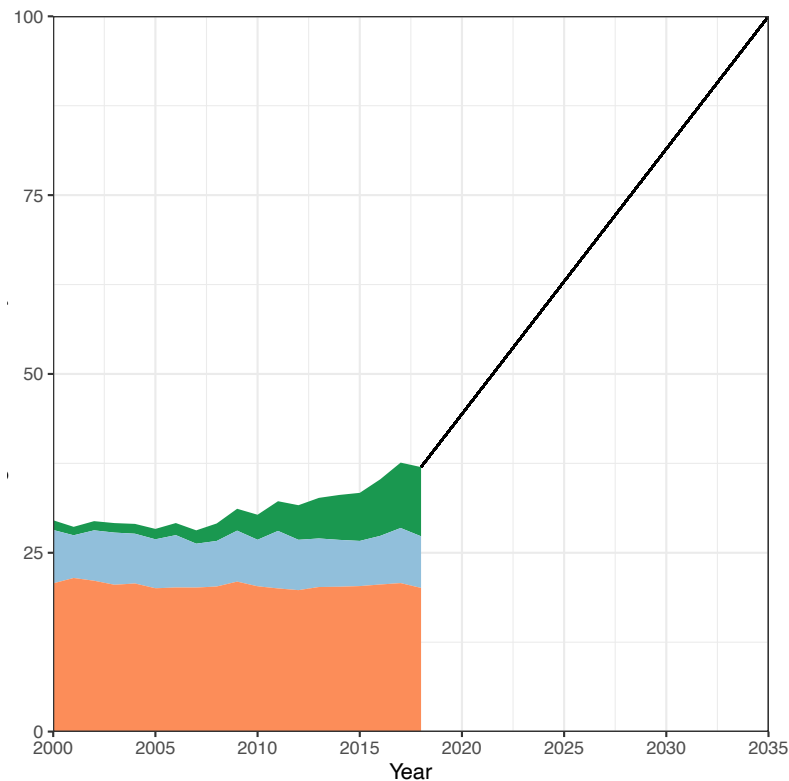
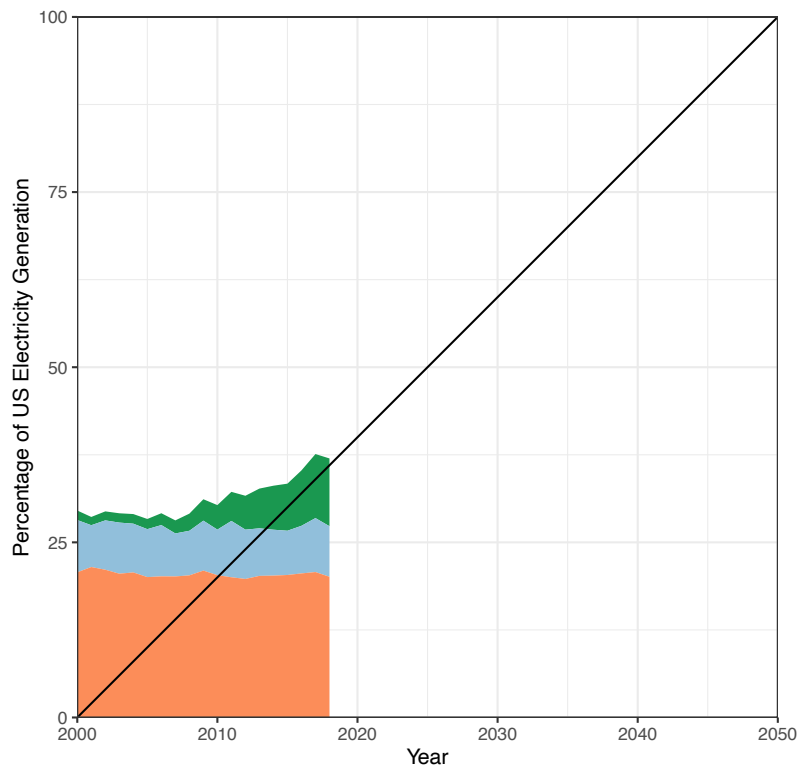


# Short Circuiting Policy Book Talk + Clean Energy Reports

Leah Stokes  
Assistant Professor  
UC Santa Barbara

February 11, 2020

# The Challenge: Narwhal Curves





How quickly do we need to ramp up renewables? Look to the narwhal



Watch later



Share

# *the* NARWHAL CURVE



**PARTNER  
VIDEO** 

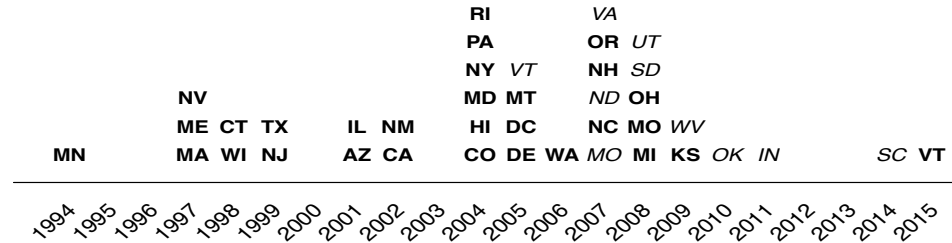
# Federal Policy Failures

- Throughout the 1990s, advocates tried to pass an Renewable Portfolio Standard (RPS). They failed. (Chapter 3)
- The Waxman-Markey Bill included a federal RPS – 20% by 2020, with 8% allowed to be met with efficiency.
  - It did not pass the Senate
- Biden-Harris campaign and admin endorsed a 100% CES by 2035.

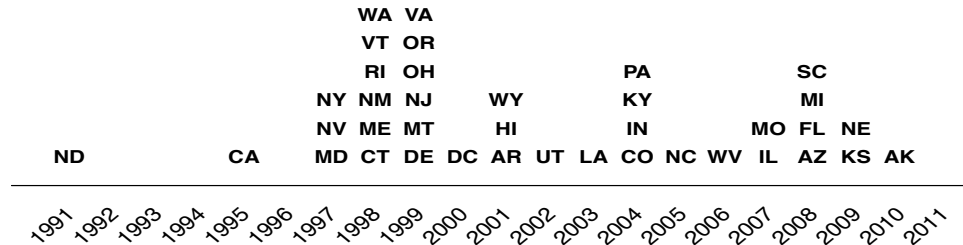


# State Laws Fueling Decarbonization

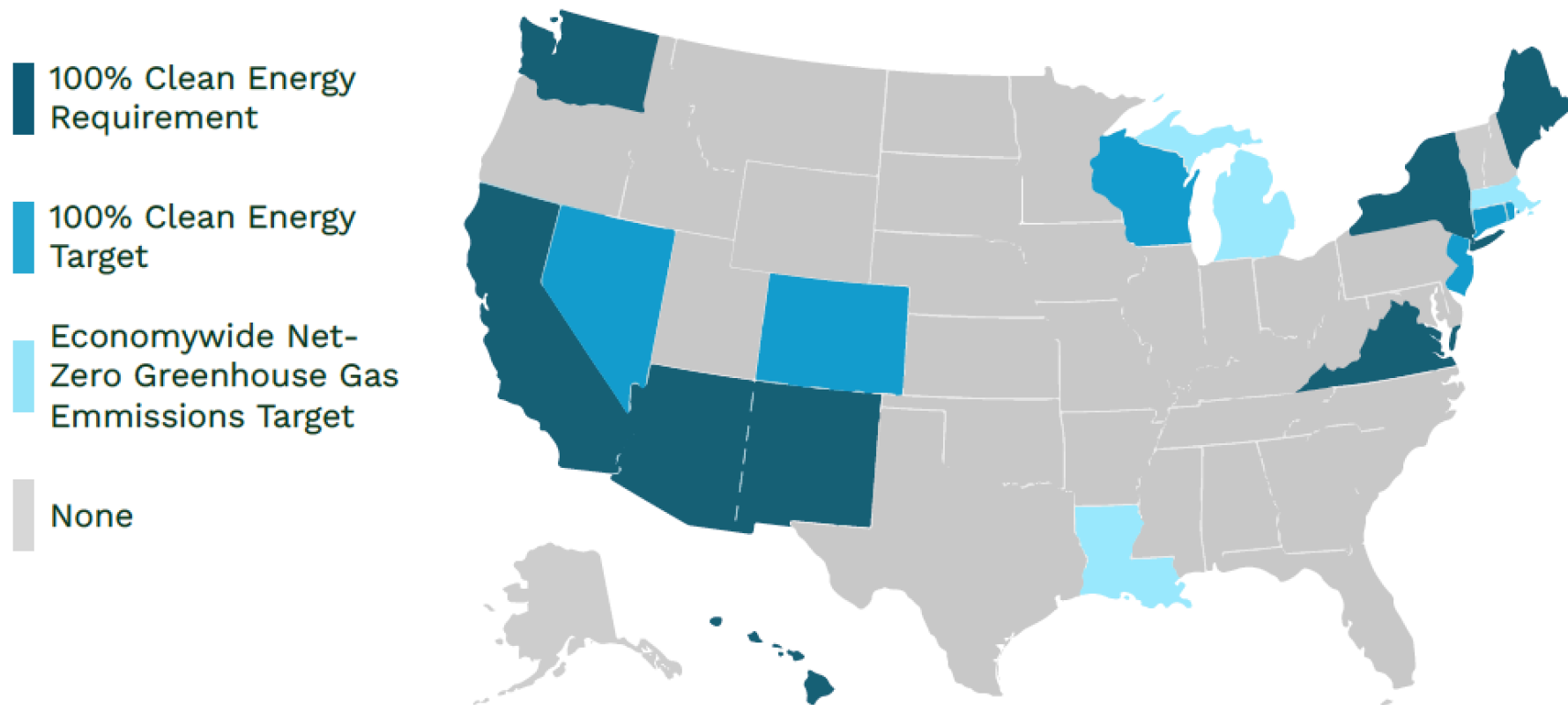
RPS Policies Passed by Year



NEM Policies Passed by Year



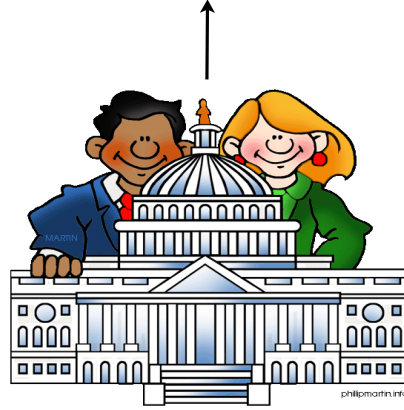
### Figure 1. States with 100% Clean Electricity Policies<sup>14</sup>



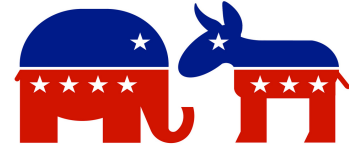
# Interest Group Backlash

- Fossil fuel companies and electric utilities are resisting the clean energy transition.
- They use a variety of tactics to undermine policy feedback:
  - lobbying
  - implementation resistance
  - primaries, elections
  - astroturfing, outside lobbying
  - court cases

## Interest Groups



## Political Control



## Bureaucrats



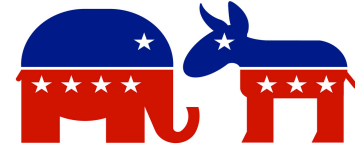
## Public



**Implemented policies  
redistribute resources  
between  
advocates and opponents**



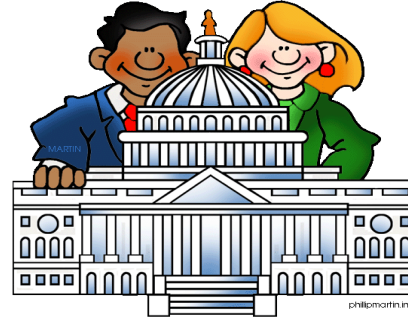
## Political Control



## Bureaucrats



## Interest Groups

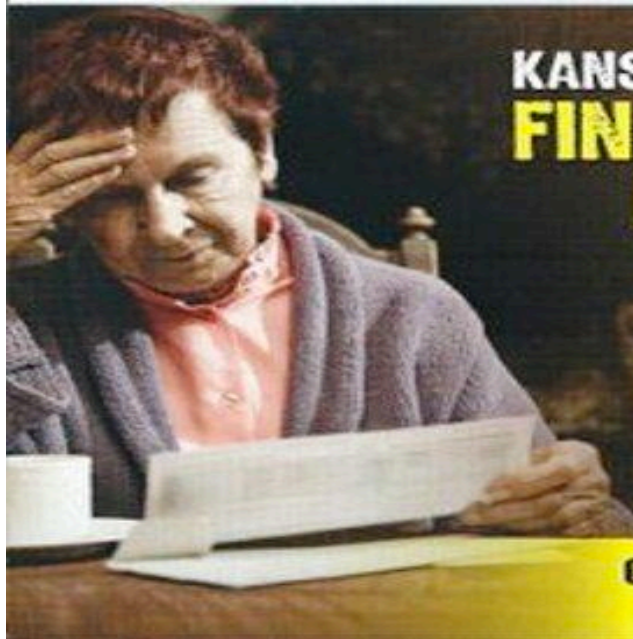


## Public



**Interest groups influence  
policy both directly and  
*indirectly* by influencing  
the public**

# Astroturfing - Kansas



**KANSAS SENIORS ARE ALREADY FINANCIALLY STRESSED**

**HIGHER UTILITY BILLS AREN'T HELPING.**

Rising costs of gasoline, groceries, and health care have put seniors and those on fixed incomes in a tough financial position. To make matters worse, our utility bills are going up.

Since the Renewable Portfolio Standard passed in 2009, our state legislature has forced energy companies to use more

expensive energy sources rather than the proven, abundant, and affordable resources that have kept our bills low.

The result has been some Kansans have seen 15 rate hikes since this law went into effect. Kansans aren't alone. In other states with these laws, rates have gone up an average of 27%.

**Call Rep. Don Hineman at 785-296-7636 and tell him to repeal the RPS Mandate.**

# Astroturfing – New Orleans



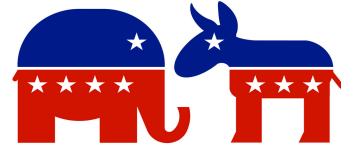


**Implemented policies  
redistribute resources  
between  
advocates and opponents**

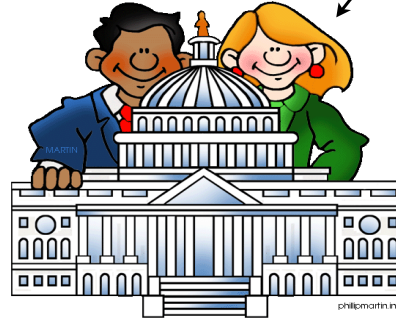


**Interest groups support  
politicians that share  
their views in primaries  
+ general election.**

**Political Control**



**Interest Groups**



**Bureaucrats**



**Public**





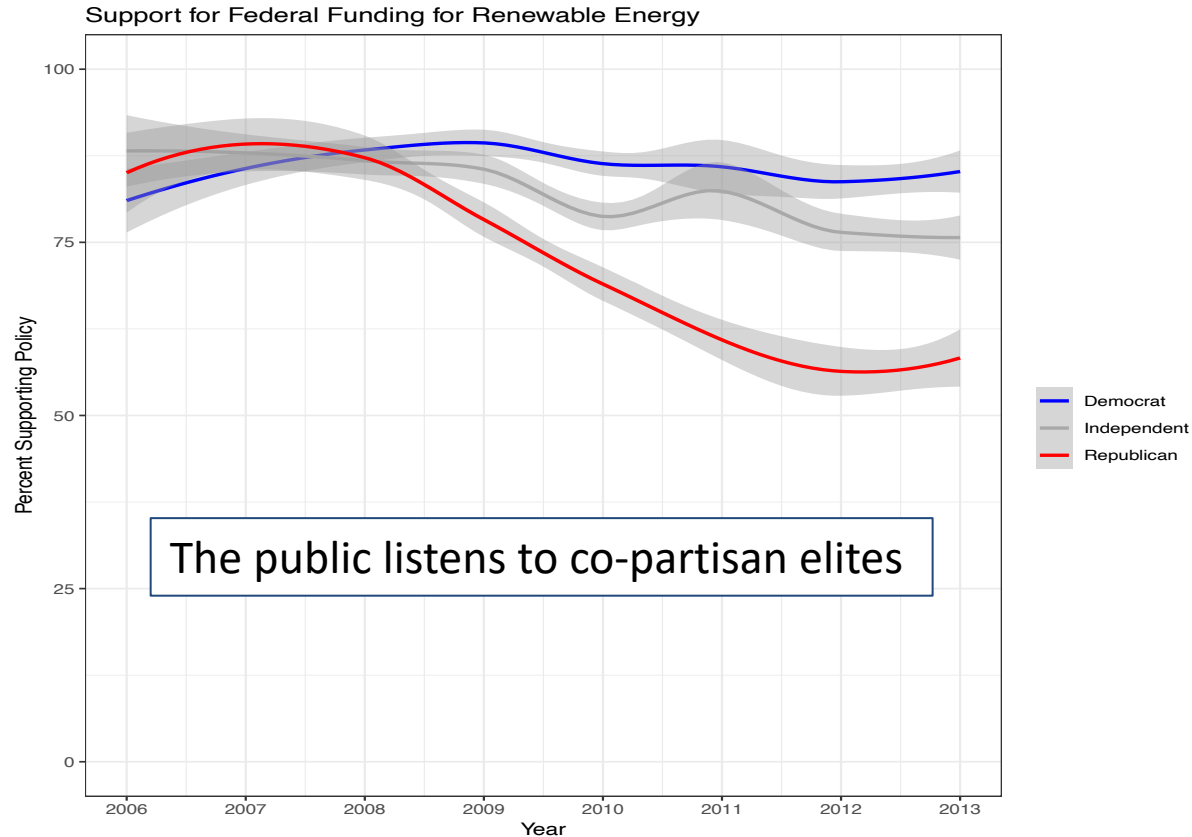
# Elite Polarization

- Interest groups have undermined Republican support for climate action, driving asymmetric polarization.

Year	State	Governor
1994	MN	R
1996	AZ	R
1997	NV	D
1997	MA	R
1997	ME	I
1998	WI	R
1998	CT	R
1999	TX	R
1999	NJ	R
2001	IL	R
2002	NM	R
2002	CA	D
2004	RI	R
2004	PA	D
2004	NY	R
2004	MD	R
2004	HI	R

2005	MT	D
2005	DE	D
2007	NH	D
2007	NC	D
2007	OR	D
2008	OH	D
2008	MI	D
2009	KS	D

# Mass Public Polarization



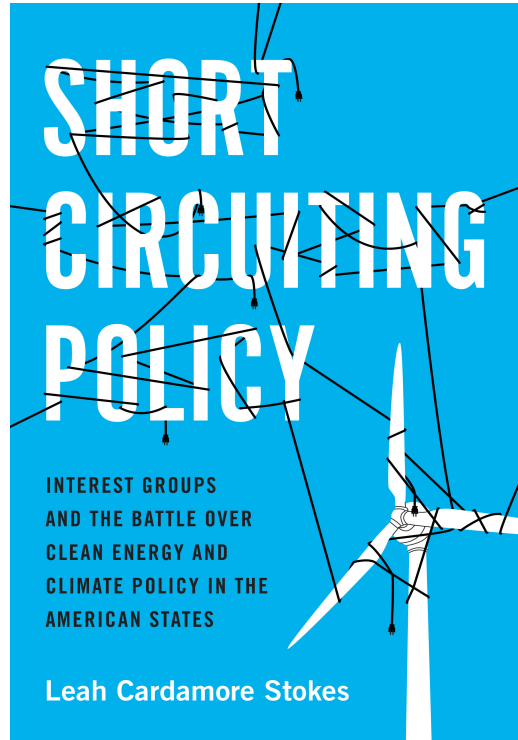
# Cases

- Texas: successful wind energy and transmission laws
- Texas: unsuccessful solar laws
- Kansas: Rollback of Renewable Energy Laws
- Arizona: Rollback of Net Metering Laws
- Ohio: Rollback of Renewable Energy and Energy Efficiency Laws, Bailouts for Coal Plants

# Climate Denial & Climate Delay

- Electric utilities, like fossil fuel companies, have played a key role in delaying the clean energy transition (Chapter 3).
  - Promoted a wasteful energy system.
  - Promoted climate denial.
  - Worked to rollback clean energy laws.
- You can read a summary of this part of the book on Drilled News.

# How to get a copy



- Want to buy a copy? Go to the Oxford University Press website: [bit.ly/scp-book](http://bit.ly/scp-book)
- Discount code: ASFLYQ6 – 30% off.
- You can also buy a kindle ebook: [bit.ly/scp-kindle](http://bit.ly/scp-kindle)
- There is an audiobook!

# THE DIRTY TRUTH

## About Utility Climate Pledges

January 2021



WILL DATA FOR PROGRESS

# A Roadmap to 100% Clean Electricity by 2035

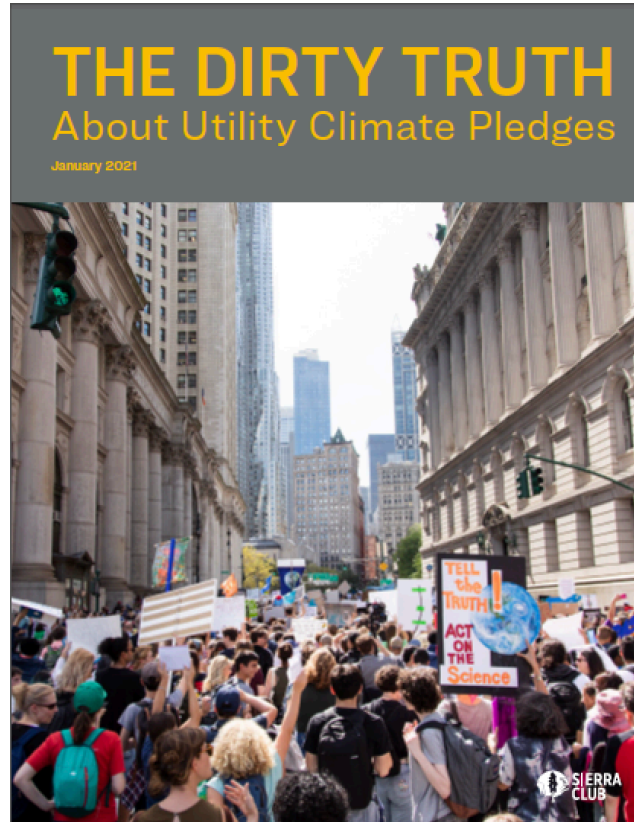
Power Sector Decarbonization through  
a Federal Clean Electricity Standard  
and Robust Clean Energy Investments  
and Justice-Centered Policies

University of California Santa Barbara:  
Leah C. Stokes and Olivia Quinn

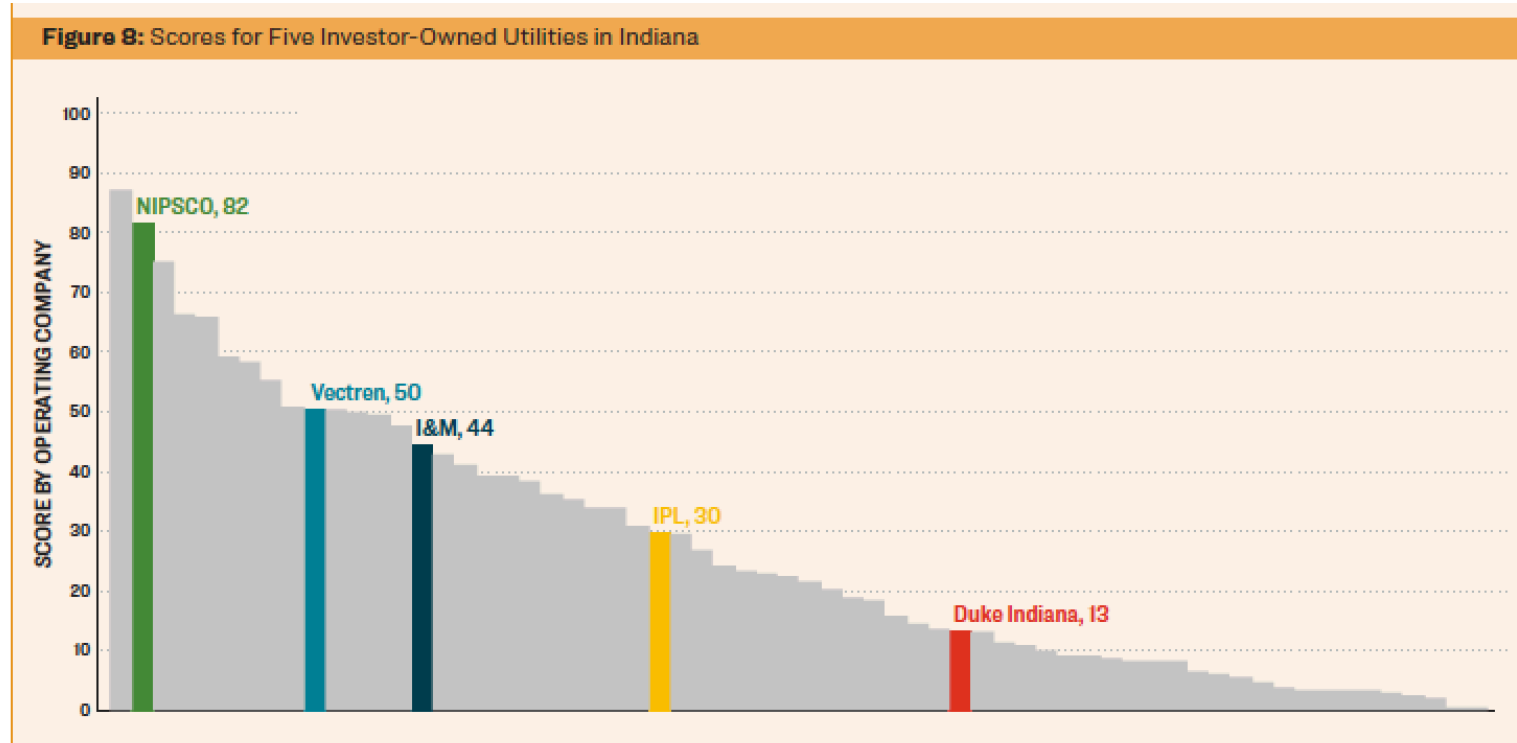
Evergreen Action:  
Sam Ricketts and Bracken Hendricks

February 2021

# Sierra Club Report



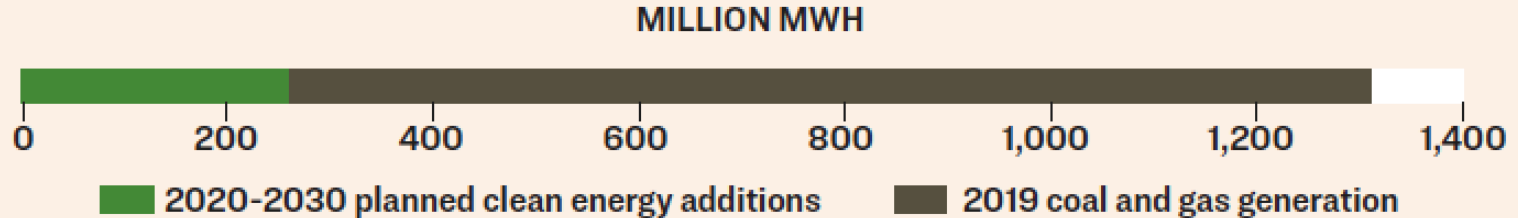
# Without a CES, (most) utilities won't move fast enough! Sierra Club report





# Planned New Clean Energy

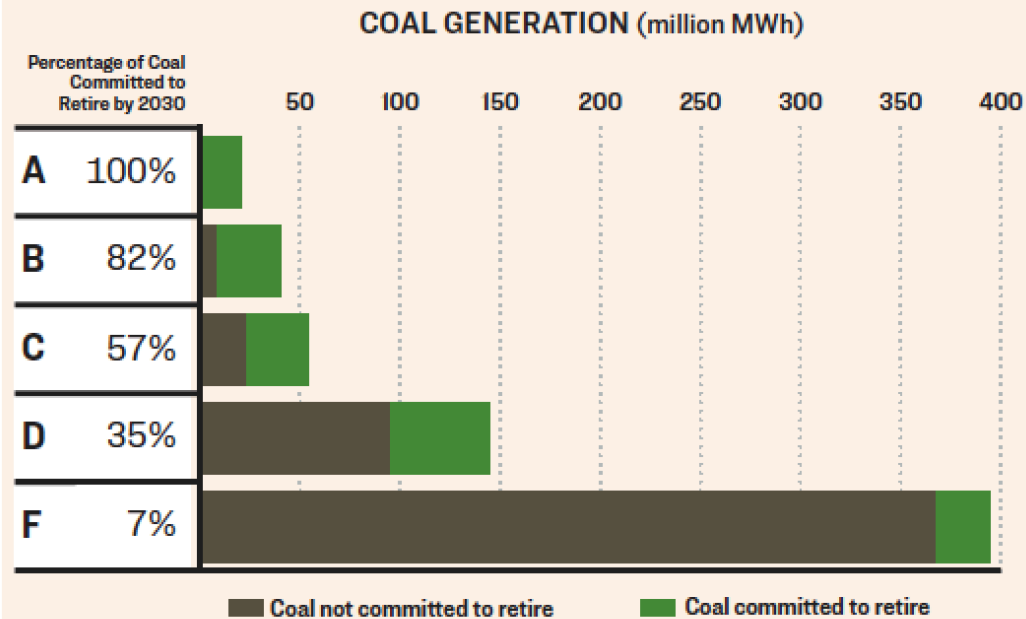
**Figure 4:** Planned Clean Energy Vs. Existing Fossil Generation Across All Utilities Studied



SOURCE: SIERRA CLUB ANALYSIS, DETAILED DATA AVAILABLE [HERE](#).

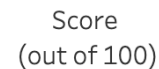
# Coal retirements

**Figure 6: Coal Committed to Retire by 2030 by Letter Grade**





2



0

Grade

F

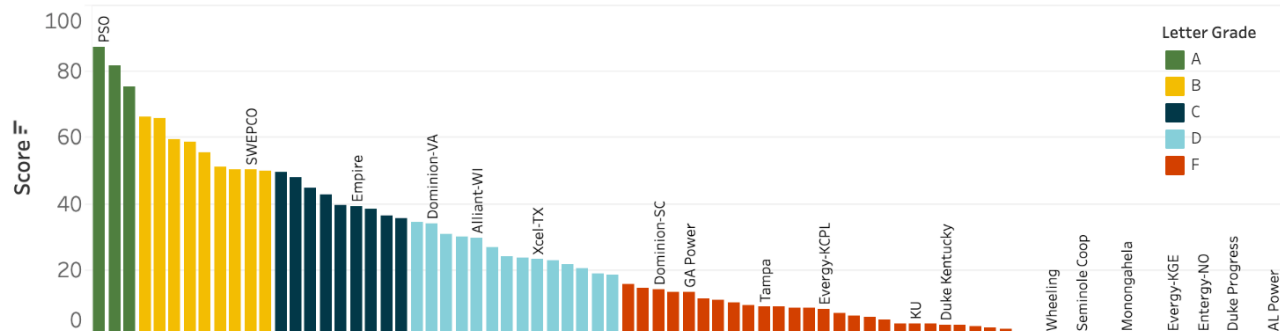
## Company clean energy metrics

2020-2030 planned clean energy additions (million MWh)	0.8
Solar capacity planned (MW)	400.0
Wind capacity planned (MW)	0.0
Residential efficiency - 2019	0.0%
Commercial efficiency - 2019	0.0%
Industrial efficiency - 2019	0.0%
Total efficiency - 2019	0.0%

Note: efficiency data not available for G&T co-ops or utilities with state aggregated EE programs

Highlight a company

2



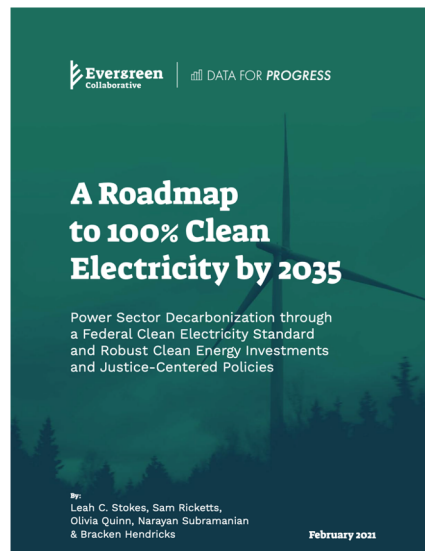
# Federal Policy Opportunity

- We have an opportunity to scale up state and local action in 2021 with comprehensive climate legislation.
  - Standards: 100% CES by 2035; auto standards; energy efficiency and home retrofits. Just released a report with Evergreen Action and Data for Progress.
  - Investments: \$2 trillion over 4 years.
  - Justice: Centering income inequality and racial justice; 40% of federal investments to disadvantaged communities.

# Can we clean up our electricity system fast? Yes.



# A Roadmap to 100% Clean Electricity by 2035



# Why should Congress pass a 100% CES?

- **The next two years are critical for 100% clean electricity.**

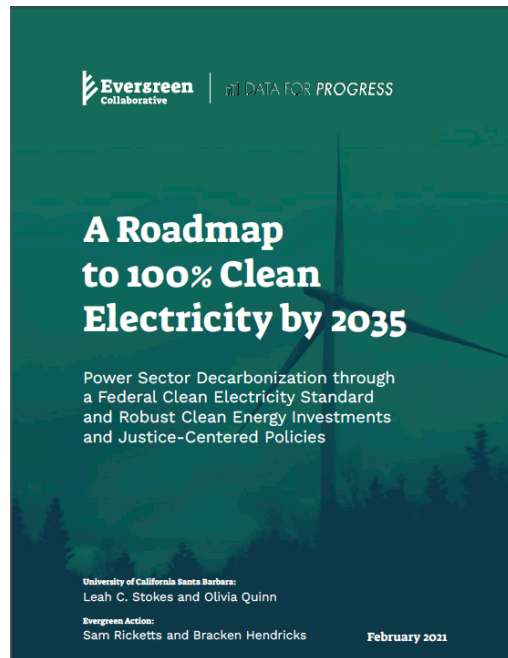
President Biden and Vice President Kamala Harris campaigned and won on a 100% clean energy standard for electricity by 2035. We must increase the pace of clean energy deployment through policy.

- **Congress must act on these commitments, and pass a federal Clean Electricity Standard (CES).**

This approach is proven in states—already more than 1 in 3 Americans live in a place targeting 100% clean, carbon-free power. It is popular, with a majority of voters supporting this policy. It is also a practical approach, which can ensure job creation and justice.

# Can we do this through budget reconciliation? Yes!

- Federal CES Option 1: “On the Books” ZEC System
- Federal CES Option 2: Reverse-Auction for ZECs
- Federal CES Option 3: Mass-Based Standard
- Three Alternative options that approximate a CES





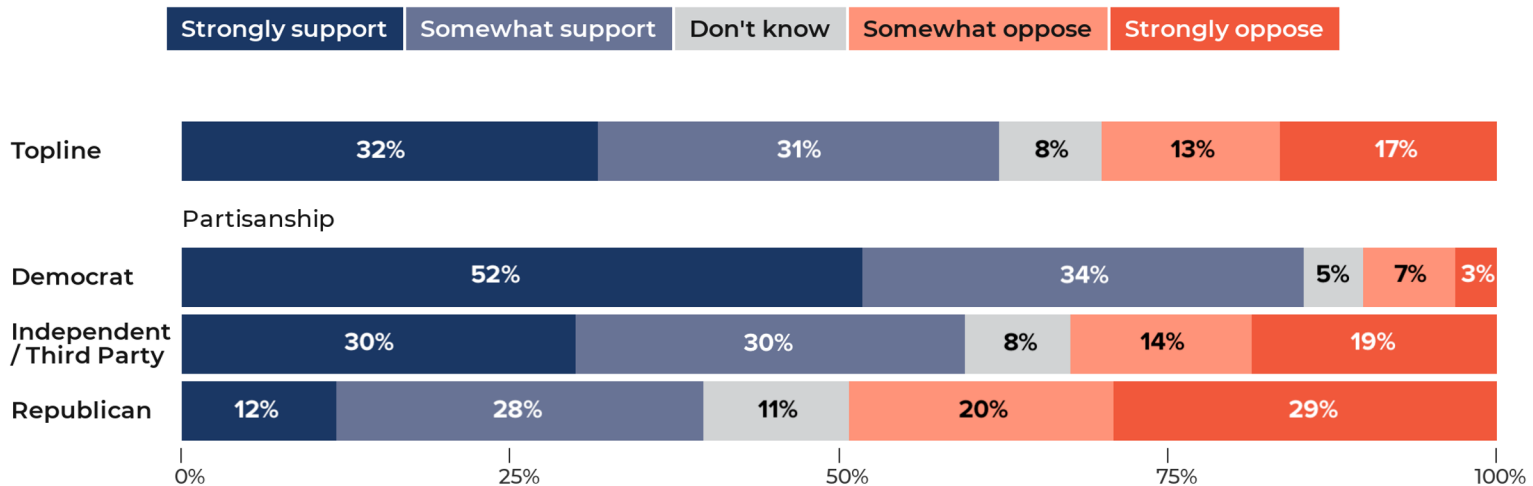
# Additional federal policies for 100% clean power:

- **Federal Clean Energy Investments & Financing**
- **Federal Support for Fossil Fuel Transition**
- **Push for Electrification**
- **Streamlining Clean Energy Permitting & Siting**
- **Promoting Competition**
- **Promoting Intervenor Compensation Programs**
- **Addressing the Technology Innovation Gap**

# Popular approach

## A Majority of Voters Support a 2035 Clean Electricity Standard

Would you support or oppose the government moving the country to a 100% clean energy electricity grid by 2035 to address climate change and reduce pollution?



Jan 8 to Jan 11, 2021 survey of 1233 likely voters

DATA FOR PROGRESS

# Corporate Leadership: Google



- 100% Clean Electricity by 2030, 24/7 in real time.

# Utility leadership emerging

- Essentially all utilities in Colorado are committed to 80% clean power by 2030, putting them on the path to 100% clean by 2035.

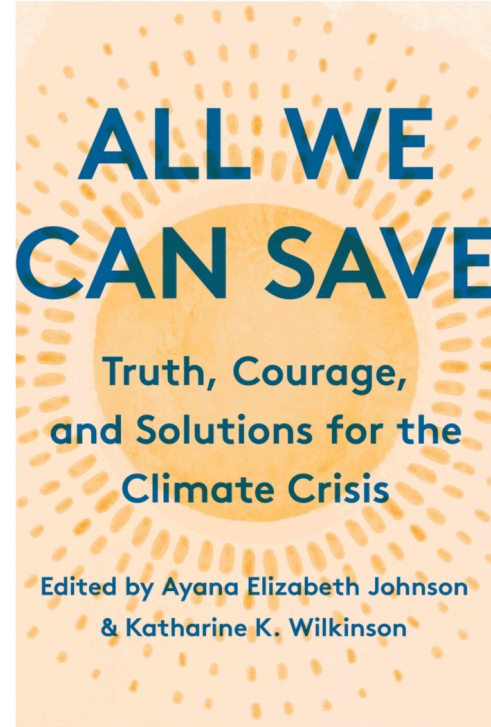
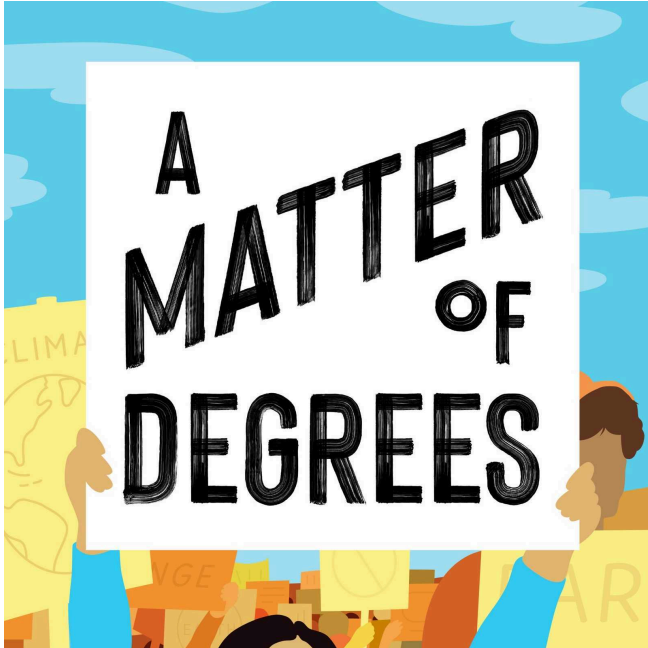
**“Congress should take action to pass  
a federal Clean Electricity Standard.”**



**Jared Polis**

GOVERNOR  
COLORADO

# Climate Advocacy



THANK YOU!

Questions?



lstokes@ucsb.edu



@leahstokes

# Climate Justice is Racial Justice

- Black, brown and indigenous people breathe in more dirty air (Tessum et al, 2019).
- This also makes them more likely to die from coronavirus.
- Income inequality and racial inequality are linked to carbon pollution.
- The Green New Deal makes this clear.

## Environmental Research Letters

### Combining climate, economic, and social policy builds public support for climate action in the US

Parrish Bergquist<sup>1,3,4</sup> , Matto Mildenerberger<sup>2</sup> and Leah C Stokes<sup>2</sup>

<sup>1</sup> School of Forestry and Environmental Studies, Yale University, 195 Prospect Street, New Haven, CT 06511, United States of America

<sup>2</sup> Department of Political Science, University of California Santa Barbara, Santa Barbara, CA 93106-9420, United States of America

<sup>3</sup> Authors contributed equally and are listed in alphabetical order.

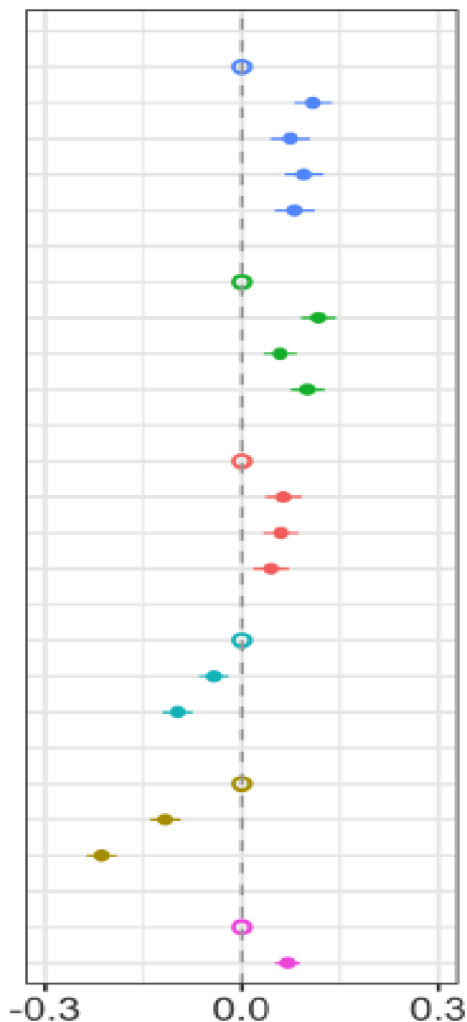
<sup>4</sup> Author to whom any correspondence should be addressed.

E-mail: [parrish.bergquist@yale.edu](mailto:parrish.bergquist@yale.edu)

Keywords: green new deal, climate, politics, economy, social policy, policy bundling, public opinion

Supplementary material for this article is available [online](#)





**Social**  
 no social policy  
 affordable housing  
 health insurance  
 \$15 minimum wage  
 free college

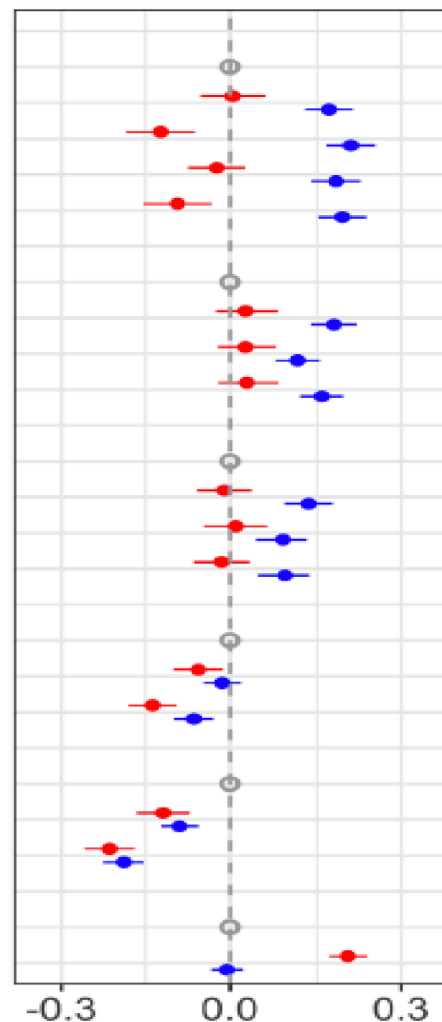
**Economic**  
 no economic policy  
 job guarantee  
 retrain fossil fuel workers  
 unionized clean energy jobs

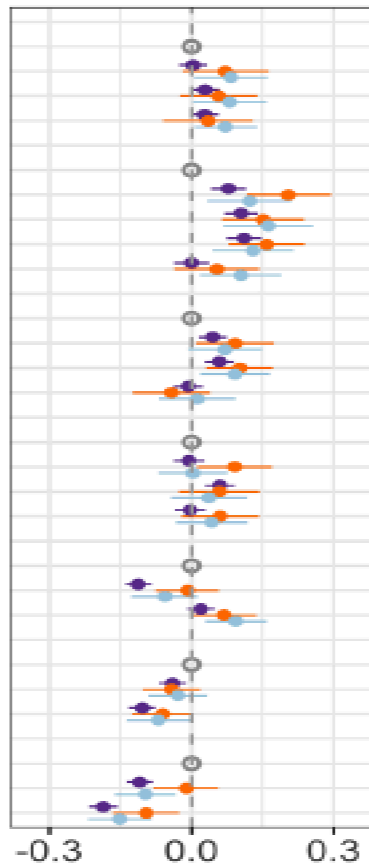
**Carbon**  
 no carbon tax  
 tax and invest  
 tax and dividend  
 revenue neutral tax

**Size**  
 \$100 billion per year  
 \$250 billion per year  
 \$500 billion per year

**Cost**  
 \$10 per month  
 \$35 per month  
 \$55 per month

**Sponsor**  
 Democrats  
 bipartisan





**Carbon**  
 no carbon tax  
 tax and invest  
 tax and dividend  
 revenue neutral tax

**Energy**  
 no energy policy  
 CES renewables only  
 CES with CCS  
 CES with nuclear  
 mandate coal phaseout 2030

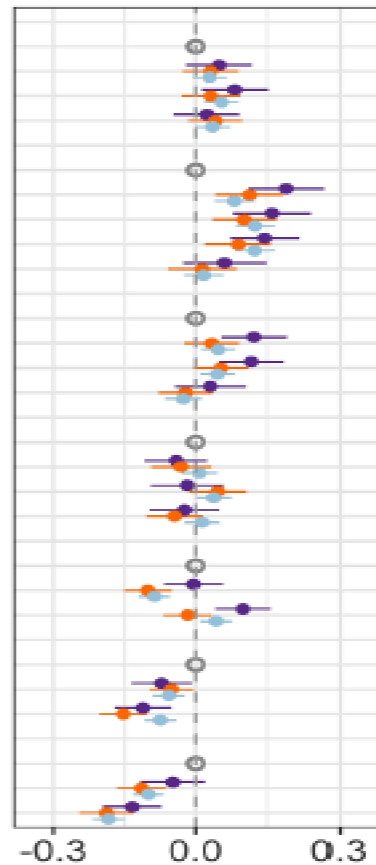
**Investments**  
 no investments  
 building retrofits  
 direct air capture  
 natural carbon storage

**Fossil Infrastructure**  
 no fossil infrastructure policy  
 coal plant securitization  
 eliminate subsidies  
 prosecute

**Transportation**  
 no transportation policy  
 electric car mandate  
 public transit

**Size**  
 \$100 billion per year  
 \$250 billion per year  
 \$500 billion per year

**Cost**  
 \$10 per month  
 \$35 per month  
 \$55 per month



● White   ● Black   ● Hispanic   ● <\$50K   ● \$50K-\$100K   ● \$100K+

# Climate Fact Sheets

## CLIMATE CHANGE & HEAT WAVES

The Earth is getting hotter due to human activities that release heat-trapping gases into the atmosphere. This human-caused global warming is undisputed in the scientific literature, and numerous studies have identified the human fingerprint on recent extreme heat events.

Recent heat waves affecting the US were greatly exacerbated by climate change:

- It is virtually certain that the Northern Hemisphere heat waves in Summer 2018 could not have occurred without climate change. Moreover, observed climate change has exposed an extra 16 percent of the populated and agricultural areas in the Northern Hemisphere to extreme heat waves (Vogel *et al.* 2019).
- Human-induced climate change contributed to the record breaking global hot temperatures in 2014, 2015, and 2016. The 2016 temperatures had a 27 percent chance of being record-breaking, but without climate change, that chance would have been one-in-a-million (Mann *et al.* 2017a).
- For the 2000-2009 decade, climate change quadrupled the likelihood of a record-breaking hot year for all of the US (Knutson *et al.* 2013).
- Climate change has at least doubled the likelihood of record-breaking hot summer days in the US (Diffenbaugh *et al.* 2017).
- Climate change is increasing heat stress, a dangerous threat to human health. Nighttime temperatures are increasing faster than daytime (Cox *et al.* 2013), making it harder for the human body to cool down at night (Knutson *et al.* 2013).
- Even with these figures, there is evidence that we may be underestimating the effect of climate change on heat waves (Li *et al.* 2018; Mann *et al.* 2018).

## HOW DOES CLIMATE CHANGE AFFECT HEAT WAVES?

The clearest and most direct effect of human-driven climate change is the increase in global temperatures. We have already observed a rise of 1 degree Celsius (1.8 degrees Fahrenheit) in global average temperatures. Heat waves have always affected societies, long before human-driven climate change. However, when a 'wave' of hot temperatures occur in an already 1-degree-warmer world, they are more likely to be pronounced heat waves. Thus, climate change has increased the probability that a heat wave will be severe and has increased the frequency of heat waves and record-breaking seasons and years.

Climate change is also altering atmospheric circulation (e.g. the jet stream), and some of these changes are dramatically amplifying local heat extremes (Mann *et al.* 2017). For instance, the jet stream is increasingly going off its traditional course and sometimes stalls altogether. When it stalls, high pressure ridges get 'stuck', leading to longer and more intense heat waves.

**"FOR ME, THESE TEMPERATURES FOR THE PAST DECADE ARE NOT JUST STATISTICS: THEY HAVE NAMES AND STORIES. HEAT WAVES KILL MORE PEOPLE THAN ANY OTHER EXTREME WEATHER EVENT."**

- Dr. Renee Salas, MD, Emergency Medicine

## CLIMATE CHANGE & FLOODING

Climate change is increasing flood risk in the US by rising sea levels, changing precipitation patterns, intensifying storm precipitation, and increasing rates of snow and ice melt. Worsening floods due to climate change are putting a growing number of inland and coastal communities at risk.

- Human-caused global sea level rise is increasing the number of coastal flood days in the US (Storass *et al.* 2018).
- In the Mid-Atlantic, climate change contributed to widespread upward trends in stream flood magnitude and frequency since 1970 (Jungwong *et al.* 2014).
- Climate change is elevating flood risk across the US by increasing the frequency of extreme precipitation (Gochis *et al.* 2017; Lehmann *et al.* 2019) and intensifying hurricane rainfall (Trenberth *et al.* 2018; Wang *et al.* 2018).
- Climate change is increasing total precipitation in the Mississippi River Valley, a precursor to river flooding (Gochis *et al.* 2019; Knutson and Zeng 2018).
- Climate change is intensifying the extreme swings between drought and flood years in California (Vuong *et al.* 2017).

## HOW IS CLIMATE CHANGE INCREASING FLOOD RISK?

Floods can be caused by heavy rainfall, rising sea levels coupled with high tides, faster and earlier snowmelt, or when dams or levees break. They can occur quickly or over a long period and may last days, weeks, or longer. Floods are the most common and among the most deadly natural disasters in the US. Just six inches of rushing water can knock over an adult and 12 inches of rushing water can carry away most cars (USFA 2020).

The combination of melting land ice and the expansion of ocean water due to global warming has significantly increased the incidence of high tide floods and the reach of storm surge - the temporary increase in sea level due to stormy conditions.

Climate change is increasing the risk of river floods through changes in major flood precursors such as extreme precipitation, total precipitation, and snow/ice melt:

- Warmer temperatures increase evaporation of moisture into the air and allow the air to hold more moisture. This warm, water-laden air can then dump more precipitation, increasing flood risk.
- Observational data suggest climate change is likely increasing overall precipitation in the Midwest and Northeast, as well as storm precipitation in the Gulf of Mexico states.
- Long-term climate warming is causing shifts toward less snow, more rain, and earlier snowmelt, increasing early-season runoff and flood risk.

**"THIS IS A NEW NORMAL. HOW MANY TIMES CAN WE HAVE A 100-YEAR FLOOD EITHER ON THE MISSISSIPPI, THE MERAMEC OR THE MISSOURI EVERY YEAR BEFORE WE REALIZE THAT THOSE TERMS ARE USELESS AND WHAT WE'VE DONE HAS SO CHANGED THE RIVER SYSTEMS THAT WE NEED TO THROW OUT ALL PRIOR MEASUREMENTS?"**

- David Stokes, executive director of the Great Rivers Habitat Alliance

## CLIMATE CHANGE & WILDFIRES

Climate change is increasing the size, frequency, intensity and seasonality of wildfires. Climate scientists have already identified the telltale fingerprint of climate change on some of the biggest blazes of the past decade:

- Climate change has increased the frequency of fire weather - hot, dry, and windy - in much of the US (Abatzoglou, Williams, and Barbero 2018).
- Climate change has doubled the area burned in the Western US (Abatzoglou and Williams 2016).
- The fire season has increased by more than two months in the Western US, largely due to climate change (Westervelt *et al.* 2018).

All fire needs to burn is an ignition source and plenty of fuel. While climate change might not ignite the fire, it is giving fire the chance to burn into catastrophic blazes by creating warmer temperatures, increasing the amount of fuel (dried vegetation) available, and reducing water availability through earlier snowmelt and higher evaporation. These infernos have dire consequences - from respiratory illness to loss of life and property - and many communities are not equipped to deal with this new era of mega fires.

## REGIONAL SPOTLIGHT

### WESTERN US

In the Western US, climate change has doubled how much land has burned (Abatzoglou and Williams 2016). Wildfire frequency has quadrupled in the West since the 1980s, and fire season has increased by 78 days, changes which are largely linked to warmer temperatures and earlier snowmelt (Westervelt *et al.* 2018). Both warmer temperatures and earlier snowmelt for this region has been attributed to climate change (Bionfi *et al.* 2020; Hogg *et al.* 2020). Finally, climate change increased the risk of fire weather in 2015-2016 (Westervelt *et al.* 2018).

### CALIFORNIA

In California, climate change has increased fire risk (Boon *et al.* 2015). The combination of climate change and human practices such as urbanization have increased the frequency of wildfires, particularly along the southern coast and the southwestern Sierras (Mann *et al.* 2016). Increased aridity in summer and, to an extent, fall, has increased fire activity in forested areas (Williams *et al.* 2019). In urban areas in coastal Southern California, the interacting effects between urbanization and climate change have reduced summertime cloud cover, which warms and dries the surface, leading to an increase in burned area (Williams *et al.* 2018). In California, 15 out of the 20 largest fires since the 1950s have occurred since 2000 (Caffrey 2019).

### ALASKA

In Alaska, climate change has increased the risk of severe fire seasons by 34-60 percent (Pattin *et al.* 2016). Additionally, there is evidence that lightning strike frequency increases by 15 percent for every 1 degree Celsius (1.8 degrees Fahrenheit) increase (Romps *et al.* 2014). In interior Alaskan boreal forests, lightning strike frequency is the main driver of fire (Korner *et al.* 2017).

**"WHAT WE'RE SEEING IN CALIFORNIA RIGHT NOW IS MORE DESTRUCTIVE, LARGER FIRES BURNING AT RATES THAT WE HAVE HISTORICALLY NEVER SEEN."**

- Jonathan Cox, Assistant Chief with San Mateo County Fire Department / CAL FIRE (Pitts 2018)

enventab.com/climatefactsheets  
climatesignals.org  
scipline.org/quick-facts