

Can Marin Achieve Its Climate Action Goal By 2030?

April 15, 2025

SUMMARY

As the planet becomes increasingly hotter, sea levels rise, and wildfires and other climate-related disasters proliferate, the State of California has set aggressive goals to reduce greenhouse gas (GHG) emissions by 2030. Every city, town, and the County of Marin (County)¹ have passed climate action plans consistent with these goals. In this report, the Marin County Civil Grand Jury (Grand Jury) assesses Marin's countywide efforts to reduce GHG emissions and the challenges Marin County (Marin)² faces as we try to achieve collective success in this endeavor.

Marin has made important strides to reduce GHG emissions in some sectors. However, Marin is *not* on track to meet the 2030 goal. Why? Largely because residents of Marin need to change their behavior. To reach the goal, we must significantly reduce burning fossil fuels in vehicles, homes, and buildings.

While the efforts to combat climate change by the municipalities have been thoughtful and earnest, the Grand Jury recommends the County take a more focused and vigorous approach and change the governance structure of the current informal, multi-entity partnership to a more structured and better-resourced single entity or department charged with making and tracking progress. This entity should be accountable to the Marin County Board of Supervisors and be assigned to coordinate all of Marin's efforts. Doing so provides a better chance of reaching the goal enacted by California and each Marin municipality.

BACKGROUND

The Earth is now hotter than at any point in human history. GHG continues to create an insulating atmospheric blanket, heating the planet, and wreaking havoc on every part of the environment. Here are real and scary facts about global warming:

- In 2024, the levels of carbon dioxide (CO₂) in the atmosphere above Hawaii reached the highest measured levels ever recorded, 427 ppm (parts per million). The concentration of CO₂ rose by 3.58 ppm between 2023 and 2024, which is the largest increase between calendar years recorded by Hawaii's Mauna Loa Observatory. Climate scientists say this

¹ The term "County" throughout the report refers to both the governmental bodies and agencies of Marin County as well as the unincorporated areas of Marin.

² The term "Marin" means the entire county, including all of the cities, towns, and the unincorporated area governed by the County of Marin.

rise results from a year filled with major wildfires, record-breaking fossil-fuel emissions, and ongoing deforestation.³

- Ocean water temperature in shallow waters off the coast of Florida reached temperatures over 100° F (i.e., jacuzzi temperatures) for several hours.⁴
- Hurricanes are getting stronger.⁵ Winds from Hurricane Michael in 2018 brought maximum sustained winds of 161 mph.⁶
- Glaciers are melting much faster than expected, releasing millions of gallons of fresh water into the oceans.⁷
- The massive ocean currents regulating our climate could be slowing down because of excess heat and excess fresh water—i.e., water previously glacier ice.⁸
- Sea levels are rising. In the coming years and without significant mitigation efforts, many coastal areas will be hit hard by the combination of land subsidence and rising waters.⁹
- The summer of 2024 was the hottest on record in the Northern Hemisphere.¹⁰

³ Sara Hashemi, “Hawaiian Observatory Clocks Highest Annual Jump in Atmospheric Carbon Dioxide Since Its Records Began 67 Years Ago,” *Smithsonian Magazine*, January 21, 2025, <https://www.smithsonianmag.com/smart-news/hawaiian-observatory-clocks-highest-annual-jump-in-atmospheric-carbon-dioxide-since-its-records-began-67-years-ago-180985868/>, (accessed 3/11/25).

⁴ Agence France-Presse, “Water Temperatures Off Florida Coast Soar Above 100 Degrees, Possibly Setting Record,” page 1, *Science Alert*, July 26, 2023, <https://www.sciencealert.com/water-temperatures-off-florida-coast-soar-above-100-degrees-possibly-setting-a-world-record>, (accessed 3/11/25).

⁵ Seth Borenstein, “New study finds climate change increasing the power of hurricanes,” *PBS News*, November 20, 2024; <https://www.pbs.org/newshour/science/new-study-finds-climate-change-is-increasing-the-power-of-hurricanes#>, (accessed 3/11/25).

⁶ “Catastrophic Hurricane Michael Strikes Florida Panhandle,” *National Weather Service*, October 10, 2018. [https://www.weather.gov/tae/hurricanemichael2018#:~:text=Michael%20made%20landfall%20along%20the,of%20919%20millibars%20\(mb\)%20,](https://www.weather.gov/tae/hurricanemichael2018#:~:text=Michael%20made%20landfall%20along%20the,of%20919%20millibars%20(mb)%20,) (accessed 3/11/25).

⁷ Dorothea Elisabeth Moser, Elizabeth R. Thomas, Christoph Nehrbaß-Ahles, Anja Eichler, and Eric Wolff, “Review article: Melt-affected ice cores for polar research in a warming world,” *The European Geosciences Union - The Geosphere*, <https://tc.copernicus.org/articles/18/2691/2024/>, (accessed 3/20/2025).

⁸ NASA Science Editorial Team, “Slowdown of the Motion of the Ocean,” *NASA*, June 5, 2023. <https://science.nasa.gov/earth/earth-atmosphere/slowdown-of-the-motion-of-the-ocean/#:~:text=As%20the%20concentration%20of%20carbon,yet%20confirmed%20such%20a%20decline>, (accessed 3/11/25).

⁹ Alia Shoaib, “America Underwater: How Rising Sea Levels Will Transform the US,” *Newsweek*, June 30, 2024, <https://www.newsweek.com/america-underwater-sea-level-rise-1918894>, (accessed 3/11/25).

¹⁰ “Earth had its hottest August in 175-year record: Summer 2024 was Northern Hemisphere’s warmest on record,” *National Atmospheric and Oceanic Administration (NOAA)*, September 12, 2024, <https://www.noaa.gov/news/earth-had-its-hottest-august-in-175-year-record#:~:text=June%E2%80%93August%202024%20was%20the.a%20degree%20C>, (accessed 3/11/25).

The fire season in California now starts earlier and ends later, approaching a *year-round* fire season.¹¹ A drier and hotter climate increases both the frequency of wildfires and their size and intensity. Since 2017, the five largest fires in California history have burned about 3.2 million acres or roughly the size of Connecticut.¹²

The August Complex fire in 2020, which burned over one million acres across several Northern California counties, became the largest fire in California's history. The urban wildfires that consumed large parts of Los Angeles in January 2025 were enormously destructive.

Marin is not immune to the damage to our planet caused by climate change. For example, and while not a mega-fire, the 2020 Woodward Fire in Point Reyes National Seashore showed that Marin is vulnerable. The fire burned almost 5,000 acres and took six weeks to contain.¹³ About 60,000 acres in Marin (18 percent of Marin's land area) fall within a Wildland Urban Interface (WUI) where homes and structures are next to or intermixed with open space and wildland vegetation.¹⁴ The areas hit hardest in the Los Angeles fires in January 2025 were also within a WUI.¹⁵

In October 2024, San Rafael reached a record-setting temperature of 108 degrees.¹⁶

The National Oceanic and Atmospheric Administration projects a gradual one-foot rise in sea level for the San Francisco Bay Area by 2050. In just 15 years (by 2040), the projected increase will damage shoreline buildings, roads, and utility systems and drastically change life in Marin for all residents, not just people who live near the ocean or bay.¹⁷

¹¹ "Understanding the Changing California Fire Season," *Western Fire Chief's Association*, <https://wfca.com/wildfire-articles/california-fire-season-in-depth-guide/#pp-toc-6x9tjk18r15u-anchor-5>, (accessed on 3/20/2025).

¹² "Top 20 California Wildfires" *California Department of Forestry and Fire Protection*, <https://34c031f8-c9fd-4018-8c5a-4159cdf6b0d-cdn-endpoint.azureedge.net/-/media/calfire-website/our-impact/fire-statistics/top-20-largest-ca-wildfires.pdf?rev=097f901c128347149e2614f2fca4f546&hash=27DDE83DFEF9A69E67C73765892A2B75>, (accessed 3/11/2025).

¹³ "Woodward Fire," *Point Reyes Nature*, September 6, 2020, <https://www.pointreyesnature.com/blog/2020/9/6/woodward-fire>, (accessed 3/11/25).

¹⁴ "Literature Review of the State-of-the-Science in Wildfire Evacuation," *Marin Wildfire Prevention Authority*, October 7, 2022, p. 11. https://assets-global.website-files.com/6107823cbe8db485b50aa8f8/6362c326bcc34a69b81cc941_MWPA%20Literature%20Review%20-%20FINAL.pdf (accessed 3/11/2025).

¹⁵ Jeremia Kimelan, "The LA County fires devastated homes in the wildland urban interface. Here's what that is," *Cal Matters*, January 28, 2025, <https://calmatters.org/environment/wildfires/2025/01/la-county-fires-wildland-urban-interface/> (accessed 3/11/25).

¹⁶ Cameron Macdonald, "San Rafael hits record 108 degrees as heat wave persists," *Marin Independent Journal*, October 8, 2024, <https://www.marinij.com/2024/10/07/san-rafael-hits-record-107-as-heat-persists/>, (accessed 3/11/25).

¹⁷ "Sea Level Rise: The Water Is Upon Us. We Cannot Run - We Cannot Hide," *2023-2024 Marin Civil Grand Jury Report, 2024-25*, p. 1. https://www.marincounty.gov/sites/g/files/fdkgoe241/files/2024-05/sea-level-rise_1.pdf

These events, and evolving climate news stories, prompted the Grand Jury to ask and answer three questions:

1. What are the Marin governments (11 municipalities and the County) doing to reduce GHG emissions to minimize further climate-related catastrophes?
2. Is Marin on track to reach its GHG emission reduction goal?
3. What can Marin's residents, businesses, and government do to help Marin reach its GHG emission reduction goal?

The biggest contributors to GHG emissions in Marin (and the world) are emissions from gas-powered cars and burning gas in homes and businesses. Because we continue to extract fuel and gas from the earth and burn it in our cars and in our buildings, the planet is becoming hotter.

The County and Marin's 11 municipalities each enacted Climate Action Plans (CAP). These are comprehensive, thoughtfully researched plans that lay out well-defined strategies to reduce GHG emissions in the sectors that produce them. While each municipality has its own CAP, the municipalities collectively share a common goal: To reduce GHG emissions to a level 40 percent below 1990 levels by 2030 (2030 CAP Goal).

The municipalities also produce periodic inventories, which assess the GHG emissions produced annually beginning in 2005. The inventories inform the municipalities and the public on the success or failure in achieving the CAPs' GHG emission reduction goals.

This report examines the two key sectors in Marin that produce over 80 percent of Marin's GHG emissions: transportation (exhaust emissions from vehicles) and built environment-natural gas (emissions released from burning natural gas in buildings). This report discusses the successes realized toward achieving the 2030 CAP Goal and the challenges ahead. The report provides the Grand Jury's findings and recommendations.

The Grand Jury recognizes that the agriculture sector in West Marin is an integral part of Marin's economy, identity, and climate future. After completing this investigation, the Grand Jury elected not to report on GHG emissions in this sector because the emissions inventory data (analyzing the years 2005 to 2020) does *not* factor in the reductions realized through carbon dioxide equivalent (CO_{2e}) sequestration and carbon farming, which the Grand Jury concludes should be factored into inventory calculations for this sector. Marin is fortunate to have government agencies, and several non-profit agencies, focused on helping farmers and ranchers with carbon sequestration and carbon farming practices. (Appendix A provides brief explanations of carbon sequestration and carbon farming and a list of these entities and their websites.) Once more fully established, sequestration and carbon farming could result in capturing substantially more CO_{2e} than is produced through farming and ranching.

APPROACH

Interviews. As part of this investigation, the Grand Jury interviewed senior management and staff knowledgeable on the matters discussed in this report, including representatives from:

- Marin municipalities
- Coalition for Sensible Taxpayers
- Marin County Community Development Agency
- County of Marin Sheriff's Department
- Golden Gate Bridge, Highway and Transportation District
- Marin Agricultural Land Trust
- Marin Clean Energy
- Marin Climate & Energy Partnership
- Marin County Board of Supervisors
- Marin County Department of Agriculture, Weights & Measures
- Transit Authority of Marin
- Marin Transit District
- Sonoma Marin Area Rail Transit
- Transportation Authority of Marin

Documents. The Grand Jury reviewed reports from various government and non-profit agencies, scientific journals, and news articles. The documents reviewed and considered most important by the Grand Jury are cited in footnotes.

The Grand Jury completed this investigation on March 14, 2025.

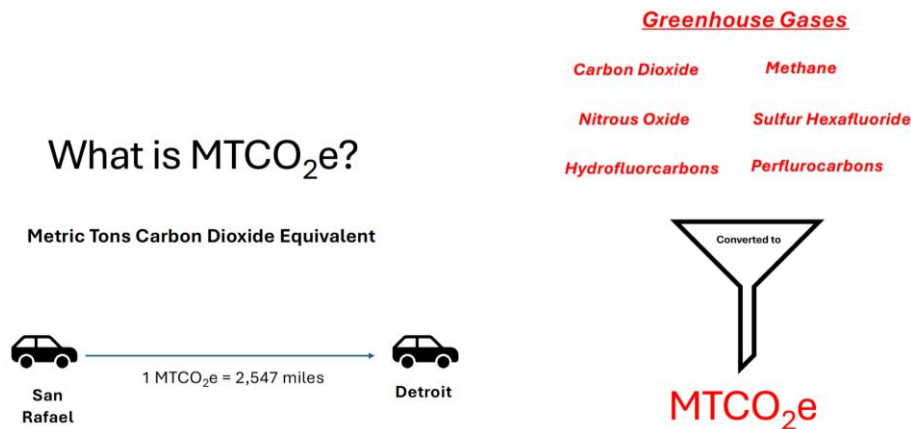
DISCUSSION

GHG and What is MTCO₂e (Metric Ton of Carbon Dioxide Equivalent)

Some GHG is naturally emitted and makes Earth suitable for life. A certain level of these gases keeps Earth habitable. However, according to the U.S. Environmental Protection Agency, “the majority of GHG emissions comes from fossil fuel combustion, which in turn is used for electricity, transportation, industry, heating, etc.”¹⁸ Human activities increase the concentration of GHG in the atmosphere to dangerous levels, trapping more heat, resulting in an increase in earth’s average temperature. The intensification of GHG in the Earth’s atmosphere from human activities affects climate patterns worldwide and amplifies the hazards and catastrophes.

¹⁸ County of Marin, Marin County Unincorporated Area Climate Action Plan 2030, update as of January 25, 2024, p. 3, citing the U.S. Environmental Protection Agency’s 2019 Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2018, <https://www.marincounty.gov/departments/cda/sustainability/climate-action-plan/climate-action-plan-2030>, (accessed 3/11/2025).

Figure 1: What is MTCO₂e?



Source: Created by 2024-2025 Marin County Civil Grand Jury

Human activities produce several greenhouse gases illustrated above in Figure 1: carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, hydrofluorocarbons, perfluorocarbons. These gases have differing degrees of harmful impact on climate change—e.g., methane’s global warming potential is 28 times higher than carbon dioxide; nitrous oxide’s global warming potential is 265 times higher than carbon dioxide.¹⁹

To help with a comparison across these different gases, climate experts use the term “carbon dioxide equivalent” or CO₂e. The term CO₂e is a way to compare the climate impact of the different gases by converting them to the equivalent amount of carbon dioxide that would have the same global warming potential over a specific time, usually 100 years.²⁰

The GHG inventories discussed in this report use the term MTCO₂e, which means: one metric ton of carbon dioxide equivalent. According to the Environmental Protection Agency’s Greenhouse Gas Equivalencies Calculator, one metric ton of carbon dioxide equals the GHG emissions produced by an average gas-powered passenger vehicle driven 2,547 miles.²¹ (Detroit is about 2,400 miles from San Rafael.)

¹⁹ Marin County Unincorporated Area Climate Action Plan 2030, Table 1, p. 4.

²⁰ United States Environmental Protection Agency, *Terminology Services (Terms & Acronyms)*, [https://sor.epa.gov/sor_internet/registry/termreg/searchandretrieve/termsandacronyms/search.do?search=&term=carbon%20dioxide%20equivalent&matchCriteria=Contains&checkedAcronym=true&checkedTerm=true&hasDefinitions=false#:~:text=potential\)%20than%20others.-,The%20international%20standard%20practice%20is%20to%20express%20greenhouse%20gases%20in,Carbon%20Dioxide%20Equivalentterm%20Search](https://sor.epa.gov/sor_internet/registry/termreg/searchandretrieve/termsandacronyms/search.do?search=&term=carbon%20dioxide%20equivalent&matchCriteria=Contains&checkedAcronym=true&checkedTerm=true&hasDefinitions=false#:~:text=potential)%20than%20others.-,The%20international%20standard%20practice%20is%20to%20express%20greenhouse%20gases%20in,Carbon%20Dioxide%20Equivalentterm%20Search), (accessed 3/11/25).

²¹ United States Environmental Protection Agency, *Greenhouse Gas Equivalencies Calculator*, <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results>, (accessed 3/11/2025).

The 2030 CAP Goal

The 2030 CAP Goal comes from two State of California laws and an executive order of former Governor Jerry Brown.²² Together, they tasked the California Air Resources Board (CARB) and other state agencies to achieve technologically feasible and cost-effective, state-wide GHG emissions reductions to 40 percent below 1990 levels by 2030. These laws do not require CARB to follow any specific guidelines and give CARB flexibility in the measures needed to achieve the reduction. The laws do, however, require CARB to consult with key state agencies and account for equity, health, and economic considerations.

The 2030 CAP Goal derived from these statutes is aspirational. There are no penalties imposed by the state on any municipality if the GHG reduction goals are not met. Also, the inventories do not measure Marin’s “upstream emissions,” which are GHG emissions generated in making things (like appliances and clothing) or growing food outside Marin and shipping them into Marin. Nor do the inventories include emissions from airplane travel or other travel activities that Marin residents engage in outside of their communities.²³

What are the primary sources of GHG emissions in Marin?

Emissions are measured in the CAPs according to sectors. The County’s CAP, for example, tracks the following sectors:²⁴

- **Built Environment - Electricity:** emissions generated from using electricity in homes and businesses
- **Built Environment - Natural Gas:** emissions generated from burning natural gas (and, to a limited extent, propane) in homes and businesses
- **Transportation:** tailpipe emissions from passenger vehicles, medium and heavy-duty vehicles, transit vehicles, and the SMART train
- **Waste:** methane emissions from decomposing organic material in landfill
- **Off-Road:** emissions from gasoline and diesel off-road vehicles
- **Water:** emissions from energy used to pump, convey, treat, and distribute water
- **Wastewater:** emissions created during the treatment of wastewater
- **Agriculture:** emissions from manure management, livestock enteric fermentation, and fertilizer application

Other than the Agriculture sector, Marin’s 11 municipalities’ CAPs track these same sectors.²⁵

²² Assembly Bill 32 and Senate Bill 32 were codified in Health & Safety Code §§ 38500, *et seq.* and 38566, respectively. Governor Brown’s Executive Order B-30-15, April 29, 2015.

²³ Marin Climate & Energy Partnership, *Greenhouse Gas Inventories*. <https://marinclimate.org/greenhouse-gas-inventories/>, (accessed on 3/14/2025)

²⁴ Marin County Unincorporated Area Climate Action Plan 2030, p.12, <https://www.marincounty.gov/departments/cda/sustainability/climate-action-plan/climate-action-plan-2030>, (accessed 3/11/25).

²⁵ City Of Mill Valley Climate Action Plan 2030, Final and Adopted May 6, 2024, p. ES-1-ES-2. <https://www.cityofmillvalley.gov/DocumentCenter/View/8725/FINAL-Climate-Action-Plan-adopted>, (accessed 3/11/25).

Successes

Success: CAP Coordination Through the Marin Climate & Energy Partnership

Marin is trying to reduce GHG emissions through the efforts of the Marin Climate and Energy Partnership (MCEP). MCEP is a partnership founded in 2007 by the County, the 11 municipalities, and three public agencies.²⁶ While the MCEP partners each have their own CAPs, the partners share a common goal of working as unified partners to achieve the 2030 CAP Goal.

Sustainability managers from the MCEP partners meet each month to strategize on ways to reduce Marin's GHG emissions and track progress on reaching the 2030 CAP Goal. MCEP tracks GHG emissions through GHG emission inventories for the municipalities and Marin's unincorporated area, which then are consolidated into a countywide inventory (MCEP 2024 Inventory). The inventories track GHG emissions on a sector-by-sector basis for the municipalities and countywide beginning in 2005 (i.e., the year for which MCEP has reliable data).

MCEP has also played a leading role in creating strategies to increase the adoption of electric vehicles and the electrification of Marin's homes and buildings. This report discusses these strategies below.

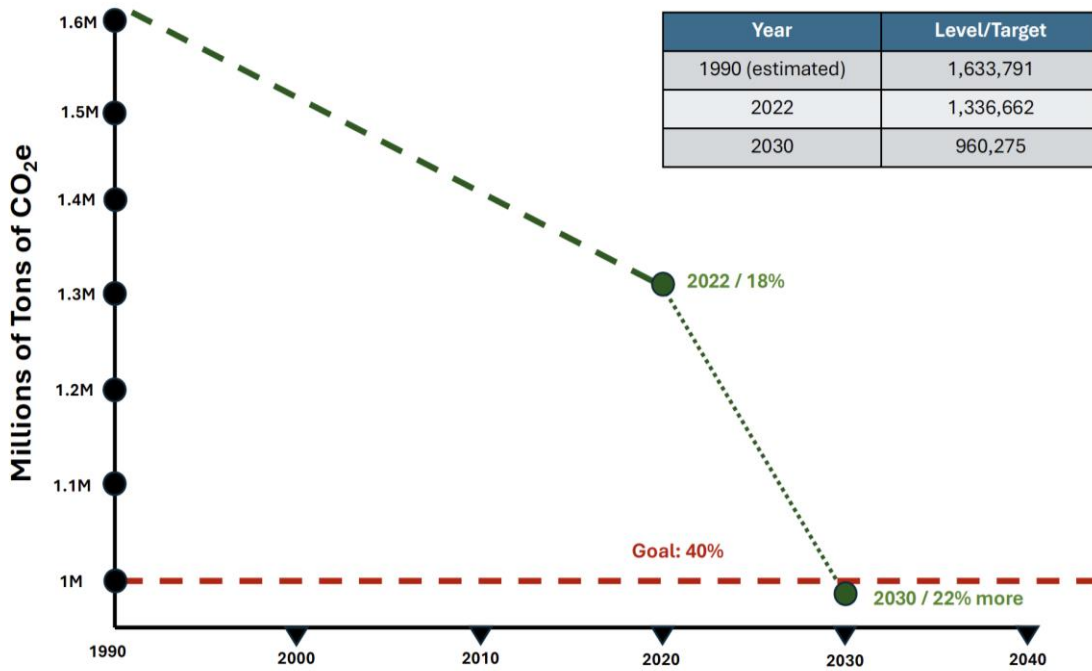
What does the MCEP 2024 Inventory show? According to MCEP's 2024 Inventory, Marin's countywide GHG emissions were reduced 18 percent below the 1990 levels.²⁷ To achieve the 2030 CAP Goal within the next five years, Marin must decrease its GHG emissions by another 22 percent.²⁸ Figure 2 below shows the progress made through 2022 (the latest year analyzed in the MCEP 2024 Inventory) and the additional reduction needed to achieve the 2030 CAP Goal.

²⁶ The three public agencies are Marin Clean Energy, Marin Municipal Water District, and Transportation Authority of Marin.

²⁷ The most recent 2024 inventories analyze and report on data compiled from 2022. Unless otherwise explained, the data in this report is based on 2022 data. New inventories will be released in the spring of 2025, and will report GHG emissions data collected and analyzed from 2023.

²⁸ "Green House Gas Inventories," *Marin Climate & Energy Partnership*, <https://marinclimate.org/greenhouse-gas-inventories/> (accessed 3/11/2025).

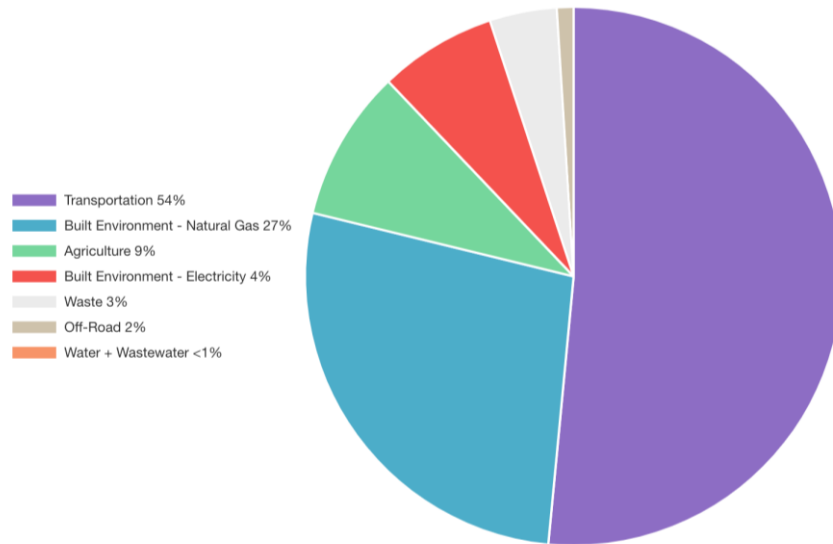
Figure 2: Countywide GHG Emission Reductions (2022)



Source: Created by 2024-2025 Marin County Civil Grand Jury with data from MCEP

Sectors producing GHG emissions. In 2022 and as Figure 3 below illustrates, over 80 percent of Marin’s GHG emissions came from burning fossil fuels to power vehicles (54 percent) and for heating and cooking (27 percent). Reaching the 2030 CAP Goal depends largely on how Marin addresses these two important sectors in the next five years. The remaining 20 percent of GHG emissions come from other sectors.

Figure 3: Marin County Emissions by Sector, 2022²⁹



Source: Data and graphic provided by MCEP

Success: Increased Electrification from MCE’s and PG&E’s Clean Energy Programs

MCEP’s 2024 Inventory tracks countywide GHG emissions generated from using electricity in Marin’s homes and businesses. To date, the biggest contributions to Marin’s success toward achieving the 2030 CAP Goal are from reductions in this sector (Built Environment – Electricity).³⁰ The reduction resulted from Marin residents’ purchase of GHG-free electricity supplied by Marin Clean Energy (MCE) and, to a lesser extent, PG&E for their homes and businesses.³¹

MCE was formed in Marin in 2010 and functions as a Joint Powers Authority operating across four counties: Marin, Napa, Solano, and Contra Costa.³² MCE was California’s first Community Choice Aggregation program and is a leader in developing this not-for-profit, public agency model. MCE purchases its renewable energy from solar, wind, geothermal, biomass, and hydroelectric sources.

Marin residents’ choice to buy cleaner energy supplied by MCE and PG&E resulted in a countywide decrease of 78 percent of GHG emissions in this sector (Built Environment - Electricity) since 2005. This cleaner energy choice also accounts for about half of the total

²⁹ Marin Climate & Energy Partnership website, <https://marinclimate.org/greenhouse-gas-inventories/> (accessed 3/11/2025).

³⁰ Marin Climate & Energy Partnership website, <https://marinclimate.org/greenhouse-gas-inventories/> (accessed 3/11/2025).

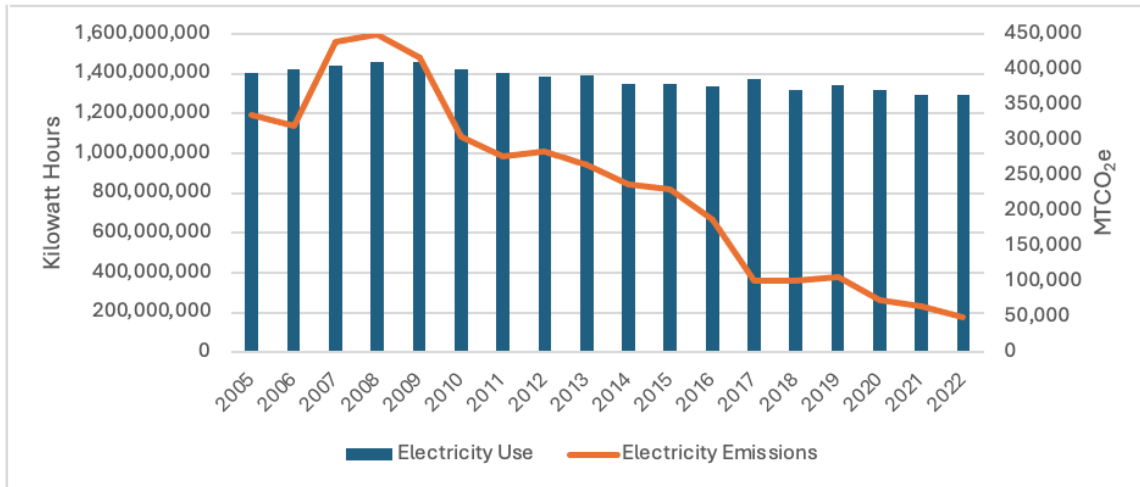
³¹ Data provided to the Grand Jury by Marin Clean Energy (MCE).

³² Marin Clean Energy, *MCE’s Power in Partnership, Impact Report 2024*, p. 2. (https://mcecleanenergy.org/wp-content/uploads/2024/12/MCE-Impact-Report-2024_120124.pdf), (accessed 3/11/2025).

decrease in GHG emissions reported in the MCEP 2024 Inventory — i.e., the 18 percent reduction below the 1990 levels reported in the MCEP 2024 Inventory.³³

Figure 4 below illustrates the reduction of GHG emissions measured countywide. The municipalities’ inventories for the same time show similar results.

Figure 4: Countywide Electricity Consumption and Emissions³⁴



Source: Data and graphic provided by MCEP

As of 2024, MCE reported it had reduced 500,000 MTCO₂e from its fourteen-year operations in all of the counties it serves.³⁵ (For context, that amount of CO₂e measured by tailpipe emissions roughly equates to almost 1.3 billion miles driven by average gasoline-powered passenger vehicles.³⁶)

MCE has about 98,000 accounts in Marin to which it provides GHG-free energy. These customers represent about 81 percent of all residential and business accounts.³⁷ PG&E supplies the remaining 19 percent. Marin residents’ and businesses’ purchase of GHG-free energy from MCE and PG&E resulted in significant GHG reductions since 2005. However, the GHG emission reductions from those choices have largely been realized as Figure 4 above illustrates.

³³ Marin Climate and Energy Partnership website, *Change in County Emissions by Sector, 2005-2002*, <https://marinclimate.org/greenhouse-gas-inventories/>, (accessed 3/11/2025).

³⁴ Data and figure provided to the Grand Jury by Marin Climate & Energy Partnership.

³⁵ MCE’s Power in Partnership, Impact Report 2024, p. 3.

³⁶ Environmental Protection Agency Greenhouse Gas Equivalencies Calculator (<https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>, (accessed 3/11/25).

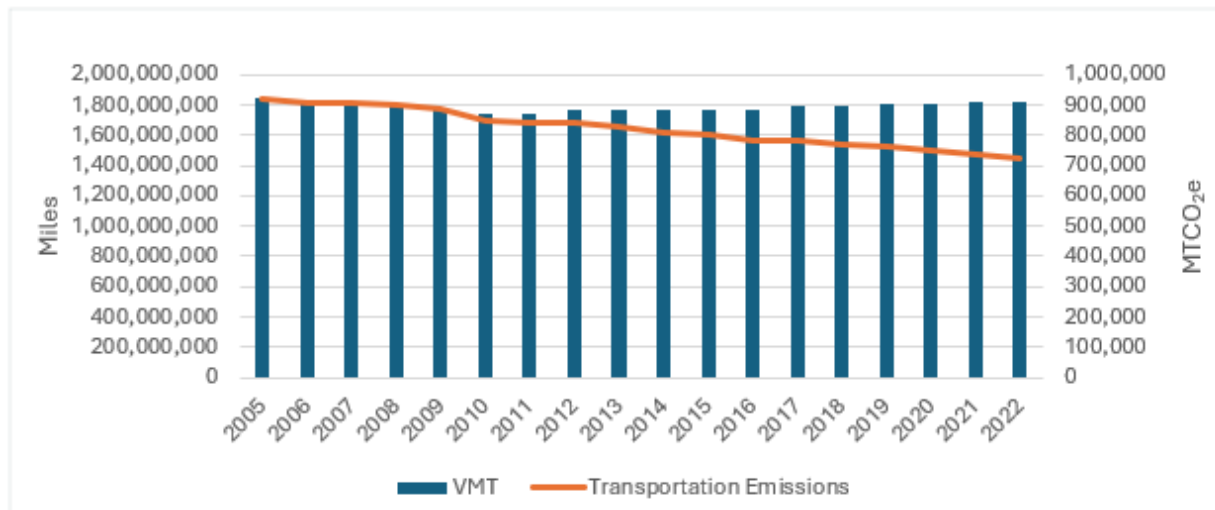
³⁷ Data provided to the Grand Jury from Marin Clean Energy.

Success: Increased Numbers of Fuel-Efficient Vehicles (FEVs) and Zero Emission Vehicles (ZEVs)

GHG emissions from gas-fueled vehicles. The biggest contributor to Marin’s GHG emissions is the Transportation sector. Over 50 percent of Marin’s GHG emissions come from this sector and about 80 percent of those emissions come from tailpipe emissions from passenger vehicles. For the remaining 20 percent, commercial vehicles accounted for about 19 percent and public transportation accounted for about one percent.³⁸

GHG emissions reduction from increased FEVs and ZEVs. To assess GHG emissions from vehicle exhaust, MCEP analyzed countywide data from 2005 to 2022. (MCEP only has data going back to 2005.) MCEP focused on two factors: (1) vehicle miles traveled (VMT) and (2) the percentage reduction of GHG emissions. Figure 5 below illustrates both VMT and GHG reductions countywide from 2005-2022.

Figure 5: Countywide VMT and GHG Emissions (2005-2022)



Source: Data and graphic provided by MCEP

MCEP’s 2024 Inventory shows that in that 17-year period and on a countywide basis, VMT went down by only 1.3 percent, have remained fairly constant, and show no signs of abating.

Marin residents’ purchase of more FEVs and ZEVs resulted in about a 22 percent reduction of GHG emissions for this sector.³⁹ (ZEVs include battery-electric, plug-in hybrid, and fuel-cell-electric vehicles.) The reductions from this sector account for over one-third of the overall GHG emission reductions reported by MCEP in the MCEP 2024 Inventory. The decrease in GHG emissions in this sector is the second largest contributor to Marin’s reduction in GHG emissions,

³⁸ Marin Climate & Energy Partnership, *Marin Countywide EV Acceleration Strategy*, September 2023, p. 5, 8,9, <https://marinclimate.org/wp-content/uploads/2023/10/Marin-Countywide-EV-Strategy-Overview-September-2023.pdf>, (accessed 3/10/25).

³⁹ Marin Climate & Energy Partnership, *Greenhouse Gas Inventory for Unincorporated Community Emissions for the Year 2022*, March 2024, p. 8,

behind reductions resulting from Marin’s conversion to GHG-free electricity from MCE and PG&E. Additional reductions of GHG emissions in the Transportation sector will only occur through the increased purchases of FEVs and EVs by Marin residents.

ZEVs in Marin—percentages, rankings, and numbers

- ZEVs were just over nine percent of all registered vehicles in Marin in 2023, and about 40 percent of all new cars sold in Marin through Q4 of 2024.⁴⁰
- For 2024 and on a state-wide comparison basis, Marin is second behind Santa Clara County in the percentage of newly registered ZEVs to total passenger vehicles sold.⁴¹ The statewide percentage of ZEVs as of 2024 was slightly over 25 percent.⁴²
- Marin has the highest use of electric vehicles in the Bay Area at 1,942 miles driven per 1,000 residents (as of 2023).⁴³

That Marin residents are buying and driving ZEVs is positive news for the environment and Marin’s efforts to achieve its 2030 CAP Goal.

What is needed to reach the 2030 GHG Goal in the Transportation sector? MCEP created a plan for Marin titled “Marin Countywide EV Acceleration Strategy (September 2023)” (EV Strategy).⁴⁴ The work to create the EV Strategy was funded by Transportation of Marin’s Alternative Fuel Program.⁴⁵ The EV Strategy seeks to accelerate EV adoption to meet the targets set in each of the 11 municipalities and the County’s CAP. Marin’s municipalities can either accept or adopt the EV Strategy into their capital improvement plans.⁴⁶ MCEP’s EV Strategy recommends three efforts to reach the 2030 GHG Goal.

First, Marin must increase the number of registered ZEVs from nine percent to about 35 percent (median across all the municipalities and the County) by 2030. To reach that 35 percent increase, Marin must sustain an annual ZEV growth rate of 21 percent — meaning that about one out of

⁴⁰ California Energy Commission, *New ZEV Sales in California*, <https://www.energy.ca.gov/data-reports/energy-almanac/zero-emission-vehicle-and-infrastructure-statistics-collection/new-zev>, (accessed 3/10/25).

⁴¹ Adrian Rodriques, “Marin ranks second in state for sales of electric vehicles,” *Marin Independent Journal*, March 7, 2025, (accessed 3/14/25), https://edition.pagesuite.com/popovers/dynamic_article_popover.aspx?guid=b4a2ec81-d679-4e74-b5e4-65902b0f68da&appcode=MAR722&eguid=c2a27314-137b-4e40-abbc-8a66cc203507&pnum=1#

⁴² California Energy Commission, *Light-Duty Vehicle Population in California*, <https://www.energy.ca.gov/data-reports/energy-almanac/zero-emission-vehicle-and-infrastructure-statistics-collection/light>, (accessed 3/14/2025).

⁴³ “Marin County Transportation Plan 2050 Draft, October 2024”, *Axios* <https://www.axios.com/local/san-francisco/2023/12/04/electric-vehicle-use-statistics>, p. 43, (accessed 3/10/25).

⁴⁴ Marin Climate & Energy Partnership, *EV Strategy*, September 2023. <https://marinclimate.org/wp-content/uploads/2023/10/Marin-Countywide-EV-Strategy-Overview-September-2023.pdf>, (accessed 3/10/25).

⁴⁵ Marin Climate & Energy Partnership, *EV Strategy*, September 2023, p. 2.

⁴⁶ Marin Climate & Energy Partnership, *EV Strategy*, September 2023, p. 2.

every four vehicles purchased in the next five years will be a ZEV.⁴⁷ Marin is currently on track to hit that 35 percent number if the purchase or leasing of ZEVs continues at the same pace.

Second, MCEP's EV Strategy recommends the installation of more public charging infrastructure, particularly near multi-family buildings and workplaces. The EV Strategy lists several key action steps to increase community outreach and education, increase public charging infrastructure and municipal fleet electrification, and support and advocate for policy and funding that will accelerate EV adoption.⁴⁸

Third, Marin residents who can afford to buy a ZEV and outfit their homes with chargers should do so when economically feasible. For existing homes, installing chargers is a choice and cannot be mandated. However, California's Green Building Code mandates an EV-capable parking space for new single-family homes as do the County's building-reach codes.⁴⁹

Challenges

Challenge: Converting Homes and Businesses from Gas to All-Electric

As Figure 3 above illustrates, over a quarter (27 percent) of Marin's GHG emissions come from burning gas in buildings (homes and businesses), which is the second leading source of emissions. The majority of GHG emissions from burning gas produced in homes come from water heaters (about 58 percent) and space heaters (32 percent).⁵⁰ To reach the 2030 CAP Goal, Marin must reduce GHG emissions from burning gas by replacing gas appliances with all-electric.

There are health and safety concerns from burning gas in homes and businesses. Doing so releases harmful toxins, including carbon monoxide, nitrogen oxide, particulate matter, and methane gas.⁵¹ Many studies confirm that gas-burning appliances increase the risk of respiratory infection, asthma, heart disease, and death.⁵²

In 2022, this Grand Jury released a report recommending the development of a comprehensive electrification plan—one that lays out a countywide strategy for municipalities to implement.⁵³ In response to that report, the County, along with partner members from MCEP, created the

⁴⁷ Marin Climate & Energy Partnership, *EV Strategy*, September 2023, p. 2, p. 8.

⁴⁸ Marin Climate & Energy Partnership, *EV Strategy*, September 2023, p. 2, pp. 13-17.

⁴⁹ Marin Climate & Energy Partnership, *EV Strategy*, September 2023, p. 2, pp. 21-23.

⁵⁰ Marin County's Building Electrification Roadmap, September 5, 2024, p. 67, <https://marinclimate.org/wp-content/uploads/2024/10/Marin-Countys-Building-Electrification-Roadmap-9-5-24.pdf>, (accessed 3/11/25).

⁵¹ Marin County's Building Electrification Roadmap, September 5, 2024, p. 16, citing UCLA Center for Occupational & Environmental Health, *Effects of Residential Gas, Appliances on Indoor and Outdoor Air Quality and Public Health in California*, April 2020, <https://coeh.ph.ucla.edu/effects-of-residential-gas-appliances-on-indoor-and-outdoor-air-quality-and-public-health-in-california/>, (accessed 3/11/25),

⁵² "Gas Stove Pollution: A factsheet on reducing your risk," *Physicians for Social Responsibility*, 2022, <https://psr.org/wp-content/uploads/2022/05/gas-stove-pollution.pdf>, (accessed 3/11/25).

⁵³ "Electrifying Marin's Buildings: A Countywide Approach," *Marin County Civil Grand Jury Report, 2021-2022*, <https://www.marincounty.gov/departments/grand-jury/civil-grand-jury-reports>, (accessed 3/11/25).

Marin County Electrification Roadmap (Roadmap), a comprehensive plan to electrify buildings in Marin.⁵⁴ The Roadmap is solely advisory. However, the Roadmap has been adopted by many of Marin’s municipalities. The Roadmap is a meaningful step toward achieving the 2030 CAP Goal and meeting other requirements set by the state and regional agencies.

Other impetuses for the Roadmap are regional and state mandates that will take effect starting in 2027. From 2027 to 2031, the Bay Area Air Quality Management District (BAAQMD) will begin phasing out gas water heaters and furnaces in homes and commercial buildings by requiring that only zero-nitrogen oxide units (i.e., an appliance producing no harmful nitrogen oxide gas) be sold or installed in the Bay Area.⁵⁵ The California Air Resources Board (CARB) also plans to ban gas space and water heaters from being sold statewide starting in 2030.⁵⁶ (These zero nitrous oxide rules will not apply to gas stoves or gas fireplace inserts, which account for a small portion of GHG emissions from burning fossil gas.)

The Roadmap sets forth ten actions, tasks to implement those actions, and a timeline for each action. The first action is: “Create a ‘Central Hub’ for easy access to electrification and resources.”⁵⁷ The Central Hub is up and running on the County’s website.⁵⁸ The Central Hub gives Marin residents instructions on starting home electrification, getting rebates, finding a contractor, and obtaining a permit, among other topics.

The transition from gas to all-electric will not be easy. There are several significant challenges. First, over 70 percent of Marin’s residential buildings are single-family homes and 94 percent of those homes were built *before* 1980. Many of those older homes may need electrical panel upgrades to an existing 100-amp panel to accommodate electric water heaters or heaters. To make the conversion from gas to all-electric could require expensive upgrades to the electrical systems, costing owners anywhere from \$3,000 to \$25,000.⁵⁹

Second, finding competent contractors who can install all-electric systems and obtain a permit for the upgrade can be difficult and time-consuming, which is why many homeowners choose not to upgrade.⁶⁰

⁵⁴ County of Marin Green Building Coordinator, “Electrification roadmap: Our plan to an all-electric future,” last updated July 31, 2024, <https://www.marincounty.gov/departments/cda/sustainability/electrify-marin/policy-dev/roadmap> (accessed 3/11/25).

⁵⁵ “Regulation 9 Rule 6: Nitrogen Oxides Emissions from Natural Gas-Fired Water Heaters - 2023 Amendment (Current), *Bay Area Air District*, 2023, <https://www.baaqmd.gov/rules-and-compliance/rules/reg-9-rule-6-nitrogen-oxides-emissions-from-natural-gas-fired-water-heaters>, (accessed 3/11/25).

⁵⁶ Caleigh Wells, “California plans to phase out new gas heaters in 2030,” *NPR*, September 23, 2022, <https://www.npr.org/2022/09/23/1124511549/california-plans-to-phase-out-new-gas-heaters-by-2030>, (accessed 3/11/2025).

⁵⁷ Marin County’s Building Electrification Roadmap, September 5, 2024, p. 27,

⁵⁸ “Electrify Marin,” *County of Marin*, <https://www.marincounty.gov/departments/cda/sustainability/electrify-marin>, (accessed 3/11/25).

⁵⁹ Marin County’s Building Electrification Roadmap, September 5, 2024, p. 27.

⁶⁰ Marin County’s Building Electrification Roadmap, September 5, 2024, p. 22.

Third, California’s electric grid is old and needs upgrading to support the electrification of buildings. PG&E may not be able to expand and upgrade its grid infrastructure fast enough to meet the state’s climate and energy goals.⁶¹

Fourth, efforts by municipalities or government agencies to force conversion from gas to all-electric by-passing ordinances face likely legal challenges, as happened to the City of Berkeley when it passed an ordinance in July 2019 banning natural gas piping in newly constructed buildings. The ban was challenged by an association of restaurant owners. The association claimed the ban was preempted by a federal law—the Energy Policy and Conservation Act—enacted by Congress in 1975. The Act prohibits states and local governments from preventing consumers from using “covered products,” which includes natural gas appliances. The Ninth Circuit Court of Appeals agreed with the association and concluded the ordinance was preempted.⁶² The implications of this decision have yet to be played out. However, the Ninth Circuit’s decision calls into question the ability of Marin’s municipalities and state and regional agencies to pass ordinances or laws restricting the use of natural gas or any other products covered by federal law.

Challenge: Factoring in Policy Changes Issued by the New Federal Administration

The year 2025 opened with one of the most economically devastating disasters in U.S. history—the fires in Los Angeles with an estimated loss of \$250 billion.⁶³ In the same month, the federal government announced the United States was pulling out of the Paris Climate Agreement, streamlining permits for oil and gas drilling, and revoking electric vehicle funding and subsidies—which could substantially hinder Marin’s progress in achieving the 2030 CAP Goal.⁶⁴ Consistent with the administration’s reversal of existing climate policies, the Environmental Protection Agency announced “The Biggest Deregulatory Action in U.S. History” with a list of actions intended to repeal or weaken numerous environmental regulations.⁶⁵ These actions could

⁶¹ Marin County’s Building Electrification Roadmap, September 5, 2024, p. 21.

⁶² California Restaurant Association. v. City of Berkeley, No. 21-16278, 2923 WK 2962921 (April 17, 2023), <https://cdn.ca9.uscourts.gov/datastore/opinions/2023/04/17/21-16278.pdf>, (accessed 3/14/2025), and as amended on January 2, 2024, <https://cases.justia.com/federal/appellate-courts/ca9/21-16278/21-16278-2024-01-02.pdf?ts=1704214835> (accessed 3/23/25).

⁶³ Roger Vincent, “Estimated cost of fire damage balloons to more than \$250 billion,” *Los Angeles Times*, January 24, 2025, <https://www.latimes.com/business/story/2025-01-24/estimated-cost-of-fire-damage-balloons-to-more-than-250-billion>, (accessed 3/11/2025).

⁶⁴ Paul Rogers, “What do Trump’s environmental rollbacks mean for California?” *Marin Independent Journal*, January 21, 2025, <https://www.marinij.com/2025/01/20/what-do-trumps-environmental-rollbacks-mean-for-california/>, (accessed 3/14/2025).

⁶⁵ “EPA Launches Biggest Deregulatory Action in U.S. History,” *United States Environmental Protection Agency*, March 12, 2025, [https://www.epa.gov/newsreleases/epa-launches-biggest-deregulatory-action-us-history#:~:text=Reconsideration%20of%20limitations%2C%20guidelines%20and,small%20businesses%20\(PM%202.5%20NAAQS\)](https://www.epa.gov/newsreleases/epa-launches-biggest-deregulatory-action-us-history#:~:text=Reconsideration%20of%20limitations%2C%20guidelines%20and,small%20businesses%20(PM%202.5%20NAAQS)), (accessed 3/22/2025).

deliver a direct blow to California's policies on air and water quality standards, electric vehicle initiatives, and efforts to curb planet-harming GHG emissions.

These recent changes in federal policy could increase oil drilling on public lands, promote tax breaks to oil, gas, and coal producers, and expedite the approval of natural gas pipelines.⁶⁶ Based on the administration's desire to revoke any limitations on natural gas, a legal challenge to BAAQMD's limits on new gas appliances starting in 2027 is likely.⁶⁷ The conversion of gas appliances for heating to all-electric to meet the 2030 Cap Goal will likely face legal challenges.

An executive order issued in January 2025 eliminated the existing EV targets (50 percent of all new vehicles sold by 2030), revoked unspent funds for electric vehicle charging stations, and called for terminating any state emissions laws that function to limit sales of gas-powered vehicles.⁶⁸ This executive order could result in diminished sales of EVs. If so, MCEP's EV-Strategy goal of 35 percent EVs registered in Marin by 2030 could be difficult to achieve given the current federal administration's rollback of EV subsidies and policies promoting EV purchases.⁶⁹

⁶⁶ "‘Drill, baby, drill’ is Trump's prime agenda in his second term. What is it?," *The Economic Times*, January 20, 2025, <https://economictimes.indiatimes.com/news/international/global-trends/drill-baby-drill-is-trumps-prime-agenda-in-his-second-term-us-oil-energy-gas-policies-paris-agreement-landmark-climate-law-what-is-it/artic2.leshow/11636248cms?from=mdr>, (accessed 3/11/2025).

⁶⁷ Lisa Friedman, "Trump's Plan to Repeal Climate Policy Could Upend Shift to Electric Cars," *New York Times*, February 26, 2025, <https://www.nytimes.com/2025/02/26/climate/republicans-california-waiver-electric-cars.html?searchResultPosition=1>, (accessed 3/11/2025).

⁶⁸ Jack Fitzgerald, "President Trump Signs Executive Order Revoking Biden-Era EV Targets," *Car and Driver*, January 21, 2025, <https://www.caranddriver.com/news/a63495060/president-trump-revokes-biden-ev-mandates/>, (accessed 3/11/2025).

⁶⁹ Caroline Petrow-Cohen, "With an executive order, Trump casts doubt on the future of EVs in California," *Los Angeles Times*, January 24, 2025, <https://www.latimes.com/business/story/2025-01-24/trump-impact-on-california-ev-sales>, (accessed 3/11/2025).

Challenge: Changing Behavior is Difficult

The final challenge to overcome in addressing climate change and reaching the 2030 CAP Goal is the difficulty in changing people’s behavior—e.g., buying a ZEV rather than a less-expensive gas-powered vehicle, taking mass transit rather than driving yourself, converting gas appliances to all-electric. Many factors make changing behavior difficult, but here are three worthy of consideration.

First, a long-standing problem with climate action is that the dangerous GHG blanketing our atmosphere is invisible, odorless, tasteless, and, consequently, does not impact a person directly. For example, assume a person drives an average gasoline-burning vehicle 10,000 miles in one year. That equates to about three tons of CO_{2e}. But what is three tons of CO_{2e}? And, even if that person is told about the connection, it may not affect their behavior.

Second, most people are concerned with now as opposed to later. People have commutes to figure out and kids to pick up from school and practices. People often do not know a reliable electrical contractor or have the time or money to install a new electrical panel or an EV charger. Climate problems can be seen as a problem for future generations to deal with because the urgency of now takes precedence over later.⁷⁰

Third, there is the problem of “free riding,” meaning people ask: Why should the United States scale back if China and India refuse to curb emissions?⁷¹ Or more pertinent: Why should Marin scale back when the federal government is reversing climate policies and aggressively promoting policies that will damage the environment? These are fair questions and the best answer is: Because we can.

California is one of the world’s largest economies, home to over ten percent of Americans, and a state that contributes over 14 percent of the nation’s revenue.⁷² Both California and Marin are well-positioned to continue their leading roles in climate change. Marin has a strong network of dedicated non-profit organizations and municipalities committed to combating climate change. Marin’s residents’ wealth also allows many households to implement the changes recommended in this report. According to census estimates, Marin’s median household income ranks as one of the highest in the United States.⁷³ California and Marin have a unique and outsized opportunity to be a counterweight against federal attacks, step up internationally, and trailblaze the next wave of state and local action.

⁷⁰ Richard H. Thaler and Cass R. Sunstein, *Nudge: Improving Decisions About Health, Wealth, and Happiness*, (Michigan: Yale University Press, 2008), p. 281.

⁷¹ Thaler and Sunstein, *Nudge*, pp. 285-286.

⁷² Mary Creasman and Mike Young, “California Voice: State faces biggest call to action yet as climate-powered disasters worsen,” *Marin Independent Journal*, February 22, 2025, <https://www.marinij.com/2025/02/22/california-faces-its-biggest-call-to-action-yet-as-climate-powered-disasters-worsen-2/>, (accessed 3/11/2025).

⁷³ Stephen Ross Johnson, “The 15 Richest Counties in the U.S.,” *U.S. News*, January 1, 2025, <https://www.usnews.com/news/healthiest-communities/slideshows/richest-counties-in-america?slide=7>, (accessed March 24, 2025).

CONCLUSION

The Grand Jury shares the following conclusions derived from conducting its investigation and preparing this report. First, before starting this investigation, most members of the Grand Jury were not familiar with CAPs, inventories, the 2030 Goal, or the admirable work performed by MCEP, including the important climate-action strategies MCEP created (e.g., the EV Strategy, Electrification Roadmap). This lack of awareness suggests to the Grand Jury that these important climate plans and inventories, the 2030 Goal, and strategies require more public awareness.

Second, the Grand Jury learned that MCEP is largely funded by the County through the Marin General Services Authority (MGSA), which is a Joint Powers Authority. The MGSA has administrative responsibility for MCEP.⁷⁴ Further, this County-sponsored partnership has only one paid member — a third-party consultant who has performed excellent work over the past several years. However, a larger, dedicated team of experienced people should enhance Marin’s chances of reaching the 2030 Goal.

Third, while the Grand Jury understands the need and reasons each municipality wants its own CAP and inventory, Marin is a relatively small county with closely adjoining municipalities. GHG emissions are ubiquitous and not siloed in cities, counties, or even in countries. At the county level, Marin can only control what is within its control, which are emissions generated in *this* county. The Grand Jury also concludes that the public is most concerned about total GHG emissions in the County as opposed to a specific city, e.g., Corte Madera or Tiburon.

Fourth, based on several interviews the Grand Jury conducted, the Grand Jury believes that the County needs a more cohesive, better-funded, and stronger group responsible for climate action.

These conclusions are the primary reasons for the Grand Jury’s Recommendations.

⁷⁴ “Marin General Services Authority: Overview and History,” <https://maringeneralservicesauthority.com/overview-and-history/>, (accessed 3/11/2025).

FINDINGS

- F1. Despite the laudable efforts of the municipalities, the County, and Marin Climate and Energy Partnership, Marin is not on track to reach the 2030 CAP Goal over the next five years, without significant reductions in burning fossil fuels in vehicles, homes, and buildings.
- F2. To achieve the 2030 CAP Goal, the programs and strategies discussed in this report (e.g., EV Strategy, Electrification Roadmap, etc.) require stronger countywide coordination, better public education, and more dedicated resources.

RECOMMENDATIONS

- R1. By December 31, 2025, the Marin County Board of Supervisors should form either a new agency or a department that will function on a countywide basis to direct and coordinate, among other issues, climate action planning and tracking, and enhance public awareness of the 2030 CAP Goal and the ways to reach the goal. The new agency or department formed by the Marin County Board of Supervisors will be responsible for promoting, implementing, and maintaining all climate-related initiatives that impact the County.
- R2. By April 1, 2026, the new agency or department will present to the Marin County Board of Supervisors its strategic plan to achieve the 2030 CAP Goal for the entire county.
- R3. By July 1, 2026, the new agency or department formed by the Marin County Board of Supervisors should publish an annual GHG Inventory using the most current and reliable emissions data. The inventory should state the total GHG emissions in all sectors countywide, and be posted on the Marin County website.

REQUIRED RESPONSES

Pursuant to Penal Code section 933.05, the Grand Jury requires responses from the following governing bodies:

From the following governing bodies within 90 days:

- Marin County Board of Supervisors (F1-F2, R1-R3).

The governing bodies indicated above should be aware that the comment or response of the governing body must be conducted in accordance with Penal Code section 933 (c) and subject to the notice, agenda, and open meeting requirements of the Brown Act.

Note: At the time this report was prepared (March 2025), information was available at the websites listed.

Reports issued by the Civil Grand Jury do not identify individuals interviewed. Penal Code Section 929 requires that reports of the Grand Jury not contain the name of any person or facts leading to the identity of any person who provides information to the Civil Grand Jury. The California State Legislature has stated that it intends the provisions of Penal Code Section 929 prohibiting disclosure of witness identities to encourage full candor in testimony in Grand Jury investigations by protecting the privacy and confidentiality of those who participate in any Civil Grand Jury investigation.

Appendix A: Carbon Sequestration and Carbon Farming

Carbon Sequestration. Carbon dioxide is the most commonly produced greenhouse gas. Carbon sequestration is the process of capturing and storing atmospheric carbon dioxide. It is one method of reducing the amount of carbon dioxide in the atmosphere with the goal of reducing global climate change. The USGS is conducting assessments on two major types of carbon sequestration: geologic and biologic. Source: “What is carbon sequestration?” *U.S. Geological Survey*, <https://www.usgs.gov/faqs/what-carbon-sequestration#:~:text=Carbon%20sequestration%20is%20the%20process,of%20reducing%20global%20climate%20change>. (Accessed 3/22/2025).

Carbon Farming. Carbon Farming involves implementing practices that are known to improve the rate at which CO₂ is removed from the atmosphere and converted to plant material and/or soil organic matter. Source: “What is carbon farming?,” Marin Carbon Project, <https://marincarbonproject.org/what-is-carbon-farming/#what-is-carbon-farming>, (Accessed 3/22/2025).

Agriculture Sector Agencies, Organizations, and Websites

Public Agencies:

- Marin County Agriculture - <https://www.marincounty.gov/departments/awm/agriculture>
- Marin Resource Conservation District - <https://www.marinrcd.org/programs/home2/>
- UC Agriculture and Natural Resources Marin - <http://growninmarin.org>

Non-Profit Organizations:

- Agriculture Institute of Marin - <https://www.agriculturalinstitute.org/>
- Land Trust Alliance - <https://landtrustalliance.org/resources/learn/explore/enhancing-carbon-sequestration#related-resources>
- Marin Agricultural Land Trust (MALT) - <https://malt.org>
- Marin Carbon Project - <https://marincarbonproject.org/>
- Sonoma-Marín Ag and County Climate Coalition - <https://sonomacounty.ca.gov/smaccgrant>