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

Citizens’ Climate Lobby
Ellie Cohen June 24, 2020
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Mission: Speed and scale greenhouse gas reductions

Key role in growing Community Choice Energy: 21 CCAs serving 11 million Californians- ¼ of state- with 88% clean energy today!

https://theclimatecenter.org/our-work/community-choice/
https://cal-cca.org/cca-impact/
I’LL BE HAPPY WHEN THIS IS OVER...
COVID19 and Climate Change

• Heed science and experts
• Advance preparation saves lives
• Tipping points happen quickly, abruptly
• Healthy ecosystems sustain life and make us more resilient
• We are only as resilient as the most vulnerable
• 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 emissions due to pandemic; need to at least double annually
UN IPCC 1.5C Report- Oct 2018

Consensus => conservative, not enough
New science => we must do more sooner

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

https://www.ipcc.ch/sr15/
https://www.ipcc.ch/sr15/chapter/summary-for-policy-makers/
Abrupt ecosystem collapse - could start this decade in tropical oceans

Deep emissions cuts this decade could save thousands of species

Trisos et al. *Nature*, April 2020

High % of species will be exposed to harmful climate conditions at about the same time - potentially lead to sudden die-offs of biodiversity
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

Turetsky et al. Nature Geoscience | VOL 13 | February 2020
https://www.sciencedaily.com/releases/2020/02/200203151152.htm
Record-breaking heatwave in Siberia; 2020 on track to be hottest on record

>1/3 of global methane increase due to fracking
Methane 84x stronger global warming compound than CO2 over its 10-20 year lifespan

“Reducing methane now can provide an instant way to slow global warming”
—R. Howarth

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)
Western US now in global warming-induced megadrought

2000 to 2018 was 2\textsuperscript{nd} driest in 1200 years

https://www.washingtonpost.com/weather/2020/04/16/southwest-megadrought-climate-change/

Williams et al. *Science* Apr 17 2020
Fall fire weather days have doubled since 1980 in California

Goss et al Environmental Research Letters Mar 2020

Australian pyrocumulus fire clouds that created dry lighting, igniting more fires
Health Impacts: e.g., polluted air shortens lives, fetal impacts; extreme heat kills most

http://www.who.int/globalchange/en/
Leleiveld et al., Cardiovascular, March 2020
Hoffman et al. Climate Jan 2020
Bekkar et al JAMA June 2020
9 of 15 global tipping points underway now… domino effect to uninhabitable ‘hothouse’ climate if we don’t act soon…

https://www.nature.com/articles/d41586-019-03595-0
“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, December, 2019

https://sverigesradio.se/avsnitt/1425542
https://medium.com/@rchrdhy/johan-rockstr%C3%B6ms-10-point-agenda-for-saving-the-world-unofficial-transcript-431261f885c6

Modelling suggests climate is considerably more sensitive to carbon emissions than thought June 13 2020
Are net-zero CO2e emissions enough?

Balance carbon emissions with carbon removal (sequestration) (transition to a "post-carbon economy").

NO!

https://twitter.com/KHayhoe/status/1104835726246592513
GOAL: DRAWDOWN > EMISSIONS
Net-negative emissions by 2030

• More sequestration than emissions to become a net carbon sink

• Massive emissions reduction and increasing sequestration

• Reverse some (not all) of the impacts
  (e.g. CO2 at least below 350 ppm); “overshoot” pathway - the faster we do this, the more impacts we can avoid.)

January 2020
https://www.nap.edu/catalog/25259/negative-emissions-technologies-and-reliable-sequestration-a-research-agenda
Global Climate Action Leaders

**Finland**: Carbon neutrality by 2035 w/o carbon offsets

**Uruguay**: Net carbon sink (net-negative emissions) by 2030—major investments in wind, increased forest cover

**Norway**: Banning new Internal Combustion Engine (ICE) car sales in 2025

**Denmark**: Reduce GHGs to 70% below 1990 by 2030

**Copenhagen**: Carbon neutral by 2025 with econ growth

**Rhode Island**: 100% renewable energy by 2030

**Santa Monica**:
- 80% below 1990 carbon emissions by 2030
- Converting 50% ICE vehicle trips to walking or bikes/scooters/skateboard by 2030
- Water self-sufficiency by 2023; Zero waste by 2030
State of California- some key climate policies

- Executive Order S-3-05 (2005): Reduce GHG emissions to 80% below 1990 levels by 2050
- SB 32 (2016): Reduce GHG emissions to 40% below 1990 levels by 2030
- SB 100 (2018): Achieve 60% renewable energy by 2030 and 100% by 2045
- Executive Order B-55-18 (2018): Achieve carbon neutrality by 2045 and maintain net-negative emissions after

Is this enough per the science and climate reality?
California Measured Emissions 2017

41% · Transportation

424.1 MMTCO₂e
2017 TOTAL CA EMISSIONS

https://ww2.arb.ca.gov/ghg-inventory-data
SUVs: 2nd biggest cause of emissions rise (2010-2018)

SUV sales doubled over past decade; SUV drivers rank 7th in world for CO2 emissions, more than UK & Netherlands combined

CA isn’t counting all of our emissions

Consumption-based, out-of-boundary emissions from embedded goods & services

- Product & food manufacturing & disposal (waste) outside boundary
- Air travel & other transportation outside boundary
- Emissions from production of natural gas and fuels; foreign fuels refined in California

https://www.baaqmd.gov/about-air-quality/research-and-data/emission-inventory/consumption-based-ghg-emissions-inventory
Example: Marin measured emissions estimated to be 1/3 of all emissions in 2017.

- **Energy**
  - Residential/Non-Residential: 11%
- **Transportation**: 18%
- **Agriculture**: 3%
- **Waste**: 2%
- Out-of-boundary & consumption-based emissions: 67%

~4,324,920 MT CO2e
Need more aggressive policies and accelerated timelines now!

Climate-Safe California Campaign for Rapid Decarbonization

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

• Net-negative emissions (sequestration greater than emissions, CA becomes net carbon sink)

Endorse here: www.climatesafeca.org
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
Close the Climate Gap

• Ensure lower-income communities are no longer disproportionately harmed by fossil fuel development, production, and use
• Prioritize lower income & communities of color in climate-safe policies - *climate justice is racial justice*
• Ensure *everyone* is able to participate in the clean energy economy
ENACT THE POLICIES REQUIRED BY SCIENCE:

Endorse here: www.climatesafeca.org

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

- Immediately halt new oil & gas drilling and infrastructure development
- 100% GHG-free, decentralized electricity & energy storage by 2030
- Electrify almost everything!
Rapidly Transition to Sustainable Mobility

• Begin phasing out fossil fuel powered vehicles--cars, trucks, buses, ships- by 2025

• 80%+ of Caltrans $ to sustainable modes of transportation, not freeways, by 2025

• Invest in affordable housing near jobs, transition to telecommuting when possible
Zero Emissions Vehicles & charging stations growing-- but need much more!

- ZEVs = 2.5% (655k) of CA cars (26m)
- 33.4% increase from 2018 to 2019
- Must >double current CA goal to ~10+ million ZEVs by 2030
- Get more people out of cars!

Florian Knobloch et al. ‘Net emission reductions from electric cars and heat pumps in 59 world regions over time.’ Nature Sustainability (2020). DOI: 10.1038/s41893-020-0488-7
https://www.dmv.ca.gov/portal/wcm/connect/5aa16cd3-39a5-402f-9453-0d353706cc9a/official.pdf?MOD=AJPERES
Major increase in building electrification and efficiency

- Buildings = ~25% of CA’s GHG emissions
- 20+ California cities have enacted methane gas bans for new buildings
- Enact zero-emission building codes by 2025


Embodied Carbon in Construction Calculator
https://www.buildingtransparency.org/en/


http://www.buildingdecarb.org/
Ban Gas-Powered Lawn Equipment

https://ww2.arb.ca.gov/our-work/programs/small-off-road-engines-sore
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 on land/coast
  - Enhance protected habitats

Point Blue STRAW project

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

Carbon Farming, Marin

Kelp forests
Carbon farming potential sequestration at scale
Example: 21m acres = at least 20 MMT/year CO2e/20 years

Marin est cost of roughly $500/acre-- $10.5 billion for 21M acres over 10 years with multiple co-benefits for resilience, water, biodiversity and more
Riparian restoration potential at scale
Major potential for CO2e sequestration and other benefits

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 EV storage, starting with critical facilities in lower income communities by 2021

https://microgridknowledge.com/tribal-microgrid/
Instead of perpetuating a 100-year old grid architecture...

...a transmission network prone to failure and likely to start wildfires.
…let’s build a new integrated, decentralized grid…

Community Energy Resilience

Clean, Affordable, Resilient, Equitable and Safe
…starting with critical facilities serving lower income communities and homes for medically dependent

- 49 major state government buildings
- 92 refrigerated food warehouses
- 147 digital TV transmitters
- 225 local emergency operational centers
- 273 AM towers
- 535 urgent care facilities
- 570 hospitals
- 728 colleges and universities
- 1,013 law enforcement facilities
- 1,751 passenger transportation terminals
- 1,193 cell towers
- 3,182 nursing homes
- 3,139 emergency medical service facilities
- 3,209 fire stations & equipment depots
- 10,465 public schools
- 12,388 child care centers
Community Energy Resilience Planning - SB 1314 (Dodd)

- A new state program to fund and support all California local governments to plan and implement local energy resilience projects, engaging local communities in the process
- Keeps California’s 35,000 critical facilities up and running through microgrid technology
- Prioritizes lower income and high fire threat communities

For 2020:
- Amend into an existing bill like SB 1215 (Stern)
- Allocation through budget trailer bill based on existing statute
4- Fund Climate Action

New progressive financing mechanisms to produce additional $20+ billion/year specifically for climate action

- Frequent flyer fee e.g., $2.4 billion from $10 per passenger x 240 million (in CA in 2018)
- Fossil Fuel Severance Tax
- Green climate bonds
- Closing tax loopholes and tax code upgrades
- Progressive carbon taxes
Carbon Fee & Dividend: Charge for Pollution, Return Funds to Economy

A carbon fee & dividend policy

Charge a fee on fossil fuels at the source

Return some or all net revenue to households as a dividend

From Citizens Climate Lobby/Jerry Hinkle
HR 763 Energy Innovation and Carbon Dividend Act
Read more here: https://en.wikipedia.org/wiki/Carbon_fee_and_dividend
California’s measured GHG emissions: where we are and need to go by 2030
Endorse here: www.climatesafeca.org

Million Metric Tons (MMT) CO2e Per Year

- 1990 baseline (431 MMT)
- 2017 actual (424 MMT)
- 40% below 1990 by 2030- current CA law (259 MMT)
- 2030 Goal (a): 80% below 1990 levels (86 MMT)
- 2030 Goal (b): Additional sequestration/year thru healthy soils, habitat restoration (-100 MMT)
- 2030 Goal (a + b): Drawdown started (sequestration greater than emissions) (-14 MMT)
WE CALL UPON CALIFORNIA TO ENACT THE FOLLOWING:

1. By 2022, commit to accelerating existing policies to achieve 80% below 1990 levels and net-negative emissions to 2030
2. Close the “climate gap” for lower income communities
3. Commit to a secure transition for workers
4. Enact the policies required by science:
   - Accelerate the phase-out of fossil fuel development, production and use
   - Increase sequestration
   - Invest in community resilience
   - Fund climate action

Endorse here: www.climatesafeca.org
How ensure California increases its global leadership for speed and scale GHG reductions?

The Climate Center’s Theory of Change

ACTIVISTS ➔ POLICY CHANGE ➔ MARKET FORCES ➔ BEHAVIOR CHANGE ➔ IMPACT

Build an unprecedented cross-sectoral coalition of climate advocates demanding accelerated, equitable climate policies to channel market forces so all can participate in the clean energy economy.
Climate-Safe California Phase I

• Secure platform endorsements
• Establish new statewide Climate-Safe CA alliance with workers, healthcare, environment/justice, businesses, local govt. & other partners – build bridges across silos

• Build clout in Sacramento and secure early policy wins eg, Community Energy Resilience
• Engage experts to develop science-based pathways & policies to net-negative emissions by 2030
• Publish white papers, opinion columns with opinion leaders & other influencers
• Identify and begin building regional partnerships in target communities

• Raise $25 million-- $2 million by summer 2020
“Climate-Safe California is the bold pathway that leads toward shared prosperity on a healthy planet – exactly what California and the world need now.”
L. Hunter Lovins
President of Natural Capitalism Solutions
Rocky Mountain Institute Co-Founder and author

“The Climate Center’s platform is a win-win for people and the planet. It will rapidly jumpstart an economy in peril while beginning the process to reverse the climate crisis.”
Efren Carrillo
Board President, The Climate Center, former Supervisor, County of Sonoma

“Climate change is here. It is now. The Climate Center offers the best roadmap to get us where we need to be in the next few years. We need a carbon descent plan, and we need it now. Climate Safe California is just such a plan.”
Ed Begley Jr.
Actor and environmentalist

“The gravity of the environmental situation demands a serious response, and the Climate-Safe California Platform is one that I can support.”
Jim Grant
Director, Social Justice Ministry, Roman Catholic Diocese of Fresno
“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."
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
Other actions you can take:

- Support **Community Energy Resilience** (SB1215, SB1314)
- Organize for **Fee and Dividend in CA** ($10+ billion/year?)
- Support **AB345: setbacks for oil/gas infrastructure** away from schools, homes
- Support a **Climate Bond** for jobs and a climate-safe future
- Tell your legislators to support a **clean, green, and just economic recovery** in California
- **Divest and invest** for a climate-safe future [gofossilfree.org](http://gofossilfree.org) & [fossilfreefunds.org](http://fossilfreefunds.org)
- Ask your **City Council** to develop, implement *and fund* a Community Energy Resilience Plan and Climate Action Plan
Other actions you can take:

• Ditch the SUV and make your next car an EV, plan to use it as back-up power source
• Work from home!
• Make energy efficiency/electrical improvements to your home, including wiring for EV charging bayrenresidential.org/get-rebates
• Reduce airplane travel and enjoy staycations
• Purchase/lease solar, wind or 100% green power
• Use mass transit, shared transit, e-bikes and other micro-mobility
• Insulate home, install insulating windows & doors
• Eat locally grown, organic food; avoid industrially grown meats entirely
• Switch to electric lawn equipment, appliances & hot water heaters, and heat pumps
• Engage young people in education, habitat restoration & policy action
• Use less, waste less: refuse, reduce, reuse, take action!
• SUPPORT THE CLIMATE CENTER! www.theclimatecenter.org
We can– and are– making a difference!

Be bold, take risks and innovate for a healthy, equitable future
WE HAVE CHOICES

http://blog.savesfbay.org/2013/09/bay-or-river/
One person can make a difference!
Together we make an even bigger difference!!
U.S. RENEWABLES PRODUCE MORE ELECTRICITY THAN COAL for first time in 130 YEARS in 2019
SOLAR GROWS 32% & WIND 20%

U.S. Energy Information Administration
U.S. renewable energy consumption surpasses coal for the first time in over 130 years May 28 2020
https://pvbuzz.com/renewables-produce-more-electricity-than-coal/ Apr 27 2020
https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_es1a
CA first state to achieve drawdown
Kickstarts nation & world into speed & scale climate action
April 2030
Drawdown and resilience increasing despite record-breaking drought thanks to climate-friendly natural and working lands management

August 2035
Sunrise party wins presidency

Ecosystems, Economy & Communities Healthy & Resilient, Populations Recovering

Soils and Vegetation Sequestering Carbon at Scale: Wildlife

Global Climate Union Authorizes $420 Trillion in Healthy Planet Accords; On Track to 350 PPM and a Safe Climate

Wednesday, November 6, 2040

The New York Times
Thank you!

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www.theclimatecenter.org