# REACH CODE NEWS BRIEF: FEBRUARY 2022

## NEW COST-EFFECTIVENESS STUDY ON RESTAURANTS PUBLISHED BY REACH CODES TEAM



Supplementing the range of cost-effectiveness studies that focus on nonresidential new construction types such as commercial offices, retail and small hotels, the Reach Codes team has completed cost-effectiveness analysis for new construction restaurant prototypes. This new study focuses on cost-effective combinations of measures that include energy efficiency, electrification, solar photovoltaics (PV), and battery storage.

The Reach Code Team analyzed two restaurant prototypes: a Full-Service Restaurant (FSR), representing fine dining serving American cuisine, and a Quick-Service Restaurant (QSR) representing a quick-service burger diner, and a wide range of building measure packages, comparing the performance of three different Mixed-Fuel packages and seven different All-Electric packages to a baseline model.

High-level findings include the following:

- Mixed-fuel packages with efficiency measures are cost effective in all Climate Zones (CZs) using both on-bill and TDV metrics. Adding PV with battery measures is cost effective in all CZs using TDV, and in many CZs using on-bill.
- Electrifying HVAC and adding efficiency measures is mostly cost effective. Additionally, electrifying Service Water Heating (SWH) is generally cost effective when hot water efficiency measures are added.
- Reach codes may be adopted in several climate zones that require higher efficiency mixed-fuel restaurants, all-electric HVAC, or all electric HVAC + SWH + Efficiency.
- A cost-effective pathway has not yet been determined for packages including all-electric kitchen appliances. Minor exceptions occur in CPAU and LADWP territories for QSR packages that include solar PV and battery storage.
- All end uses including HVAC, SWH and cooking appliances can be installed to the energy code without significant barriers: heat pump HVAC and SWH results in positive compliance margins, and cooking loads do not significantly affect compliance margins.

Complete results are available in the study, downloadable at no cost from the localenergycodes.com website here.

## UPCOMING EVENTS

### March

**March 1:** BayREN Training: Heat Pump Water Heaters for Building Dept. Staff.

**March 9:** Energy Commission Monthly Business Meeting.

**March 17:** BayREN Regional Forum: Heat Pumps for Water and Space Heating: From the Technical to Real World Experience

**March 17-19:** CABEC Conference: 2022 CABEC Energy Pivot: Decarbonizing Buildings. In-person, Temecula, CA.

**March  22:** Reach Code Newcomers Series, Session 3: Cost-Effectiveness Analyses.

**March 21-23: ACEEE:** Hot Water Forum.




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# NEW THIS MONTH!




## REACH CODES CORNER: AN OVERVIEW OF THE REACH CODE PROCESS

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

Now that we've taken a look at two common structures for reach codes (see the December 2021 issue for more on this topic), this month we will be considering how the reach code process works. While the experience of each jurisdiction will be unique, there are some commonalities throughout the development and adoption process.

Generally, the process begins with certain goals being proposed. This can emerge from a city's Climate Action Plan, a request from Council, or from community activities. This will lead to a period of local stakeholder inputs as the community begins to explore options. There may be public workshops, either in-person or virtual as well as surveys and other information gathering. As potential measures come into more precise focus, jurisdiction staff will begin to gather technical information and analyses to satisfy cost-effectiveness and other legal requirements.

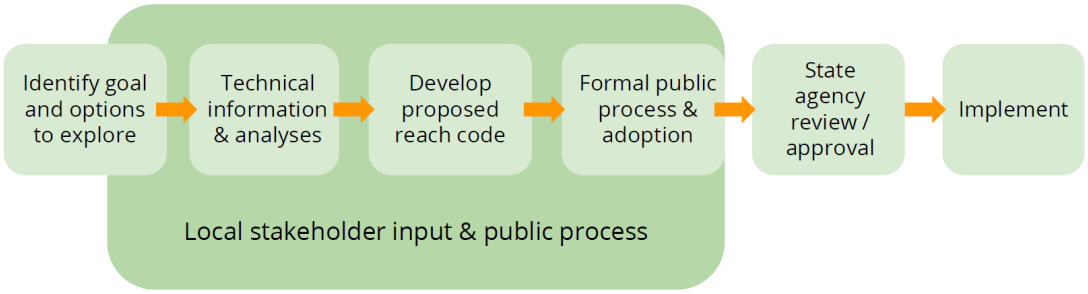
The jurisdiction team will develop a proposed reach code and undertake the formal public process necessary for adoption. This may include additional public workshops to refine requirements, presentation to Council as required, and a period of public notice

and comments. At any point during this process, the measure may be returned to staff for additional work, perhaps because of new stakeholder inputs, direction from Council, or other developments.

When the measure is formally adopted by Council, the next stage of the process where formal state agency review and approval is required. As noted in the December article, if the measure is linked to the statewide Building Energy Efficiency Standards, it must be approved by the Energy Commission and filed with the California Building Standards Commission (CBSC) before it can be enforced locally.

Although the final stage in the process is implementation, it's best to begin coordination and planning early. This occurs at the local level and will involve education of city department staff tasked with compliance, such as the planning, permitting and inspection offices. There will also be an educational component focused on the community itself, helping residents, developers, and builders understand the new requirements and how to comply.

For more information on this topic, you can download the presentation or listen to the recording of Session 1 of the Reach Codes Newcomers webinar series. Session 2 materials are also available here. And it’s not too late to register for Session 3, scheduled for March 22 here. Session 3 will be focusing on cost-effectiveness analyses.






## Q&A WITH CHEF CHRISTOPHER GALARZA: A CONVERSATION ABOUT SUSTAINABLE KITCHEN DESIGN

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Renowned Chef Christopher Amado Galarza is the Founder and Culinary Sustainability Consultant for Forward Dining Solutions LLC, as well as the Country's Leading Commercial Electric-Kitchens Expert. Chris earned a BS in Culinary Management from the International Culinary Schools at the Art Institute of Pittsburgh and earned a position as one of 12 Culinary Apprentices at the prestigious Greenbrier Resort. Since then, he has served as Private Chef at Carnegie Mellon University and Executive Chef at Chatham University where he helped construct one of the country's first all-electric commercial kitchens.

**Q: Tell us a little about why you are a proponent of all-electric kitchens, Chef Chris.**

A: All-electric kitchens offer an amazing opportunity for the hospitality industry and home chefs as well. I sometimes use the analogy of a Toyota Corolla and a Ferrari. Both will get you to the destination, but the Ferrari is a precision machine capable of so much more. Induction technology is similarly capable of a level of precision and control that is impossible with gas cooktops. I can instruct a junior chef to sear short ribs at 435 degrees for four minutes on each side, then braise at a level 2 for a specified amount of time and I will know the exact outcome. Consistency is a chef's best friend!

Beyond this level of control capability, the benefits include improved air quality in the kitchen, greater efficiency in food production and a significant improvement in work conditions year-round.

The panel discussion, held on August 21,  explored how reach codes can accelerate clean construction to achieve local goals for both green building and climate. Moderated by Christopher Kuch of Southern California Edison, the session featured Danuta Drozdowicz of the California Energy Commission, Robyn Eason from the City of West Hollywood, and Drew Johnstone from the City of Santa Monica.

**Q: Can you go into a little more detail, Chef Chris?**

A: Sure! Let’s look at air quality first. Because electric equipment does not emit dangerous gases such as carbon monoxide, nitrous oxide, and formaldehyde, our workers have a healthier environment to work in. This is a huge benefit for those who are pregnant, elderly, have lung diseases, or are COVID-19 survivors who may have diminished lung capacity.

Concerning efficiency, we know that gas cooktops average an efficiency rate of 35% while traditional electric cooktops are in the range of 60%. Compare these to induction equipment which is 85-90+% efficient. Because of this, cook times can be reduced with induction technology. Water efficiency is improved as well. For instance, many commercial woks rely on a constant open flame cooled by a constant water flow, which can be between 750,000 – 1,000,000 gallons per year per wok.[1] Induction wok technology can eliminate the need for the constant flow of water and those are significant savings that are often times not talked about.

Finally, we know that traditional cooking technologies like gas produce significant waste heat. This can create an extremely hot work environment for line workers during much of the year. Last fall, the US Department of Labor announced it would be developing new guidelines for extreme heat working conditions for both outdoor and indoor work environments. The current proposed guideline would require all indoor environments to have a heat threshold of 82 degrees and our current kitchens would all be out of compliance. All-electric will be the way we mitigate the heat and meet these guidelines.

**Q: So why don’t more all-electric kitchens exist?**

A: The biggest barrier is a lack of knowledge. Many professional chefs and home cooks simply do not know the facts about induction technology or that it even exists. We hope to change that! There’s also the perception that all-electric kitchens can be very expensive, both for new construction and especially for retrofit projects. And while all-

electric kitchens can have additional costs, many jurisdictions offer rebates and other financial assistance to help ease the transition from legacy cooking technologies to induction.

The panelists then shared information of the range of resources available to support local jurisdictions throughout the reach code development and implementation process, including many of the resources developed by the statewide program.

**Q: What are some resources for jurisdictions exploring the feasibility of adopting measures requiring all-electric kitchens?**

A: A great starting point is the new website, www.electrickitchens.org, launched by Building Decarbonization Coalition. It offers a wealth of resources and information about the technology as well as financial and industry resources. And for jurisdictions actively working on measures, the new Cost-Effectiveness study just published by the statewide reach codes program described in this newsletter offers insights into specific measures and packages. Finally, our firm, Forward Dining Solutions offers support and information for organizations and individuals working to create lasting sustainable kitchens and culinary ecosystems.

1. The Electric Kitchen Investment fact sheet, citing Sydney Water fact sheet.

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## OTHER REACH CODE NEWS BRIEFS

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