DOCKETED	
Docket Number:	19-IEPR-06
Project Title:	Energy Efficiency and Building Decarbonization
TN #:	227582
Document Title:	Building Decarbonization Workshop - Proposed Approaches to Implementing SB 1477
Description:	Presentation by Kevin Wood, SCE
Filer:	Raquel Kravitz
Organization:	Southern California Edison
Submitter Role:	Public
Submission Date:	4/9/2019 12:44:41 PM
Docketed Date:	4/9/2019

SOUTHERN CALIFORNIA EDISON®
An EDISON INTERNATIONAL® Company

Building Decarbonization Workshop

Proposed Approaches to Implementing SB 1477

Southern California Edison

April 8, 2019

Building electrification is a cost-effective approach to building decarbonization; SCE has a recommended path forward

- SCE's Clean Power Pathway (November 2017) identifies electrification of space and water heating as a cost-effective component of the economy-wide approach to meet California's goals.
- E3's "Deep Decarbonization in a High Renewables Future" (May 2018) identifies heat pumps in the loading order of cost effective GHG abatement measures.
- BUILD and TECH pilots are a start but likely not enough.

Home electrification measures will provide cost savings for most homeowners and developers, while reducing greenhouse gas emissions

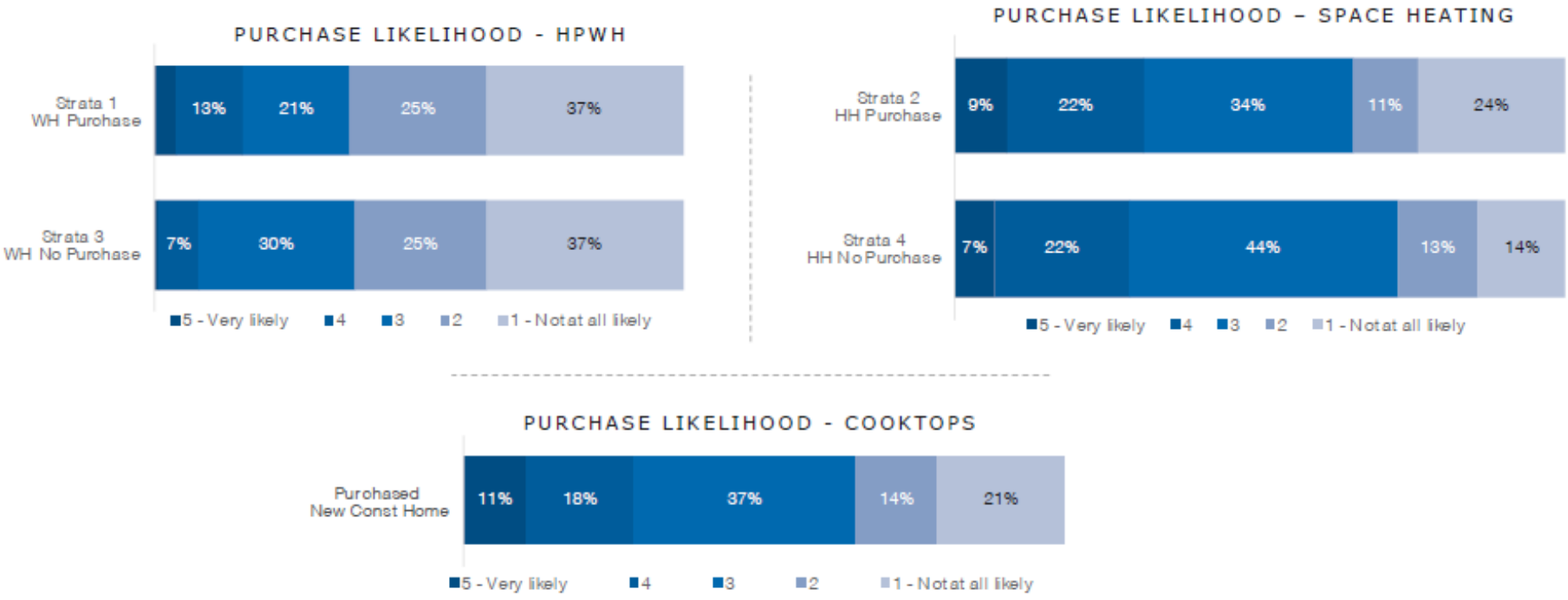
	Single Family	Low-rise Multifamily
All-electric New Construction	Large majority see lifecycle savings	Large majority see lifecycle savings
Retrofit package – Heat Pump HVAC + Heat Pump Water Heater	Vast majority see lifecycle savings	Approximately half see lifecycle savings

Electrification reduces greenhouse gas emissions in homes by up to 60% in 2020 and by up to 90% in 2050 as the grid decarbonizes.

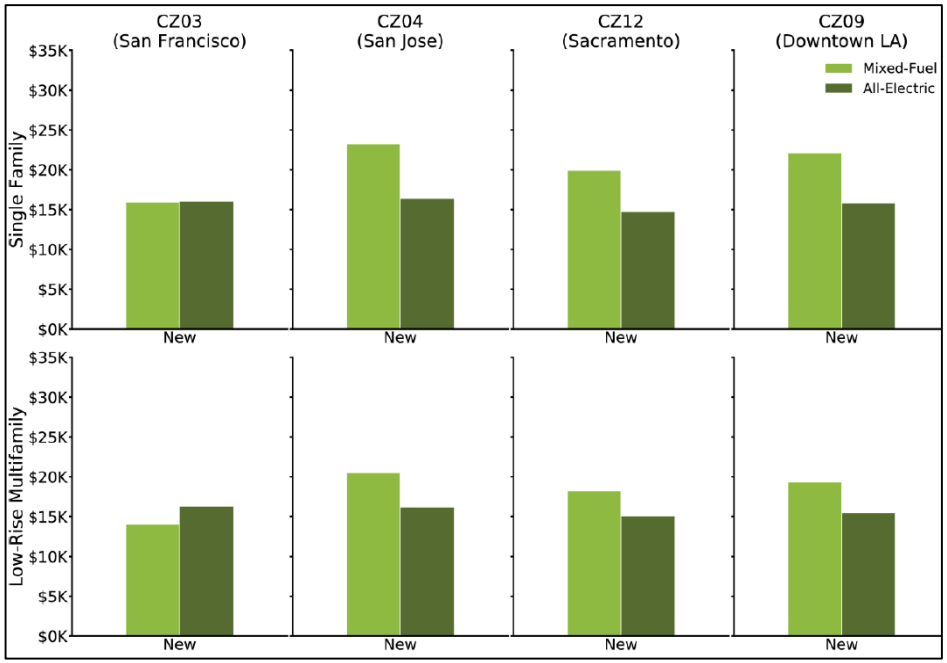
Market & customer education is key for market transformation

"With education, customers appear to be willing to adopt building electrification technologies. However shifting the discussion toward 'how to live in a zero-carbon home' appears to be imperative. "

Consumer Awareness Study
EMI Consulting



Builders can pass upfront cost savings on to customers through use of high efficiency appliances

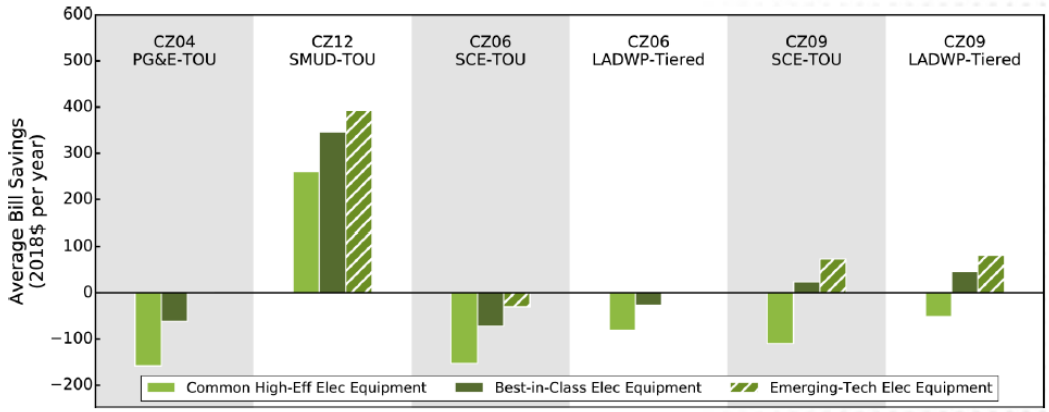


Installation Costs

For all climate zones with air conditioning needs, all electric construction is less expensive than mixed fuel (electric AC + gas water heating, clothes drying and cooking)

Bill Savings

Best-in-class HVAC and water heating electric appliances generate bill savings or reduce bill impacts for SF households



All-electric adoption by builders is lower than economic potential: incentives are needed

Now

Understand barriers and learn from successful all-electric developments/missed opportunities

- Market assessment; customer survey
- Technical support for builders considering all-electric
- Support development of Title 24 carbon metric
- Manufacturer engagement
- Induction cooktops in lending library
- Local reach code support
- Review distribution design standards (“right-size” transformers)

Early Stage Market

Implement incentive program(s) to reduce upfront costs & pair with market education

- Robust marketing/outreach (BDC marketing campaign)
- Train/support workforce
- Incentive structure (high efficiency appliances)
- Significant manufacturer engagement (negotiate warranties, etc.)
- Technical support for builders considering all-electric
- Continued local reach code support
- Rate design for bill impacts

Later Stage Market

Support market growth and modify programs as needed to achieve goals

- Continued marketing and outreach
- Grid interactive opportunities for additional grid and customer value
- Batteries included in new construction to smooth load curve and help customer take advantage of TOU rates

For retrofits of existing buildings, households can save on energy bills

- All or nearly all single family and low-rise multifamily homes will see bill savings.
- Heat pumps are typically less expensive than a gas furnace + A/C combination.
- Heat pump water heaters are typically more expensive than gas tank water heaters but less expensive than gas tankless.

Existing buildings strategy will focus on space and water heating to optimize costs and benefits

Now

Understand existing state of market & technology and conduct pilots; educate market

- Market assessment; customer survey; customer journey mapping, customer segmentation
- San Joaquin Valley Pilot; Clean Energy Optimization Pilot
- Manufacturer engagement
- Leverage existing **energy efficiency** programs to support heat pump market (e.g. SCAQMD's MF Affordable Housing Electrification Program; CSD's Low Income Weatherization Program)

Early Stage Market

Implement incentive program(s) to reduce upfront costs & pair with market education

- Robust marketing and outreach (leverage local govs and NGOs)
- Train/support workforce
- Stepped technology incentive structure for upstream/midstream
- Direct install model for low income and multifamily
- Significant manufacturer engagement (specs for water heater replacements)
- Prioritize low hanging fruit (e.g. PV over-generators, non-emergency replacements)
- Rate design for bill impacts

Later Stage Market

Support market growth and modify programs as needed to achieve goals

- Continued marketing and outreach
- Evaluate financing options to potentially phase out incentives
- Grid interactive opportunities for additional grid and customer value

Thank You!

Kevin G. Wood

Principal Manager, Southern California Edison

kevin.wood@sce.com