



CALIFORNIA PLUG LOAD RESEARCH CENTER
UNIVERSITY of CALIFORNIA • IRVINE

Accelerating Climate Action in California

April 22, 2021

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the
climate
center

Sunday

Los Angeles Times

\$3.66 DESIGNATED AREAS HIGHER © 2020 WST ** SUNDAY, SEPTEMBER 13, 2020 latimes.com

California's climate apocalypse

Fires, heat, air pollution: The calamity is no longer in the future — it's here, now

Oregon residents standing ground

BY RICHARD READ, MOLLY HENNESSY-FISKE AND MELISSA ETEHAD

MOLALLA, Ore. — Christine VanOeveren grab-

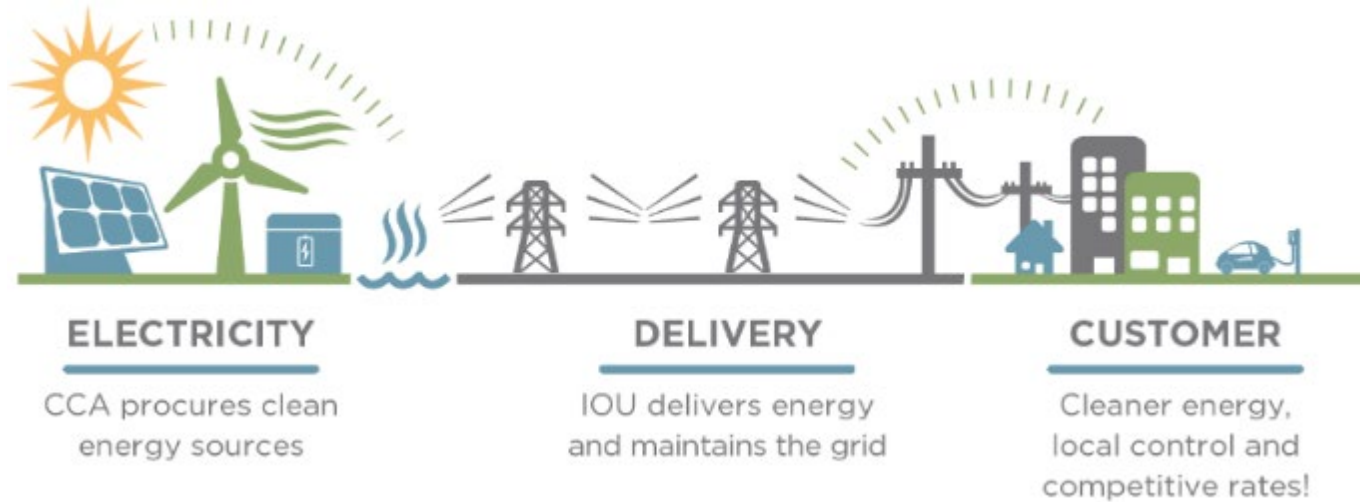


BY SUSANNE RUST AND TONY BARBOZA

In 2001, a team of international scientists projected that during the next 100 years, the planet's inhabitants would witness higher maximum temperatures, more hot days and heat waves, an increase in the risk of forest fires and "substantially degraded air quality" in large metropolitan areas as a result of climate change.

In just the past month, nearly two decades after the third United Nations Intergovernmental Panel on Climate Change report was issued, heat records were

Mission:
Speed and scale
greenhouse gas reductions



**Key role in growing Community Choice Energy:
24 CCAs serving 88% GHG-free electricity to
11 million Californians- 1/4 of state!**

<https://theclimatecenter.org/our-work/community-choice/>
<https://cal-cca.org/cca-impact/>

Current global climate goals are inadequate

UN IPCC 1.5°C Report - Oct 2018

- Emissions must decline by 45% by 2030 to meet 1.5°C (2.7°F) limit
- Up to 1000 Gt CO₂e must be removed from atmosphere over the decades ahead
- Achieve net-zero emissions by 2050



UN operates by consensus so goals are conservative and not enough.

We must do more sooner per new science...

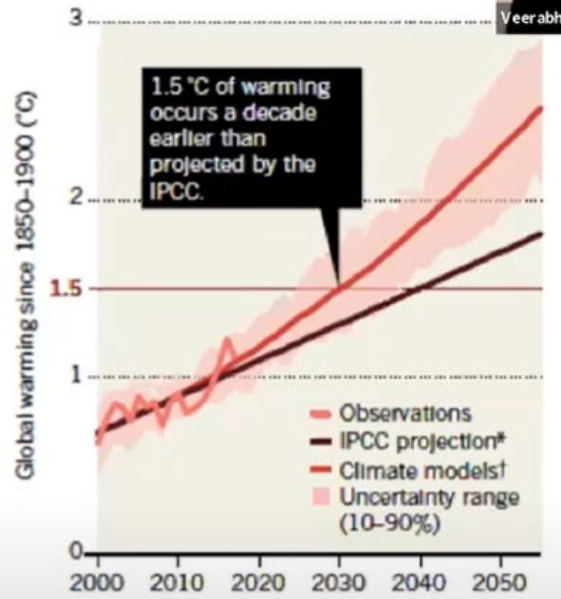
Will pass 1.5 °C dangerous warming by 2030 10 years earlier than UN IPCC projected

Global warming will happen faster than we think

Three trends will combine to hasten it, warn Yangyang Xu, Veerabhadran Ramanathan and David G. Victor.

ACCELERATED WARMING

Climate simulations predict that global warming will rise exponentially if emissions go unchecked.



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)

MoveCA Zoomposium, Jan 21 2021, <https://www.youtube.com/watch?v=T3IOX5ru0BI&t=12s> (at 16 min in)

Hébert, R. et al. *Climate Dynamics*, 2020; DOI: [10.1007/s00382-020-05521-x](https://doi.org/10.1007/s00382-020-05521-x)

CA impacts: personal communication with V. Ramanathan, Scripps/UC San Diego

Western US now in global warming -induced severe megadrought

- In CA as early as 2027- impacts on ag, economy, communities
Threatens dustbowl & ag economy by as early as 2027 in CA
- 2015 drought cost ~\$2.7 billion and 20k lost ag jobs in California



<https://www.washingtonpost.com/weather/2020/04/16/southwest-megadrought-climate-change/>
Williams et al. *Science* Apr 17 2020
<https://www.scientificamerican.com/article/drought-takes-2-7-billion-toll-on-california-agriculture/>

Increasing health impacts especially to most vulnerable communities

Fossil fuel air pollution => 1 in 5 deaths globally
2020 CA smoke storm: ~1200-3000 addl deaths among 65+
7.3 million Californians live within 1 mi. of oil & gas wells



<https://www.fractracker.org/2020/12/people-and-production/>

<https://www.seas.harvard.edu/news/2021/02/deaths-fossil-fuel-emissions-higher-previously-thought>

<https://www.latimes.com/california/story/2021-02-01/wildfire-smoke-microbes-in-the-air>

<http://www.who.int/globalchange/en/>; Leleiveld et al., Cardiovascular, March 2020; Hoffman et al. Climate Jan 2020

Bekkar et al JAMA June 2020

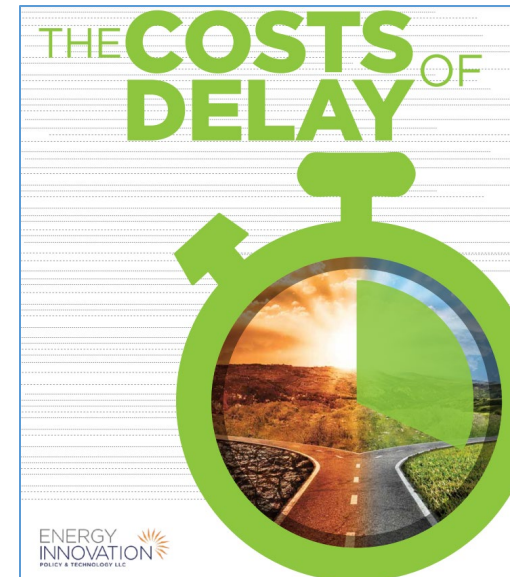
<https://www.nytimes.com/2020/06/18/climate/climate-change-pregnancy-study.html>

<https://amp-sacbee-com.cdn.ampproject.org/c/s/amp.sacbee.com/news/california/fires/article245947495.html>;

<http://www.g-feed.com/2020/09/indirect-mortality-from-recent.html>

Climate action delay costs trillions, bankrupting our economy

- **Costs much less investing big today rather than waiting until 2030** *(For CA: est. \$47 billion/year now vs. \$110 billion/year starting in 2030 based on CA =14.6% of GDP)*
- **\$150 Billion in damages from 2018 CA wildfires; \$80 Billion in 2019**
- **\$80 billion invested in California will generate ~725,000 jobs**



https://energyinnovation.org/wp-content/uploads/2021/01/Cost_of_Delay.pdf

<https://www.federalreserve.gov/publications/files/financial-stability-report-20201109.pdf>

<https://www.nytimes.com/2020/09/08/climate/climate-change-financial-markets.html>

Wang, D et al. **Economic footprint of California wildfires in 2018**. *Nature Sustainability*, 2020 DOI: 10.1038/s41893-020-00646-7

<https://www.accuweather.com/en/weather-news/california-wildfires-will-cost-tens-of-billions-accuweather-estimates/612548>

Political Economy Research Institute https://www.peri.umass.edu/images/CA-EconRecProgram-6-12-20_Final.pdf

World Resources Institute <https://www.wri.org/blog/2020/07/economic-benefits-climate-action-us>

RAISING THE ALARM

Evidence that tipping points are under way has mounted in the past decade. Domino effects have also been proposed.



A. Amazon rainforest
Frequent droughts

B. Arctic sea ice
Reduction in area

C. Atlantic circulation
In slowdown since 1950s

D. Boreal forest
Fires and pests changing

F. Coral reefs
Large-scale die-offs

G. Greenland ice sheet
Ice loss accelerating

H. Permafrost
Thawing

I. West Antarctic ice sheet
Ice loss accelerating

J. Wilkes Basin, East Antarctica
Ice loss accelerating

9 of 15 global tipping points underway now... domino effect to uninhabitable 'hothouse' climate if we don't act soon ...

Lenton, Rockstrom, Gaffney, Rahmstorf, Richardson, Steffen, Schyellnhuber. *Nature*, Nov 27 2019
<https://www.nature.com/articles/d41586-019-03595-0>

<https://www.sciencedaily.com/releases/2019/11/191127161418.htm>

**The climate reality
is outpacing
outdated policy.**

We must step up now.

Why focus on policy?



Bold targets work!

As goes California, goes the world

AB1493 (2002)
tailpipe emissions cuts; later adopted by 13 other states; basis for 2010 national clean car standards



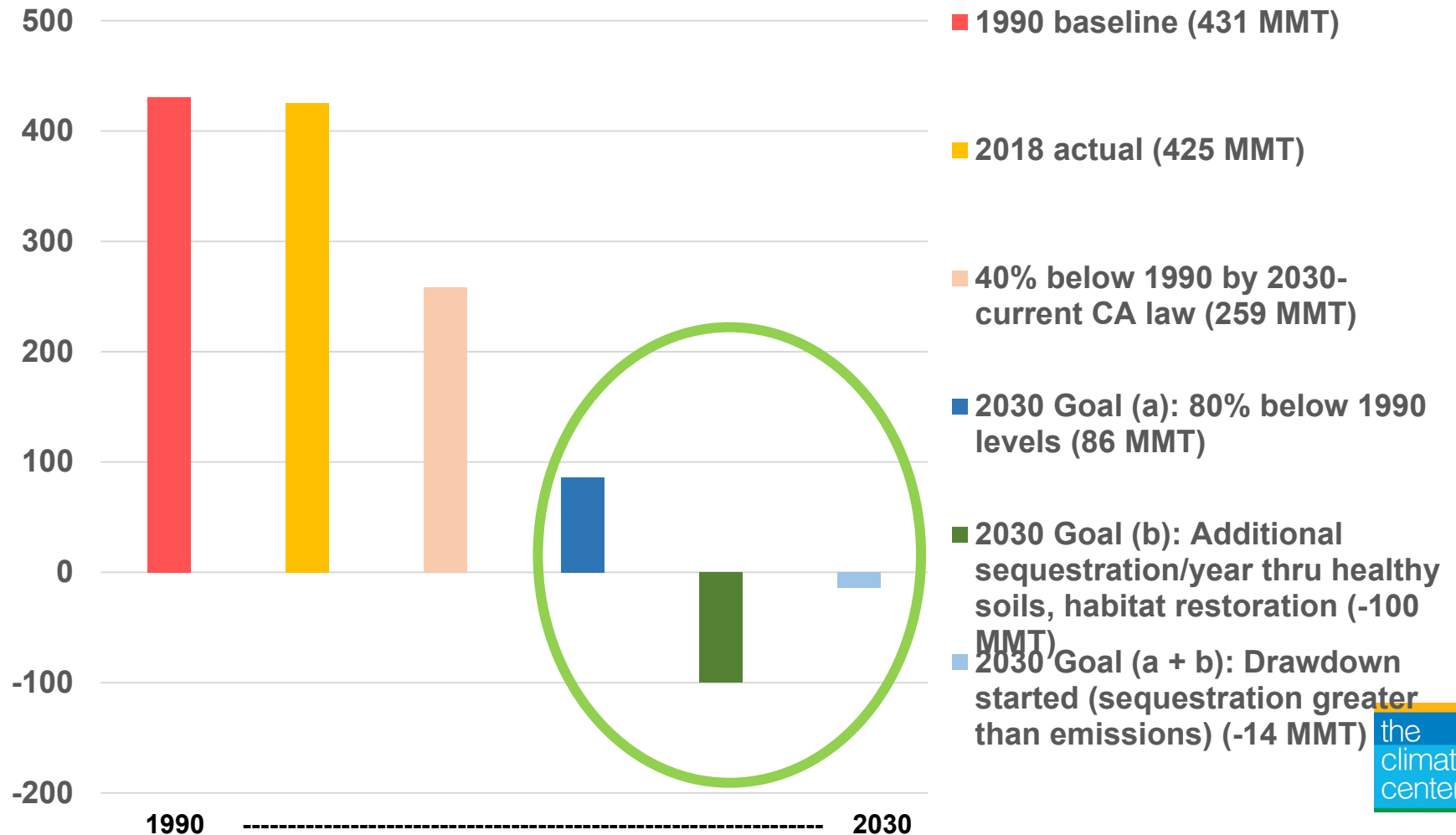
California must lead for the country and the world to secure a climate -safe future.



California's measured GHG emissions: where we are & where we need to go by 2030

www.climatesafeca.org

Million Metric Tons (MMT) CO₂e Per Year



Governor Newsom on Sept. 11, 2020: “We are in a climate emergency... Our goals are inadequate... We must fast-track goals”

New Exec Orders: 100% ZEV new car sales by 2035 &
protect 30% of land and waters by 2030 **But....**



<https://defenders.maps.arcgis.com/apps/webappviewer/index.html?id=8fa934ebbee54431bdc53d0873ab14>

<https://www.gov.ca.gov/2020/09/23/governor-newsom-announces-california-will-phase-out-gasoline-powered-cars-drastically-reduce-demand-for-fossil-fuel-in-californias-fight-against-climate-change/> Sept. 23 2020

<https://calmatters.org/environment/2020/09/california-governor-climate-emergency/> Sept. 11 2020

...California is behind: New International & National Climate Targets....

- ✓ **EUROPEAN UNION:** Cut GHGs by at least 55% by 2030 ... from 1990 levels to reach net zero emissions by 2050
- ✓ **UK:** Cut GHGs 68% by 2030 from 1990 levels & 100% ZEV sales by 2030
- ✓ **FINLAND:** Net-Zero emissions by 2035 without offsets
- ✓ **RHODE ISLAND:** 100% GHG free electricity by 2030
- ✓ **PRESIDENT BIDEN**
 - 100% GHG free electricity by 2035
 - 40% investments to lower-income communities
 - Invest \$2 trillion (= ~\$292 Billion in CA @ 14.6% GDP)

<https://www.theguardian.com/environment/2020/dec/03/uk-vows-outdo-other-major-economies-emissions-cuts-by-2030> Dec 3, 2020

<https://www.cbsnews.com/news/uk-ban-new-gasoline-diesel-cars-vehicles-by-2030-boris-johnson-green-industrial-revolution/> Nov 18 2020

<https://www.axios.com/eu-carbon-emissions-target-cut-2030-climate-063fa943-1af8-471f-a798-590bba10c7c4.html> Dec 11, 2020

[https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)32290-X/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)32290-X/fulltext) December 2, 2020

<https://joebiden.com/wp-content/uploads/2020/07/UNITY-TASK-FORCE-RECOMMENDATIONS.pdf> July 8, 2020

<https://www.nytimes.com/2020/07/14/us/politics/biden-climate-plan.html> Feb 1, 2021

More aggressive policies and accelerated timelines are needed now!



Climate -Safe California

VISION: CA will enact the bold policies required by science to dramatically cut emissions, start drawdown and secure resilient communities by 2030, inspiring global action

CLIMATE-SAFE CALIFORNIA

accelerates existing state goals by 15 years.

Net-negative emissions by 2030 (drawdown greater than emissions)
(Brown 2018 EO by 2045)

- 80% below 1990 GHG levels by 2030 (Schwarzenegger 2005 EO by 2050)
- Nature-based annual sequestration greater than emissions by 2030

Definition: net negative emissions is achieved when, as a result of human activities, more greenhouse gases are removed from the atmosphere than are emitted into it. – UN IPCC 1.5C Report <https://www.ipcc.ch/sr15/chapter/glossary/>



PILLARS OF CLIMATE -SAFE CA

- Accelerate the phase-out of fossil fuel development, production and use
- Scale-up nature-based sequestration to 100 MMT/year by 2030 on natural & working lands
- Invest in community resilience, including clean energy microgrids & storage
- Fund climate action with \$12-20 billion/year and leverage private sector money

PRINCIPLES OF CLIMATE -SAFE CA

- 1- Based on the **latest science**
- 2- Ensure a **just transition**
- 3- Prioritize **climate justice**



SB 582 (Stern): Climate Emergency Mitigation, Safe Restoration, and Just Resilience Act of 2021

Would establish:

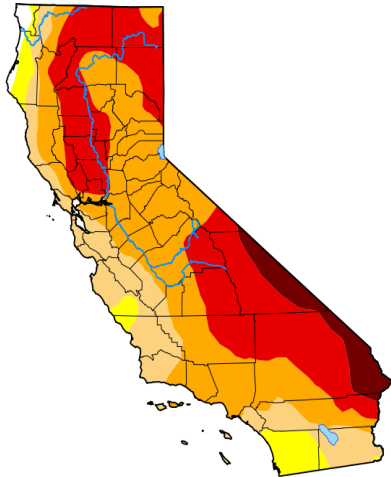
- state's first-ever statutory net-negative emissions goal, with a target date of 2035
- 80% below 1990 levels by 2030
- Just Resilience Plan to drive urgently needed investments in California's most vulnerable communities



Driving policy with science: “Accelerating the Timeline for Climate Action in California” Kammen et al March 2021

April 13, 2021

**U.S. Drought Monitor
California**



https://droughtmonitor.unl.edu/data/pdf/current/current_ca_trd.pdf

Accelerating the timeline for climate action in California

[Daniel M Kammen](#), [Teenie Matlock](#), [Manuel Pastor](#), [David Pellow](#), [Veerabhadran Ramanathan](#), [Tom Steyer](#), [Leah Stokes](#), [Feliz Ventura](#)

The climate emergency increasingly threatens our communities, ecosystems, food production, health, and economy. It disproportionately impacts lower income communities, communities of color, and the elderly. Assessments since the 2018 IPCC 1.5 Celsius report show that current national and sub-national commitments and actions are insufficient. Fortunately, a suite of solutions exists now to mitigate the climate crisis if we initiate and sustain actions today. California, which has a strong set of current targets in place and is home to clean energy and high technology innovation, has fallen behind in its climate ambition compared to a number of major governments. California, a catalyst for climate action globally, can and should ramp up its leadership by aligning its climate goals with the most recent science, coordinating actions to make 2030 a point of significant accomplishment. This entails dramatically accelerating its carbon neutrality and net-negative emissions goal from 2045 to 2030, including advancing clean energy and clean transportation standards, and accelerating nature-based solutions on natural and working lands. It also means changing its current greenhouse gas reduction goals both in the percentage and the timing: cutting emissions by 80 percent (instead of 40 percent) below 1990 levels much closer to 2030 than 2050. These actions will enable California to save lives, benefit underserved and frontline communities, and save trillions of dollars. This rededication takes heed of the latest science, accelerating equitable, job-creating climate policies. While there are significant challenges to achieving these goals, California can establish policy now that will unleash innovation and channel market forces, as has happened with solar, and catalyze positive upward-scaling tipping points for accelerated global climate action.

Comments: 13 pages, 2 figures

Subjects: **Systems and Control (eess.SY)**

Cite as: [arXiv:2103.07801](https://arxiv.org/abs/2103.07801) [eess.SY]

(or [arXiv:2103.07801v1](https://arxiv.org/abs/2103.07801v1) [eess.SY] for this version)

Submission history

From: Daniel Kammen [[view email](#)]

[v1] Sat, 13 Mar 2021 21:59:00 UTC (875 KB)

<https://arxiv.org/abs/2103.07801>

An Earth Day message for California: Move faster on climate change



The Los Angeles Department of Water and Power's Pine Tree Wind and Solar Farm in the Tehachapi Mountains of Kern County. (Irfan Khan / Los Angeles Times)

By SAMMY ROTH | STAFF WRITER

APRIL 20, 2021 5 AM PT

If there's one thing to understand this Earth Day about California's role in confronting the climate crisis, it's this: Just because the state considers itself a global leader doesn't mean it's doing nearly enough.

Gov. Gavin Newsom admitted as much last year. As monstrous wildfires [carved a path of destruction](#) from the [giant sequoias of the Sierra Nevada](#) to the [mountains around Los Angeles](#) — bringing smoke-choked [orange skies](#) to the Bay Area and [raining ash](#) to Southern California — Newsom said, “Across the entire spectrum, our goals are inadequate to the reality we're experiencing.”

CORONAVIRUS, VACCINES AND PANDEMIC >

[New data reassuring for COVID-19 vaccination in pregnancy](#)

[White House offers new tax credit to help spur vaccinations](#)

[I'm fully vaccinated against COVID-19. How long will the protection last?](#)

[Tracking reopenings](#)

[Latest on vaccines and pandemic](#)

Cases statewide »

3,701,040
confirmed

60,816
deaths

As of April 21, 6:20 p.m. Pacific

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Solutions exist!



CALL TO ACTION –

Endorse Climate -Safe California

www.climatesafeca.org

- A public pledge of support for California to accelerate aggressive climate policy
- Inspiring states and countries to greater action for a climate-safe Earth

Terry Tamminen

former CAL EPA Secretary under Governor Schwarzenegger



“I strongly endorse the goal of Climate -Safe California to achieve net-negative emissions by 2030; 2050 is too late. The campaign’s focus on science, urgency, and policy is exactly what’s needed — and California must lead the way.”

<https://theclimatecenter.org/endorsementlist/>

CALL TO ACTION

- Endorse Climate-Safe CA www.climatesafeca.org

- Advocate for good climate policy –

When you endorse Climate-Safe CA you'll join our network and receive opportunities to advocate and make a difference. (Wind in the sails!)

- Contribute to our efforts

www.theclimatecenter.org/donate-5/

CA first state to reach net negative emissions

Kickstarts nation & world into equitable climate action

December
2030



Thank you!

ann@theclimatecenter.org

More information:

www.theclimatecenter.org

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