Attachment 3

Building Electrification Ordinance

Frequently Asked Questions

Where does our electricity come from?

Electricity is generated from a mix of distant and local energy resources. Community choice aggregation programs, like Central Coast Community Energy and Santa Barbara Clean Energy, procure electricity generated primarily from renewable and non-fossil fuel-based energy, like large hydroelectric dams. PG&E and SCE also procure from similar sources of energy, but also include traditional sources such as natural gas, nuclear and large hydro.

What about renewable natural gas?

Renewable natural gas (RNG) is produced from the decay of waste in landfills, digesters at wastewater treatment plants, dairy and agriculture operations, and other bio-energy and synthetic options. RNG is touted as a 'drop-in fuel' meaning that the sustainably sourced gas is dropped into the existing pipeline network, requiring no physical change out of building infrastructure.

In 2018, less than 1% of natural gas was generated from renewable sources compared to the 34% of electricity being supplied by renewable energy from Southern California Edison. SoCalGas currently has a goal increase the supply of renewable natural gas to 5% by 2022 and 20% by 2030. Renewable gas is more expensive than fossil gas, while renewable electricity is getting cheaper than electricity from gas power plants.

Reducing methane natural gas demand in easy-to-electrify buildings will help the utility achieve its long-term RNG goals. Given its scarcity and high cost, RNG is unlikely to ever replace a large enough share of the State's fossil gas needs. The limited supply of RNG may be better used where it is most impactful in harder-to-decarbonize sectors, for example, in certain industrial and heavy machinery applications.

What about energy reliability?

Methane natural gas plays an important role in ensuring energy reliability in today's electric grid, as it provides power generation during periods of the day when renewable sources are not active. California's energy system is in the middle of a major transition away from fossil fuels and towards sources of renewable energy. This transition raises valid questions and concerns about the stability of electricity supply for County residents.

Maintaining energy reliability remains challenging on both the electric and methane natural gas sides of the equation. Wildfire risks and Public Safety Power Shutoffs pose a constant threat, and potential breakdowns in the aging methane natural gas infrastructure in the region remain a critical concern. For example, the massive leak at the Aliso Canyon methane natural gas storage facility in 2015 resulted in the State limiting the use of the facility, "which has historically helped balance methane natural gas supply and demand. Further, multiyear outages of methane natural gas pipelines that serve the region greatly add to the risk of disruptions in energy reliability."[1]

While some may argue that mixed-fuel buildings offer greater resilience, gas appliances that rely on electric ignition may also not be operable in the face of electric outages. While the proposed ordinance will not significantly change the overall demand for electricity within the County or State,

requiring newly constructed buildings be all-electric will increase the dependency of these buildings – and their occupants – on the State's system for procuring and distributing electricity.

Staff have concluded that multiple State and regional agencies and utilities are engaged in a comprehensive planning process to implement this transition over the next 25 years. While the outcome of the process cannot be known at this time, considerable State resources are being applied to make it successful. This will be an ongoing challenge of statewide concern for decades to come.

What about costs & equity?

Because all-electric buildings remove the need for methane natural gas infrastructure, they are less expensive to construct, as represented by the negative values (cost savings) in Table 3 below.

Table 1. Incremental Costs – All-Electric Code Compliant Home Compared to a Mixed Fuel Code Compliant Home

(Source: 2019 Energy Efficiency Ordinance Cost-effectiveness Study)

Measure	Incremental Cost (2020 PV$) Single Family[1]				Incremental Cost (2020 PV$) Multifamily[1] (Per Dwelling Unit)			
	Low	High	Typical (On-Bill)	Typical (TDV)	Low	High	Typical (On-Bill)	Typical (TDV)
Heat Pump vs Gas Furnace/Split AC	($2,770)	$620	($221)		Same as Single Family			
Heat Pump Water Heater vs Gas Tankless	($1,120)	$1,120	$0					
Electric vs Gas Clothes Dryer[2]	($428)	$820	$0					
Electric vs Gas Cooking[2]	$0	$1,800	$0					
Electric Service Upgrade	$200	$800	$600		$150	$600	$600	
In-House Gas Infrastructure	($1,670)	($550)	($800)		($600)	($150)	($600)	
Site Gas Infrastructure	($25,000)	($900)	($5,750)	($11,836)	($16,250)	($310)	($3,140)	($6,463)
Total First Cost	***($30,788)***	***$3,710***	***($6,171)***	***($12,257)***	***($20,918)***	***$4,500***	***($3,361)***	***($6,684)***
Present Value of Equipment Replacement Cost			***$1,266***				***$1,266***	
Lifetime Cost Including Replacement & Financing of First Cost			***($5,349)***	***($11,872)***			***($2,337)***	***($5,899)***

[1]Low and high costs represent the potential range of costs and typical represents the costs used in this analysis and determined to be most representative of the conditions described in this report. Two sets of typical costs are presented, one which is applied in the On-Bill cost effectiveness methodology and another applied in the TDV methodology.
[2]Typical costs assume electric resistance technology. The high range represents higher end induction cooktops and heat pump clothes dryers. Lower cost induction cooktops are available.

To support market development and reduce costs and real or perceived barriers, the California Energy Commission launched the Building Initiative for Low-Emissions Development (BUILD) Program that provides incentives and technical assistance to support the adoption of advanced building design and all-electric technologies in new, low-income all-electric homes. Participants are eligible to receive free technical assistance for design, construction and incentive applications and are eligible to receive up to $2M in incentives for construction-related costs.

While an all-electric building built to code in Santa Barbara will be less expensive up front compared to a mixed fuel building, if one invests the savings from the gas infrastructure in a solar system to offset the electricity load, an all-electric building is often cost-effective from day one. The solar-powered building is less expensive to build and cheaper to operate.

Studies that have shown on-bill costs being higher relative to a mixed fuel building utilize appliances that meet federal minimum efficiency standards in the assumptions. These costs can be reduced by selecting high efficiency appliances.

This is particularly true for low-rise residential buildings, where it is also often more cost-effective for the owner to exceed code requirements by improving efficiency and adding solar photovoltaic (PV) energy systems. Low-income customers that are enrolled in the California Alternate Rates for Energy (CARE) program receive a 30-35 percent discount on their electric bill and a 20 percent discount on their methane natural gas bill. Families whose household income slightly exceeds the CARE allowances will qualify to receive Family Electric Rate Assistance Program (FERA) discounts, which bills applies a 18% discount on their electricity bill.

What about pools?

Electric and solar thermal alternatives to methane natural gas pool heating systems exist and in fact electric heating is the most common approach for standalone hot tubs. Eliminating the use of methane natural gas would require other equipment that would take substantially longer than a gas system to heat cold water in a pool or inground spa.

The ordinance under discussion would currently only affect new construction. The added cost of designing the electrical system of a new home to accommodate the needs of a pool heating system is not significant as the added electrical load resulting from a pool heating system will not result in a substantial increase in the cost of the overall electrical system for the home.

A more comprehensive method for comparing the costs of various pool heating systems is to compare the life-cycle cost of these systems, which includes both the initial cost of installation and the ongoing operating cost of such systems over their useful life. Staff is not aware of any such studies that have examined this issue. The closest approximation staff has found is a cost effectiveness study done on behalf of the City of Santa Monica that found, generally, electric pool heating systems have a marginally higher initial cost of installation, but a marginally lower cost of ongoing operation. Overall, the analysis was inconclusive as to which type of system has a lower overall cost to homeowners.

Homes with pools are typically owned by higher income residents who have greater ability to absorb the nominal cost impacts, therefore the affordability argument is less potent in this regard.

What about jobs?

Shifting construction to all-electric will affect local jobs. In April 2022, the City of San Diego released a jobs impact analysis commissioned for two proposed policies: municipal building electrification and a citywide all-electric requirement for new construction.

The study found there would be fewer construction jobs as a result of the all-electric residential new construction policy, primarily for plumbers, and within large multifamily buildings (60-65 average residential construction jobs out of 32,000 in San Diego County). However, this does not necessarily equate to immediate construction job losses, due to strong projected new construction in San Diego County over the next decade that will increase the overall construction workforce.

The table below provides the estimated average work hours associated with both mixed fuel and all-electric residential units.

Table 2. Projected Work Hours per Residential Unit Constructed

(Source: San Diego Jobs Impact Analysis)

Average Work Hours Per Residential Unit	Mixed Fuel	All-Electric	Difference
Single Family	100	60	40
Small Multi-Family	60	50	10
Large Multi-Family	60	45	15
Total Hours per Unit	**220**	**155**	**65**

The same could be said for Santa Barbara County as it prepares to accommodate over 24,000 new households within less than a decade. Staff have replicated the methodology in this study to estimate the potential job impacts in the residential sector.

Table 3. Estimated Residential Construction Job Impacts under All-Electric Ordinance

	Per Unit Work Hour Difference (from Table 2)	Estimated Units by 2032 in Unincorporated Santa Barbara County	Total Work Hours	Full Time Equivalent Employee
Single Family	40	3506	140,240	70.1
Small Multi-Family	10	736	7,380	3.7
Large Multi-Family	15	735	11,025	5.5
TOTAL		4,977	158,625	79.3

Notes: Housing estimates are preliminary from sites inventory for upcoming Housing Element Update and are subject to change. The inventory does not include parcels considered for rezone, as they have not been approved. Estimated multifamily units were evenly divided between large and small units.

To offset the job loss impact, staff propose developing an ordinance to require greywater systems for large commercial and multifamily buildings. Onsite water reuse systems represent a significant opportunity to transform the way water is managed in buildings. By matching alternate water sources with the right end use, such as irrigating landscapes and flushing toilets and urinals, onsite water reuse systems offset valuable potable water supplies and unlock the potential for more resilient and sustainable water management.

[1] CEC, 2019 Integrated Energy Policy Report, February 2020. Pg. 7

https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2019-integrated-energy-policy-report