

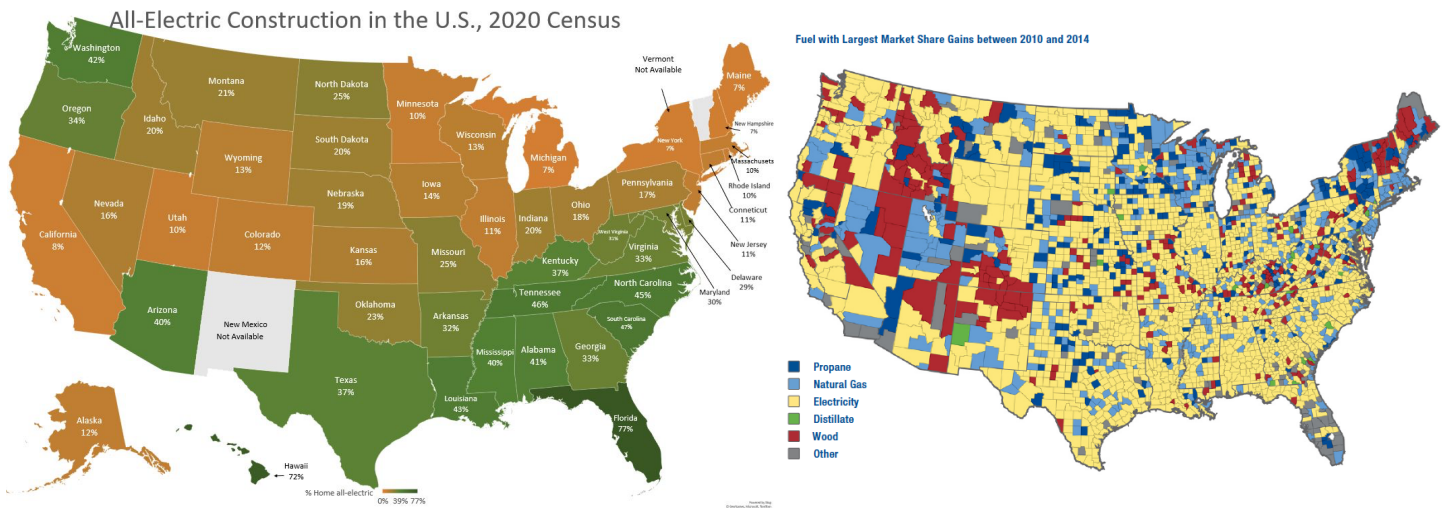


February 29, 2024

RE: SB 1023 will lower construction costs

Honorable Legislators,

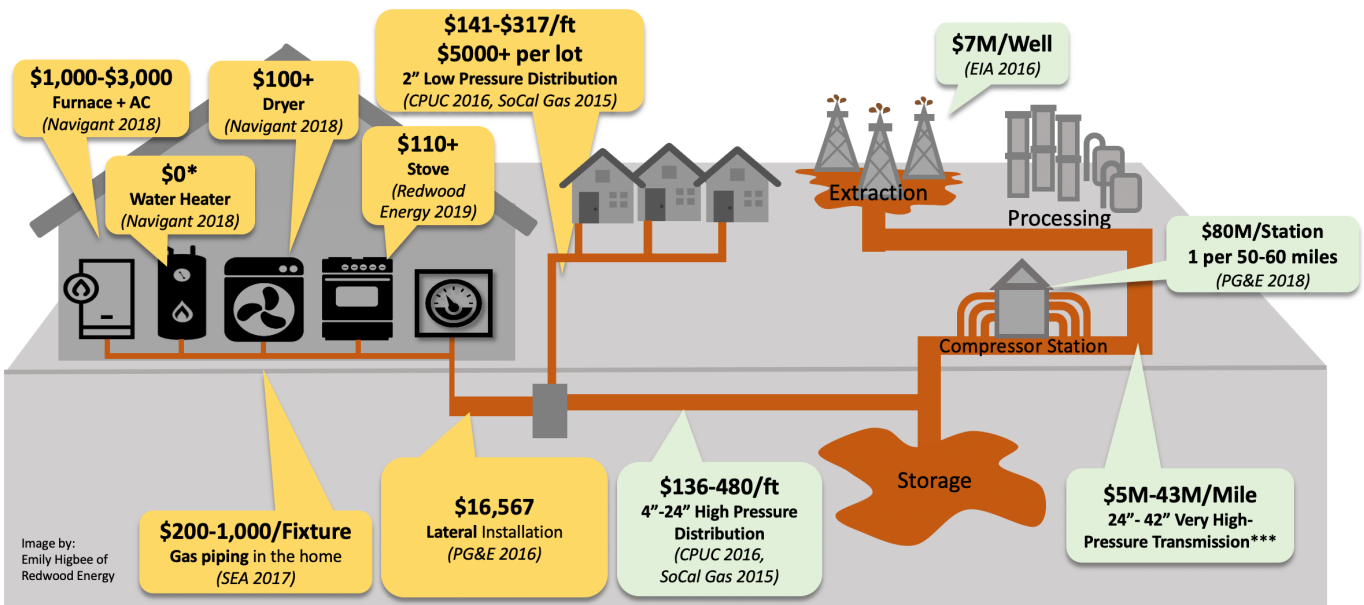
My consultancy has performed the energy design—HVAC, Hot Water, Appliances, Solar—for more than 30,000 apartments, including with Maryland’s Montgomery County Housing Authority, to help lower construction costs by avoiding higher costs with gas infrastructure and gas appliances. This insight is already proven common knowledge in the South, America’s long-time leaders in all-electric construction. While Maryland is already 30% all-electric, neighbors to the South are even more all-electric, like Tennessee (46%), South Carolina (47%) and Florida (77%). This trend dates back decades, and the embrace of all-electric construction cost savings by production builders has been national since 1993, but gained real traction by 2014 in almost every county in the nation, both urban and rural, North and South.



**Left:** 2020 Census data on the prevalence of all-electric residential construction. **Right:** An illustration from ICFs 2016 report for the Propane Education Research Council membership documenting the loss of market share by both Propane and Natural Gas to Electricity.

The construction cost savings from building all-electric ranges from ten thousand dollars to more than twenty thousand dollars per residence, particularly in cities where installing new gas laterals require trenching into actively used streets. I specialize in apartment complex design, and installing a new gas lateral from the street in any California city costs \$100,000. There are usually no additional electrical infrastructure costs to building all-electric, and an overall project savings, because electricity is already wired throughout every residential building, including to all the gas burning appliances for safe ignition.

## Residential Natural Gas Plumbing and Infrastructure Costs \$20,000+ Per New Home in California, More From Rate Based Infrastructure Costs



Appliance costs are the marginal cost (\$) of gas over all-electric  
 \*heat pump water heater equal in cost to on demand gas water heating  
 \*\*Also Canyon leaked 4.62 Billion cubic feet and alone cost \$1.014 billion shared by 5.6 million meters - \$181/meter cost (Reuters, Aug 6, 2018)  
 \*\*\* Range of finding in Cochran 2018, Lennon 2019, SoCalGas 2014, Nemec 2015, Noguera 2011

Above is a compilation of California Utility studies of the cost of gas appliances vs. electric appliances. These studies have consistently shown all-electric construction is less expensive.

Please support cost-effective construction practices. Installing gas service slows down construction, increases jobsite risks, costs more to design and build, and contributes to air pollution.

Sincerely,

*Sean Armstrong*

Managing Principal  
 Redwood Energy

# Redwood Energy

Together Redwood Energy has led the energy design of more than 30,000 units of affordable housing, 90% of which is all-electric, and half of which pursued Zero Net Energy. Our consultancy serves low-income large families, seniors, farm workers, the homeless and first-time home buyers. We have won Grand Prize awards from the United Nations and the California Building Industry Association, among other honors.

**Sean Armstrong** taught net-zero design from 1992-2002 at the Campus Center for Appropriate Technology, an off-grid, solar and wind powered demonstration house at Humboldt State University, and before founding Redwood Energy worked for 12,000+ hours of experience as Project Manager with affordable housing developers Pacific West Communities, Danco Communities, and the Redevelopment Agency of the City of Arcata. Sean designed the first 50% Net Zero Energy apartment complex in California in 2005-2006, and the first three 80-100% NZE apartment complexes in California in 2012. Sean was inducted into California's Clean Energy Hall of Fame in 2022.

**Michael Winkler's** career began as the technical lead for the world's first cell phone system in 1979 in Vienna. After a successful career in telecommunication software, Michael returned for his engineering degree at HSU in 1998 and was hired as a Renewable Energy Engineer at Schatz Energy Research Center. At the SERC he helped develop one of the world's most efficient hydrogen fuel cells. Michael currently lives in a remodeled Net-Zero house, but previously created an off-grid house in 1996 in Mountain View. Michael co-founded Redwood Energy with Sean in 2011. In addition to multiple energy credentials (EIT, CEPE, HERS, BPI), Michael is a software engineer. Michael served for 12 years on the Arcata City Council and co-founded Redwood Coast Energy Authority.

