

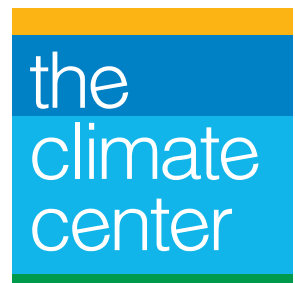


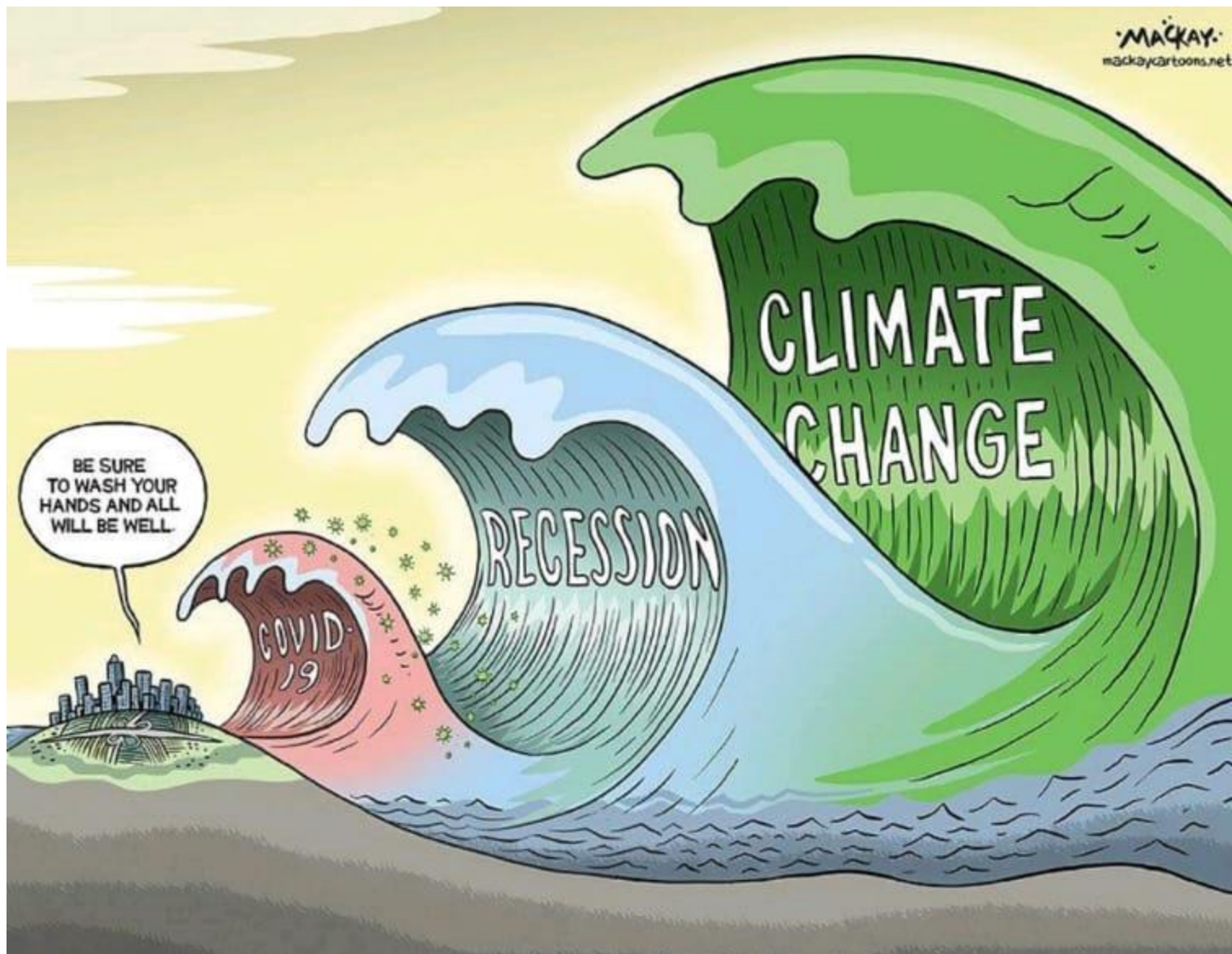
The Path to Climate-Safe California: Net-negative Emissions by 2030

Sept. 16, 2020

Ellie Cohen and Team, The Climate Center

www.theclimatecenter.org ellie@theclimatecenter.org

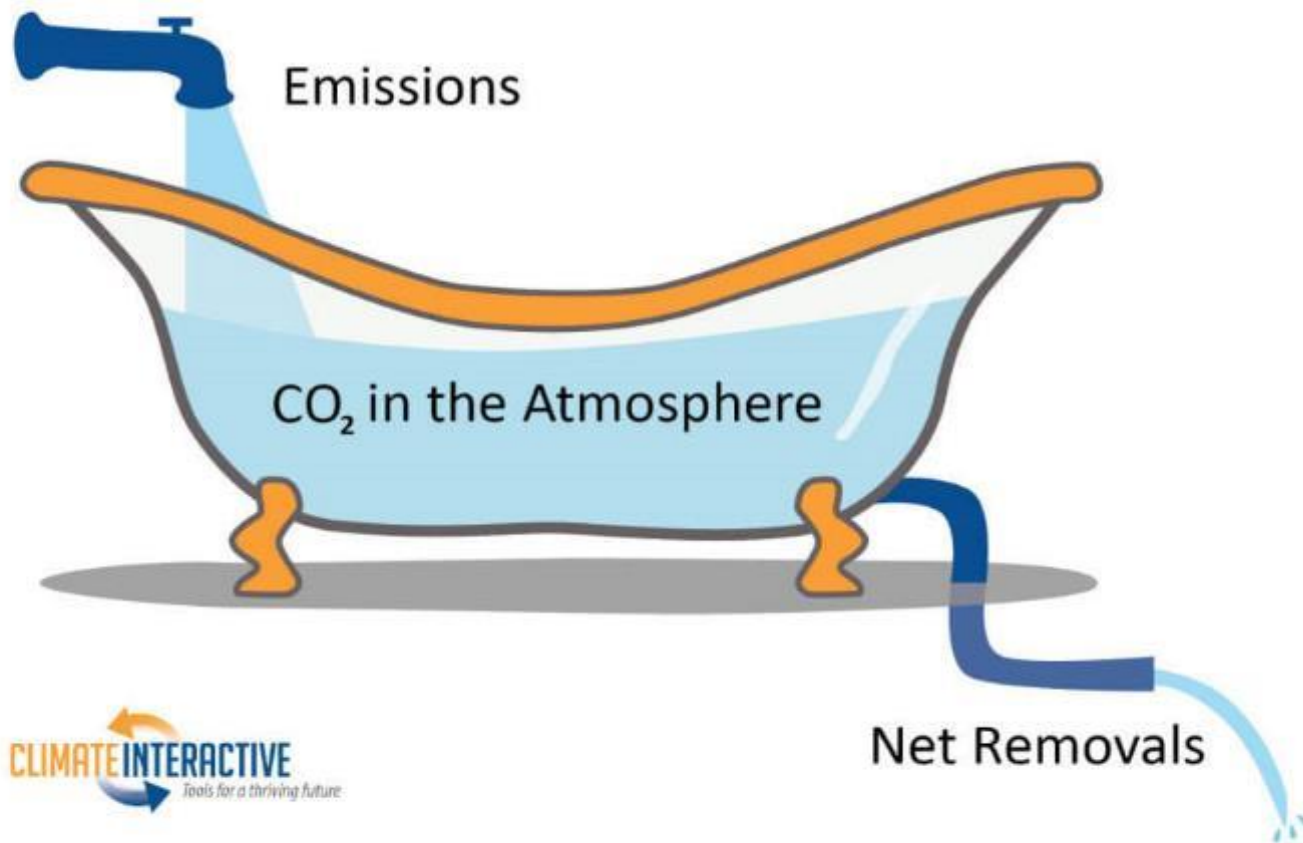




COVID19 and Climate Change: opportunity amidst devastation?

- Heed science and experts
- Advance preparation saves lives
- Tipping points happen quickly, abruptly
- We are only as resilient as the most vulnerable
- Healthy ecosystems sustain life and make us more resilient
- Shared responsibility: “We” not “me”
- Individuals make a difference and we need coordinated government action
- We can act quickly, invest billions and change behavior with political will

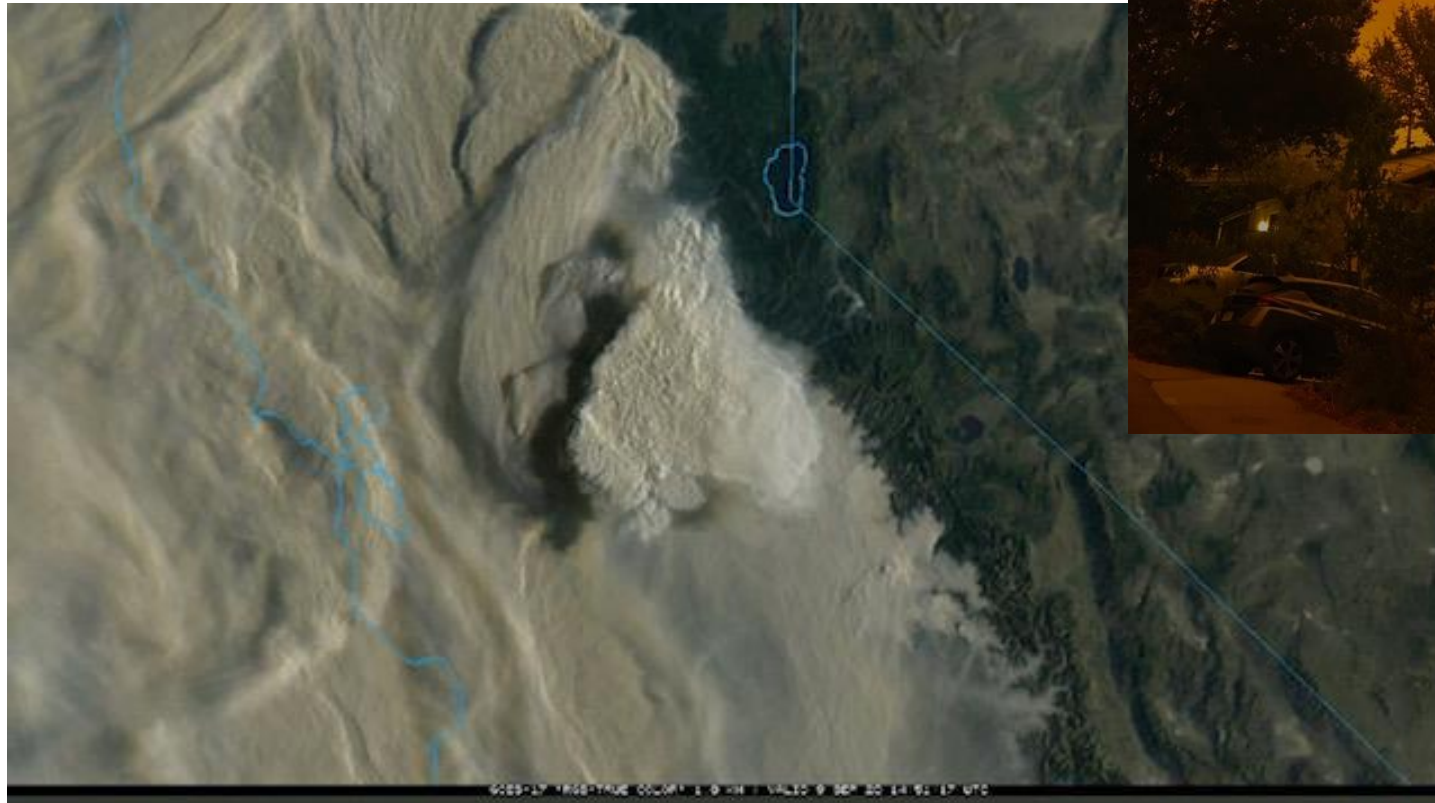
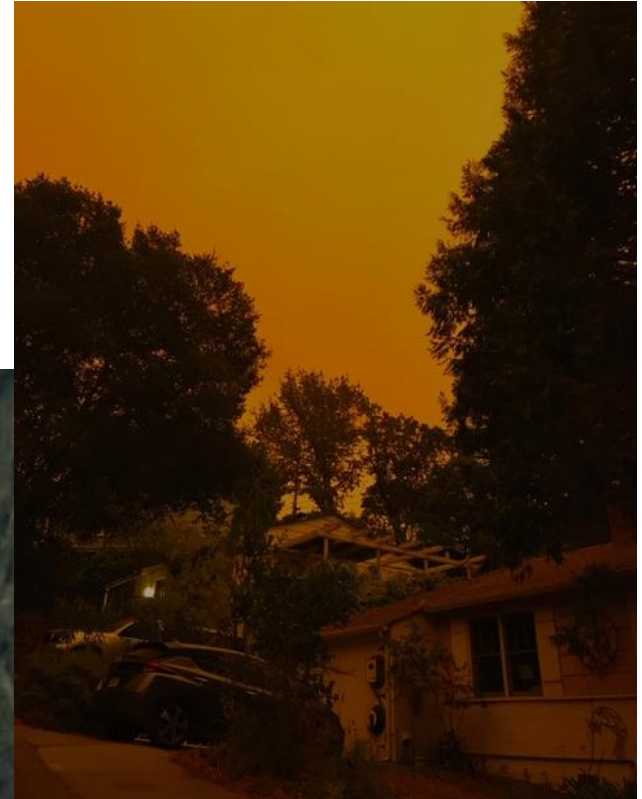
<5.5% projected drop in 2020 emissions due to pandemic; must now double each year



Overall framing by Dr. John Sterman, MIT Sloan

Lenzen et al PLOS ONE July 2020 15 (7): e0235654 DOI: [10.1371/journal.pone.0235654](https://doi.org/10.1371/journal.pone.0235654)
<https://grist.org/climate/the-world-is-on-lockdown-so-where-are-all-the-carbon-emissions-coming-from/>
<https://www.climateinteractive.org/tools/climate-bathtub-simulation/>
<https://www.carbonbrief.org/analysis-coronavirus-set-to-cause-largest-ever-annual-fall-in-co2-emissions>

Our house is on fire, the “hellscape is here,” and Californians are afraid...



Sept 9, 2020 GOES WEST Satellite image of Northern California; Orange skies over Bay Area

<https://www.latimes.com/opinion/story/2020-09-09/wildfires-record-temperatures-hellscape-climate-change-greenland-rising-seas>

Sunday

Los Angeles Times

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

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

Current global climate goals are inadequate

UN IPCC 1.5C Report- Oct 2018

- Emissions must decline by 45% by 2030 to meet 1.5C (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...

<https://www.ipcc.ch/sr15/>
<https://www.ipcc.ch/sr15/chapter/summary-for-policy-makers/>

Abrupt ecosystem collapse likely this decade starting in tropical oceans

Deep emissions cuts this decade could save thousands of species



Jan 2016 common murre carcasses near Whittier, AK, David B. Irons

Trisos et al. *Nature*, April 2020 High % of species exposed to harmful climate conditions at same time - potentially lead to sudden die-offs of biodiversity

Jacox et al. **Thermal displacement by marine heatwaves**. *Nature*, August 2020; 584 (7819): 82 DOI: [10.1038/s41586-020-2534-z](https://doi.org/10.1038/s41586-020-2534-z)

West Antarctic ice shelves unhinging— portends 10 ft of sea level rise



Enormous curved crevasses near the Pine Island Glacier shear margin. (Brooke Medley/NASA)

<https://www.washingtonpost.com/climate-environment/2020/09/14/glaciers-breaking-antarctica-pine-island-thwaites/>

Abrupt permafrost thaw doubles previous est.CO2/methane emissions

Not in any climate models
including IPCC 1.5C
report... “How realistic are
our projections” without
permafrost feedbacks?
“We can definitely stave off
the worst consequences if
we act in the next decade”

-Merritt Turetsky, PhD

>1/3 of global methane increase due to fracking

More than half of increase from US fossil fuel production

Methane 86x stronger than CO₂ as warming compound over 10-20 year lifespan

“Reducing methane now can provide an instant way to slow global warming”

-R. Howarth, Cornell University



<https://www.nytimes.com/2020/07/14/climate/methane-emissions-record.html>

Saunois et al, Earth Syst. Sci. Data, 12, 1561–1623, July 2020 <https://doi.org/10.5194/essd-12-1561-2020>

Jackson et al, Eniro Research Letters, July 2020 <https://iopscience.iop.org/article/10.1088/1748-9326/ab9ed2>

Höglund-Isaksson et al. *Enviro Research Communications*, 2020; 2 (2): 025004 DOI: [10.1088/2515-7620/ab7457](https://doi.org/10.1088/2515-7620/ab7457)

Hmeil et al Nature Vol 578 Feb 2020 <https://www.nature.com/articles/s41586-020-1991-8>

Howarth. *Biogeosciences*, 2019 DOI: [10.5194/bg-16-3033-2019](https://doi.org/10.5194/bg-16-3033-2019)

<https://therealnews.com/stories/methane-emissions-fossil-fuels-vastly-underestimated>

Western US now in global warming-induced severe megadrought

- 2000 to 2018 was 2nd driest in 1200 years
- Threatens dustbowl & ag economy by as early as 2027 in California
- 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/>



Fall fire weather days have doubled since 1980 in California

but can reverse trend with major GHG reductions

Goss et al Environmental Research Letters Mar 2020

<https://www.latimes.com/california/story/2020-03-19/the-west-is-in-an-expanding-20-year-drought-that-a-march-miracle-will-do-little-to-change>

Australian pyrocumulus fire clouds that create dry lighting, igniting more fires

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>

“We have **underestimated the risks** of unleashing irreversible changes, where the planet **self-amplifies global warming**. This is what we [are starting to see] already at 1°C global warming. Scientifically, this provides strong evidence for **declaring a state of planetary emergency, to unleash world action** that accelerates the path towards a world that can continue evolving on a stable planet.”

“We don't want to push the 'on' buttons of runaway global warming. The next decade is our window...with consequences for all future generations.”

- Johan Rockström, Director, Potsdam Institute for Climate Impacts Research, 2019



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

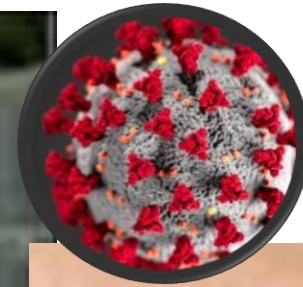
<https://sverigesradio.se/avsnitt/1425542>
<https://medium.com/@rchrthy/johan-rockstr%C3%B6m-10-point-agenda-for-saving-the-world-unofficial-transcript-431261f885c6>

The science is clear—after assessing 5 million climate pathways:

“We must aggressively pursue carbon neutral energy by 2030 & hope for ‘some luck’ for a tolerable climate.”



Increasing health impacts especially to most vulnerable communities; extreme heat most deadly



<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>

Climate inaction is bankrupting our economy

- ~\$80 billion in insured and uninsured losses in California in 2018 alone due to wildfires
- Climate change threatens U.S. financial markets including insurance and mortgage markets, pension funds, and other financial institutions
- One year delay in adopting the (conservative IPCC) 1.5C pathway globally costs >\$5 trillion (in 2020)
- Damages from delayed GHG reductions in the US now cost ~\$600 billion per year (in 2020)



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

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

<https://medium.com/@ben.m.sanderson/a-last-chance-to-meet-climate-targets-37a2b7a02ff9>

Sanderson, B.M., O'Neill, B.C. Assessing the costs of historical inaction on climate change. *Sci Rep* 10, 9173 (2020). <https://doi.org/10.1038/s41598-020-66275-4>

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

**Leaders are now
stepping up.**

New Proposed National Climate Targets.... California is behind!

All include some versions of just transition and closing the climate gap

BIDEN-SANDERS UNITY TASK FORCE

- **Eliminate carbon pollution from power plants by 2035**
- Net-zero new buildings by 2030
- Get agriculture to net-zero

HOUSE SELECT COMMITTEE ON CLIMATE CRISIS

- Net-zero emissions by 2050
- Net-zero emissions in power sector by 2040
- **100% ZEVs-cars and light trucks-by 2035**

SENATE SELECT COMMITTEE ON CLIMATE CRISIS

- Net-zero emissions globally by 2050
- **Invest 2% annually of GDP w/ 40% to low income communities**
Note: 2% of CA 2019 GSP \$3.2 trillion = \$64 billion

DNC CLIMATE COMMITTEE

- Near-zero emissions by 2040
- **100% clean renewable energy by 2030 in electricity generation, buildings, and transportation**
- 100% zero-carbon new bldgs by 2025
- \$10-\$16 trillion in fed expenditures over next decade

<https://www.democrats.senate.gov/climate-report> August 25, 2020

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

<https://climatecrisis.house.gov/> June 30, 2020

<https://www.dnccclimate.org/the-platform> June 4, 2020

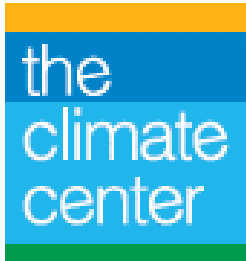
Governor Newsom: We are in a climate emergency, must fast-track goals



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



Need more aggressive policies and accelerated timelines in CA now!



Climate-Safe California Campaign for Rapid Decarbonization

www.theclimatecenter.org

GOAL: By 2025, CA will have enacted the bold policies required by science to dramatically reduce emissions, start drawdown and secure resilient communities by 2030, inspiring global action

CLIMATE-SAFE CALIFORNIA

Accelerate existing state goals
to achieve by 2030:

- 80% below 1990 GHG levels (*Schwarzenegger 2005 EO by 2050*)
- Net-negative emissions (*sequestration greater than emissions, CA becomes net carbon sink*) (*Brown 2018 EO by 2045*)

**One Next Step? Governor Newsom 2020 Executive Order
that accelerates these timelines to 2030**



Two Climate-Safe California guiding principles:

1- Ensure a just transition for workers

- Support workers dependent on fossil fuel enterprises
- Continue creating jobs for building, construction and other trades as we solve climate change together



<https://www.iddri.org/en/publications-and-events/blog-post/investing-just-transition>

2- Prioritize climate justice

- Climate-safe policies must ensure that lower-income communities are no longer disproportionately harmed by fossil fuel development, production, and use
- Policies must prioritize lower income & communities of color --> *climate justice is racial justice*
- Policies must ensure *everyone* is able to participate in the clean energy economy

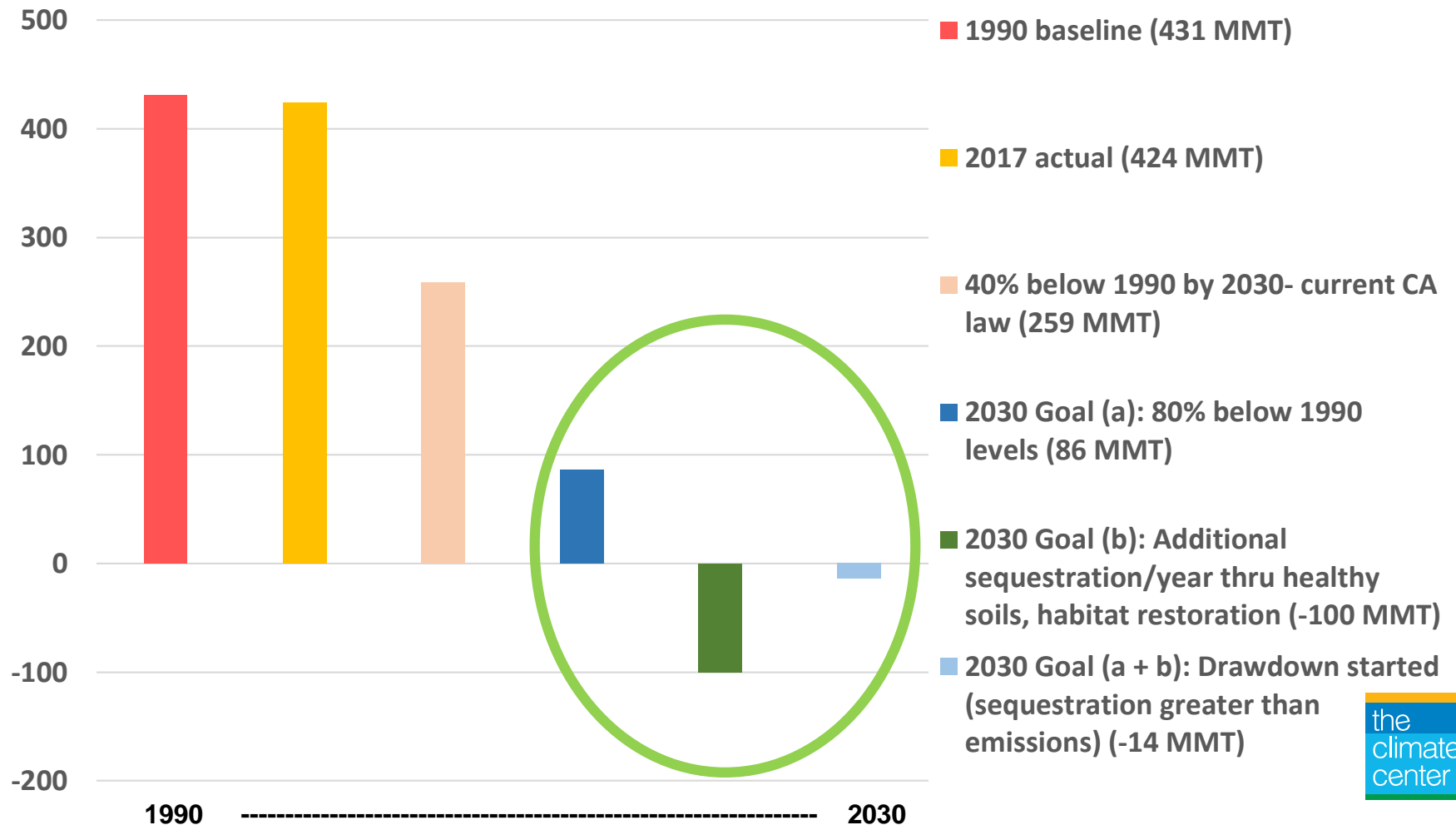


Photo: Stand.LA, by KPCC AirTalk

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



KEY POLICIES REQUIRED BY SCIENCE TO REACH NET-NEGATIVE EMISSIONS BY 2030

- Accelerate the phase-out of fossil fuel development, production and use
- Increase sequestration
- Invest in community resilience
- Fund climate action

www.climatesafeca.org

1- Accelerate phase out of fossil fuel development, production and use

- Immediately **halt new oil & gas drilling** and infrastructure development; **start plugging abandoned wells**, and, **establish health and safety zones from active wells**
- Ensure significantly greater **GHG-free transportation and mobility**, starting with a **phase-out of fossil fuel powered vehicles** beginning no later than 2025 & **no new ICE registrations by no later than 2030**
- **Secure 100% GHG-free, decentralized electricity & energy storage by 2030**
- Electrify almost everything with **massive GHG-reduction in new and older buildings**



Rapidly Transition to Sustainable Mobility

- Begin **phase out of fossil fuel powered vehicles**--cars, trucks, buses, ships-- by no later than 2025; Permit **no new ICE vehicle registrations by no later than 2030**
- Flip priorities: invest 80%+ of Caltrans \$ in non-GHG sustainable modes of transportation by 2025
- Invest in affordable housing near jobs
- Invest in clean mass transit
- Accelerate telecommuting for workforce, students, business and government



Zero Emissions Vehicles & charging stations have grown-- but need much more!

- ZEVs = 2.5% (655k) of CA cars (26m total)
- 33.4% increase from 2018 to 2019
- Need 2-3x more **current CA goal to 15+ million ZEVs by 2030...**
- Dramatically **increase charging infrastructure** (eg, thru public/private partnerships)
- And **get many more people out of cars!**



Photo: Ellie Cohen

Florian Knobloch et al. '[Net emission reductions from electric cars and heat pumps in 59 world regions over time](https://doi.org/10.1038/s41893-020-0488-7).' *Nature Sustainability* (2020). DOI: 10.1038/s41893-020-0488-7
<https://www.latimes.com/business/story/2019-12-01/electric-vehicle-sales-in-california-on-the-rise-but-is-it-enough-to-reach-the-5-million-goal-by-2030>
<https://www.dmv.ca.gov/portal/wcm/connect/5aa16cd3-39a5-402f-9453-0d353706cc9a/official.pdf?MOD=AJPERES>
<https://centerforjobs.org/ca/zev-reports/states-progress-on-5-million-zero-emission-vehicle-by-2030-q3-2019-results-2>

2- Increase Sequestration

- **Sequester addl. 100+ MMT CO₂e annually** in healthy soils, forests and vegetation annually by 2030-- starting no later than 2022
 - **Carbon farming** and gardening
 - **Climate-smart habitat restoration** and management on land/coast
 - **Enhance protected habitats**



Carbon Farming, Marin



Kelp forests



Point Blue STRAW project

<https://www.marincarbonproject.org/carbon-farming>
<https://www.carboncycle.org/carbon-farming/>
<https://www.pointblue.org/our-work/restoration/>

3- Invest in Community Resilience

- **Fund implementation of resilience plans** in all California counties and cities by 2025 (SB379)
- **Implement *clean* energy community microgrids with storage** including EV's, starting with critical facilities in lower income communities by 2021



<https://microgridknowledge.com/tribal-microgrid/>

4- Fund climate action

Institute progressive funding strategies to **produce additional ~\$12-20+ billion/year** specifically for climate action such as:

- **Regulatory changes** that open markets *so private investments pay for much of what's needed*
- **Frequent Flyer Fee** e.g., \$2.4 billion *from \$10 per passenger x 240 million (CA in 2018)*
- Fossil Fuel Severance Tax
- Enhance Cap & Trade
- Green climate bonds
- Close tax loopholes and make tax code upgrades
- Progressive carbon taxes

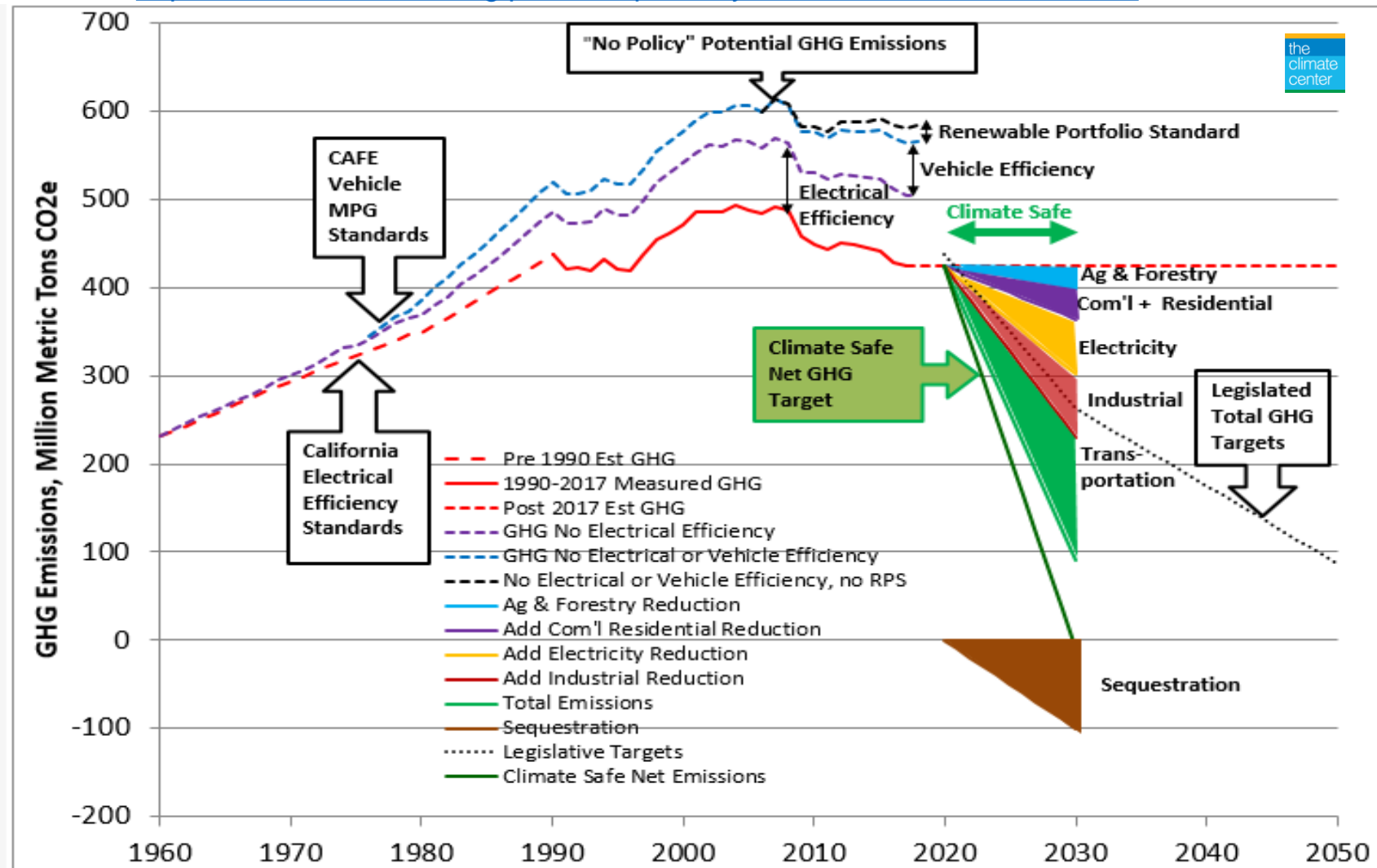


The suite of solutions and technologies exists today for California to enact now



Climate-Safe California 80% below 1990 levels and net-negative emissions by 2030

<https://theclimatecenter.org/potential-pathways-to-a-climate-safe-california/>



Investing in GHG reduction creates jobs and builds the economy

- \$2.2 billion from CA's Cap-and-Trade Program supported direct employment of 36,106 job years from 2013-2016
- 54% of the jobs were in building trades
- 11% in architecture and engineering, 10% in transportation



J.R. DeShazo et al. **Employment Benefits from California Climate Investments and Co-Investments.** UCLA Luskin Center for Innovation. Aug, 2018. <https://innovation.luskin.ucla.edu/publication/employment-benefits-from-california-climate-investments-and-co-investments/>

Recent studies about beneficial economic impact of climate investments

- \$80 billion invested in California will generate ~725,000 jobs
- Investments in clean energy generate more than 2x the jobs as in fossil fuels
- Current California current emissions reduction goals yield an estimated \$21 billion in economic and other benefits



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>

Energy Innovation https://energyinnovation.org/wp-content/uploads/2020/01/Insights-from-the-California-Energy-Policy-Simulator_1.16.20.pdf

Building broad support for climate action

- Labor
- Environmental Justice
- Health Care
- Agriculture
- Real Estate
- Insurance
- Energy
- Environment
- Local Government
- Transportation
- Information Technology
- Recreation... and more



Over 500 endorsements of Climate-Safe California including:

- **ELECTEDS and APPOINTED**

- Congressmen Jared Huffman, Mike Thompson
- State Senators Henry Stern, Mike McGuire
- CA State Assoc of Counties,* Chair, James Gore
- Mayor Protem, City of Oxnard,* Carmen Ramirez
- Angelina Galiteva, CAISO Board member*

- **ACADEMICS and ECONOMISTS**

- Dan Kammen, PhD, UC Berkeley*
- Hunter Lovins
- Steve Weissman, PhD, UC Berkeley*

- **BUSINESS**

- Joint Venture Silicon Valley
- Terry Tamminen, Seventh Generation Advisors*
- Ygrene Energy

- **NGOs**

- Alliance of Nurses for Healthy Environments
- Center for Sustainable Energy
- Local Government Commission
- Mi Familia Vota

- **FAITH**

- Roman Catholic Diocese of Fresno



Congressman Jared Huffman

Member of House Select Committee
on the Climate Crisis



“I applaud Climate-Safe California for recognizing that solving our climate crisis requires setting the bar high enough to actually meet the challenge. I endorse this effort to keep California on that course, leading our country and the world toward climate solutions.”

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

Mayor Pro Tem Carmen Ramírez

City of Oxnard, public interest attorney



“[Climate-Safe California] is urgent and desperately needed. Also urgent is a just transition and safety net for those working in the fossil fuel industry. We must not leave people behind as seen in the coal industry.”

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

Carl Mears, PhD

UN IPCC Climate Scientist,
Remote Sensing Systems



“The Climate Center’s suite of decarbonization policies are all required to stay below 2°C (3.6°F) warming & avoid dangerous climate chaos. We need aggressive, equitable policies in place now so society can transition to a fossil-fuel-free economy as quickly & safely as possible.”

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

State Senator Henry Stern

*speaking at The Climate Center's Virtual Community
Energy Resilience Summit, August 5, 2020*



“This campaign for a Climate-Safe California is not only crucial but it is scalable. The goal for a 2030 near term net-negative emissions target is not just something we should be striving for in California, but should be pushing the next administration [*in Washington*] to embrace as well.”

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

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/>

ENDORSE CLIMATE-SAFE CALIFORNIA

www.climatesafeca.org



Climate-Safe California
Rapid Decarbonization Campaign
Endorsement Platform

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

This is the Governor's “Winston Churchill” moment



Never in human history will so much be owed by so many to so few

(inspired by Winston Churchill)

What should Governor Newsom do?

- Declare a State of Climate Emergency
- Issue an Executive Order to achieve net-negative emissions with the start of drawdown and resilience for all California's communities by no later than 2030
- Issue an Executive Order requiring that all climate policies align with most current science, include just transition, and close the climate justice gap
- Call a special emergency session of the state legislature on wildfire and climate, including health, housing and related issues, in 2020
- Direct staff to identify public and private start-up funding for wildfire and climate action by Dec 2020

CA first state to reach net negative emissions

Kickstarts nation & world into speed & scale climate action

February 2030





The Climate Center: Working for speed and scale greenhouse gas reductions, starting in California

www.theclimatecenter.org

- A climate and energy policy nonprofit founded in 2001
- Led efforts resulting in Sonoma County becoming the first county in the nation with all its cities and the county committed to measurable emission reductions
- Awarded multiple honors including the Climate Protection Award, U.S. Environmental Protection Agency
- Played key role in growing Community Choice Energy in California from two CCAs just five years ago to 21 today, serving over 11 million residents with 88% clean energy
- Launched the bold, science-based Climate-Safe California campaign to accelerate policy timelines and action for greenhouse gas reductions working with dozens of partners across the state

Thank you! ellie@theclimatecenter.org

