



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

Ellie Cohen
The Climate Center
January, 2019



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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)

- Lenton et al, Nature, Nov 2019
- 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.

The Press Democrat

PG&E plans another massive power shut-off

October 27, 2019





United Nations Climate Change





- 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"



United Nations

Framework Convention on
Climate Change

Annual “Conference of the Parties” or COPs

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



United Nations Framework Convention on Climate Change <http://unfccc.int/resource/docs/2015/cop21/eng/l09.pdf>
www.pointblue.org/parisagreementecosystems

Guiot, et al. Paris Agrmt and Mediterranean **basin** ecosystems. *Science* 28 Oct 2016 DOI: 10.1126/science.aah5015

IPCC 1.5C report- Oct 2018

<https://www.ipcc.ch/sr15/>

- 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”

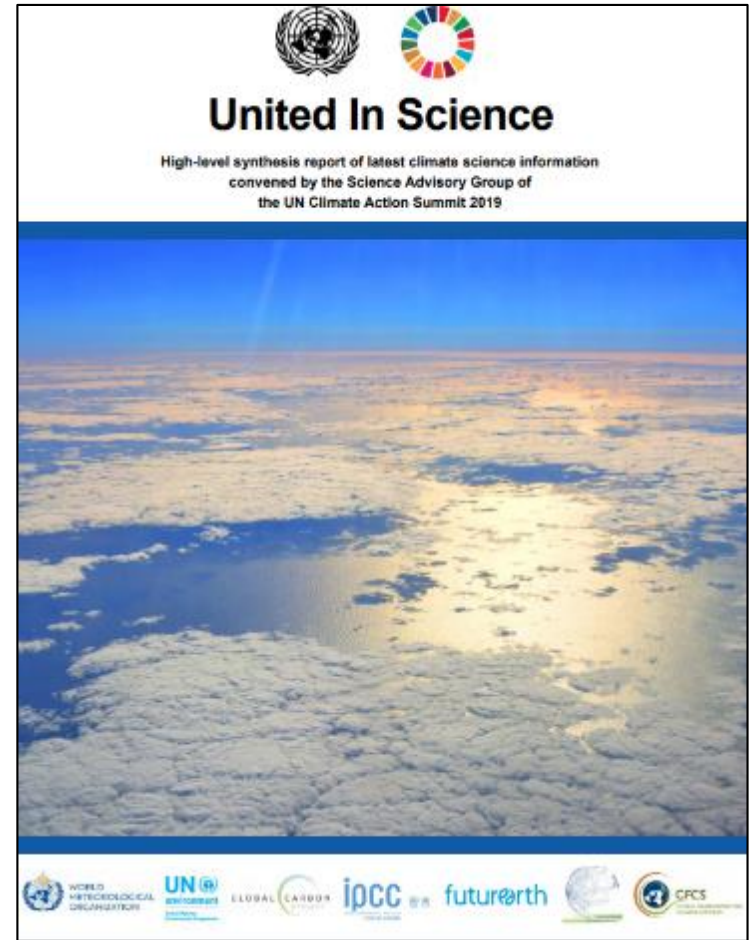
- We must “immediately and aggressively pursue carbon-neutral energy production by 2030 and hope climate sensitivity to CO₂ is relatively low”
- “Rapid carbon reduction strategies provide a hedge against the possibility of high climate sensitivity scenarios”



Lamontagne et al. [Robust abatement pathways to tolerable climate futures require immediate global action](https://www.sciencedaily.com/releases/2019/03/190311125353.htm). *Nature Climate Change*, 2019 (over 5 million pathways analyzed)
<https://www.sciencedaily.com/releases/2019/03/190311125353.htm>

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.”



Smoke from fires burning in California from satellite photos, Oct. 2017

-Ripple et. al. [World Scientists' Warning of a Climate Emergency](#),
Bioscience, November 2019

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

Tipping points underway could cascade to an uninhabitable, 'hothouse' climate state...
Compels political & economic action on emissions now

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

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/iamc-1.5c-explorer/>

Net zero CO₂e emissions- is it enough? No!

Balance
carbon emissions
with carbon
removal

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



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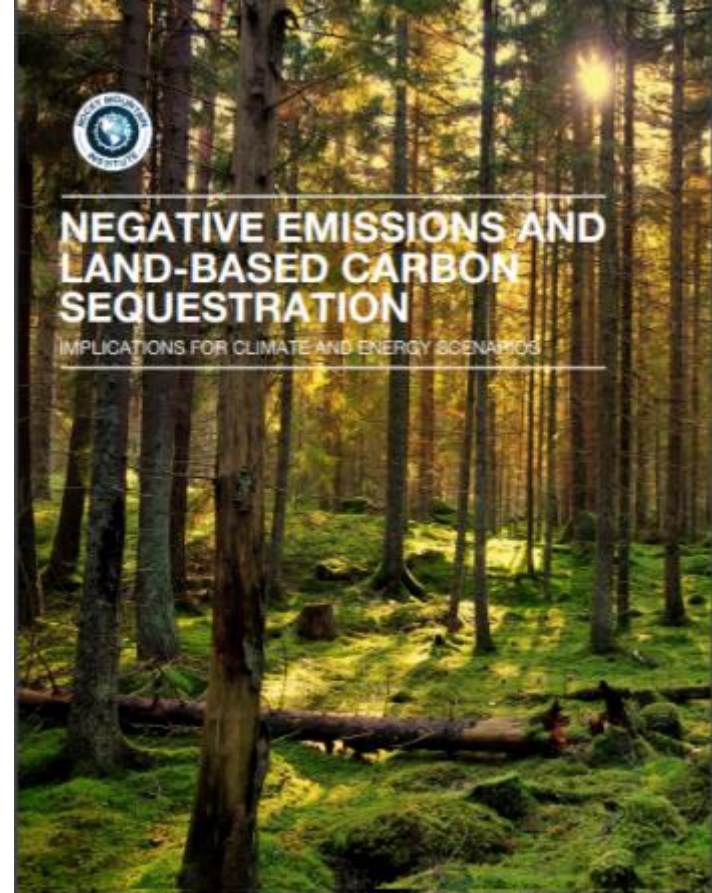
<https://twitter.com/KHayhoe/status/1104835726246592513>

GOAL: Net “negative” emissions

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

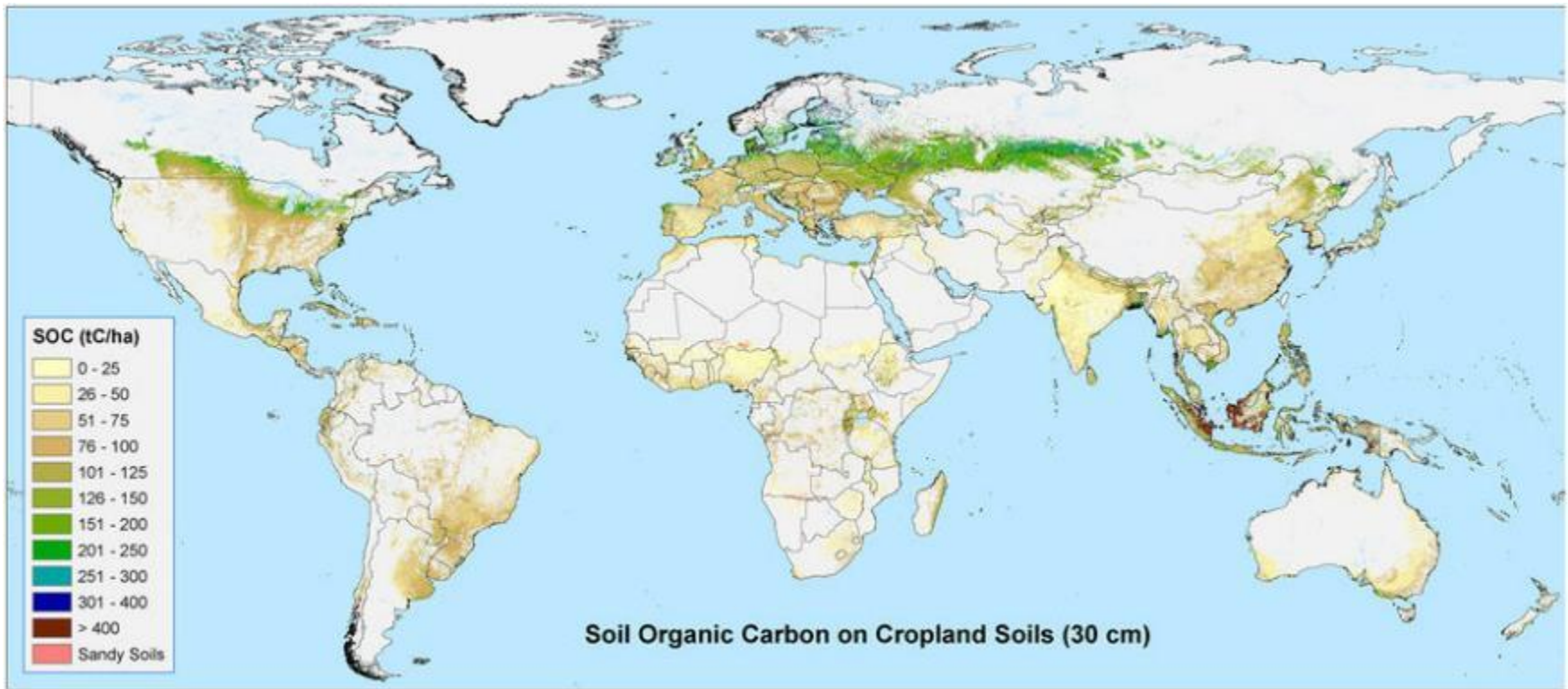
--reverse some (not
all) of the impacts

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



https://www.rmi.org/wp-content/uploads/2018/11/RMI_Negative_Emissions_Scenarios_Report_2018.pdf

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



Vermeulen et al. [A Global Agenda for Action on Soil Carbon](#). Nature Sustainability, Jan 2019

Bronson, Griscom, et al. [Natural Climate Solutions](#). PNAS October 2017 doi: 10.1073/pnas.1710465114

Zomer et al (TNC). [Global Sequestration Potential of Increased Organic Carbon in Cropland Soils](#). Scientific Reports Nov 2017.

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

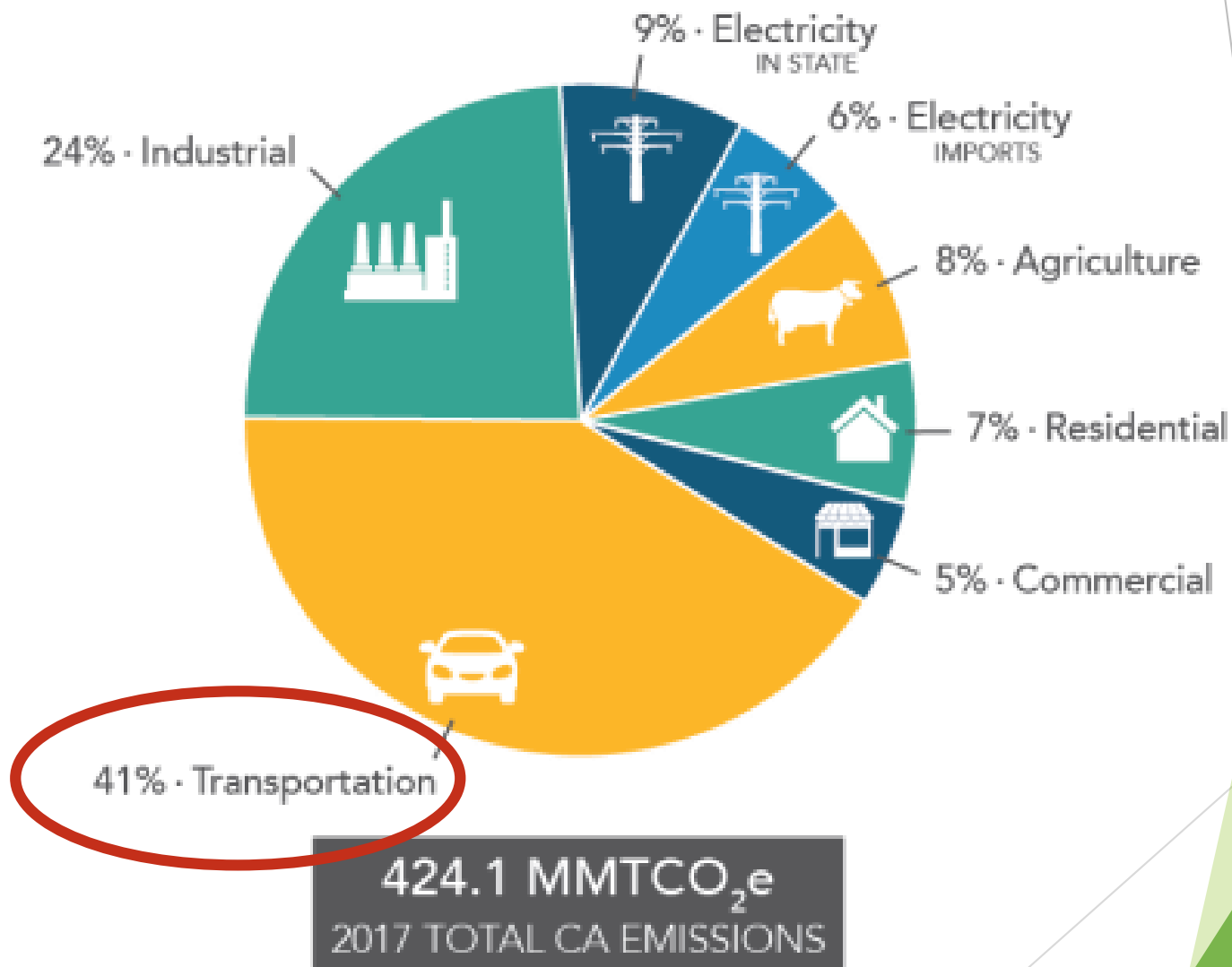
Denmark

- ▶ 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



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

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<https://www.iea.org/newsroom/news/2019/october/growing-preference-for-suvs-challenges-emissions-reductions-in-passenger-car-mark.html>

Emissions we don't count

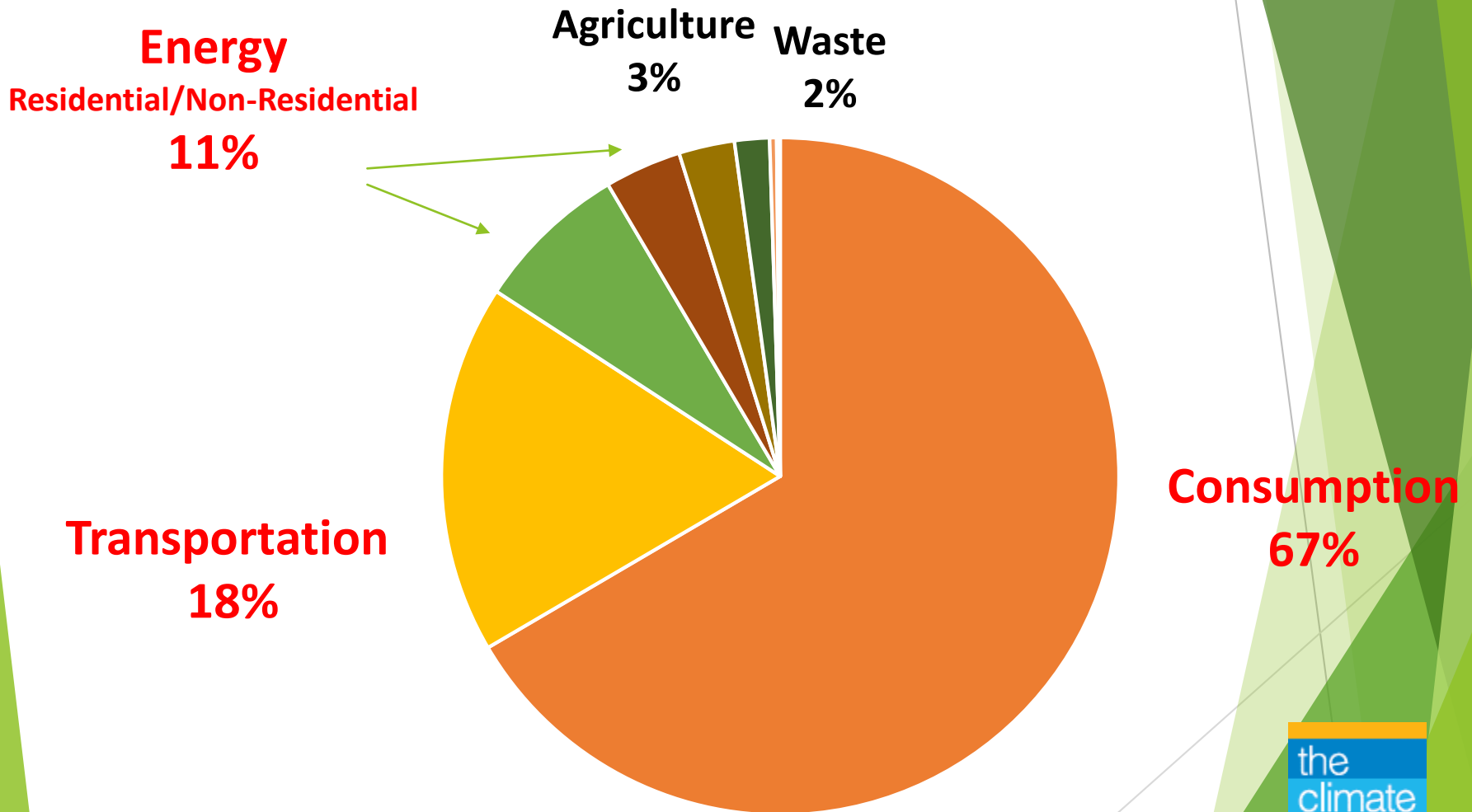
Consumption-based, out-of-boundary emissions

- 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)



Photo: Ellie Cohen

Example: Marin consumption-based,
out-of-boundary emissions
~3x measured emissions in 2017



~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:

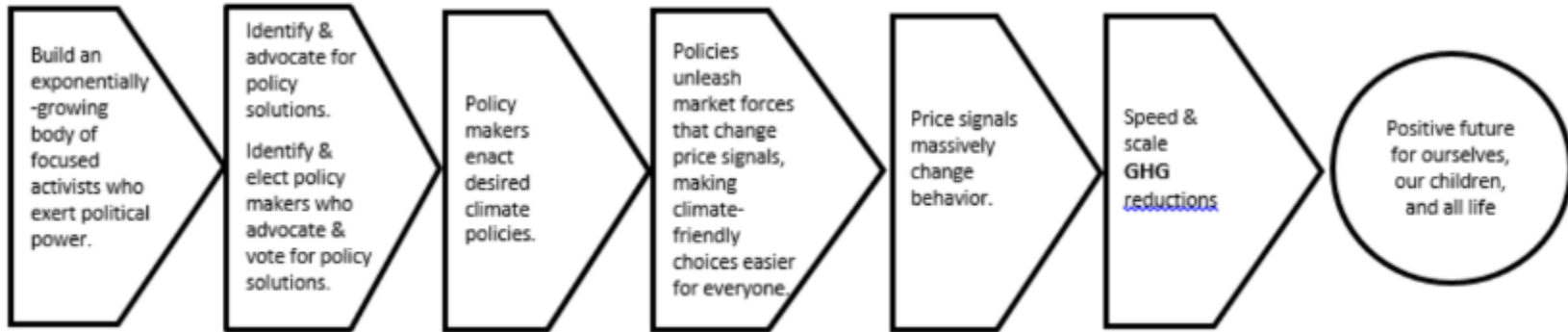
By 2025, enact the bold policies required by the science to be on track for a safe climate by 2030, to secure a vibrant, equitable, and healthy future for all.



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.

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



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

Clean & Smart Community Microgrid



Clean, Affordable, Resilient, Equitable and Safe

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



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



Carbon Farming, Marin



Point Blue STRAW project

4- Climate-Safe Communities

- Fund implementation of resilience in all California counties and cities



www.nrgmarin.org



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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

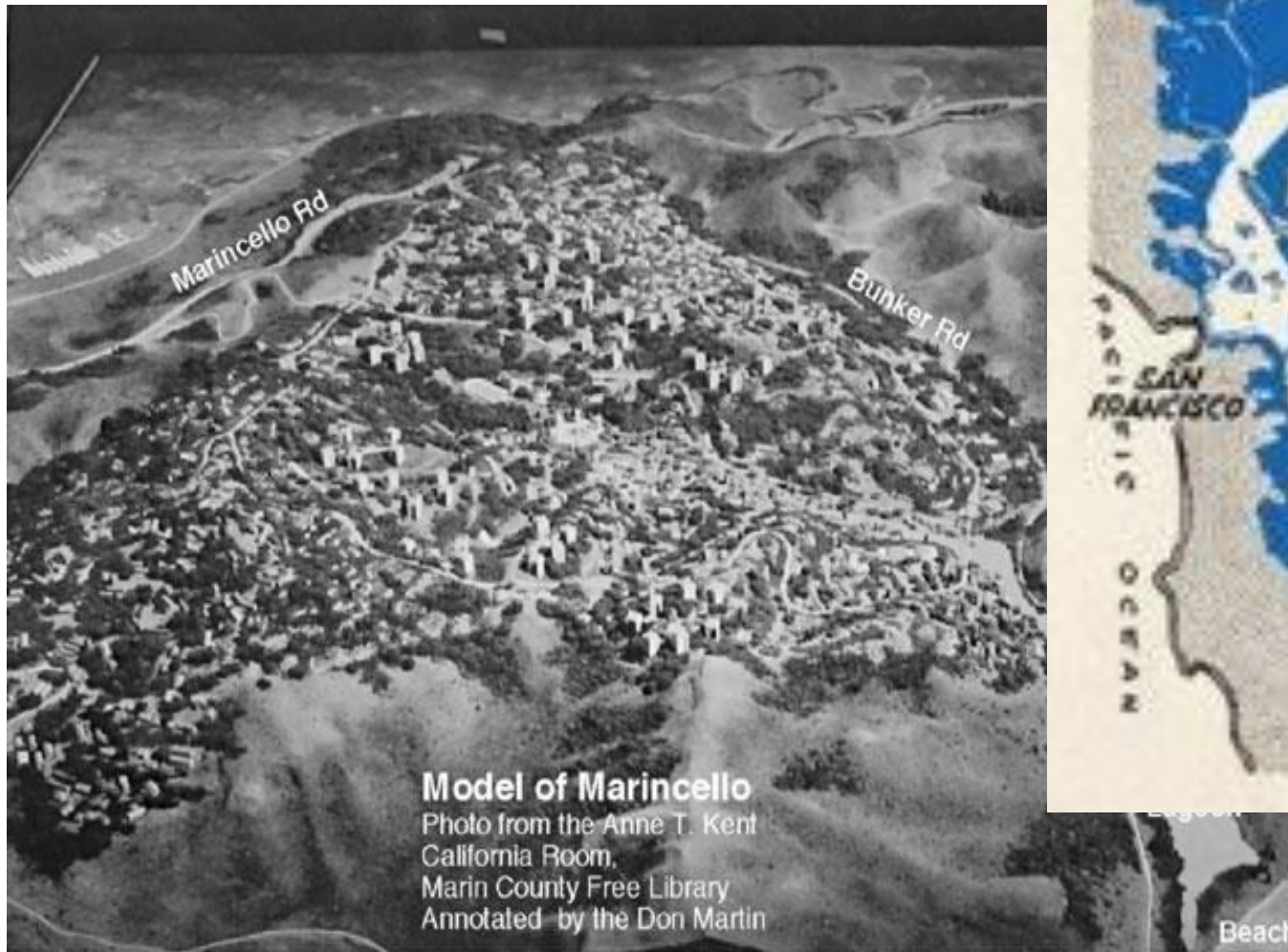
#ClimateNeutral2030 & #NetNegative2035

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



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/>

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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



27 C40 CITIES

HAVE PEAKED THEIR GREENHOUSE GAS EMISSIONS

Global GHGs must peak by 2020 in order to limit global temperature rise to 1.5°C.

https://c40-production-images.s3.amazonaws.com/other_uploads/images/1923_Peaking_emissions_Media_Pack_Extended_version.original.pdf?1536847923



CNN DEMOCRATIC PRESIDENTIAL TOWN HALL
THE CLIMATE CRISIS



CNN PRESIDENTIAL TOWN HALL WITH MAYOR PETE BUTTIGIEG

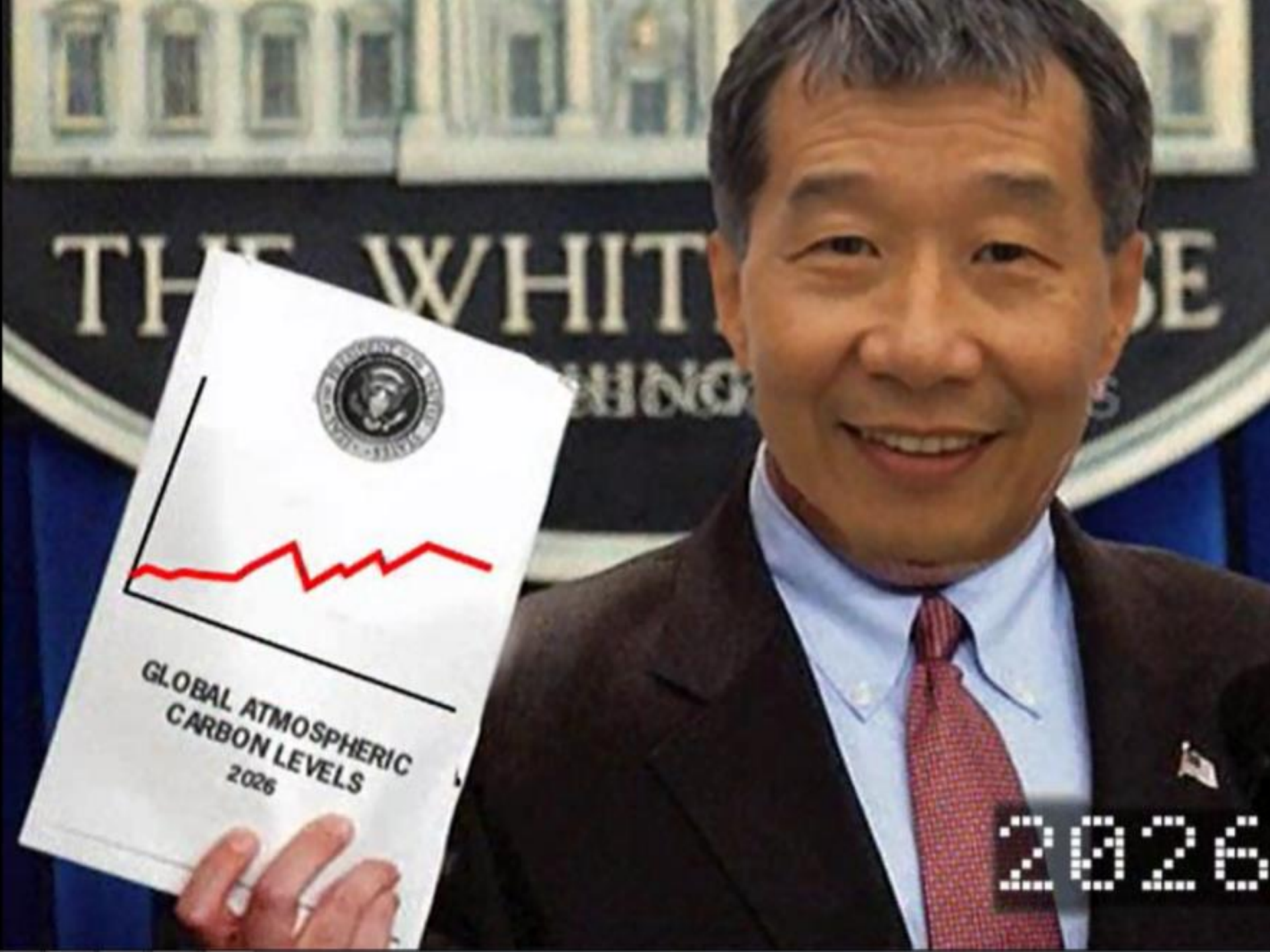


10:02 PM ET

#ClimateTownHall

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GLOBAL ATMOSPHERIC
CARBON LEVELS
2026

2026

California first state to reach net zero emissions

Major equitable economic retooling a success

November 2029



The New York Times

Sunday, January 10, 2040

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

Sunrise party wins presidency

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

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Thank you!

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