On the Path by 2025 to Decarbonize California: We can do it!

Ellie Cohen
The Climate Center
January, 2019
Impending tipping point for the future of life on our planet

Exceeding 4 of 9 ‘planetary boundaries’

- Climate change
- Species extinction
- Habitat loss (land-use changes)
- Fertilizers (altered biogeochemical cycles, pesticides)

- IPBES, Global Assessment, May 2019
- Steffen et al, SCIENCE, Jan 2015, Planetary Boundaries
- Natl Acad. of Sci., Abrupt Climate Change Dec 2013
- Barnosky et al, NATURE June 2012

Image Cheng (Lily) Li.
PG&E plans another massive power shut-off

October 27, 2019
- Established Convention on Biological Diversity
- Established UNFCCC (launched 1994)

- Called for "stabilizing atmospheric CO2 [in ppm] to prevent dangerous human interference with the climate system"
Took until COP21 (Paris 2015) to agree on meaning of "dangerous human interference"

https://twitter.com/KHayhoe/status/1104835726246592513
Paris Climate Agreement - Dec. 2015

Hold increase in global avg. temp. below 2°C – aspirational goal of 1.5
Major differences in impacts between 1.5C & 2C… for "health, livelihoods, food security, water supply, human security, and economic growth."

ID’d several pathways to 1.5 or 2C warming

Emissions must decline by 45% by 2030 to meet 1.5C goal

Up to 1000 Gt CO2e must be removed from atmosphere over the decades ahead

https://www.ipcc.ch/sr15/chapter/summary-for-policy-makers/
“Carbon-neutral energy production by 2030 & some luck for tolerable climate future”

• We must “immediately and aggressively pursue carbon-neutral energy production by 2030 and hope climate sensitivity to CO2 is relatively low”

• “Rapid carbon reduction strategies provide a hedge against the possibility of high climate sensitivity scenarios”

UN Climate Science Synthesis  Sept 2019

• Climate impacts are hitting harder and faster than climate assessments indicated
• Staying below 2°C requires
  • immediate & deep decarbonization,
  • protection of carbon sinks & biodiversity, and
  • removing CO2 from the atmosphere.
11,000 scientists’ warning: climate emergency

...To secure a sustainable future...decision-makers and all of humanity [must] promptly respond to [the] climate emergency and act to sustain life on planet Earth, our only home.”

–Ripple et. al. World Scientists’ Warning of a Climate Emergency, Bioscience, November 2019
Tipping points underway could cascade to an uninhabitable, ‘hothouse’ climate state… Compels political & economic action on emissions now

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

**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

**E. Coral reefs**
Large-scale die-offs

**F. Greenland ice sheet**
Ice loss accelerating

**G. Boreal forest**
Fires and pests changing

**H. Permafrost**
Thawing

**I. West Antarctic ice sheet**
Ice loss accelerating

**J. Wilkes Basin, East Antarctica**
Ice loss accelerating
EVERY ACTION MATTERS
EVERY BIT OF WARMING MATTERS
EVERY YEAR MATTERS
EVERY CHOICE MATTERS

Full report: https://ipcc.ch/sr15, including the Summary for Policymakers, 5 chapters, 10 FAQs and the Glossary.
Database of SR15 mitigation pathways: https://data.ene.iiasa.ac.at/iarmc-1.5c-explorer/
Net zero CO2e emissions- is it enough? No!

Balance carbon emissions with carbon removal

(transition to a "post-carbon economy").

https://twitter.com/KHayhoe/status/1104835726246592513
GOAL: Net “negative” emissions

Bring atmospheric CO2 back down (e.g. to 400 or 350ppm)

--reverse some (not all) of the impacts

("overshoot" pathway- the faster we do this, the more impacts we can avoid.)

Example: Croplands could sequester ~1/5 of current annual emissions globally; healthy ag soils 5+ Gt/yr or 50% of 2050 goal

Global Climate Action Leaders

**Finland**
- Carbon neutrality by 2035 without carbon offset program

**Uruguay**
- Carbon neutrality by 2030– major investments in wind and increased forest cover

**Norway**
- Ban on new Internal Combustion Engine (ICE) car sales in 2025

**Denmark**
- Reduce GHGs to 70% below 1990 levels 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
CALIFORNIA Measured Emissions by Sector, 2017

- Transportation: 41%
- Industrial: 24%
- Electricity in State: 9%
- Electricity Imports: 6%
- Agriculture: 8%
- Residential: 7%
- Commercial: 5%

Total CO2 emissions: 424.1 MMTCO₂e

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

Photo: Jonathan Turley

Emissions we don’t count

Consumption-based, out-of-boundary emissions

- Product & food manufacturing & disposal outside boundary
- Air travel & other transportation outside boundary
- Emissions from production of natural gas and fuels; foreign fuels refined in California
- Other emissions away from home (e.g. energy)
Example: Marin consumption-based, out-of-boundary emissions

~3x measured emissions in 2017

- **Energy**
  - Residential/Non-Residential: 11%
  - **Agriculture**: 3%
  - **Waste**: 2%

- **Transportation**: 18%

- **Consumption**: 67%

~4,324,920 MT CO2e
State of California: recent climate policy highlights

- SB 32 (2016): Reduce measured GHG emissions 40% below 1990 levels by 2030
- SB 1383 (2016): Reduce short lived climate pollutants, e.g., methane emissions from food waste/landfills
- SB 100 (2018): Achieve 50% renewable energy by 2025, 60% by 2030 and 100% by 2045
- Executive Order B-55-18 (2018): Achieve carbon neutrality by 2045 and maintain net-negative emissions after
… are CA’s policies enough per the science & climate reality?

The Climate Center’s rapid decarbonization accelerated timeline:

By 2025, enact the bold policies required by the science to be on track for a safe climate by 2030, to secure a vibrant, equitable, and healthy future for all.
HOW will California become a global leader in rapid decarbonization for a climate-safe future?

The Climate Center’s Theory of Change

ACTIVISTS → POLICY CHANGE → MARKET FORCES → BEHAVIOR CHANGE → IMPACT

- Build an unprecedented cross-sectoral coalition of climate activists demanding a suite of bold, equitable climate policies now
Secure by 2022 CA commitments to accelerate decarbonization

- 80% below 1990 levels by 2030
- Carbon neutrality by 2030
- Net negative emissions by 2035
Ensure a Just, Equitable Transition

- CA will support workers and frontline communities dependent on fossil fuel enterprises as we transition to a clean energy, climate-resilient economy.
- California will prioritize and support vulnerable frontline communities and energy-insecure communities in achieving these rapid decarbonization goals.
1- Clean, Local, Equitable Power & Storage

- Phase out oil/gas production and investment by 2030
- 100% building electrification & efficiency by 2030
- Implement Advanced Community Energy— for utility reform and to fund clean energy, community microgrids starting with critical facilities in low income communities by 2021
2- Sustainable Mobility

- Phase out new fossil fuel powered vehicle sales starting no later than 2025

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

[Image: Illustration of sustainable mobility]
3- Healthy Lands and Waters

- Sequester 100+ MMT CO2e in healthy soils and vegetation annually by 2030-- starting in 2020
  - Healthy soils investments on 25 million acres
  - Carbon farming & gardening
  - Habitat restoration
4- Climate–Safe Communities

- Fund implementation of resilience in all California counties and cities

www.nrgmarin.org
5-Green Finance

- New progressive financing mechanisms producing additional $20+ billion annually specifically for climate action
  - Frequent flyer fee
  - Progressive carbon taxes (e.g., fee and dividend)
  - Green bonds
How? Raise $25 million over the next 5 years with $2m by spring 2020 to:

- Establish a diverse statewide Rapid Decarbonization Partnership
- Develop science-based policies for each of our six strategic objectives
- Establish strong legislative advocacy presence in Sacramento
- Identify and build relationships with climate opinion leaders as well as other influencers in the state
- Mobilize and engage target communities through house meetings and social media
- Launch a major strategic communications campaign
Phase I (draft):

Phase 1: Development and initial success

- Develop prospectus and build out strategy
- Secure initial investment of $2 million
- Secure initial NGO, business, local govt. partners
- Develop Political and Labor strategy
- Engage experts in each initiative area
- Develop policy white papers
- Start efforts to secure early wins: State commitments to accelerated decarbonization and Advanced Community Energy with utility reform

#ClimateNeutral2030 & #NetNegative2035
No more ‘business as usual’

- Stop greenhouse gas emissions
- Rapidly transition to clean, efficient and equitable energy and water-use economy
- Make nature-based, multi-benefit approaches an equal priority
WE HAVE CHOICES

http://blog.savesfbay.org/2013/09/bay-or-river/
Key policy areas:

- Consumerism
- Transportation
- Energy
- Sequestration/Nature
- Resilience
Demand that California count all emissions, commit by 2022 to rapid decarbonization & carbon neutrality by 2030, & divest from and stop all fossil fuel production by 2030

Contact Governor Newsom at: https://govapps.gov.ca.gov/gov40mail/
We can – and are making a difference!

Be bold, take risks and innovate for a healthy, equitable future
One person can make a difference!!
Together we make a huge difference!!
Renewable energy now doubling every 5.5 yrs globally; 4x more than 10 yrs ago

- Solar 26x greater than 10 yrs ago
- Clean energy- w/ hydropower= 26.3% of total electricity produced globally

Global Trends in Renewable Investment 2019
http://fs-unep-centre.org/research/report
DOI: 10.1126/science.aah3443
Global GHGs must peak by 2020 in order to limit global temperature rise to 1.5°C.

WE ARE THE ONES WE'VE BEEN WAITING FOR
California first state to reach net zero emissions

Major equitable economic retooling a success

November 2029
Global Climate Union Authorizes $420 Trillion in Healthy Planet Accords: On Track to 350 PPM and a Safe Climate

Sunday, January 10, 2040

Sunrise party wins presidency

Ecosystems and Communities Healthy & Resilient, Soils and Vegetation Sequestering Carbon at Scale;

the center
Thank you!

ellie@theclimatecenter.org
www.theclimatecenter.org