

# Looking Ahead: The Future of Building Electrification in San Mateo County

## What Can Residents Do?

### Homeowners

- Learn about options by exploring the [Resources in Appendix B](#) and talking with friends and neighbors who have electrified their homes.
- Consider electrification at moments when it would be most cost effective - when purchasing or renovating a home; when replacing an old air conditioning unit, furnace, and/or water heater; or when installing new air conditioning, solar panels, batteries and/or an electric vehicle charger.
- Consider getting a home energy audit.
- Weatherize with insulation and block leaks in doors and windows. Doing so will help determine how much clean energy is needed, without overpaying for excess, unnecessary power.
- Talk to an energy ambassador who can serve as a guide through the process. They are available through the [Campaign for Fossil Free Buildings in Silicon Valley](#). [The Building Decarbonization Coalition](#) is currently recruiting ambassadors as part of its [The Switch Is On](#) campaign.
- Check [The Switch Is On](#), [BayREN](#), [PG&E](#) and [Peninsula Clean Energy](#) to learn about rebates and incentives, some of which can be stacked.
- Beginning in January 2023, the Inflation Reduction Act will make many more incentives and rebates available, beginning with tax credits, which are likely to come first.
- Spread the word. Tell friends and neighbors about the benefits of electrification and show them what it's like to live in a clean, safe home powered by renewable energy.

### Renters

- Choose clean cooking. Use a portable induction cooktop as a substitute for your gas stove. Borrow an induction cooktop for two weeks at no cost through the [PG&E Induction Cooktop Loaner Program](#). One can purchased for under \$100.
- Use renewable energy. Opt up to [Peninsula Clean Energy's ECO100 plan](#).
- Explore ways to [reduce energy use](#).
- Talk to the landlord about [incentives and rebates available for multifamily housing](#).



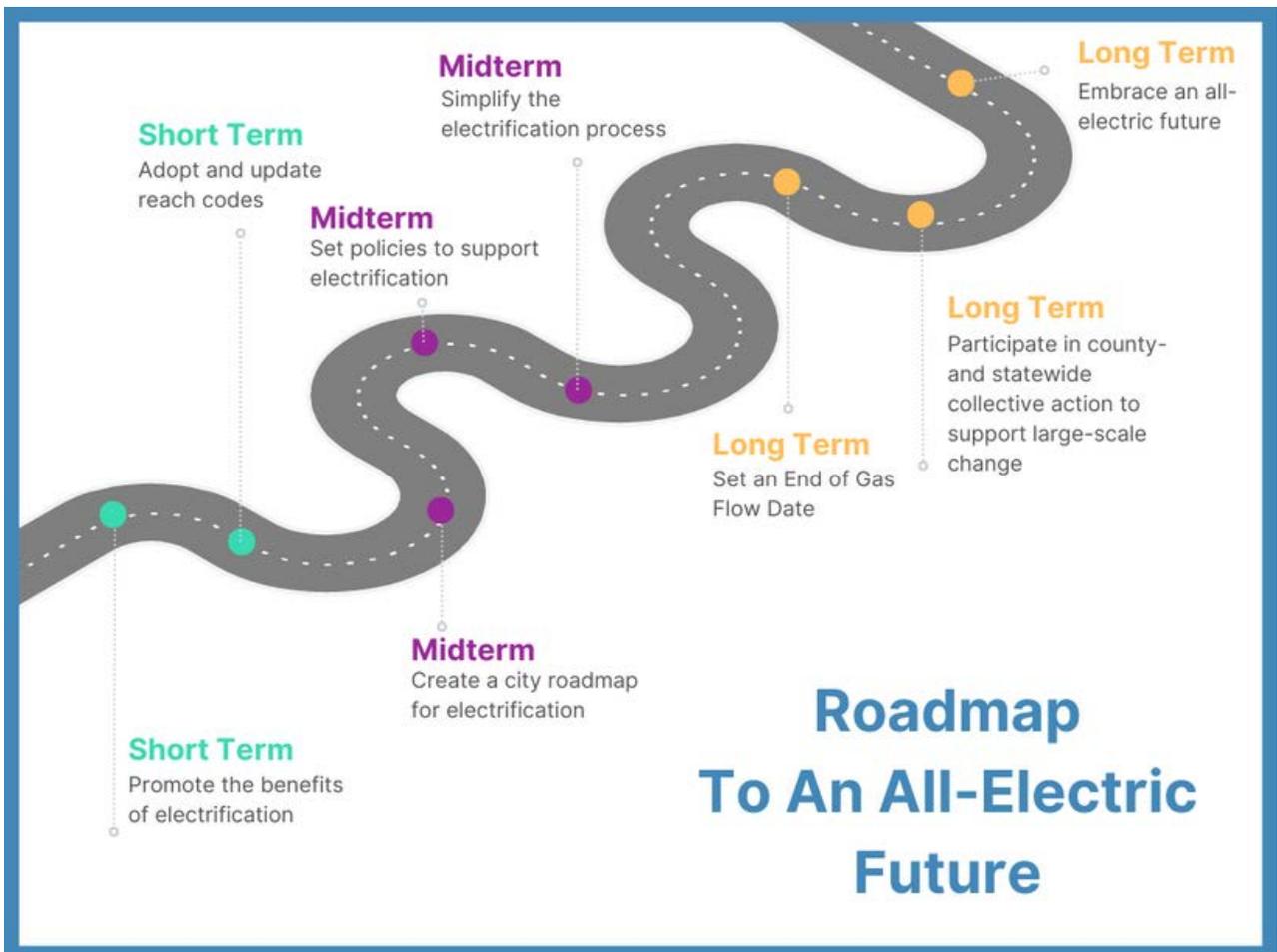
## What can municipalities do?

In concert with county, state, and federal efforts, local jurisdictions have the opportunity to drive building electrification across San Mateo County. Each jurisdiction should understand the makeup of its own population and building stock (e.g., square footage in different types of buildings, how many residents face disproportionate energy burdens) in order to understand the challenges that exist to electrification and the possible solutions.

Here's how city and county policymakers in San Mateo County can help lead the way.

*“Government normally feels that slowness is part of prudence. We’re facing a problem where that’s not the fact. While it’s normally prudent to go slow, we are not in a normal situation anymore.”*

*- Tom Kabat, Menlo Spark*



# Short-Term Actions: Lay the Groundwork for Electrification

## Promote the Benefits of Electrification

Build local support for electrification by addressing misconceptions and building a positive narrative around the transition away from fossil fuels. Promote the many short- and long-term benefits of electrification and help residents and businesses understand and access the incentives, rebates, and other programs in place to support their electrification projects. Educate the public on regulations that will go into effect in the next several years in the Bay Area and throughout the state, including bans on the sale of gas-powered appliances and vehicles. Explore partnerships like the pilot project between Menlo Park and BlocPower to help homeowners and businesses overcome the barriers to electrification.

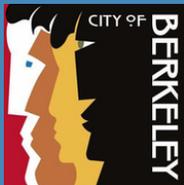
### Key Organization

[Bay Area Reach Codes](#)

[Bay Area Reach Codes](#) is a joint effort of several Bay Area Community Choice Aggregators (CCAs) and county governments that provides model reach codes for building and transportation electrification. The existing building model code includes a full menu of options for cities to choose from, including end-of-flow requirements, time-of-replacement mandates, and time-of-sale disclosure requirements.



### Bay Area Role Model



City of Berkeley  
Natural Gas Ban

The Berkeley City Council adopted the country's first full ban of natural gas connections in new buildings, effective January 1, 2020. There are limited exceptions to the ban, and all buildings with exceptions must be built with electrical infrastructure that has sufficient capacity for full building electrification in the future.



## Adopt and Update Reach Codes

The California Energy Commission (CEC) updates the statewide [Building Energy Efficiency Standards \(Title 24\)](#) every three years. The 2022 version of Title 24 was adopted on December 14, 2021 and will go into effect on January 1, 2023. The next iteration will come out in 2025 and will increasingly favor electrification, onsite solar generation, in-house storage and reducing the demand for gas.

With each update of the statewide energy code, cities and counties have the opportunity to adopt local building codes more advanced than those required by the state, which are known as "reach codes".

Cities may also choose to adopt municipal code amendments that transcend the building code cycle and can be adopted indefinitely. For example, municipal ordinances for gas pipe bans adopted by cities like Half Moon Bay are permanent and do not need to be updated.

Reach codes adopted by the cities during the 2019 code cycle will expire at the end of 2022 and will need to be re-adopted, with the new energy code taking effect in January 2023. Most cities in San Mateo County adopted reach codes for new construction during the 2019 code cycle, so electrification advocates are now encouraging cities to consider requirements for existing buildings alongside re-approval of their reach codes for new construction. Several Bay Area CCAs, including Peninsula Clean Energy, joined forces with local counties, including San Mateo County, to recommend model reach codes and electric infrastructure requirements for the 2019 code cycle. The model codes, which include recommendations for existing buildings, are available from [Bay Area Reach Codes](#).

As of November 1, 2022, most municipalities in San Mateo County with reach codes from the prior cycle had begun the renewal process, and a few new cities had adopted reach codes. The following cities were advancing code updates or recently adopted a reach code as of publication (see [Appendix A](#) for more information):

- New construction: County of San Mateo, Atherton,\*\* Belmont,\*\* Brisbane, Burlingame, Colma, Daly City, Half Moon Bay,\*\* Hillsborough,\*\* Menlo Park,\* Millbrae, Pacifica, Portola Valley,\*\* Redwood City,\* San Bruno,\*\* San Carlos,\* City of San Mateo and South San Francisco.
- Existing buildings: Portola Valley & City of San Mateo. Menlo Park, Pacifica and San Carlos are slated to develop policies in 2023.

\* Reach code renewals completed

\*\* New reach codes for cities that did not have a prior reach code

The [California Energy Codes & Standards](#) program tracks [adopted energy ordinances](#) across the state.



## What's in the 2022 version of California's Title 24?

Title 24 contains mandatory requirements that apply to all buildings, performance standards that vary by climate zone and building type, and alternatives to performance standards (a set of prescriptive packages that provide a recipe or checklist compliance approach).

The 2022 update to Title 24:

- Encourages electric heat pump technology for space and water heating
  - Single-family homes—heat pump water or space heating standard
  - Multifamily homes—heat pump space heating standard
  - Businesses—heat pumps standard for schools, offices, banks, libraries, retail, and grocery stores
- Establishes electric-ready requirements for new homes to position owners to use cleaner electric heating, cooking, and EV charging options whenever they choose to adopt them
- Extends solar and introduces battery storage standards to high-rise multifamily, hotel-motel, retail and grocery stores, schools, and others
- Strengthens ventilation standards to address indoor air quality

The standards apply to substantial upgrades to existing homes and businesses.



### National Role Model



The Efficiency Maine Trust is the administrator for programs to improve the efficiency of energy use and reduce greenhouse gasses in Maine. The trust serves all sectors and all regions of the state. Its suite of nationally recognized programs

provides consumer information, discounts, rebates, loans and investments for high-efficiency, clean energy equipment and strategies to manage energy demand. The trust is a quasi-state agency governed by a board of trustees with oversight from the Maine Public Utilities Commission.

In 2013, the Efficiency Maine Trust began offering rebates on cold-climate, air source heat pumps. Since then, Maine's homeowners and businesses have installed more than 60,000 high-performance units to displace their use of heating oil and propane (cutting greenhouse gasses by 60% for every BTU they produce). Following several years of 25-30% annual sales growth, in 2019 Governor Janet Mills introduced legislation establishing a goal of installing 100,000 more high-performance heat pumps in Maine homes and businesses by 2025 and securing funding commitments to help achieve this goal. Since then, the rebate level doubled and sales rocketed to a 100% increase year over year.



# Midterm Actions: Create the Framework for Electrification

## Create a City Roadmap for the Transition to Widespread Beneficial Electrification

A city roadmap lays out an energy vision with clear goals and local actions that can be taken to reach those goals. According to guidance from [C40 Knowledge Hub](#), a city roadmap can align with national policies, establish platforms for collaboration within and outside city government, and attract private investment. An energy roadmap should also be connected to a city's climate action plan. Key stakeholders should be engaged in the design process.

Creation of a city energy roadmap can include the following:

- **Understand the local context** - Including demographics, trends, economic and social drivers, financial conditions and regulatory powers, and vulnerable populations.
- **Analyze data on energy use in the city** - Fuels and equipment used, sector and end-user demand, behavior patterns, building stock information.
- **Lead by example** - Electrify municipal buildings, particularly HVAC; assess and identify which municipal buildings are best suited for conversion and promote a high-profile project.
- **Identify ways to target building energy use** - Implement policies to reduce building energy demand and promote electrification.
- **Ensure equitable and affordable access** - Create a plan to protect vulnerable populations and support the transition to clean electricity for lower-income groups, while achieving building electrification as quickly as possible.
- **Develop partnerships and collaborations** - Connect appliance electrification upgrades to other programs and policies that target health, energy poverty, and job creation; explore pilot projects and strategic investments with an equity focus.
- **Identify funding sources**
- **Set zero-carbon emissions targets**, aiming for 100% clean energy.

 Bay Area  
Role Model



[Climate Smart San José](#)

[Climate Smart San José](#) is one of the first detailed city plans to reduce greenhouse gas emissions and address climate change. In November 2021, the San Jose City Council set an [aspirational goal](#) of community-wide carbon neutrality by 2030, thereby accelerating Climate Smart. Climate Smart identified the electrification of buildings as a strategic focus, leading to the development of [Electrify San José: Framework for Existing Building Electrification](#), a plan to encourage and incentivize electrification of homes and businesses.



# Set Policies to Support the Transition from Natural Gas to Electricity

## Enact Policies Identified in a City Roadmap

Local policies to restrict gas expansion and accelerate electrification vary based on local context. Cities should prioritize the unique needs of low-income and historically marginalized groups while providing a clear and decisive shift away from fossil fuel use in buildings. Cities can work with PG&E to identify areas of town to electrify first in order to avoid having to perform aging gas line maintenance and replacement.

Cities can consider enacting a building performance standard (BPS), which would set energy and emissions reduction targets for building owners to meet over time. Building performance standards require property owners to report energy or emission use intensity (EUI) and set requirements for incrementally more stringent reductions in EUI over time (generally a long period of time with intermediate reporting and compliance periods). BPS models typically include incentives and financing to help with building upgrades, along with financial penalties for noncompliance.



[BayREN Policy Calculator Tool](#)

BayREN offers a Policy Calculator that local governments can use to estimate and visualize the potential energy and greenhouse gas (GHG) impacts from a suite of policy options for electrifying the existing single-family housing stock in their municipalities.



### State Role Model



[City of Chula Vista Building Energy Saving Ordinance](#)

In support of the Chula Vista's (Calif.) Climate Action Plan, the city adopted the Building Energy Saving Ordinance that will enhance market transparency for building efficiency by making energy performance data available to existing and prospective owners and lessors.

Building performance standards make the most sense in large commercial, industrial, and multifamily buildings, and in jurisdictions that have sufficient nonresidential building stock and staff capacity to make the program effective. However, State Senator Josh Becker has signaled interest in introducing legislation to create a statewide building performance standard, which would require improvements in energy efficiency and reduced greenhouse gas emissions over time from large, existing commercial and residential buildings, similar to BPS laws in New York, Washington, and Colorado. A statewide building performance standard program could provide IT, rule-making, and help desk infrastructure, thereby lowering the costs of implementation and enforcement at the local level.





## Local Role Model



### City of Brisbane Building Efficiency Program

In its [Brisbane Building Efficiency Program \(BBEP\)](#) program, Brisbane, Calif., has set energy and water efficiency requirements for buildings over 10,000 square feet. Annual benchmarking requirements began in 2021. Starting in 2023 for commercial and 2024 for industrial and multifamily residential, and repeating every five years thereafter, buildings will need to show that they are high performing or taking steps to improve.

## Encourage or require the replacement of natural gas appliances at various trigger points

One way to begin to tackle the electrification of existing buildings is to encourage or require the electrification of natural gas appliances at times when a resident or business would already be required to seek planning or building permits from the city.

### Upon replacement or renovation

Gas furnaces and water heaters have a useful lifespan of 10 to 20 years, meaning only 5-10% of those appliances are replaced annually. The time of appliance replacement or home renovation is the most cost-effective time to switch from natural gas appliances to efficient electric alternatives.

Several San Mateo County municipalities have revised or are considering revisions to their reach codes to apply to substantial remodels in addition to new construction.

### At other major milestones in a building's life cycle (point-of-sale or lease)

Some cities, including [Berkeley](#), [Piedmont \(Calif.\)](#), and [Denver](#), have enacted requirements for energy assessments or disclosures at the time of listing or selling a home or other building.

### Code compliance

While code compliance itself does not drive electrification, increasing code compliance will augment the effectiveness of policies like those described above. Permits are required for many energy efficiency improvements, including hot water heaters and HVAC systems, but permit evasion remains an issue in many jurisdictions. Cities such as Davis, Calif., and Minneapolis have enacted code compliance policies that inspect permit and renovation history and charge fees for non-compliance. These have shown to increase permitted work significantly.



# Find Ways to Simplify and Accelerate the Electrification Process for Building Owners

One of the current hurdles to electrification is the complexity of the process, from planning to execution. Municipalities can encourage electrification by simplifying the process in various ways.

- Adapt existing state-mandated expedited review requirements and resources for use with electrification projects, such as a submission requirement checklist that must be completed for expedited processing.
- Support staff training on electrification technologies so that staff are well equipped to review electrification permits and inspect projects.
- Provide pre-application resources to help customers provide complete and accurate permit applications. Resources could include guidance on panel optimization so that more residents can electrify on their existing infrastructure.
- Identify electrification projects early in the permitting process through guidelines or checklists, dedicated applications, or electrification selection options on standard applications.
- Establish permit fee parity between electric and natural gas equipment, or provide discounted or waived permit fees for electric technologies to signal a preference for electrification.
- Develop standardized application requirements, application and plan check processes, and inspection guidelines for common electrification technologies.

## International Role Model

### City of Copenhagen Carbon Neutral Capital 2025



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In 2011, the City of Copenhagen adopted an intensive plan to become carbon neutral by 2025. Along with requiring all new buildings to meet stringent energy efficiency standards, the plan notably includes energy savings incentives to drive at least 33% of residential and 46% of commercial buildings to be retrofitted by 2025. The plan includes an emphasis on incentivizing and educating toward building retrofits and policy participation on a voluntary basis.

# Long-Term Actions: Fully Embrace An All-Electric Future

## Establish a Date to End Gas Flow to All Buildings

Consider adopting a long-term goal for decommissioning all gas infrastructure, which would serve as a clear signal to homeowners, businesses, and the market that electrification is a municipal priority.



### Local Role Model

City of Half Moon Bay

End of Gas Flow



In February 2022, Half Moon Bay approved an ambitious new reach code in the city's bid to meet local and state climate change targets. The reach code requires new construction to be all-electric moving forward and fuel gas lines to be capped/decommissioned in existing buildings by 2045.

## Participate in County and Statewide Collective Action

Individual municipalities have the ability and opportunity to impact the lives of their residents and drive electrification at the local level. However, collective action at the county, state, and national level is needed to create the regulatory and market conditions for large scale equitable electrification.

Areas for collective action include:

- Advocate for policy changes that can make electrification easier and more cost-effective, particularly at the neighborhood level, such as changes to the utilities' obligation to serve and the rules dictating how funds can be allocated for gas infrastructure.
- Support the increase of accessible electrification funding and financing programs.
- Promote utility rates that fairly reflect the current and future societal costs of gas (internalizing external costs) along with affordable and equitable electricity rates.
- Conduct pilot projects and share outcomes to help improve the electrification process, highlight best practices, and lower cost and other market barriers.



# Conclusion

As we await the influx of funding from the federal Inflation Reduction Act and California’s ambitious clean energy initiatives, we are on the cusp of what promises to be an electrification revolution that will transform the way we live and work. Eliminating natural gas from homes and workplaces will improve safety and health, usher in countless new job opportunities, and pump millions of dollars into local economies. The speed of this transition will depend on how quickly the public understands the benefits of electrification and how rapidly suppliers, plumbers, electricians and contractors learn new skills. Its success will depend on the inclusion of people of all income levels. Right now, all signs point to California as being the leader of a clean energy transition that will lead the rest of the country to a sustainable future.

