. There are several cost-effective efficiency measures, including cool roof, window films, and interior lighting upgrades, as well as a common-sense efficiency package.
- **Standalone Retail:** Code minimum electrical retrofits are cost effective when combined with efficiency measures (window film and lighting retrofit) or PV. There are several cost-effective efficiency measures, including cool roof, window films, roof alterations, and interior lighting upgrades, as well as a common-sense efficiency package.
- **Warehouse:** Code minimum electrical retrofits are cost effective when combined with PV. The Team only found lighting efficiency measures to be cost effective, partially due to the limited range of efficiency measures applicable to warehouse spaces.
- **Full Service Restaurant (FSR):** The Team did not identify any cost-effective electrical retrofit packages. A common-sense package of efficiency measures, as well as ten individual efficiency measures, are cost effective for most Climate Zones statewide, depending on the vintage.
- **Quick Service Restaurant (QSR):** The Team did not identify any cost-effective electrical retrofit packages, except for the All Electric + Efficiency package (which excludes kitchen electrification) in limited Climate Zones. A common-sense package of efficiency measures, as well as seven individual efficiency measures, are cost effective for most Climate Zones statewide, depending on the vintage.

- **High Rise Multi-Family (HRMF):** Electrical retrofits can be cost effective depending on the vintage and associated existing HVAC system. The All-Electric Code Min package is cost effective in the 1990's vintage in most Climate Zones, and improves in cost-effectiveness when adding PV, largely due to cost savings from replacing PTACs with PTHPs and decommissioning standalone heating systems.
- **Small Hotel:** Electrical retrofits are cost effective in all Climate Zones due to the existing HVAC system having separate heating and cooling systems in all vintages. The All-Electric Code Min package is cost effective in all vintages and improves in cost effectiveness when adding PV, largely due to cost savings from replacing PTACs with PTHPs and decommissioning standalone heating systems.

The complete report is available for download at no cost here.

UPCOMING EVENTS

February

February 8: CCEC Local Energy Resources Network (LERN) Meeting

February 10: 3C-REN Webinar: 2022 Energy Code Preview for Residential Projects

February 15: 3C-REN Webinar: 2022 Energy Code Preview for Multifamily Projects

February 16: Energy Commission Business Meeting

February 22: Reach Code Newcomers Series Session 2: Reach Code Process & Timing

February 28-Mar. 2: California Irrigation Institute: Annual Conference: Water for a Sustainable California



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NEW THIS MONTH!

REACH CODES NEWCOMERS CORNER: NEW WEBINAR SERIES FOR 2022

The Reach Codes Team in collaboration with BayREN and California Climate and Energy Collaborative (CCEC) kicked off a Reach Codes Newcomers webinar series this month, focused on helping reach code newcomers (and anyone who wants to learn more about reach codes) gain a greater understanding of the options, resources and timeframes involved. Sessions are timed for jurisdiction staff who are exploring reach code adoption in alignment with the new statewide 2022 Building Energy Code, effective January 1, 2023.



This 5-session webinar series began with an introductory session on Tuesday, January 25, 2022. This session focused on the what and why of reach codes, including an overview of the process and timing, legal considerations, and more.

Four additional sessions are planned as follows:

Tuesday, February 22, 2022. Session 2, Reach code process & timing: The general steps of developing and drafting a reach code, including policy development, timing considerations, preparing for Council, and support resources to help you throughout the process.

Tuesday, March 22, 2022. Session 3, Cost-effectiveness analyses: Introduction to terms, when an analysis is required, what makes a measure cost effective, types of inputs and considerations, how to obtain and use a cost-effectiveness analysis, energy code terms and metrics, and more.

Tuesday, April 26, 2022. Session 4, Reach code ordinance options: Renewing existing reach codes, developing and adopting new reach codes for new and existing buildings, model ordinances, and more.

Tuesday, September 27, 2022. Session 5, Implementation: Monitoring reach code implementation, checklists and training, examples from specific jurisdictions, and more.

All sessions will be from 10-11:30 am PST and are free. Local government staff and other stakeholders are welcome to attend all sessions or just a couple of particular interest. Webinars will also be recorded for registrants to view later.

Visit the Eventbrite page to reserve your space now!



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OTHER REACH CODE NEWS BRIEFS

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