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Deliver rapid greenhouse gas reductions at scale, starting in California.

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June 30, 2021

The Honorable Luz Rivas  
Chair, Assembly Committee on Natural Resources  
California State Assembly  
Sacramento, CA 95814

**RE: SB 18 (Skinner) – Support If Amended**

Dear Chair Rivas:

The Climate Center writes to express our support, if amended, for SB 18, which would help California develop new tools to meet its decarbonization goals by seriously examining the production and use of green hydrogen.

The Climate Center is a climate and energy policy nonprofit which works for rapid greenhouse gas reductions, starting in California. The Climate Center's Climate-Safe California campaign articulates the need for and outlines a path toward accelerating state climate targets and achieving urgently needed emissions reductions.

The United Nations' Intergovernmental Panel on Climate Change (IPCC) concluded in 2018 that preventing dangerous impacts of climate change globally will require not only cutting greenhouse gas emissions essentially in half by 2030 but also scaling up the removal of emissions already put in the atmosphere from human activity by deploying enhanced land use practices and other means. In the short time since the publication of that report, new studies<sup>1</sup> show that we will pass the 1.5C threshold of dangerous warming within the next decade, at least 10 years earlier than the IPCC expected. That trend was experienced real time here in Californian with the mid-June extreme heat event, which prompted the Governor to issue an emergency declaration.<sup>2</sup> We are also in the early stages of a severe multi-decadal drought and dramatic reductions in water supply across the state made much worse by climate change. This harsh reality calls for a significant acceleration in California's emissions reduction efforts. Green hydrogen can play a critical role in making that acceleration a reality.

Given its flexibility as a liquid or gaseous fuel source, green hydrogen can meet the needs of myriad applications and significantly decarbonize or completely reduce their associated emissions. This flexibility is key as it allows green hydrogen to be the energy source for a wide range of end uses, including industrial uses (such as cement manufacturing), heavy-duty transportation, and maritime applications.

Additionally, green hydrogen production and use enables California to take advantage of its abundant wind and solar resources by taking excess renewable electrons and using them to split water into hydrogen and water. That hydrogen gas can then be stored and turned back into electricity when it is most needed to support reliability and resiliency, such as when solar generation declines during the evening

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<sup>1</sup> Xu, Y., et al, Global Warming will Happen Faster than We Think, *Nature*, Dec 2018, 564(7734):30-32 DOI: [10.1038/d41586-018-07586-5](https://doi.org/10.1038/d41586-018-07586-5); Warszawski et al. All options, not silver bullets, needed to limit global warming to 1.5°C: a scenario appraisal. *Environmental Research Letters*, 2021; DOI: [10.1088/1748-9326/abfeec](https://doi.org/10.1088/1748-9326/abfeec); Kammen et al Accelerating the timeline for climate action in California. <https://arxiv.org/abs/2103.07801>

<sup>2</sup> [http://cert1.mail-west.com/ZyjcM/rmp/zjanmc7/1pZgtmyu/but8ei0s8/Zoqw5g/m0s81pZqvnqp/rf3exy7s81bqd?\\_c=d%7Cze7pzanwmlhzt%7C18f0z18f7kr3se&\\_ce=1623975779.91666d9453cc2abc5c3af4cc73640a3d](http://cert1.mail-west.com/ZyjcM/rmp/zjanmc7/1pZgtmyu/but8ei0s8/Zoqw5g/m0s81pZqvnqp/rf3exy7s81bqd?_c=d%7Cze7pzanwmlhzt%7C18f0z18f7kr3se&_ce=1623975779.91666d9453cc2abc5c3af4cc73640a3d)

hours. And as the green hydrogen market scales up, the associated need to build out and maintain infrastructure will see the creation of numerous, high-quality jobs in the renewable energy sector. Sadly, California currently curtails - wastes - many thousands of gigawatt-hours of clean solar and wind power due to the difficulty of ramping conventional power rapidly.<sup>3</sup>

In developing a state plan for hydrogen, however, it is critical to focus solely on utilizing green hydrogen, rather than hydrogen of all types. Although the end uses of hydrogen, such as in fuel cell vehicles, are often zero-emission, the production of non-green hydrogen is usually far from zero-emission. Currently, the majority of hydrogen is created using processes that rely on fossil fuels to provide the base feedstock. Relying on hydrogen derived from fossil sources is antithetical to the state's climate, air quality, and health goals. As such, **The Climate Center strongly recommends that SB 18 be amended to clarify that the hydrogen strategic plan to be developed by the Air Resources Board focus only on utilizing green hydrogen to achieve the goals outlined in the Scoping Plan.** Please refer to the attached document for suggested amendments.

With the climate rapidly changing and the state facing another summer of drought, wildfires, and extreme heat, we must take stock of every emissions reduction tool available to us, so long as they make sense from an emissions and health standpoint. Green hydrogen seems to have significant potential to decarbonize the state's hardest to abate sectors, but we need to understand the implications of its use. As such, the creation of a strategic plan exploring the technology's use is a wise move, provided that the plan looks solely at green hydrogen. For these reasons, The Climate Center supports SB 18, if amended.

Sincerely,



Ellie Cohen  
CEO  
The Climate Center

CC: Senator Nancy Skinner  
Members, Assembly Committee on Natural Resources

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<sup>3</sup> <https://www.greentechmedia.com/articles/read/california-renewable-curtailments-spike-as-coronavirus-reduces-demand>

## SECTION 1.

(a) The Legislature finds and declares all of the following:

(1) Climate change and air pollution threaten the health and prosperity of all Californians. Historic droughts, devastating wildfires, storms, extreme heat, and the death of millions of trees are creating billions of dollars in property damage and threatening human health and food supplies.

(2) California has set ambitious targets to reduce the effects of climate change by reducing greenhouse gas emissions 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050.

(3) In 2018, Governor Brown issued Executive Order No. B-55-18, creating a state goal to reach greenhouse gas neutrality by no later than 2045 and to maintain net negative greenhouse gas emissions thereafter, and directing the State Air Resources Board to work with relevant state agencies to develop a framework for implementation and accounting that tracks progress toward these goals.

(4) Hydrogen also has the ability to significantly reduce diesel emissions from goods movement, which particularly impacts low-income communities living near ports and freeways. In 1998, the State Air Resources Board identified diesel particulate matter as a toxic air contaminant based on published evidence of a relationship between diesel exhaust exposure and lung cancer, and diesel pollution also leads to noncancer health effects, such as premature death, hospitalizations, and emergency department visits for exacerbated chronic heart and lung disease, including asthma, increased respiratory symptoms, and decreased lung function in children. Hydrogen fuel cell buses and trucks emit zero harmful tailpipe emissions, their only tailpipe emission being water.

(5) California has also set targets to reduce short-lived climate pollutants by 2030, including targets to reduce black carbon emissions by 50 percent and methane emissions by 40 percent. Short-lived climate pollutants account for nearly 45 percent of global warming, and can be harmful to human health. Capturing and productively using methane, and productively using wood waste, to displace fossil fuel use to generate electricity and for transportation fuel can help eliminate short-lived climate pollutants while also reducing harmful exposure to diesel particulate matter and other air quality pollutants.

(6) California's leadership in driving aggressive emissions reductions has helped bring to market many new forms of renewable energy resources and fuels, including supporting a rapid decline in prices for electricity generated by eligible renewable energy resources such as solar, wind, and battery storage, and has accelerated adoption and price reduction of zero-emission vehicles. The cost of utility-scale solar generation dropped by 50 percent in just four years between 2011 and 2015, and electric vehicle battery prices dropped 87 percent in real terms from 2010 to 2019.

(7) Multiple studies show that ~~renewable hydrogen, particularly~~ green electrolytic hydrogen, produced by using electricity generated by eligible renewable energy resources to split water, is poised to experience similar cost declines over the next decade.

(8) Achieving these cost reductions and deploying green hydrogen at scale would help decarbonize many difficult-to-decarbonize sectors, including cement and steel production, industry, thermal powerplants, and the transportation sector, including light-, medium-, and heavy-duty vehicles, goods movement, and air travel, and accelerate progress towards the state's climate, clean air, and clean energy goals.

(9) Green hydrogen offers many climate and energy cobenefits, including better utilizing curtailed electrical generation and better integrating eligible renewable energy resources into the electrical grid to achieve greater than 100 percent zero-carbon energy and putting renewable generation of electricity to use to decarbonize many other sectors of the economy.

(10) Green hydrogen offers an opportunity to reduce emissions of greenhouse gases, criteria air pollutants, and toxic air contaminants and improve the health of local communities located close to existing industrial hydrogen uses, including oil refining, production of ammonia, and other industrial chemical uses.

(11) Green hydrogen is a flexible resource that can be used for many things, including ~~oil refining,~~ ammonia and fertilizer production, and other industrial and chemical processes; storing renewable and zero-carbon electricity for multiple days and seasons; powering a variety of onroad, off-road, rail, aviation, and maritime transport and materials handling applications; providing dispatchable electricity production including enhancing resiliency for behind-the-meter emergency backup generation and islanded microgrids; displacing coking coal used in the production of steel; fueling industrial thermal applications; and decarbonizing the existing natural gas pipeline.

(12) Continuing to support the build out of hydrogen infrastructure, particularly in sectors of the economy that are otherwise difficult to decarbonize with renewable resources available today, will ensure that as green hydrogen production increases, these sectors are prepared to shift from conventional hydrogen to green hydrogen.

(13) ~~The hydrogen industry, and likewise the~~ *The* green hydrogen industry, ~~are is~~ well positioned to offer new opportunities to developing and employing California's skilled and trained workforce. Additionally, many potential end uses of hydrogen, such as powerplants, and freight, airline, and shipping vessels, which today generally run off of fossil fuels, already employ large numbers of unionized employees who could continue to work at these facilities when repowered with hydrogen or green hydrogen. California's policies regarding growing the hydrogen economy

should include a deep emphasis on developing and utilizing skilled and trained workers, to ensure that the availability of well-paid jobs with good benefits remains a top priority in California.

(b) It is the intent of the Legislature to develop a leading green hydrogen industry in California in order to provide accelerated clean air, climate, and energy benefits, better integrate existing renewable resources into the electrical grid, create jobs, and provide new clean technology to decarbonize challenging sectors.

## SEC. 2.

Section 38561.7 is added to the Health and Safety Code, to read:

### 38561.7.

(a) Not later than December 31, 2022, as part of the scoping plan prepared pursuant to Section 38561 and the state's goal for carbon neutrality, the state board shall prepare ~~both of the following:~~

~~(1) A strategic plan for accelerating the production and use of hydrogen, including a specific plan to accelerate production and use of green hydrogen, in California to help meet the goals set forth in this division. The scoping plan shall include all of the following:~~

(A) A strategic plan for promoting, scaling, and utilizing green hydrogen in the state to help achieve the state's climate, clean energy, and clean air objectives.

(B) An assessment of difficult to decarbonize sectors of the economy for which green hydrogen may be a more feasible and cost-effective decarbonization method than other alternatives. For purposes of this section, to "decarbonize" means to reduce or eliminate associated emissions of greenhouse gases. This assessment shall include an estimate of the amount of greenhouse gas emissions reduction and air quality benefits the state could achieve through deploying green hydrogen through a variety of scenarios, the costs associated with using green hydrogen, and the associated health and environmental impacts of prioritizing the development of various forms of hydrogen, when compared to other alternatives.

(C) A review of similar efforts to deploy **green** hydrogen internationally, including opportunities to collaborate with other jurisdictions to accelerate market scale, cost reductions, and global climate benefits.

(D) Recommendations to the Legislature for legislative or agency actions to implement the strategic plan. The recommendations shall include recommendations on how to overcome market barriers and accelerate progress in green hydrogen production and use, including through the use of public-private partnerships, demonstration projects undertaken by public, private, or nonprofit entities, or a combination thereof, incentives, financing mechanisms, or other policies, and recommendations to maximize economic, environmental, public health, workforce, and equity benefits resulting from increased utilization of green hydrogen.

(E) A strategic plan for supporting hydrogen infrastructure and end uses in difficult to decarbonize sectors of the economy for the purpose of preparing infrastructure and end uses for green hydrogen deployment. This plan shall identify policies that promote the reduction of economywide emissions of greenhouse gases through the deployment of **hydrogen, including** green hydrogen, while ensuring that hydrogen infrastructure will support the employment of a skilled and trained workforce in California to perform that work.

~~(F) The strategic plan should also include the potential for other forms of hydrogen, outside of green hydrogen, to achieve emission reductions that can contribute to achieving the state's climate, clean energy, and clean air objectives.~~

~~(2)~~

(G) An analysis of how curtailed electrical generation could be better utilized to help meet the goals set forth in this division, including, but not limited to, whether curtailed electrical generation could be made available for the production of green hydrogen. The state board shall consult with the Independent System Operator in the preparation of the analysis.

(b) In developing the strategic plan pursuant to subdivision (a), the state board shall consult the California Workforce Development Board and labor and workforce organizations, including those that administer state approved apprenticeship programs that train workers to construct, install, and maintain hydrogen infrastructure.

## SEC. 3.

Section 25307 is added to the Public Resources Code, to read:

### 25307.

(a) For purposes of this section, "decarbonizing" means reducing or eliminating associated emissions of greenhouse gases.

(b) As part of the 2023 and 2025 editions of the integrated energy policy report, the commission shall study and model potential growth for **green** hydrogen and its role in decarbonizing the electrical and transportation sectors of the economy, and helping to achieve the goals set forth in The 100 percent Clean Energy Act of 2018 (Chapter 312 of the Statutes of 2018), the California Global Warming Solutions Act of 2006 (Division 25.5 (commencing with Section 38500) of the Health and Safety Code), and the Clean Energy and Pollution Reduction Act of 2015 (Chapter 547 of the Statutes of 2015).

(c) Pursuant to Section 10231.5 of the Government Code, this section is repealed on January 1, 2030.

~~SEC. 4. Section 380.1 is added to the Public Utilities Code, to read:~~

~~380.1.~~

~~(a) Except as provided in subdivision (b), the commission shall modify the resource adequacy requirements established pursuant to Section 380 and accounting rules to provide equal consideration for dispatchable local and system resource adequacy resources made from green electrolytic hydrogen, as defined in Section 400.2.~~

~~(b) If insufficient information exists to consider a hydrogen resource pursuant to subdivision (a), the commission may make a finding that the resource cannot be considered for resource adequacy purposes.~~

~~SEC. 5. Section 380.6 is added to the Public Utilities Code, to read:~~

~~380.6.~~

~~In any rulemaking proceeding related to energy storage, commenced after December 31, 2021, the commission shall consider green electrolytic hydrogen, as defined in Section 400.2, as part of encouraging electrical resource portfolio diversity.~~

~~SEC. 6.~~ **SEC. 4.**

Section 400.3 of the Public Utilities Code is amended to read:

**400.3.**

The commission, State Air Resources Board, and Energy Commission shall consider green electrolytic hydrogen an eligible form of energy ~~storage, shall consider green electrolytic hydrogen in the integrated resource plans required pursuant to Section 454.52,~~ *storage* and shall consider other potential uses of green electrolytic hydrogen in all of their decarbonization strategies. For purposes of this section, “decarbonization strategies” means actions undertaken to reduce or eliminate emissions of greenhouse gases.