

Lenzi, Chelsea

From: Katie Davis <kdavis2468@gmail.com>
Sent: Monday, December 10, 2018 11:02 PM
To: Wolf, Janet; Williams, Das; Hartmann, Joan; Lavagnino, Steve; Adam, Peter; sbcob; Cregar, Jennifer; Litten, Jefferson; Watkins, Ashley; Bob Perry
Cc: Jonathan Ullman; Michael Chiacos
Subject: Letter to Board of Supervisors, Energy and Climate Action Plan Update
Attachments: Sierra Club Los Padres Chapter re SB County CAP 12-10-18.pdf

Dear County Supervisors,

Please see the attached letter from the Sierra Club regarding the Climate Action Plan Update.

Apologies for the late delivery of this letter, but it is meant to be a reference for future updates to the CAP and includes ideas from Sierra Club climate advocates from around the state.

Regards,

Katie Davis
Chair, Santa Barbara Sierra Club
805-451-4574



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December 10, 2018

Santa Barbara County Board of Supervisors
105 E. Anapamu Street
Santa Barbara, CA 93101

Re: Agenda Item #2: Santa Barbara County Climate Action Plan

Dear County Supervisors,

One year ago, the Thomas fire raged through Santa Barbara County in December introducing the prospect of a year-long fire season. The subsequent mudslide killed over twenty people in our County. In the year since, California fires have burned 1.8 million acres and caused billions of dollars of damage. Report after report warns we can expect more extreme weather events, crop losses, droughts and fires due to an unnaturally rapid rate of global warming. The latest United Nations IPCC report, written by 91 scientists from 40 countries who analyzed more than 6,000 scientific studies says we need to transition off of fossil fuels as soon as possible or face a catastrophic global crisis by 2040. Debra Roberts, Co-Chair of the group concludes, "The decisions we make today are critical in ensuring a safe and sustainable world for everyone, both now and in the future... **The next few years are probably the most important in our history.**" In short, we need to step up our climate actions.

First, it starts with a critical look at how we measure GHG emissions and what is and is not included. The International Council For Local Environmental Initiatives (ICLEI) Protocol for Accounting and Reporting of Greenhouse Gas Emissions for local government jurisdictions and agencies (GPC), provides a standard methodology that local jurisdictions may use to estimate their local emissions. The GPC defines different scopes of emissions to include in a GHG Inventory. An honest, reasonably inclusive GHG inventory should include scope 1, 2 and 3 emissions. Scope 3, out-of-boundary emissions, is especially significant for jurisdictions like Santa Barbara County with a tourist economy. Accounting for that would encourage us to consider tourist travel, and whether there are ways to reduce those associated emissions. Likewise, scope 3 emissions would include end use emissions from oil and gas produced in the County. An honest accounting of GHGs for the County would require a plan to eliminate oil and natural gas production and would prohibit new drilling permits.

In terms of the recommended 2030 GHG reduction target, we support a goal of a 50% reduction by 2030 in order to demonstrate real climate leadership and a genuine commitment to avert irreversible global warming. While a goal of 40% below 1990 levels by 2030 is justifiable and supported by state law (SB 32), we think a 50% is in line with the best available science and with an eye toward meeting the Executive Order S-03-05 target of 80% reduction by 2050.

We should then implement an ambitious set of GHG reduction and climate resiliency actions. It's important to use clearly defined terms that make the measures quantifiable and enforceable. For example:

- Establish a goal of 100% renewable electricity by 2030 in line with the cities of Santa Barbara and Goleta and a timeline for establishing a CCA.
- Require new residential and nonresidential Energy Code development to exceed CALGreen Tier 1 voluntary standards by complying with CALGreen Tier 2 standards.
- Require all future County government procurements of vehicles to minimize emissions, and establish a timeline and plan for transitioning the county's vehicle fleet to all electric vehicles;
- Require new construction to be all electric, by prohibiting new natural gas hookups for buildings. (See Attachment A: Building Electrification)
- Encourage greater density and affordability of housing and identify specific areas for denser, affordable development. Without those specifics, it's just aspirational language.
- Move from "transit-oriented" development to "transit-coordinated" development. More dense urban infill development can make new transit viable, making it possible and necessary to plan transit in coordination with new development.
- Prohibit new drilling permits and build out of fossil fuel infrastructure.

Please refer to attachments below developed by Sierra Club national experts on building electrification (Attachment A) and other measures suggested by members of the Sierra Club California's Energy and Climate Committee (Attachment B).

Regards,



Katie Davis
Chair, Santa Barbara Group, Vice-Chair, Los Padres Chapter of the Sierra Club
Santa Barbara and Ventura Counties

Sierra Club's Building Electrification Comments for Santa Barbara County's Climate Action Plan Update

Building electrification is critical to achieving Santa Barbara County's long-term climate objectives. After transportation, buildings are the largest sources of greenhouse gas (GHG) emissions in the County, and close to half of the emissions from buildings come from the use of gas combustion appliances like water heaters. Major developments in renewable energy and energy efficiency technologies mean California's dependence on fossil fuels can soon sunset. To achieve its climate goals, the County must reduce reliance on gas by replacing polluting appliances like gas furnaces and water heaters with high performing electric appliances that can have "zero-emissions" when powered by clean energy. A UC Berkeley study commissioned by the Sierra Club determined that the most cost effective way to meet the building sector's 2050 carbon budget is to start electrification in earnest now. New building construction should be all-electric starting in 2023 and beginning no later than 2030, gas appliances in *all* existing residential and commercial buildings should be replaced as they reach the end of their natural life with high-efficiency electric appliances.

California's state agencies are determining that electrification is the primary strategy to decarbonize the buildings sector. A recent study conducted by E3 for the California Energy Commission ("CEC") concluded that a high electrification scenario, described as a transition of the state's buildings from using natural gas to low-carbon electricity for heating, offers the most promising path to achieving GHG reduction targets in the least costly manner.¹ Similarly, in its Draft 2018 Integrated Energy Policy Report Update, the CEC recognized the "growing consensus that building electrification is the most viable and predictable path to zero-emission buildings . . . due to the availability of off-the-shelf, highly efficient electric technologies (such as heat pumps) and the continued reduction of emission intensities in the electricity sector."²

Beyond the immediate greenhouse gas mitigation benefits, building electrification offers the potential to improve safety, comfort, and climate resiliency, create new jobs, lower energy bills and the cost of new construction, and improve air quality and public health.

- **Improve safety:** Aliso Canyon, San Bruno, and the recent fires in Massachusetts are important and unfortunate visceral reminders of the gas system's inherent risks. Santa Barbara's "La Goleta" gas storage facility by Goleta beach and UCSB uses wells dating back as far as the 1930s for gas storage and poses an inherent safety risk. California has over 150 thousand miles of gas pipelines crisscrossing the state.³ Much of California's gas aging system is vulnerable to the impacts of climate changes, such as sea level rise, storms, and flooding⁴ particularly in coastal regions like Santa Barbara County, as well as methane leakage. A recent report found that at least 2.3% of the methane that runs through the gas

¹ CEC, Deep Decarbonization in a High Renewables Future, at 58 (June 2018), <https://www.ethree.com/wp-content/uploads/2018/06/DeepDecarbonizationinaHighRenewablesFutureCEC-500-2018-012-1.pdf>.

² CEC, Draft 2018 Integrated Energy Policy Report Update Volume II, at 18 (Oct. 2018) ("Draft 2018 IEPR Update"), <https://www.energy.ca.gov/2018energypolicy/documents/#10192018>.

³ California Public Utilities Commission, *Natural Gas and California*, <http://www.cpuc.ca.gov/general.aspx?id=4802>

⁴ Radke, J. D., G. S. Biging, M. Schmidt-Poolman, H. Foster, E. Roe, Y. Ju, O. Hoes, T. Beach, A. Alruheil, L. Meier, W. Hsu, R. Neuhausler, W. Fourt, W. Lang, U. Garcia I. Reeves (University of California, Berkeley). 2016. Assessment of Bay Area Natural Gas Pipeline Vulnerability to Climate Change. California Energy Commission. Publication number: CEC-500-2017-008

system leaks before it even gets to our homes and buildings.⁵ And, adding onto this, approximately 0.5% of the gas that comes through the residential gas meter leaks *inside* our homes and apartment buildings.⁶ Methane leakage can be particularly hazardous for families living in earthquake and fire-prone areas of California since fires after earthquakes are exacerbated by leaking gas. The aging pipeline is vulnerable to shifts in the earth that put additional stress on the pipelines, causing cracks and methane leaks. The California Seismic Safety Commission estimates 20% to 50% of total post-earthquake fires are fires related to gas leaks.⁷ Electrifying entire communities particularly where there is aging and/or vulnerable gas infrastructure should be a key precautionary strategy to mitigate the growing risks of California's massive gas system.

- **Improve comfort and climate resiliency:** California is experiencing an increasing occurrence of extreme heat waves, with each summer breaking previously held record temperatures.⁸ Many Californians, particularly low-income families do not have air conditioning and are not prepared to adapt to these heat waves. Santa Barbara County didn't need air conditioning in the past so we are not prepared for the increasing heat. This poses a safety risk for the elderly, those with limited mobility, and those without access to cooling centers. Air conditioning is an important bonus from replacing gas furnaces with electric heat pump space heaters, as the heat pumps can operate in reverse and provide high efficiency cooling when needed. Electrification offers greater comfort, safety, and climate resiliency when temperatures peak.
- **Create new jobs:** Decarbonizing the County's residential, commercial and municipal will create new local employment opportunities for the County's growing workforce. We expect new jobs in construction, HVAC installation, electrical work, energy efficiency and load management services, and manufacturing.
- **Save energy:** Advanced electric heat pump appliances are two to over four times more efficient than gas appliances.⁹ There are high performing electric technologies in the market today to replace all gas appliances in residential and commercial buildings, including heat pump water heaters, heat pump space heaters, heat pump clothes dryers, induction stoves, and convection ovens. The high efficiency of advanced electric appliances mean that electrification will reduce emissions in all utility territories *today*, and the climate benefits of electrification will only improve as the electricity grid gets cleaner.

⁵ Alvarez et al. Assessment of methane emissions from the U.S. oil and gas supply chain, SCIENCE, 13 JUL 2018 : 186-188

⁶ Fischer, Marc L, Wanyu R Chan, William W Delp, Seongeun Jeong, Vi H Rapp, and Zhimin Zhu. "An Estimate of Natural Gas Methane Emissions from California Homes." Environmental Science & Technology (2018).

⁷ California Seismic Safety Commission, Improving Natural Gas Safety in Earthquakes, (Adopted July 11, 2002), p. 1. Available at http://ssc.ca.gov/forms_pubs/cssc_2002-03_natural_gas_safety.pdf

⁸ Daniel Swain, Climate Weather Blog, "2017 hottest summer in California History" Sep 9, 2017, <http://www.climatesignals.org/headlines/2017-hottest-summer-california-history>

⁹ United States Department of Energy, Heat Pump Systems | Department Of Energy, 2018. Energy.Gov. Accessed May 10 2018. <https://www.energy.gov/energysaver/heat-and-cool/heat-pump-systems>.

- **Lower energy bills and cost of new construction:** All-electric buildings can reduce the cost of construction of new housing, lower utility bills for tenants, and shield customers from the volatile and increasing costs of gas. A recent report *Decarbonization of Heating Energy Use in California Buildings* by Synapse Energy Economics found that electrification could lower the cost of new construction in Southern California by roughly \$1,500-6,000 and lower annual utility bills by up to \$800 annually.¹⁰ Electrification also shields ratepayers from the volatile and rising price of gas. Although gas has long been touted as a lower cost fuel, gas rates in California will inflate as gas utilities struggle to improve the safety and reliability of an aging gas system, and as utilities implement SB 350. Southern California Gas Company recently projected the need for 45 percent higher revenue from ratepayers by 2022 to operate its gas system.¹¹
- **Improve air quality and public health:** Gas appliances in buildings make up a quarter of California’s nitrogen oxide (NOx) emissions from natural gas. Nitrogen oxide is a precursor to ozone and a key pollutant to curb if California is to comply with state and federal ambient air quality standards. Electrifying buildings will help to reduce NOx and ground level ozone, improving *outdoor* air quality and benefiting public health. Electrification of fossil fuel appliances will also immediately improve *indoor* air quality and health. On average Californians spend 68% of their time indoors, making indoor air quality a key determinant of human health.¹² The combustion of gas in household appliances produces harmful indoor air pollution, specifically nitrogen dioxide, carbon monoxide, nitric oxide, formaldehyde, acetaldehyde, and ultrafine particles.¹³ These odorless and undetectable gas combustion pollutants can cause minor respiratory irritation as well as more serious conditions, including death. The California Air Resources Board warns that “cooking emissions, especially from gas stoves, have been associated with increased respiratory disease.”¹⁴ Young children and people with asthma are especially vulnerable to indoor air pollution.

Despite the above benefits, electrifying residential and commercial buildings faces a series of market transformation and regulatory challenges. Decades of regulatory bias have created a regulatory rubric that makes beneficial electrification challenging. Fuel-switching will not occur at the scale or

¹⁰ Synapse Energy Economics, *Decarbonization of Heater Energy Use in California*, October 2018. <http://www.synapse-energy.com/sites/default/files/Decarbonization-Heating-CA-Buildings-17-092-1.pdf>

¹¹ Protest of the Utility Reform Network, *Application of San Diego Gas & Electric Company for Authority, Among Other Things, to Update its Electric and Gas Revenue Requirement and Base Rates Effective on January 1, 2019*. Filed 11/17/17. <http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M199/K266/199266516.PDF>

¹² Klepeis, N. E.; Nelson, W. C.; Ott, W. R.; Robinson, J. P.; Tsang, A. M.; Switzer, P.; Behar, J. V; Hern, S. C.; Engelmann, W. H. The National Human Activity Pattern Survey (NHAPS): a resource for assessing exposure to environmental pollutants. *J. Expo. Anal. Environ. Epidemiol.* 2001, 11 (3), 231–252.

¹³ See, Jennifer Logue *et al.*, “Pollutant Exposures from Natural Gas Cooking Burners: A Simulation-Based Assessment for Southern California” *Environmental Health Perspectives* Vol. 122 No. 1 pp. 43-50, (2013); Victoria Klug and Brett Singer. “Cooking Appliance Use in California Homes—Data Collected from a Web-based Survey.” Lawrence Berkeley National Laboratory (August 2011); John Manuel, “A Healthy Home Environment?” *Environmental Health Perspectives*, Vol. 107, No. 7 1999, pp. 352–357; Nasim Mullen *et al.* “Impact of Natural Gas Appliances on Pollutant Levels in California Homes” Lawrence Berkeley National Laboratory, 2012.

¹⁴ California Air Resources Board, “Combustion Pollutants” (reviewed Jan. 19, 2017). Available at <https://www.arb.ca.gov/research/indoor/combustion.htm>

timing needed without City leadership and coordination with utilities and local and state policymakers to help Californians overcome these hurdles.

Sierra Club appreciates that the County identifies the following policy in the ECAP under the goal of encouraging energy efficiency and conservation in new development: “As an alternative to natural gas, encourage building electrification, including electric heat pump appliances, space heaters, and water heaters.” However, as currently drafted, this policy is far too hortatory to be meaningful and needlessly limited to a policy for new development.

Sierra Club recommends the County include the following measures in the ECAP:

- 1. Set building electrification targets to reduce greenhouse gas emissions in buildings by 45% by 2030 and 100% by 2045, and establish a plan to achieve these goals.**

In line with the most recent IPCC Report and California’s climate goals, Santa Barbara County should reduce greenhouse gas emission in buildings by 45% by 2030, and 100% by 2045. The Climate Action Plan should direct the appropriate local planning and building departments to establish electrification targets specific to residential, commercial, and municipal buildings, as well as an inter-agency plan to achieve these decarbonization milestones. We recommend a public process that includes relevant stakeholders and experts.

Establishing targets for building electrification will help to provide much needed clarity for builders, appliance manufacturers, HVAC installers, contractors, and others to prepare for and support the transition from gas to clean electricity. Just as regulatory and local agencies have adopted procurement targets for zero-emission vehicles, renewable energy, and energy storage, establishing similar goals for zero-emission appliances like electric heat pumps and induction stoves can help rally key market actors to offer the technologies, services, financing, and innovative programs needed to successfully decarbonize the buildings sector.

Cities are already beginning to establish electrification targets in line with their climate goals. For example, in February 2018, the Los Angeles City Council directed their municipal utility Los Angeles Department of Water and Power and the Department of Building and Safety to set building electrification targets and strategies, to align with the County’s GHG reduction targets of 45% below 1990 levels by 2025 and 60% by 2035. This goal and strategy setting is a key starting point to LA’s future decarbonization of the building stock.

- 2. Adopt a Green Building Ordinance that requires all-electric *new* construction.**

Santa Barbara County has a unique opportunity in 2019 to adopt a Green Building Ordinance, or “reach code” that goes beyond the statewide minimum Building Energy Efficiency Code (Title 24) and explicitly is focused on reducing GHG emissions in a cost-effective manner. Santa Barbara County should adopt a reach building code that requires, or at a minimum, strongly favors all-electric new construction, particularly for water and space heating.

Building codes are a primary vehicle to shift construction practices away from “mixed-fuel” buildings to climate-friendly all-electric construction. New construction is the most cost-effective and easiest entry point for building electrification. New buildings will also last the longest, making them the most important to electrify to minimize long-term carbon lock-in. Avoiding gas infrastructure can also reduce the cost of new construction, as all-electric buildings eliminate the

need to gas piping, meters, gas vents, and combustion safety testing. For example, a recent report *Decarbonization of Heating Energy Use in California Buildings* by Synapse Energy Economics found that electrification could lower the cost of new construction in Southern California by roughly \$1,500-6,000.¹⁵

Several cities and counties, such as Marin and Palo Alto, have already adopted Green Building Ordinances that support electrification using the 2016 code. Santa Rosa is currently considering an ordinance that would require all new construction to be “electrification-ready.”

Many local jurisdictions, including the city of Santa Barbara, Goleta, San Francisco, San Luis Obispo, Santa Monica, Marin and others, are beginning to work with the Statewide Codes and Standards Team to develop a new Green Building Ordinance that supports electrification and that will go beyond the new 2019 Building Code. The Statewide Codes and Standards Team will provide draft Green Building Ordinance language and a Cost Effectiveness Study in Q1 2019.

Santa Barbara County should join this list of jurisdictions pursuing a reach code, adopt the code in September 2019, and implement it January 1, 2020.

3. Adopt “electrification-ready” ordinances for *existing* residential and commercial buildings

It will be critical to go beyond new construction and to develop strategies to make electrification easier and the go-to choice for home and business-owners when it comes time to replace aging gas appliances. Most purchases of major household appliances and equipment like space and water heater are made as part of emergency replacement situations, shortly after the existing equipment has failed. Unlike with planned replacements, customers in an emergency replacement situation do not have time to investigate new technology options. In the absence of policy support, emergency replacements most often result in similar or slightly more efficient gas equipment.

Santa Barbara County should adopt an “electrification-ready” ordinance that helps home and building-owners to prepare for electrification *ahead of time*. “Electrification-ready” ordinances may require a panel upgrade to 200 amps and/or running 240 volt electrical conduit to the existing fossil fuel appliances. The ordinance should also simplify or streamline permitting to mitigate implementation challenges. Being “electrification-ready” is an important step to supporting fuel-switching when the appliance dies and getting ahead of the “emergency replacement” cycle. This type of ordinance could be tied to the sale of a property, new rental agreement, and/or a building retrofit or upgrade.

4. Develop incentives to lower the cost of electrification

Incentives are needed to offset the cost of purchasing and installing advanced electric appliances like heat pumps and induction stoves. Targeted incentives can help to stimulate demand and increase sales, with the end goal of developing a self-sustaining electrification market that is broadly accessible to all Californians.

Santa Barbara County should offer rebates and other financial incentives to encourage building owners to choose the cleaner electric options. These incentives are especially needed for multi-

¹⁵ Synapse Energy Economics, *Decarbonization of Heater Energy Use in California*, October 2018. <http://www.synapse-energy.com/sites/default/files/Decarbonization-Heating-CA-Buildings-17-092-1.pdf>

family properties and low-income residents who face additional barriers to clean energy.

SB 1477 will provide \$50 million for “clean heating fuels” in new and existing buildings. This is a start, but local jurisdictions, utilities, and CCAs need to find funding to support a more substantial incentive program to make clean electric appliances available to a greater number of households and buildings in Santa Barbara County. Santa Barbara County should apply for Air District Grants and find other funding streams to create building electrification incentive programs.

Many jurisdictions are already leading the way with innovative incentive programs to support electrification. The Sacramento Municipal Utility District offer up to \$13,750 for electrification upgrades and appliances. Their Home Performance Program includes a list of participating contractors, rebates for efficiency and electrification upgrades, as well as financing. Marin County is currently creating an Appliance Electrification Rebate Program for residential electrification using funding from the regional Air District climate protection grant program and from the county’s Climate Action Plan fund.

5. Create public education and outreach programs

Similar to other clean energy initiatives, building owner and tenant education will be key to successfully removing barriers and improving access. Given that building electrification is in the early stages of market penetration, a greater focus on education and outreach is needed to establish awareness, familiarity, and interest in Santa Barbara County. Education and outreach should be geared to specific market segments and appropriately convey the benefits of electrification, an overview of the technology, as well as resources on where to begin, such as a list of certified contractors and available rebates.

Santa Barbara County should create targeted educational materials, host community workshops and educational events, and create an online guide to electrification. Several cities, including Berkeley, Oakland and Palo Alto have online educational resources on how to electrify. Sonoma Clean Power (the CCE in Sonoma County) has done extensive community outreach after the Sonoma County fires to support all-electric rebuilding. Their induction cooktops lending program, induction cooking shows online, and other demonstration efforts have led to over 90% of participants expressing interest in all-electric rebuilds.

6. Support workforce outreach and training

Robust workforce development and training programs will be important to ensure that there are skilled local technicians who can install and service electric technologies like heat pumps and induction stoves over the appliance lifetime.

Santa Barbara County should:

- Support training, apprentice and employer-partnership programs that create pathways to middle-class careers for people facing barriers to quality employment opportunities. Publicly-subsidized electrification projects should require partnerships between training providers and employers.
- Leverage California’s existing workforce training and education system. For example, adding training modules within California’s apprenticeship or community college system is more effective than stand-alone contractor classes.

- Ensure that workforce training leads to industry-recognized credentials.

7. Electrify county buildings

Santa Barbara County has an important opportunity to lead by example with its county-owned buildings. Santa Barbara County can demonstrate the effectiveness and benefits of electrification and clean energy buildings, while simultaneously reducing its carbon footprint. Santa Barbara County should adopt the “Living Buildings Challenge” and electrify all gas end uses in publicly owned buildings. Santa Monica has adopted the Living Buildings Challenge and is in the process of greening and electrifying its own fleet of city buildings.

8. Break down clean energy silos – offer special incentives, financing, and other programs that support pairing electrification with new EV charging, rooftop PV, and/or EE upgrades

Consumer interest in rooftop solar and electric vehicles is becoming mainstream across California. Finding innovative ways to pair electrification with new solar installs, EV-charging, and/or energy efficiency upgrades will open a larger consumer base for electrification, lower energy bills and shorten payback periods, support appropriately sized and managed systems, and potentially make the residential and commercial clean energy projects more profitable for the contractor or installer.

Santa Barbara County should:

- Offer larger incentives for clean technology-combination installs
- Create and/or expand bulk buy programs to include heat pumps and induction stoves
- Establish accessible financing mechanisms to support larger-scale clean energy upgrades

The next one to five years will be a critical window of opportunity for the County to jump start this transition away from gas to clean energy buildings. We urge the County to not delay leadership on electrifying and decarbonizing residential, commercial, and municipal buildings.

Attachment B

Emissions Reduction Suggestions Sierra Club California Climate and Energy Committee

GOAL A - Increase building energy efficiency

1. **Enforce Title 24 Standards for Commercial and Residential Buildings** for new and remodeled buildings to conserve energy and water.
2. **Expand the Green Building Ordinance Energy Code.** Require new residential and nonresidential Energy Code development to exceed CALGreen Tier 1 voluntary standards by complying with CALGreen Tier 2 standards.
3. **Expand express permitting.** Expand the incentives for business to expedite permitting for energy and water efficient projects
4. **Promote Financing Programs for Energy Efficiency** Expand programs to promote energy efficiency in existing residential buildings and commercial buildings, and remove barriers for energy efficiency improvements to include accelerating participation in on-bill repayment programs like emPower and Demand Response agreements for larger loads.
5. **Outdoor lighting.** Adopt outdoor lighting standards in the zoning ordinance to reduce electricity consumption above and beyond the requirements of AB 1109 including motion-sensitive street lighting and lowest needed specification of intensity and luminance to conserve energy.
6. **Shade-tree planting.** Expand on current urban tree-planting policies and programs to establish a shadetree planting goal for each jurisdiction.
7. **Cogeneration facilities.** Encourage cogeneration facilities to supply a certain amount of energy in new commercial and industrial facilities greater than 100,000 square feet.

GOAL B - Increase renewable energy use

1. **Solar in New Residential Buildings.** Implement solar energy installation requirements for new residential buildings to increase renewable energy generation.
2. **Solar in Existing Residential Buildings.** Incentivize solar energy installation for existing residential buildings to increase renewable energy generation.
3. **Solar in New Nonresidential Developments** Implement solar energy installation requirements for new nonresidential development to increase renewable energy generation.
4. **Solar in Existing Nonresidential Developments** Incentivize solar energy installation for existing nonresidential development to increase renewable energy generation.
5. **Energy Efficiency Upgrades in Residential Buildings.** Provide weatherization and other energy efficiency upgrades for low and moderate income households through Community Development Block Grant funding to reduce GHG emissions by 15 percent in 20 percent of housing units by 2025 and by 15% in 50 percent of housing units by 2035.
6. **Energy Efficiency Upgrades in Nonresidential Developments.** Retrofit municipal facilities to reduce GHG emissions by 15 percent by 2025 and by 25% by 2035.

GOAL C - Increase local renewable energy generation within an integrated resource plan anticipating total electrification of the transportation system

1. **Community Choice Energy.** Participate and advocate at the local, regional and state level for community choice aggregation program setting a goal for all ratepayers of 100% renewable energy by 2030.

2. **Promote Distributed Energy Resources.** Support accelerated development of local renewable energy generation (e.g., solar and wind, small hydro) with battery storage through a higher-priced rate tier in a community choice aggregation program to develop new Distributed Energy Resources
3. **Community Microgrids.** Create an engineering analysis, advocate and participate in the building of community microgrids in all areas of the county where there is a favorable mix of load balancing; availability of rooftops; parking lots and brownfield sites for cost-effective solar and wind generation; and the need for a community facility with islanding capacity.
4. **Offshore Wind and Wave Energy.** Pursue appropriate opportunities for offshore wind and wave energy generation.

GOAL D: Switch equipment from fossil fuel to electricity

1. Convert building equipment to electricity. Replace residential water and gas space heating equipment with high efficiency electric equipment to achieve 50% conversion of total use by 2025 and 100% of use by 2035.

GOAL E: Reduce emissions from vehicles by at least 40 percent below 1990 levels by 2030 through focused growth and other programs; and, be prepared to increase this reduction if it is found to be required to support climate stabilization at a livable level.

1. **Baseline inventory must follow 2014 Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC).** The GPC provides scope 1,2 and 3 with standard methodology for reporting emissions by gas, scope, sector and subsector, and to add up emissions using the two requisite, distinct but complementary, approaches.
2. **Regional Transportation Plan must plan to reduce emissions and Vehicle Miles Traveled.** Update regional Transportation Plan to baseline emissions and Vehicle Miles Traveled by gas, scope, sector and subsector with reduction targets to total at least 40 percent below 1990 levels by 2030, 40 percent below 1990 levels by 2030 and up to 80 percent below 1990 level if this is found to be necessary to support stabilizing the climate at a livable level.
3. **Regional Transportation Plan must plan for zero emissions vehicles.** Update the plan to forecast need and strategies to support zero emissions vehicle infrastructure.
4. **Regional Transportation Plan must minimize segmented wildlife corridors and impermeable surfaces.** Update the plan to address systemic impacts that fragment wildlife corridors and lead to storm water runoff.
5. **Housing Element Report and Regional Transportation Plan must match Climate Action Plan targets for Vehicle Miles Traveled.** A target for reduction of Vehicle Miles Traveled will be set that includes the percent reduction resulting from infill development next to transit corridors, transit hubs and higher density community cores by numbers of units of legally defined extremely low, very low and low income housing to meet specified needs by specified funding sources or offset by specified savings
6. **Housing density.** Developments up to 45 units per acre may be permitted if, for example, 80 percent of the units are rented to moderate, low or very low-income households, and if sufficient services and facilities are provided, including access to open space and minimization of heat island effects.
7. **Fleet efficiency.** Define enforceable measures to ensure cars and light-duty trucks achieve necessary efficiency to reduce emissions.
8. **Reduce emissions from freight.** An Intermodal Freight Plan will specify the targets for reductions of emissions and Vehicle Miles Traveled for the freight sector
9. **Road use fees.** Support a statewide technology system to collect and distribute fees for the use of roads, parking, and transit that is fair, convenient and protects user privacy and the interests of low-income users.

10. **Plan for no new freeway expansion.** Transportation planning will subordinate freeway expansion projects by putting top priority on projects and programs that reduce per capita vehicle use and vehicle miles traveled and that will result in more jobs and more economic growth.
11. **Mixed use development along transit corridors:** Identify specific areas for transit-oriented, community centered, mixed use development focused on identified existing and planned transit corridors.
12. **Increase transit accessibility:** Encourage new residential projects consisting of 25 units or more to be located within 0.5 mile of a transit node, shuttle service, or bus route with regularly scheduled daily service.
13. **Bus-only lanes.** Create dedicated bus-only lanes on existing roads where traffic volume is below design capacity to improve transit service.
14. **Transportation Demand Management (TDM) Program** Implement support for voluntary TDM measures for employers with 49 employees or fewer, voluntary TDM measures for larger employers that are in excess of the TRO, and requirements for TDM measures in larger new residential projects.
15. **Carpool incentives and ride-sharing program.** Promote countywide ride- sharing program and encourage participation by local employers through their TDM programs.
16. **Car-sharing systems.** Make agreements with neighborhood-accessible Car Sharing systems.
17. **Guaranteed ride home.** Promote a guaranteed ride-home program to provide a free carshare, shuttle, or taxi ride home to employees in case of an emergency.
18. **Support bicycle/pedestrian measures.** Create buffered bike lanes and protected cycle tracks wherever possible in order to buffer bicycle users and pedestrians from car traffic, and subsidize League-of-American-Bicyclist-Certified Instruction (LCI) which teaches on-road cycling skills with both on-road and written class components including on-road and written tests, required to pass the course.
19. **Traffic calming.** Implement traffic calming measures in downtown cores, accident hot-spot locations, near schools and libraries, etc.
20. **High-speed internet.** Ensure that all parts of the county have access to high-speed internet to support virtual work and meeting options.
21. **Shared office and business incubator space.** Facilitate permitting for shared office and business incubator space along transportation corridors and in higher density community developments.

JUSTIFICATIONS

The mandate for a target of 40 percent reduction of emissions from vehicles by 2030 is believed to be inadequate to stabilize the climate. This target is the interim per executive order of Governor Brown intended to help California lower emissions to 80% below 1990 levels by the year 2050, a goal set by Governor Jerry Brown's predecessor, Governor Arnold Schwarzenegger, and which may or may not be climate stabilizing.

Does this policy if applied globally make the outcome of a stable climate possible? It is a mistake to go along with state mandates based on unstated assumptions as if we believe that policy will achieve climate stabilization. CEQA requires that the decision makers know the environmental outcome associated with their decision. What is required is a holistic assessment of the outcomes of all of the policies that include emissions from fixed sources and greenhouse gases from livestock and landfills, as well as the achievements of carbon sequestration. The type of net analysis done by *Project Drawdown* informs the best mix of responsible policies.

2014 Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC) (GPC) is a framework for transportation emissions relying on standard references, such as the ICLEI Global Protocol

for Communities (MGS 1.0). It expands the scope of the assessment to include so-called “Scope 3” marine vessel and aviation emissions and should include emissions from end use distribution of goods produced in the county. The emissions accounting using the CPC framework should reflect the following scopes:

Scope 1: Emissions from transportation occurring in the county including all GHG emissions from the transport of people and freight occurring within the city boundary.

Scope 2: Emissions from grid-supplied electricity used in the city for transportation including all GHG emissions from the generation of grid-supplied electricity used for electric-powered vehicles. The amount of electricity used should be assessed at the point of consumption within the city boundary.

Scope 3: Emissions from the portion of transboundary journeys occurring outside the city, and transmission and distribution losses from grid-supplied energy from electric vehicle use. This includes the out-of-county portion of all transboundary GHG emissions from trips that either originate or terminate within the county boundaries. This may include the out-of-county portion of on-road transit that burns fuel, any out-of-county stops for an electric railway, distribution of goods produced in the county by air or sea. If the county is the point of origin, half of the emissions should be attributed to the county and half to the destination point. The attribution is reversed when the county is the destination point.

Reducing per capita driving. A minimum 30 percent reduction is most likely needed in per-capita driving of by 2030, with respect to 2005. Focusing growth in higher densities with public transit and support for bicycle/pedestrian mobility will make it possible for more people to live closer to where they work and/or shop and travel.

Bicycle Lane Design Guidance - National Association of City Transportation Officials, See One-Way Protected Cycle Tracks, Buffered Bike Lanes

GOAL F: Help reduce emissions from vehicles by 40 percent below 1990 levels by 2030 by implementing improved car parking systems

1. **Redesign car-parking systems.** Phase out bundled-benefit and bundled-cost car parking systems with shared, value-priced off-street parking systems, such as a Dividend Account Parking (DAP) System, that makes costs transparent, makes parking use optional, and reduces single-occupancy vehicle travel.
2. **Demonstrate and promote a Dividend Account Parking (DAP) System.** Engage 80 percent of county employees by 2025 to open a parking account in a county DAP system while encouraging all large employers to establish similar systems and eventually phasing the system into all on-street and off-street car-parking ordinances.
3. **Preferential vehicle parking.** Implement and promote prioritized parking for EVs, carpools, and hybrids.
4. **Reduce parking space requirements.** Change minimums to maximums to reduce parking spaces at single-family residences, multi-family residences, and commercial and mixed-use properties while also planning for Car Sharing and other programs that can take the place of much of the existing multiple cars per household.

PROGRAM

Dividend-Account Parking (DAP) system: DAP system (a) recognizes cars that have been enrolled in an account associated with the building or transit center and allows them to park, (b) recognizes cars that have entered the parking area that are not associated with an account and takes enforcement action including license reading and law enforcement notification of trespassing; (c) keeps track of minutes per month parked for each car in the DAP system, (d) computes the monthly dividend (car-parking earnings) for each account, based on either money spent (on rent or buying items being sold at the building) or time spent on

the premises associated with the car parking, depending on the use(s) of the building associated with the parking; mails monthly statements showing charges and dividends, either pays out or collects money from each participant, and keeps track of space use.

JUSTIFICATION

Parking requirements can be reduced where there is access to transit, walkable neighborhoods with adequate local employment and services, and/or available car sharing systems are capable of carrying the local transportation demand. Eliminating both bundled-benefit and bundled-cost, car-parking systems: Parking policies that bundle the cost of parking with costs, including rent, or employment compensation or where free parking is used as an inducement to visit destinations, encourage single-occupancy vehicle travel. Dividend Account Parking (DAP) creates rewards for people who do not drive their car. Employers can pay an “add-in” or “must drive bonus” payment, computed so that employees that drive every day will break even (lose no money). The system will result in improved economic fairness for employees. By the county demonstrating the program, it can be studied and adopted by other large employers. This system would become mandatory as people become familiar with it.

GOAL G: Encourage a shift toward low-carbon fuels in vehicles and equipment

1. **Electric vehicle (EV) charging station program.** Develop and implement a plan for local charging stations.
2. **Electrify trucking and transit.** Increase the number of zero emissions vehicles in the county fleet and support projects toward electrification of all trucking, transit, and public service systems, including waste collection trucks to 65 percent by 2025 and 90 percent by 2040.
3. **Electrify construction equipment.** Incentivize replacement of fossil fuel construction equipment with alternatively fueled or electric equipment.
4. **Reduce fossil fuel use in equipment through efficiency or fuel switching.** Provide incentives and financing options for fuel switching to more efficient equipment and support equipment conversion to alternative fuels with low GHG intensity

GOAL G: Reduce idling

1. **Idling Ordinance for Passenger Vehicles.** Limit idling of all vehicles to 2 minutes, except as necessary for the loading or unloading of cargo within a period not to exceed 30 minutes.
2. **Idling Ordinance for Construction Equipment.** Limit idling of all construction equipment to 3 minutes for all heavy-duty construction equipment.

GOAL H: Increase solid waste diversion

1. **Construction and demolition reuse and recycling ordinance.** Establish a baseline and increase diversion of construction and demolition waste by 3 percent per year.
2. **Materials recovery.** Provide discounted rates for builders to meet CALGreen building requirements and national LEED standards that require separate dumpsters for clean loads of source separated concrete, wood, metal, soil, etc without contamination with asbestos, fiberglass insulation, large quantities of Romex cable or wire, ice plant, and poison oak.
3. **Tracking waste diversion.** Provide oversight of incoming material according to acceptance criteria for soil, green waste, concrete and asphalt, and contaminated soil and liquid waste.
4. **Thrift shop for recycled goods.** Research feasibility of providing a thrift shop at a recycling center to incentivize visits to drop off and ensure safe disposal of hazardous materials and generate revenue for the recycling center, such as the Last Chance Mercantile at the Monterey Regional Waste Management District.

5. **CRV redemption and recycling.** Provide a center for CRV redemption and for free drop-off of materials for recycling.
6. **E-Waste.** Provide free drop-off for resale at thrift shop outlet or for e-waste and ensure that e-waste recyclers comply with the best environmental practices for e-waste recycling, material processing, and full compliance with Basel Action Network e-waste recycling standards.
7. **Appliances containing refrigerant.** Appliances with and without refrigerant will be received at no charge to ensure proper disposal after capture of refrigerant gases for reuse or proper disposal.
8. **Prevent leaks and failure to capture refrigerants.** Conduct on-going and varied methods of outreach to encourage prevention of leaks of refrigerant gases and replacement of old equipment with new non-polluting equipment.
9. **Inventory and set targets and strategies.** Establish reporting by refrigeration service people and owners of large refrigeration equipment to achieve the goal to prevent leaks and capture refrigerant at end of life disposal of refrigeration equipment.
10. **Batteries.** Provide free drop-off of batteries so that strategic metals can be recycled.
11. **Mattresses.** Provide drop-off at fees set by the state for mattresses for sterilizing and direct reuse or recycling of 80 percent of materials.
12. **Green waste composting.** Compost green waste to produce 100% certified organic product and other landscape products such as wood chips for sale for gardens and local farms. Compost will be annually approved by the Organic Materials Review Institute.
13. **Organic waste recycling.** Ensure that businesses that generate 4 cubic yards or more of organic waste or commercial solid waste per week comply with AB 1826 by arranging for organic waste recycling services.
14. **School compost programs.** Provide resources for teachers and staff to demonstrate composting at schools.

JUSTIFICATION

Landfill methane comes from the large amount of organic matter people put in the trash, including food scraps, yard waste, wood, and paper. These produce biogas, a blend of greenhouse gases. These wastes should be recycled, composted, or digested, but, until then, perforated tubes are put in landfills to collect gas that can be flared, but preferably compressed and purified for fuel which reduces emissions and saves money. Refer to *Drawdown-Landfill Methane*.

Refrigerators and air conditioners contain chemical refrigerants called HFCs and HCFCs that have 1,000 to 9,000 times greater atmospheric warming effect than carbon dioxide. The Kigali amendment to the Montreal Protocol is a multinational treaty to phase out HFCs in 2019 to 2028 by banning them in new refrigeration equipment. California did that in March 2018. The gradual ban on HFC in new equipment will reduce global warming by nearly one degree Fahrenheit. However 90 percent of refrigerant emissions are from existing equipment that leaks or is not disposed of safely. Local policy can promote careful removal, storage, reuse or transformation of HFCs. The cost to prevent leaks and destroy HFCs is very high, but Project Drawdown concluded that this is the single biggest solution for addressing global warming. From *Drawdown-Refrigerant Management*

GOAL I: Reduce water consumption

Develop local water supplies, including groundwater recharge and recycled water, in a countywide sustainability master plan with resource strategies to maximize local water resources that will limit use of imported water to ten percent of total water use.

JUSTIFICATION

Energy currently used to clean and transport water and to handle wastewater needs to be reduced.

GOAL J: Increase recycled water and greywater use

recycled water and greywater use.

JUSTIFICATION

Recycled water and greywater can be applied to ecosystem restoration projects that will promote carbon sequestration. Additional benefits from these water sources can also help protect and expand forests, grasslands, wetlands, regenerative farms and urban greening to sequester carbon and counteract heat island effects to sequester carbon.

GOAL K: Increase use of renewable energy in water and wastewater systems

1. Use 100% renewable energy for 50 percent of all water production and/or conveyance by 2025 and by 100% by 2030.
2. Encourage top priority on installation of solar energy arrays at all water and wastewater plants

GOAL L: Reduce emissions from livestock

1. **Livestock manure management.** Encourage voluntary manure management techniques that reduce emissions from the decomposition of manure at livestock operations
2. **Reduce emissions from enteric fermentation.** Encourage livestock operations to explore ways to reduce GHG emissions from enteric fermentation.

JUSTIFICATION

Strategies to reduce emissions from livestock should also make available compost needed to help sequester carbon, preserve soil fertility, conserve water, reduce energy use, and maximize agricultural profitability.

GOAL M: Reduce emissions from fertilizer use

1. **Inventory and set targets.** Survey the use of artificial nitrogen fertilizer on major crops and set a target to reduce fossil fuel-based fertilizer use by 20%.
2. **Optimize fertilizer use.** Encourage voluntary agricultural practices that reduce or eliminate the need for fertilizer (especially synthetic fertilizer).
3. **Compost manure.** Organize a program to maximize composting of manure.
4. **Drip Irrigation and Subsurface Irrigation.** Encourage participation in federal and state programs that subsidize drip and subsurface irrigation systems to replace overhead irrigation that is associated with greater release of powerful GHG nitrous oxide from soils.
5. **Promote regenerative agriculture.** Encourage development of regenerative agriculture certification programs that reduce GHG emissions and/or enhance carbon stocks or increase sequestration

PROGRAMS

Healthy Soils Initiative

Sustainable Agriculture Certification Program

Sustainable Manure Composting Program

JUSTIFICATION:

Artificial nitrogen fertilizers are a source of GHG emissions from two sources: the CO₂ from fossil energy sources (mainly natural gas) as feedstock for fertilizer production and fuel in ammonia synthesis. N₂O is also emitted from nitric acid production by microbes in soil under conditions of excess fertilizer and surplus surface irrigation and is a large source of nitrous oxide emissions.

Voluntary strategies are more likely to achieve reductions because the complexity of various strategies in various crops and farms makes tracking impossible.

Work with growers to provide incentives for organic fertilizers as an alternative. Create an outreach program to help growers optimize nitrogen application rates, decrease overall fertilizer inputs and cost, maintain current crop yields, and reduce emissions of nitrous oxide.

GOAL O: Tax methane leakage at the social cost of \$4700 per ton for investments in local development of carbon sinks.

1. **Tax methane leakage.** All those legally responsible for releasing more than 40 pounds of uncaptured, unburnt methane (CH₄) emissions per year will pay an annual fee of \$4700 on each ton of such methane emission for which they are responsible which is the social and environmental cost of atmospheric release per Drew T. Shindell, Climatic Change (2015) 130:313–326, DOI 10.1007/s10584-015-1343-0, page 319.
2. **Invest methane tax revenues in programs that restore small water cycles to help CO₂ drawdown.** Manage a Drawdown Program and Trust Fund to support local restoration of small water cycles, forest and wetlands protection and expansion, regenerative agriculture, and research and demonstration of carbon sink technologies, including silvopasture, tree intercropping, multi-strata agroforestry.
3. **Continue implementing systems to recover methane at landfills.** Investigate means to install methane recovery systems at all landfills and sewage treatment plants, where appropriate.

JUSTIFICATION

Methane is 34x more potent of a greenhouse gas over a 100-year period according the latest IPCC report, not 25x which is the multiplier used by CA Air Resources Board. (Over a 20 year interval is 85 times more potent as an atmospheric heat trapper than carbon dioxide.)

Taxing methane leakage across the oil and gas industry presents a unique opportunity due to its multiple economic and climate benefits. The readily available technology also means that emitters can avoid the tax by capturing methane for useful fuel.

Flaring represents blatant economic waste, especially while extreme methods are used elsewhere to extract natural gas. This waste continued to increase between 2009 and 2015; federal and Indian onshore wells vented or flared enough gas to serve more than six million households for a year. Funding from a methane tax is needed to support expansion of carbon sinks.

One of the bases of adequacy relied on in a Climate Action Plan and Environmental Impact Report is identified sources of committed funding, as well as enforceable regulations and clarity of the terms ensuring implementation. Because the data about inventories is incomplete for setting targets to achieve emissions reductions, funding from fees or taxes to pollute can help ensure that goals that are now necessarily vague and not measurable can be nailed down and achieved.

GOAL P: Reduce emissions by lowering the threshold on stationary sources and requiring Best Available Technology for smaller projects.

1. **Net zero new emissions.** Require mitigation of greenhouse gas emissions from stationary sources to a net of zero new emissions.
2. **Best Available Technology for smaller projects.** Smaller projects that don't trigger the adopted threshold should be required to use Best Available Technology.

JUSTIFICATION

The threshold of significance for GHG emissions for stationary must be zero, because it will go farthest to reduce emissions. This threshold will not force projects into environmental review solely on the basis of projected GHG emissions because there are ample opportunities to fully mitigate GHG emissions. It is feasible for a project proponent to mitigate their GHG emissions to a net of zero new emissions.