
SENATE COMMITTEE ON ENVIRONMENTAL QUALITY

Senator Allen, Chair

2021 - 2022 Regular

Bill No: AB 1395
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Urgency: No **Fiscal:** Yes
Consultant: Rylie Ellison

SUBJECT: The California Climate Crisis Act

DIGEST: This bill would declare that it is the policy of the state to achieve net zero greenhouse gas (GHG) emissions and reduce anthropogenic GHG emissions by at least 90% below the 1990 level no later than 2045, and to achieve and maintain net negative GHG emissions thereafter.

ANALYSIS:

Existing law:

- 1) Under the California Global Warming Solutions Act of 2006 (Health and Safety Code (HSC) §38500 et seq.):
 - a) Establishes the Air Resources Board (ARB) as the state agency responsible for monitoring and regulating sources emitting greenhouse gases.
 - b) Requires ARB to approve a statewide GHG emissions limit equivalent to the statewide GHG emissions level in 1990 to be achieved by 2020 (AB 32, 2006) and to ensure that statewide greenhouse gas (GHG) emissions are reduced to at least 40% below the 1990 level by 2030. (SB 32, 2015)
 - c) Requires ARB to prepare and approve a scoping plan for achieving the maximum technologically feasible and cost-effective reductions in GHG emissions and to update the scoping plan at least once every 5 years.
 - d) Requires ARB when adopting regulations, to the extent feasible and in furtherance of achieving the statewide GHG emissions goal, to do the following:
 - i) Ensure that activities undertaken to comply with the regulations do not disproportionately impact low-income communities.
 - ii) Ensure that activities pursuant to the regulations do not interfere with efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminant emissions.

- iii) Consider overall societal benefits, including reductions in other air pollutants, diversification of energy sources, and other benefits to the economy, environment, and public health.
 - iv) Consider cost-effectiveness of these regulations.
- 2) States that it is the policy of the state that the protection and management of natural and working lands (NWL) is an important strategy in meeting the state's GHG emissions reduction goals, and that the protection and management of those lands can result in the removal of carbon from the atmosphere and the sequestration of carbon in, above, and below the ground. (Public Resources Code (PRC) §9001 et seq.)

This bill:

- 1) Makes findings and declarations regarding the need for deep direct GHG emissions reductions, a drastic reduction in fossil fuel use, and to ensure NWL become a healthy net sink of CO₂ in order to achieve net zero GHG emissions in California.
- 2) Defines the following terms:
 - a) "Carbon capture and storage technologies" means technologies that prevent CO₂ emissions by separating CO₂ from industrial and energy-related sources and putting it into long-term storage.
 - b) "Carbon dioxide removal" technologies mean anthropogenic activities that use technology or engineered strategies to remove carbon dioxide from the atmosphere and put it into long-term storage.
 - c) "Long-term storage" means either storing CO₂ in a geological reservoir and permanently preventing it from being released into the atmosphere or ocean, or converting CO₂ into a chemically stable permanent form.
 - d) "Nature-based climate solutions" means activities, such as restoration, conservation, and land management actions, that increase carbon sequestration or avoid GHG emissions in landscapes and wetlands.
- 3) Declares it is the policy of the state to achieve net zero GHG emissions as soon as possible, but not later than 2045, and to achieve and maintain net negative greenhouse gas emissions thereafter.
- 4) Requires ARB to work with relevant state agencies to:

- a) Ensure that by 2045, statewide anthropogenic GHG emissions are reduced by at least 90% below 1990 levels.
 - b) Ensure that updates to the scoping plan identify and recommend measures to achieve net zero GHG emissions and reduce statewide anthropogenic GHG emissions by at least 90% below 1990 levels by 2045.
 - c) Identify policies and strategies that support nature-based climate solutions in California so its NWL can be a healthy net sink of CO₂ and achieve durable GHG emissions reductions or carbon removals.
- 5) Requires ARB to work with relevant state agencies to establish criteria for the use of CO₂ removal technologies and Carbon Capture and Storage (CCS) technologies for the purposes of achieving statewide net zero GHG emissions and 90% GHG reductions. In establishing criteria, ARB is required to:
- a) Consider the risks and uncertainties associated with the use of CO₂ removal technologies and CCS and include requirements for long-term financial assurances to mitigate them;
 - b) Ensure the use of CO₂ removal technologies and CCS does not increase toxic and criteria pollutants, and reduces them where feasible; and,
 - c) Exclude the counting of captured CO₂ that is injected into underground wells for the purpose of in-state fossil fuel extraction as removal or reduction for the purposes of achieving net zero GHG emissions.
- 6) Requires the criteria developed by ARB for CO₂ removal technologies and CCS to be enforceable and include ongoing monitoring and safeguards that do all of the following:
- a) Ensure quantifiable, additional, and permanent emissions reductions, account for risk factors and contingencies in the event of a reversal, and provide for invalidation criteria to ensure environmental integrity is always maintained;
 - b) Include robust monitoring, accounting, and annual reporting to ARB by the project owner where reports shall describe environmental safeguards, account for uncertainty in any measurements, be verified by an ARB-approved third-party verifier, and be made publicly available; and,

- c) Ensure compliance with all applicable requirements on environmental impact assessments or reports, environmental health and safety laws and regulations, transparent documentation with state board-approved third-party verification, and grievance mechanism processes.
- 7) Requires state agencies, in working towards net zero GHG emissions by 2045, to:
- a) Engage the support, participation, and partnership of universities, businesses, investors, and communities, as appropriate;
 - b) Seek to support the health and economic resiliency of urban and rural communities, particularly low-income and disadvantaged communities; and,
 - c) Support climate adaptation and biodiversity, including by protecting the state's water supply, water quality, and native plants and animals.

Background

- 1) *The climate crisis in California.* California is particularly susceptible to the harmful effects of climate change, including an increase in extreme heat events, drought, wildfire, sea level rise, and more. According to the Fourth California Climate Change Assessment, by 2100, the average annual maximum daily temperature is projected to increase by 5.6-8.8 °F, water supply from snowpack is projected to decline by two-thirds, the average area burned in wildfires could increase by 77%, and 31-67% of Southern California beaches may completely erode without large-scale human intervention, all under business as usual and moderate GHG reduction pathways.

California is already experiencing the effects of climate change now. For example, eight out of the past ten years have had significantly below average precipitation. As of September 2020, the state has experienced a degree of wildfire activity that California's Fourth Climate Change Assessment initially forecasted to not occur until 2050. We can expect effects such as these as well as extreme weather events to increase over time until global emissions are significantly reduced.

Climate change comes with a huge price tag for every government, and California is no exception. California's 2018 wildfires, less than half the size of the 2020 conflagrations, cost \$148.5 billion in damages (about two thirds of California's pre-COVID 2020 state budget), with \$27.7 billion (19%) in capital losses, \$32.2 billion (22%) in health costs and \$88.6 billion (59%) in indirect

losses with a majority of those far from the actual wildfire footprint. The cost of water and energy is predicted to increase significantly as well, especially in the Western United States. The Natural Resources Defense Council (NRDC) estimates that under a business-as-usual scenario, between the years 2025 and 2100, the cost of providing water to the western states in the US will increase from \$200 billion to \$950 billion per year, nearly an estimated 1% of the United States' gross domestic product.

There is a greater human cost to climate change as well. In addition to capital losses, increased cost of resources, and health costs, the impacts of climate change on mental health, food security, displacement and migration, and more are just coming into the conversation and are still difficult to quantify.

- 2) *Climate change and equity.* The effects of climate change to date have been felt the world over, but the most dire consequences have often struck those least able to defend themselves. This is true both in California and worldwide. Should reaching net zero GHG emissions be delayed and rapid warming allowed to continue, experts predict unprecedented numbers of deaths, ecosystem destruction, and human migration. In a 2019 report on climate change and poverty, the United Nations Human Rights Council states, “Addressing climate change will require a fundamental shift in the global economy, decoupling improvements in economic well-being from fossil fuel emissions... An over-reliance on the private sector could lead to a climate apartheid scenario in which the wealthy pay to escape overheating, hunger, and conflict, while the rest of the world is left to suffer.”

Climate change poses the greatest threat to those least responsible for it, including low-income and disadvantaged populations, women, racial minorities, marginalized ethnic groups and the elderly. When equity is taken into account for GHG emissions reductions, “the combined emissions of the richest one per cent of the global population account for more than twice the poorest 50 per cent. The elite will need to reduce their footprint by a factor of at least 30 to stay in line with the Paris Agreement targets,” according to the United Nations Environment Programme (UNEP) 2020 Emissions Gap Report.

- 3) *Net zero GHG emissions.* Achieving net zero GHG emissions – a state where GHG emissions either reach zero or are entirely offset by equivalent atmospheric GHG removal – is essential in all scenarios that would keep Earth’s average temperature within 1.5 °C of its historical average. Net zero GHG emissions is also often used interchangeably with “carbon neutrality,” however net-zero GHG emissions implies the inclusion of GHGs other than those that contain carbon, such as nitrous oxide, as defined by AB 32 (Nunez,

Chapter 488, Statutes of 2006). The sooner net zero GHG emissions is reached globally, the less warming will be experienced.

The Intergovernmental Panel on Climate Change (IPCC) Special Report on Global Warming of 1.5 degrees from 2018 established that global net zero GHG emissions needs to be achieved by 2050 to avoid the worst impacts of climate change. According to the UNEP 2020 Emissions Gap Report, which provides an annual update on global progress towards emissions reduction, the consensus is that, globally, we are not on track to meet that goal. However, the report does state that, “the growing number of countries committing to net-zero emissions goals by mid-century is the most significant climate policy development of 2020. To remain feasible and credible, these commitments must be urgently translated into strong near-term policies and action.”

In California, carbon neutrality by 2045 was set as a goal for the state under Governor Brown’s Executive Order (EO) B-55-18. Prior to that, EO S-3-05 by Governor Schwarzenegger set the GHG reduction target of 80% below 1990 levels by 2050. A few additional sweeping targets have also been set to help achieve these goals, including SB 100 (De León, Chapter 312, Statutes of 2018) to get California to 100% zero-carbon energy by 2045, EO N-79-20 to phase out sales of gas-powered cars in the state by 2035, and EO N-82-20 to conserve 30% of the state’s land and waters by 2030. Notably, besides SB 100 and the SB 32 target of 40% GHG reduction by 2030, all of these goals are established solely by executive order and thus, are not codified in statute

- 4) *Government leadership on climate change.* Currently 137 countries have committed to carbon neutrality, as tracked by the Energy and Climate Intelligence unit, a UK-based non-profit. Over 90% of the countries have set a target of 2050 for reaching carbon neutrality or net zero GHG emissions. China, the world’s largest emitter, has pledged to reach neutrality by 2060. However, only six countries (Denmark, France, Hungary, New Zealand, Sweden, and the United Kingdom) have enshrined their commitments into law, with Sweden as the only country with a 2045 target.

In April, the Biden administration announced a new target for the United States to achieve 50% reduction from 2005 level emissions by 2030, as well as declaring intent to reach net neutrality by 2050. Most of the momentum on statutory targets in the US has come at the local and state level. At least 9 states have carbon neutrality or net zero GHG emissions targets, and 3 have signed them into law. This includes Nevada, which passed SB 254 in 2019 to achieve net zero or near zero GHG emissions by 2050; Massachusetts, which signed SB 9 in March to achieve net zero GHG emissions by 2050; and Virginia,

which passed SB 94 in 2020 to achieve net-zero GHG emissions across all sectors by 2045. Furthermore, at least 11 states have GHG emissions reduction targets signed into law, several of them with targets more ambitious than California's current statutory target of 40% emissions reduction by 2030. Last year, Washington State signed into law the most ambitious reductions-specific target of 95% reduction in GHG emissions compared to 1990 levels by 2050.

- 5) *Pathways to net zero.* In October 2020, ARB commissioned a report by Energy and Environmental Economics (E3) titled *Achieving Carbon Neutrality in California*. This report laid out three scenarios for reaching net zero GHG emissions in California by 2045, all of which achieve at least 80% reduction in GHG emissions. The pathways are: (1) The High Carbon Dioxide Removal (CDR) scenario, which achieves 80% reduction in GHG emissions and relies most heavily on CDR strategies; (2) the Zero Carbon Energy scenario, which achieves zero fossil fuel emissions and approximately 93% GHG emissions reduction by 2045; and, (3) the Balanced scenario, which represents a midpoint between the prior two scenarios at around 87% GHG emissions reduction.

The report ranks the scenarios on key metrics, including health-related air quality impacts, climate risk, and technology adoption and implementation risk. The High CDR scenario ranked highest in all three of these metrics except for the technology adoption and implementation risk metric, for which the Zero Carbon Energy scenario ranked equally high. In terms of least-regret options, the report states “Achieving carbon neutrality by 2045 requires ambitious near-term actions around deployment of energy efficiency, transportation and building electrification, zero-carbon electricity, and reductions in non-energy, non-combustion greenhouse gas emissions. These least-regrets strategies are common across all deep decarbonization strategies.” In other words, focusing efforts on cutting GHG emissions is less of a climate risk than relying on CDR to offset emissions because, even if technology adoption or implementation is hampered, we are at least moving in the right direction rather than continuing to rely on GHG-emitting infrastructure.

- 6) *GHG removal.* An essential part of carbon neutrality in any scenario is atmospheric GHG removal (also called negative emissions), to account for GHG emissions which cannot be mitigated. For GHG removal options in California, Lawrence Livermore National Lab (LLNL) produced a report in 2020 called *Getting to Neutral*, where they determined that California will need to remove on the order of 125 million tons of CO₂-equivalents per year from the atmosphere by 2045 to achieve carbon neutrality and remain in line with the current goal of 80% GHG emissions reduction by 2050. The report also concludes that “California can achieve this level of negative emissions at

modest cost, using resources and jobs within the State, and with technology that is already demonstrated or mature.” The methods that are outlined in the report are capture and storage of carbon through nature-based solutions on NWL, convert waste biomass to fuels and store CO₂, and direct air capture (DAC) and CO₂ storage. AB 1395 distinguishes between different types of GHG removal:

- a) *Nature-based solutions.* Nature-based solutions depend on careful management of NWL to enhance biological removal of CO₂ from the atmosphere, reduce emissions of GHGs, and preserve existing carbon stores in NWL. California’s NWL include rangelands, forests, woodlands, wetlands, grasslands, shrubland, farmland, riparian areas, and urban green space that cover more than 90% of the State. However, some sources show that California’s NWL are a net GHG source, losing more carbon than they are sequestering, with wildfire being the largest cause of carbon loss. A number of entities in California’s executive branch are developing policy and implementing programs to mitigate disturbances on NWL and protect these lands from conversion to more intensive land uses.

Last year, The Nature Conservancy (TNC) of California released a report titled *Nature-Based Climate Solutions: A Roadmap to Accelerate Action in California* outlining 12 nature-based solutions and associated strategies suitable for implementation across 28 million acres of California’s NWL. These solutions include: urban reforestation, reducing wildfire severity, post-wildfire restoration, wetland restoration, avoided conversion of natural land, and sustainable agricultural practices. They claim that, if enacted now, under the most ambitious scenarios these strategies could reduce GHG emissions by more than 500 million metric tons (MMT) cumulatively and save over \$24 billion in damages by the year 2050. For comparison, California’s total economy-wide GHG emissions in 2018 were 425.3 MMT.

However, GHG mitigation estimates come with a high degree of uncertainty. The declining health and net GHG emissions of the State’s lands are expected to increase through a negative feedback loop as climate change further stresses these systems. With more frequent and intense drought, wildfire, pest outbreaks, and other impacts, it will only become more challenging to achieve climate change mitigation goals. In addition to climate factors, it is extremely challenging to parse out the complex interactions between natural carbon cycles and human activity. In a recent study on GHG emissions from the Amazon rainforest, one co-author stated “[I]t’s made up of moving parts: multiple climate forcers, not just carbon

but also methane, nitrous oxide, particulates and biophysical effects, each being acted on by human stressors that range from dam building and hunting to climate change...Synthesizing these changes is a huge challenge.”

- b) *Technology-based solutions.* CO₂ removal technologies are, for the most part, newer technologies that have not been scaled up or widely adapted in the state. CO₂ removal technologies are generally understood to include converting and storing CO₂ from biomass, with or without creating energy; and direct air capture (DAC).

Permanently storing biomass carbon is a negative emissions technique that includes several different processes. Waste biomass is widely available across the state from fire prevention activities (i.e. trees), municipal waste, agricultural waste, and manure. Currently, the biomass carbon from these sources returns to the atmosphere when it decays, burns, or when it is used to produce energy. If the carbon from this biomass, instead of being released to the atmosphere as CO₂ is captured and stored, then the result is net negative GHG emissions. Sometimes bioenergy or biofuel is produced as well, which can complicate estimates of negative or positive life cycle GHG emissions of the waste source itself. A broad array of processing options is available, including combustion with CCS, collecting biogas from landfills and dairies, conversion of woody biomass to liquid or gas fuels, hydrogen fuel, and/or biochar through pyrolysis or gasification. Some of these techniques are called Bioenergy with Carbon Capture and Storage (BECCS) or Biomass Carbon Removal and Storage (BiCRS). According to the *Getting to Neutral* report, these solutions hold the greatest potential for negative emissions across the state. However, these are sometimes controversial due to potential impacts to ecosystems, food security, increased criteria pollutants, and land use.

DAC is a process where specially designed machines are used to remove CO₂ from the ambient air (rather than a point source) and permanently store it underground or turn it into valuable products. It is the most expensive CO₂ removal option, but it has nearly unlimited technical capacity, provided its energy needs can be met from a low-carbon source. The process is energy-intensive though, requiring 180 to 310 megawatts of power for a CO₂ capture rate of 1 million tons per year, which leads to extensive land-use requirements if powered by wind or solar energy. Several commercial DAC plants are in operation or planning across Europe and the US, however it has not been deployed widely and is still a relatively nascent technology.

- 7) *Carbon Capture and Storage*. CCS is a process of separating CO₂ from a point source, such as the flue of a gas-fired power plant or a cement plant, and putting it into long-term storage, usually by injecting CO₂ into a geological reservoir. CCS is generally considered by experts to be a CO₂ reduction strategy, not a CO₂ removal strategy, since it is only reducing CO₂ from anthropogenic sources that would have otherwise entered the atmosphere, rather than removing what was already there.

According to a report called *California's Energy Future – The View to 2050* by the California Council on Science and Technology (CCST) updated in 2015, any use of fossil fuels for electricity generation would need to be paired with CCS to meet the current 2050 GHG emissions target (80% reduction). CCS is adoptable in California due to the existing geological storage from the state's history of fossil fuel extraction. However, according to a LLNL report published in February, no CCS projects exist today in California, and it is unlikely that CCS could be scaled up at the pace needed due to the current regulatory framework for screening and authorizing projects. ARB has already adopted a CCS protocol under the Low Carbon Fuel Standard (LCFS), including for out-of-state CCS projects. CCS remains controversial because it could prolong the life of fossil fuels and delay the transition to more sustainable fuels.

Comments

- 1) *Purpose of Bill*. According to the author, "Climate change is the defining crisis of our time and it is happening even more quickly than we originally thought. No corner of this state is immune from the devastating consequences of climate change. The rising temperatures are fueling environmental degradation, sea level rise, weather extremes such as drought, food and water insecurity, economic disruption, ocean acidification, and catastrophic wildfires.

"According to experts, to avert the most catastrophic impacts of climate change, we must limit atmospheric warming to 1.5 degrees Celsius, which necessitates California reaching net zero emissions by mid-century.

"This bill would require the state to achieve net zero emissions as soon as possible, but no later than 2045 and net negative greenhouse gas emissions thereafter. This bill additionally sets up a framework that recognizes the need to maximize emissions reductions and the need to deploy carbon negative strategies as well as nature-based solutions to help the state achieve this goal."

- 2) *Codifies carbon neutrality goal, and more.* By requiring the state to achieve net zero GHG emissions by 2045, this bill codifies the carbon neutrality goal included in EO B-55-18. It also expands upon it by requiring at least 90% reduction of anthropogenic GHG emissions compared to 1990 levels by the same year. This is a departure from Governor Schwarzenegger's earlier executive order, EO S-3-05, to achieve an 80% reduction in emissions by 2050.

The current statutory goal, set by SB 32 (Pavley, Chapter 249, Statutes of 2016), is a 40% decrease in GHG emissions by 2030. That means GHG emissions would need to be reduced at approximately the same pace of around 4% per year to achieve the 90% reduction by 2045. The remaining 10% of emissions would need to be balanced by CO₂ removal from the atmosphere to achieve net zero. This is more aggressive emission reductions than the timeline envisioned by *Getting to Neutral*, which was predicated on 125 MMT of negative emissions needed by 2045.

It should be noted that additional negative emissions, whether it be through nature-based or technological-solutions, could account for more than 10%, meaning the state would be achieving net negative GHG emissions, if these goals are met. It is the state's goal to have net zero or net negative emissions onward into the future, which will be necessary to prevent further warming and eventually restore pre-industrial atmospheric CO₂ levels. The sooner net negative emissions can be achieved by any jurisdiction, the better.

- 3) *Reevaluating California's climate goals.* The continued acceleration of clean energy and carbon neutrality goals by cities, states, and countries reflects the reality of observed climate change impacts, and the dire calls of climate scientists. California has long been seen as a global leader on climate change, but has recently fallen behind on ambitious climate goals. AB 1395 would set a new ambitious goal of 90% GHG emissions reduction by 2045, which would be one of the most ambitious reduction-specific goals in the world.

The longer it takes for GHG emissions to be reduced worldwide, the more sharply they will need to be cut in the future to avoid the worst effects of climate change. While touring a Sierra foothill fire zone in September 2020, Governor Newsom stated that "across the entire spectrum, our climate goals are inadequate. We have to step up our game. As we lead the nation in low carbon green growth, we'll have to fast track our efforts." *While California only plays one small part in global GHG reduction efforts, not doing so will come at a monumental cost. To allow temperatures to rise past 1.5° or 2 °C this century is to accept unavoidable disruption to agriculture, trade, immigration, and public health. The less action California and other*

governments take to address the threat, the more impacts we will all suffer. To hold temperature rise to less than 1.5° or 2 °C this century will require enormous, heroic decarbonization efforts on the part of every wealthy city, state, province, and country.

- 4) *What is the best way to get to net zero?* Although there is widespread consensus on the need for eventual net zero GHG emissions to avoid the most devastating impacts of climate change, there is often disagreement about how to get there. Solutions span the range from market-based, compliance-based, technology-based, and more. Usually, the answer so far has been some combination of all-of-the-above.

AB 1395 specifies that, to reach net zero GHG emissions, 90% of anthropogenic GHG emissions should be reduced by 2045. This is roughly in line with the E3 Zero Carbon Energy scenario, which would require an economy-wide shift to deep direct GHG emissions reductions and away from fossil fuel use. This puts into question whether the way the state is currently working towards our current GHG reduction targets, which relies significantly on cap-and-trade, will get us to that future goal. A 2019 ProPublica article analyzed state data in a way the state doesn't often report to the public, isolating how emissions have grown within the oil and gas industry. The analysis shows that carbon emissions from California's oil and gas industry actually rose 3.5% since cap-and-trade began. Experts say cap and trade is rarely stringent enough when used alone; direct regulations on refineries and cars are crucial to reining in emissions. The new targets of this bill will not just require new policy changes after 2030, but a reevaluation of how we meet the current 2030 goal as well on the path to net zero in 2045.

When setting a landmark climate goal such as this, the Legislature must consider what they want the future of California in 2045 to look like. Is it a future still dependent on fossil fuels—and the pollutants and environmental injustices that come with it—but with enough carbon removal from trees and DAC to achieve net zero? Or is it a radically different California, where, as the UN Human Rights Council said, we make a fundamental shift from decoupling improvements in economic well-being from fossil fuel emissions, doing so in such a way that provides necessary support, protects workers, and creates decent work. Whatever path is decided upon will either require setting the course now, or accepting the path of least resistance.

The questions before the Legislature are, “How prescriptive should we be in determining the state’s pathway to net-zero GHG emissions?” And, “Is it enough to get to net zero, or should we also prioritize things like

environmental justice, health, jobs, or other factors in our climate goals?” One of the biggest questions is, “What sacrifices are we prepared to make to avoid the most catastrophic outcomes of climate change, and who makes them?”

- 5) *What solutions are incentivized?* Since this bill requires deep direct GHG emissions reductions of 90%, solutions that lead to GHG reductions across all economic sectors will become essential. Things like electrification, decarbonization of electricity and fuel, production of low-carbon building materials, increasing energy efficiency, CCS, and more, will no longer be just optional, but necessary to meet this reduction goal. Most of these things are possible now, but require political will to move the needle towards action.

Net zero GHG emissions cannot be achieved solely with GHG reductions, GHG removal is a crucial piece as well. If 90% of the reduction in emissions comes from direct GHG emissions reductions, then by 2045 California will need to sequester more than 43 MMT CO₂-equivalents. This is much less than what the LLNL report projects will be possible by 2045. However, the more CO₂ reduction technologies are developed, the closer we become to achieving the goal of being a net-negative society.

AB 1395 also outlines criteria for the adoption of CCS and CO₂ removal technologies to ensure that they are deployed with thorough consideration and safeguards against the risks and uncertainties of these technologies. Some argue that this disincentivizes investment and development of technological solutions like CCS and DAC in the state. Furthermore, the same standards are not applied to nature-based climate solutions, which also have a different set of risks and uncertainties for carbon sequestration, as well as additional environmental benefits like climate resilience and conservation of natural resources.

Again, this requires the Legislature to consider how the future of California will look and what role technological and nature-based solutions will play in achieving net zero. It can be argued that, to meet an ambitious goal such as this, all options need to be on the table, while still remaining considerate of the risks, benefits, and uncertainties of each available solution.

To indicate that having a wide variety of robust, implementable, and scalable strategies available for GHG reduction and removal is essential to reach net zero GHG emissions by 2045, the committee may wish to consider amending the bill to:

- ***Require ARB to identify a variety of policies and strategies that support carbon dioxide removal solutions and carbon capture and storage***

technologies in California to complement emissions reductions and nature-based climate solutions and achieve durable greenhouse gas emissions reductions or carbon removals; and,

- *Require ARB to consider the benefits, risks, and uncertainties of, and develop criteria for the use of all potential GHG reduction and removal strategies, including nature-based climate solutions.*

6) *Transparency and oversight.* The goals set out in this bill are monumental undertakings that will require an economy-wide shift towards decarbonization and coordination across many state agencies. Since the goal is set 24 years in the future, but work must begin as soon as possible to reach that goal, it is essential that planning and progress be transparent and reevaluated often to assess the progress towards, and feasibility of meeting these goals. ARB already has the scoping plan in place to serve this purpose for achieving the GHG reduction goals of AB 32 and SB 32. AB 1395 would require that future updates to the scoping plan identify and recommend measures to achieve the goals established in this bill as well.

However, given the significant change in state climate goals that would be established in this bill, and in order to ensure transparency and oversight throughout this multi-decadal process, the committee may wish to consider amending this bill to:

- *Require ARB to identify 5-year GHG emission reduction goals to achieve net zero GHG emissions by 2045, as well as the 40% GHG emissions reduction target for 2030 (SB 32), and provide annual updates to the Joint Legislative Committee on Climate Change Policies on the progress towards meeting these interim, 2030, and 2045 targets.*
- *Require the Legislative Analyst’s Office to perform independent analyses of progress towards meeting these climate goals every other year, and prepare reports detailing its review of the progress and recommendations for improvements for the Legislature and the public.*

7) *Other amendments.* In order to clarify the goals of this bill, the committee may wish to consider amending the bill to:

- *Include a definition of “Net Zero Greenhouse Gas Emissions”;*
- *Include a definition of “permanent,” in regards to long-term carbon storage;*
- *Clarify that achieving 90% GHG reductions by 2045 is a policy of the state, and all measures state agencies take to achieve the goal of net zero GHG emissions apply to both goals; and,*

- *Clarify that the new 2045 climate goals shall not take precedent over or supersede the existing 2030 GHG reduction target.*

Related/Prior Legislation

AB 284 (Robert Rivas, 2021) would require ARB to identify a 2045 climate goal, with interim milestones, for the states NWL to sequester carbon and reduce atmospheric GHG emissions. AB 284 is before the Senate Committee on Natural Resources and Water.

SB 27 (Skinner, 2021) would require ARB, as part of its scoping plan, to establish carbon sequestration goals for 2030 and beyond, as well as create the California Carbon Sequestration and Climate Resilience Project Registry in order to maintain a list of eligible but unfunded projects to mitigate California's GHG emissions and improve climate resilience. SB 27 is before the Assembly Committee on Appropriations.

SB 582 (Stern, 2021) would, amongst other things, update the statewide GHG emission reduction target to be up to 80 percent by 2030 and require the California Natural Resources Agency (CNRA), the California Environmental Protection Agency (Cal EPA), and ARB to develop a Climate Restoration Plan that specifies carbon removal targets before 2035. SB 582 has been moved to the Senate inactive file.

SOURCE: Author

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International Brotherhood of Boilermakers, Western States Section
International Council of Shopping Centers
Los Angeles County Business Federation (BIZ-FED)
Naiop of California, the Commercial Real Estate Development Association
North Orange County Chamber of Commerce
Orange County Business Council
Redondo Beach Chamber of Commerce
Sempra Energy Utilities
Simi Valley Chamber of Commerce
South Bay Association of Chambers of Commerce
State Building and Construction Trades Council of Ca
Torrance Area Chamber of Commerce
Walnut Creek Chamber of Commerce
Western Agricultural Processors Association
Western Independent Refiners Association
Western States Council Sheet Metal, Air, Rail and Transportation
Western States Petroleum Association
Yorba Linda Chamber of Commerce

ARGUMENTS IN SUPPORT: In a letter of support, The Environmental Defense Fund and The Nature Conservancy argue, "...we must take bold and aggressive action to reduce greenhouse gas emissions. The state has been a leader on climate issues, passing several landmark measures to address pollution, including setting a target to reduce greenhouse gas emissions to 40% below 1990 levels by 2030. But to address a disaster of this scale, we must do more. Because of this, we support AB 1395 and codifying a target for the state to achieve carbon neutrality as soon as possible and by no later than 2045, as well as achieve and maintain net-negative emissions thereafter. By doing these things, AB 1395 would build upon existing climate targets and ensure that the state's efforts to curb emissions and address climate change are ongoing."

Furthermore, the California league of Conservation Voters argues, "The climate crisis is affecting every corner of California. Rising temperatures are fueling environmental degradation, sea level rise, weather extremes such as drought, food and water insecurity, economic disruption, ocean acidification, and catastrophic wildfires. To avert the most catastrophic impacts of the climate crisis, we must limit warming to 1.5 degrees Celsius, which necessitates California reaching net zero emissions by the midcentury. This bill would make that a requirement of the state as well as create a framework to help us achieve this."

ARGUMENTS IN OPPOSITION: In a letter of opposition, a coalition of 35 organizations representing businesses and industries argues, "AB 1395 would direct the Air Resources Board to establish new climate goals to achieve undefined

emission reductions by 2045 with undefined policies and with unknown impacts to California's economy and its people. AB 1395 directs ARB to establish a new climate reduction target of 90% below 1990 levels by 2045 with no clear understanding of how much emission reductions will be necessary and what policies will be used to reduce those undefined emissions.

“AB 1395 would also prematurely codify Governor Brown's Executive Order requiring the ARB to achieve carbon neutrality by 2045 without taking a holistic view of the role of all sectors-- electricity, transportation, industry, and working lands— and utilizing legislature-commissioned studies to assess cost, environmental justice issues, environmental concerns, and feasibility. CARB is currently developing its Scoping Plan to evaluate the implications of the goal envisioned in AB 1395. Any legislative action should occur after a complete analysis is available.

“At the same time, AB 1395 simultaneously limits the tools for achieving carbon neutrality. Limiting California's technology-based solutions while simultaneously extending and expanding the state's climate targets will unnecessarily threaten high-wage jobs, further challenge the reliability of our electric grid, and increase costs for consumer goods for all Californians.”

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