



Kleinman Center
for Energy Policy

THE MISUNDERSTOOD POLITICS OF THE ENERGY TRANSITION

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MODERATOR

Sanya Carley

Kleinman Center for Energy Policy

@KleinmanEnergy

#EnergyAtPenn

Introduction

Part I: The Evolution of the Energy-Regulatory State

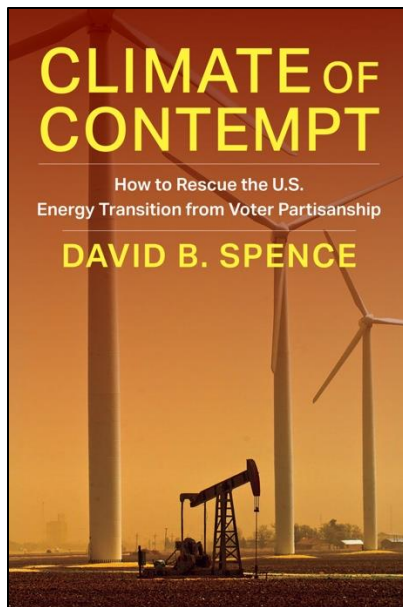
1. Republican Moments and the Creation of the Energy-Regulatory State
2. Ideological Conservatism and Deregulation
3. Partisan Tribalism and Climate Policy

Part II: Complexity, Centrifugal Forces, and the Energy Transition

4. The Propaganda Machine
5. Facing Energy-Transition Trade-offs
6. Hope and Conversation

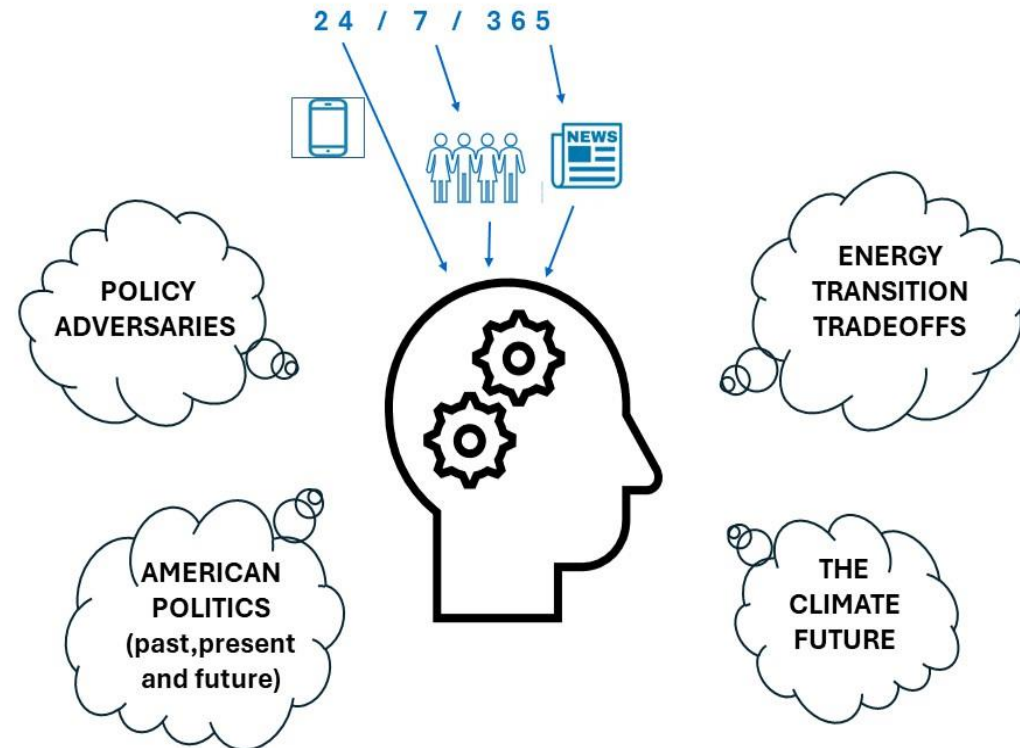
Never let yourself be diverted, either by what you wish to believe, or by what you think could have beneficial social effects if it were believed.

-- Bertrand Russell



Appendices, blog and other resources for students @ www.ClimateOfContempt.com

THE PROPAGANDA MACHINE DISTORTS PERCEPTION



Negative partisanship is cultivated & sustained by the propaganda machine

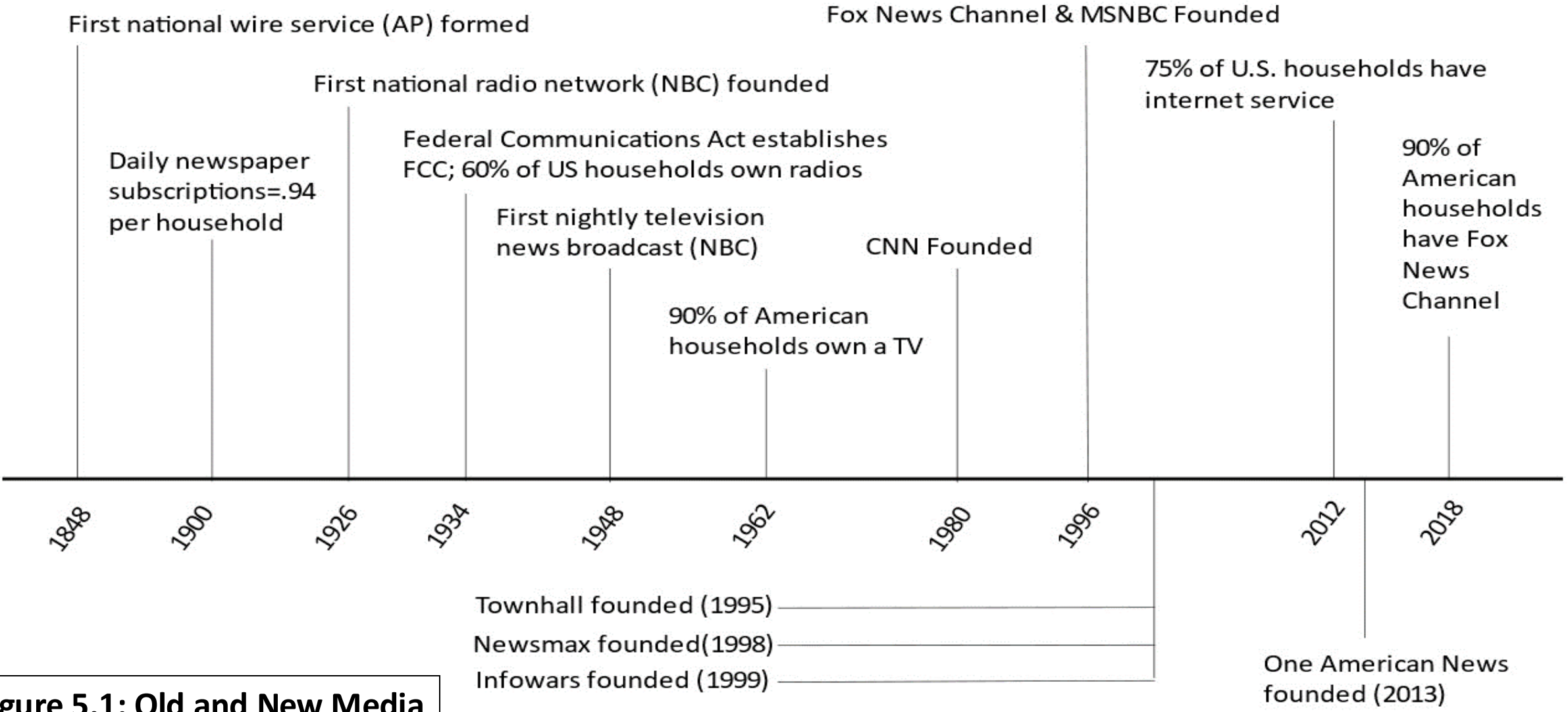
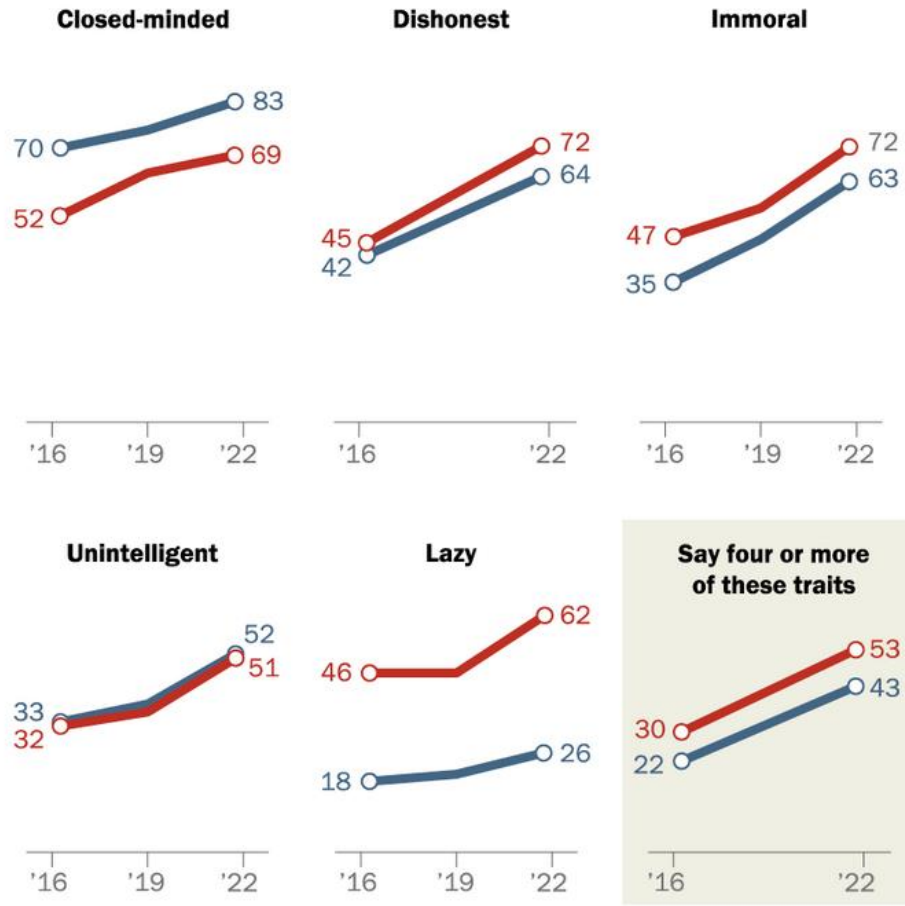


Figure 5.1: Old and New Media

Growing shares of both Republicans and Democrats say members of the other party are more immoral, dishonest, closed-minded than other Americans

% who say members of the **other** party are a lot/somewhat more ___ compared to other Americans

- Republicans say Democrats are more ...
- Democrats say Republicans are more ...



Note: Partisans do not include those who lean to each party.
Source: Survey of U.S. adults conducted June 27-July 4, 2022.

PEW RESEARCH CENTER

Negative, Affective Partisanship (a/k/a “partisan tribalism”)

National Election Study Data Feeling Thermometer Scores (0-100)

	1978	2022
Avg. score for members of the opposing party		
GOP	~45	16
DEM	~45	20
% respondents assigning score of “0” to members of the opposing party		
GOP	<10%	48%
DEM	<10%	39%

Members of Congress have remained hyper-responsive to voters (and the risk of losing elections).

But ...

1-voters have changed ...

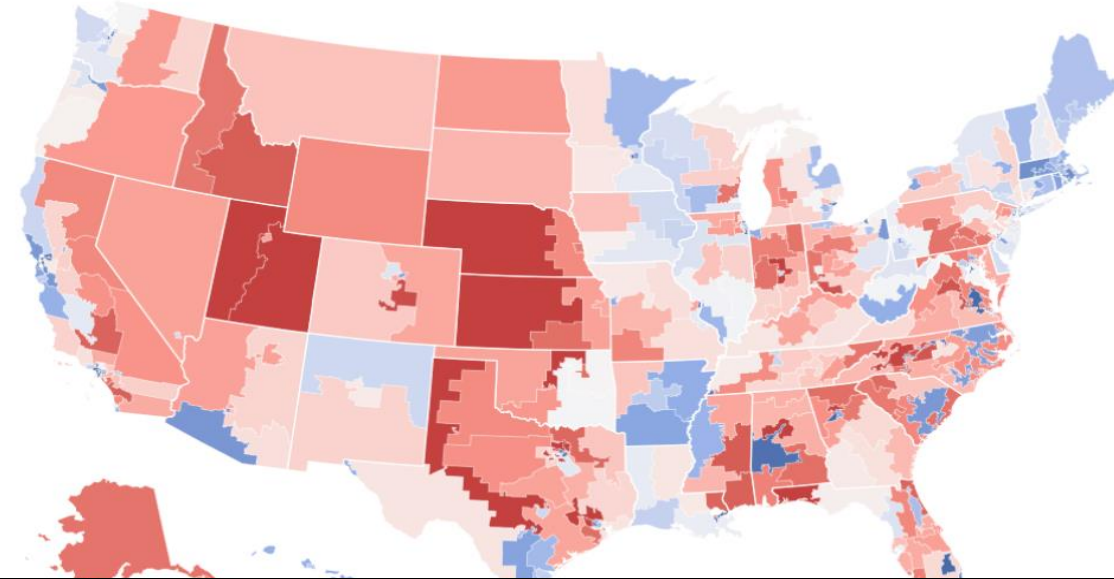
- Ideological polarization
- **Affective, negative partisanship**

2-politicians must respond to a different set of voters today because **most seats are safe.**

105th Congress Map and District List (1997)

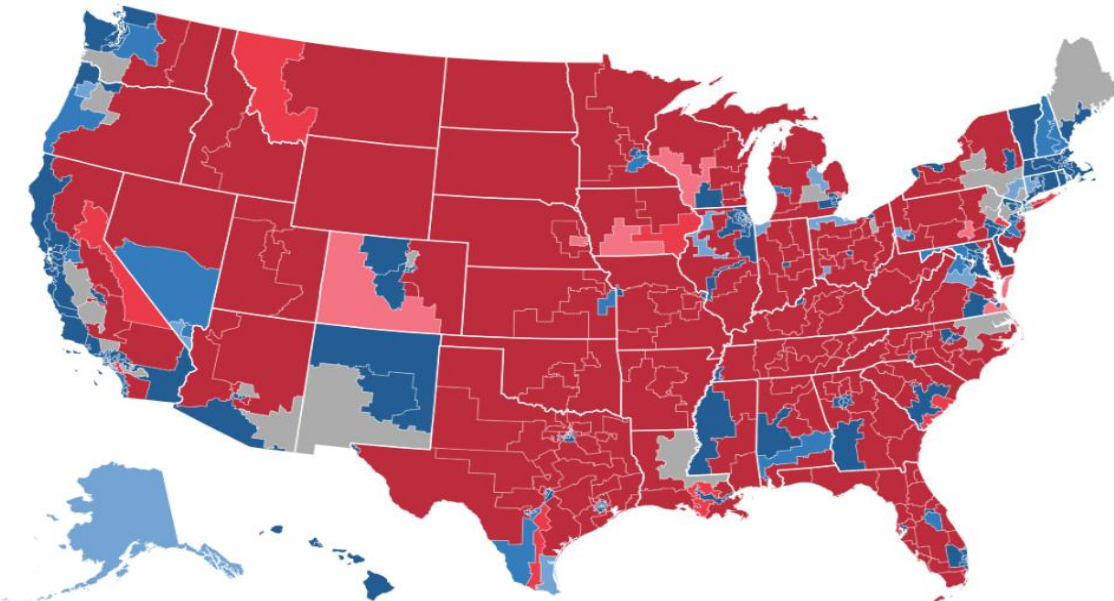
The 1997 Cook PVI scores were calculated using 1992 and 1996 presidential election results.

D+20 EVEN R+20



2024 CPR House Race Ratings map

[Click to see the 2024 Cook PVI map.](#)



CPR Race Rating:

■ Solid D ■ Likely D ■ Lean D ■ Toss Up ■ Lean R ■ Likely R ■ Solid R

Do your opinion leaders wind you up?

Remark (Tone)	About	# followers
“This is sociopath speak”	Former Treasury Sec’y Larry Summers	1.5 M
“ sociopath economist ”	Economist William Nordhaus	223K
“These craven psychopaths ... ”	Oil companies advertising their CCS work	65K
1. “ mass murders ” 2. “they subconsciously despise their grandchildren ”	1. Fossil fuel executives 2. “rich Boomers”	91K
1. Protecting “business-as-usual interests who are . . . willing to commit genocide for money. ” 2. “a form of authoritarian disinformation that aids and abets genocide ” 3. “the voice of genocide for money. ” “ FUCK YOU, you sociopathic murderer ” 4. “literally murderers erasing evidence of their crimes”	1. CNN 2. Media outlets that didn’t feature AR6 report 3. Shell Oil 4. Republicans	75K

Broad brush attribution errors	# Followers
“ Not a single Republican wants to help a single person,”	675K
Republicans are going to be maximum assholes at every juncture	223K
The white men in charge of addressing climate change , who still think it’s 2005, really need to fucking go!”	65K

CLIMATE OF CONTEMPT

How to Rescue the U.S.
Energy Transition from Voter Partisanship

DAVID B. SPENCE

Thank you!

www.ClimateOfContempt.com
www.EnergyTradeoffs.com



ORDER ONLINE AND SAVE 20%

CUP.COLUMBIA.EDU

Enter Code: CUP20 for 20% discount

EXTRA SLIDES

CLIMATE OF CONTEMPT

How to Rescue the U.S.
Energy Transition from Voter Partisanship

DAVID B. SPENCE



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Legislation During the Three Major Regulatory Eras

Politicians want to minimize the risk of losing elections

Major regulatory statutes are created during “**republican moments**” – i.e. when public concern meets a **receptive** partisan environment in Congress.

Populist Era

Interstate Commerce Act (1887)
Sherman Antitrust Act (1890)
Erdman Act (1898)

Progressive Era

Elkins Act (1903)
Hepburn Act (1906)*
Pure Food & Drug Act (1906)
Federal Reserve Act (1913)
Clayton Act (1914)
Federal Trade Commission Act (1914)
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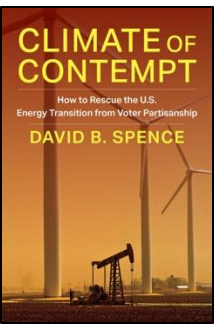
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Occupational Safety and Health Act (1970)
Clean Water Act (1972)*
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Resource Conservation and Recovery Act (1976)*
Clean Water Act Amendments (1977)*
Public Utility Regulatory Policy Act (1978)*
Comprehensive Environmental Response, Compensation and Liability Act (1980)
Clean Air Act Amendments (1990)*

*Denotes legislation imposing significant regulatory constraints directly on the energy sector.



Be curious, not judgmental. -- Ted Lasso

List of Figures and Tables

List of Abbreviations

Preface and Acknowledgments

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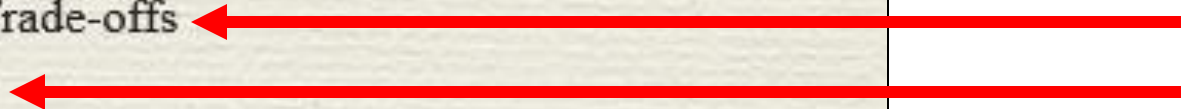
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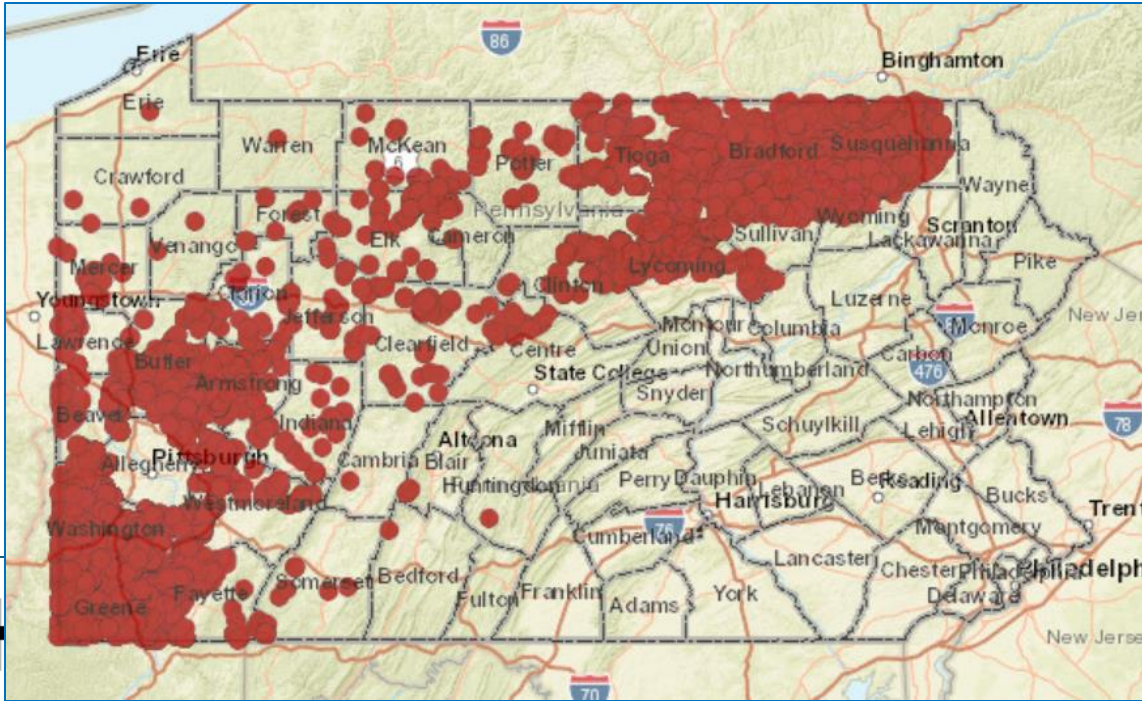
Notes

References

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What is behind Kamala Harris' "silence" on climate and "flip flop" on fracking?



Cook PVI House Ratings in Top Oil Producing States

Cook ratings from 7/16/24

SOURCE: Forbes, 12/23

	Toss-up	Lean D	Lean R
Texas		28, 34	
New Mexico	2		
North Dakota			
Colorado	8		3
Oklahoma			
Alaska	1		
California	13, 22, 27, 41	47	45
Wyoming			
Utah			
Louisiana			
Ohio	9, 13		
West Virginia			
Illinois		17	
Pennsylvania	7, 8	17	10

on Climate: Green Daily



Kate Aronoff / August 22, 2024



SELL IT

The Climate Message Harris Should Embrace: Fossil Fuels Are a Scam

The 2024 DNC: All Vibes, Little Substance

BY
RYAN ZICKGRAF

JACOBIN

The DNC revealed a Democratic Party still in love with the Obamas. The fantasy

'They aren't going to accept empty promises': progressives back Harris with cautious enthusiasm

Joan E Greve
in Chicago

The Guardian

Climate goals and Gaza ceasefire top the list of expectations for millions of young and progressive voters



Amy Westervelt @amywestervelt · Dec 29, 2021

You don't get the climate crisis without racial capitalism and you don't solve for the climate crisis without addressing racial capitalism (and yes I already know that most/all the white guys over 50 disagree)

51

155

916



**ACID RAIN
LEGISLATION VS. GHG
LEGISLATION**

National Acid Precipitation Program created.

1976

Experts Call 'Acid Rain' Growing Problem in U.S.
The New York Times
Oct. 7, 1979

1979

Sen. Moynihan introduces first acid rain control legislation.

Pres. Carter message to Congress emphasizes need for acid rain controls.

Utilities and coal industry lobby against acid rain control bills, and question the science behind acid rain.

1983

Congress considers 12 different acid rain control bills.

1990

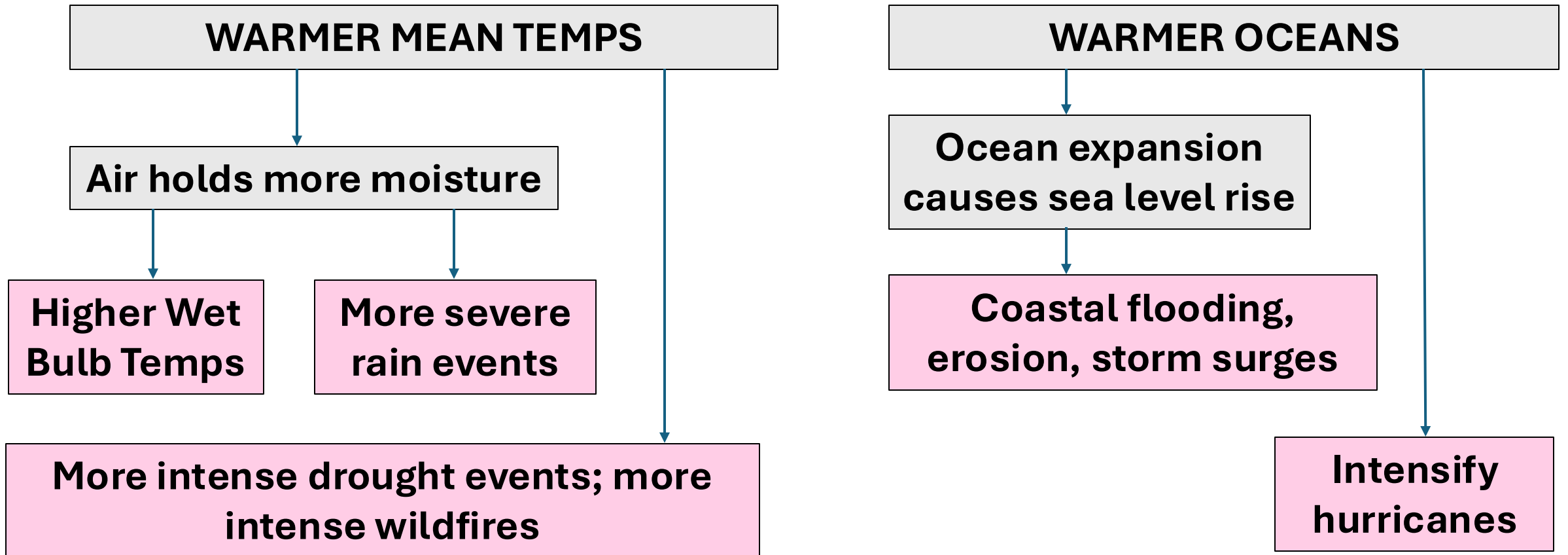
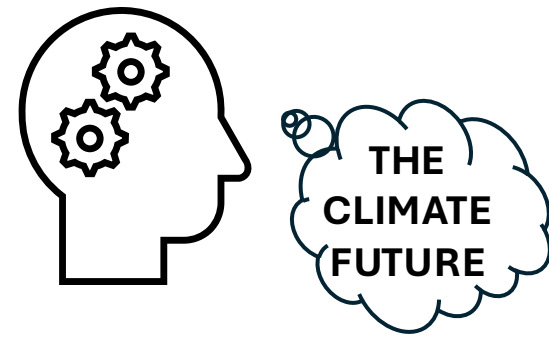
Pres. Bush signs into law the **Clean Air Act Amendments of 1990**, which includes an acid rain control program.

Partisan environment in Congress & Climate Science, 1990-now	IPCC Assessment Report (conf. level – human causes)	Year	NES-% Americans satisfied with “the way democracy works in the United States”	Partisan overlap (# of members) in the House of Representatives (D/R)	
				[gap]	
	AR1	1990		6/14	1990 – passage of acid rain program
	AR2	1995		4/1	
“likely”		1996	27.5%	3/5	
		2000	31.7%	2/3	
	AR3(≥ 66%)	2001		2/2	
“very likely”		2002	39.4%	0 [0.19]	
		2004	23.4%	0 [0.19]	2005-07 – bipartisan climate bills introduced
	AR4(≥ 90%)	2007		0 [0.14]	
“extremely likely”		2008	23.2%	0 [0.14]	
		2012	11.1%	0 [0.18]	2009 – House passes Waxman-Markey; fails in Senate
	AR5(≥ 95%)	2014		0 [0.18]	
“unequivocal”		2016	9.7%	0 [0.18]	
		2020	8.7%	0 [0.23]	2021 – Failure of Build Back Better
	AR6	2023		0 [0.39]	

Partisan environment in Congress & Climate Science, 1990-now	IPCC Assessment Report (conf. level – human causes)	Year	NES-% Americans satisfied with “the way democracy works in the United States”	Partisan overlap (# of members) in the House of Representatives (D/R)
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		2016	9.7%	0 [0.18]
“unequivocal”		2020	8.7%	0 [0.23]
	AR6	2023		0 [0.39]

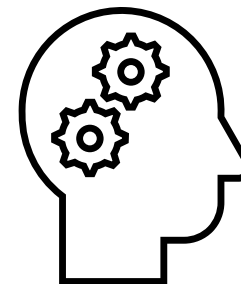
The science of global warming is simple

GHGs trap more heat in the atmosphere



The science of global warming is simple

GHGs trap more heat in the atmosphere



Warming oceans expand,
raising sea levels &
strengthening hurricanes

Higher temperatures exacerbate drought

Warmer atmosphere holds more moisture,
increasing wet bulb temperatures &
intensify rain events

A TALE OF TWO TOWNS
The US is relocating an entire town because of climate change. And this is just the beginning



A Wrenching Choice for Alaska Towns in the Path of Climate Change

MARYLAND

Sea level rise: Saltwater intrusion laying waste to Delmarva farms

Jeremy Cox Bay Journal News Service
Published 6:18 a.m. ET March 29, 2019 | Updated 11:36 p.m. ET March 29, 2019

More Insurance Companies Are Leaving California

Home and auto insurance coverage is getting harder to come by in California and

Climate warming increases extreme daily wildfire growth risk in California

nature

Climate Change Is Raising Texas' Already High Wildfire Risks

Florida is undergoing an insurance crisis

Southern US Reaches Dangerous "Wet Bulb Temperature". Here's What That Means

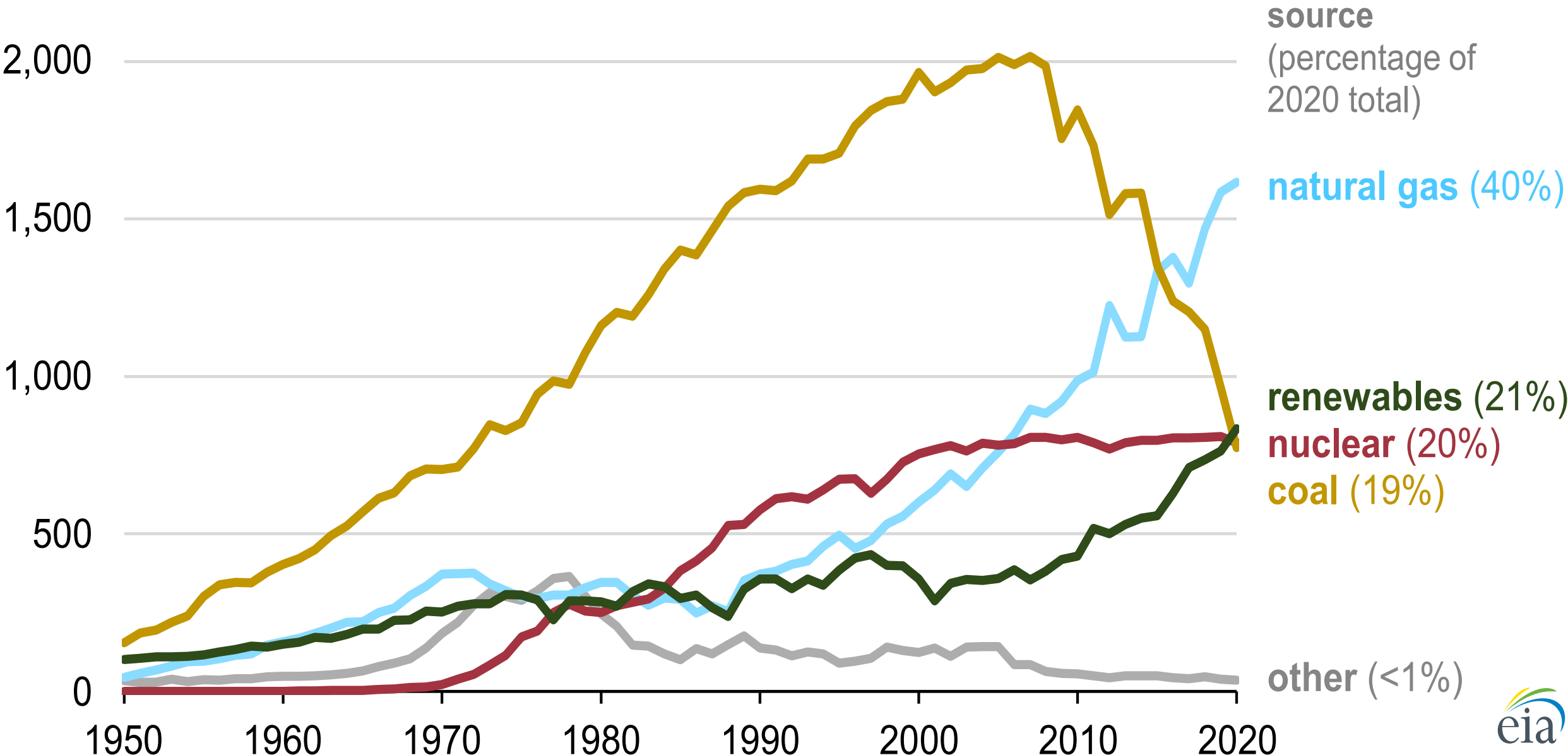
How Can FEMA and Flood Insurance Keep Up with Rising Flood Risks?

Posted on December 01, 2021

FINANCIALS

Mortgage Lenders Face Climate Risk. Why It Might Be Worse Than Insurers.

BARRON'S



**ENVIRONMENTAL PROTECTION
AGENCY**

40 CFR Part 60

[EPA-HQ-OAR-2023-0072; FRL-8536-02-
OAR]

RIN 2060-AV09

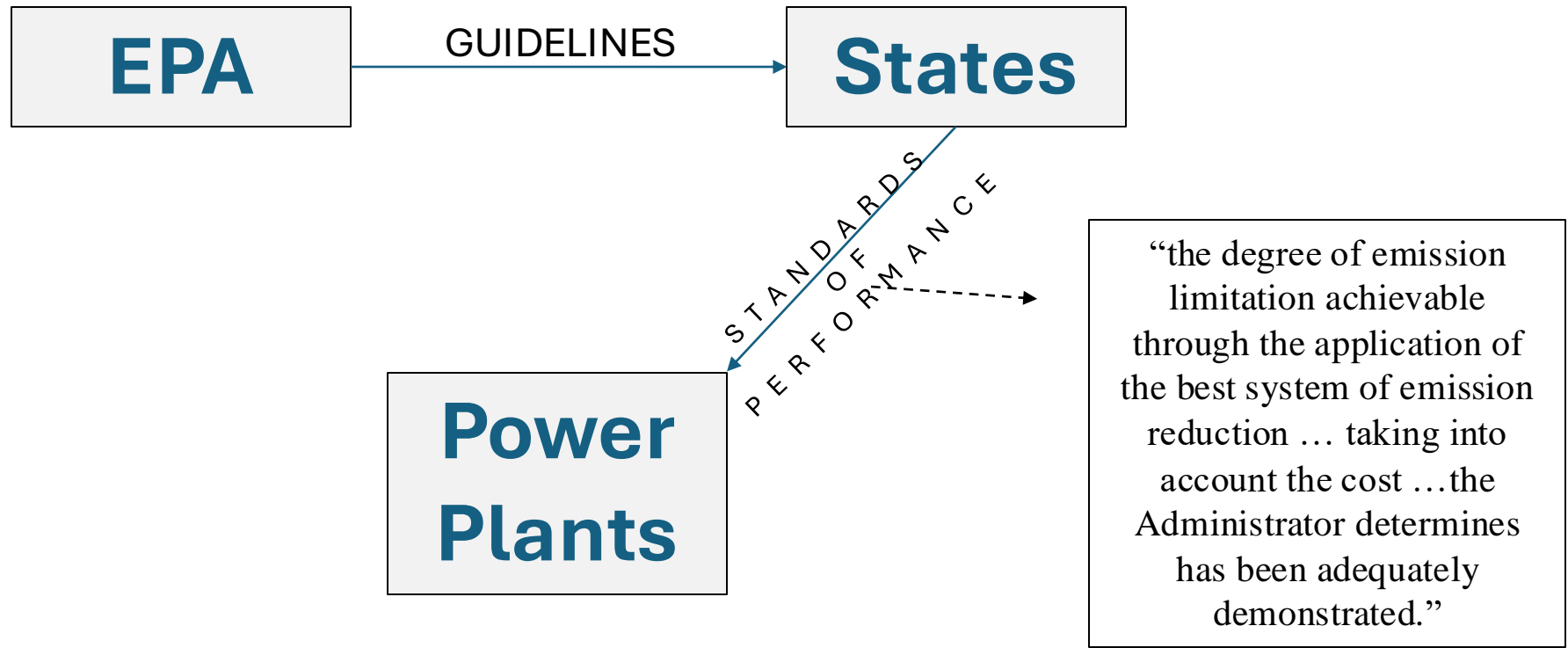
**New Source Performance Standards
for Greenhouse Gas Emissions From
New, Modified, and Reconstructed
Fossil Fuel-Fired Electric Generating
Units; Emission Guidelines for
Greenhouse Gas Emissions From
Existing Fossil Fuel-Fired Electric
Generating Units; and Repeal of the
Affordable Clean Energy Rule**

AGENCY: Environmental Protection
Agency (EPA).

ACTION: Proposed rule.

The EPA has promulgated emission guidelines on the basis that the existing sources can achieve the degree of emission limitation described therein, even though under the **RULOF** provision of CAA section 111(d)(1), the State retains discretion to apply standards of performance to individual sources that are more or less stringent, which indicates that Congress recognized that the EPA may promulgate emission guidelines that are consistent with CAA section 111(d) even though certain individual sources may not be able to achieve the degree of emission limitation identified therein by applying the controls that the EPA determined to be the BSER. Note further

How vulnerable is any power sector GHG rule to future GOP control of the White House? To weakening by states?



CAA Sec. 111 ...

a/k/a “guidelines”

a/k/a, for which there is no NAAQS

(d) Standards of performance for existing sources; remaining useful life of source

(1) The Administrator shall prescribe regulations which shall establish a procedure similar to that provided by section 7410 of this title under which each State shall submit to the Administrator a plan which

(A) establishes standards of performance for any existing source for any air pollutant

(i) for which air quality is not included on a list published under section 7401(b)(2) of this title, and section 7412 of this title

The EPA has promulgated emission guidelines on the basis that the existing sources can achieve the degree of emission limitation described therein, even though under the RULOF provision of CAA section 111(d)(1), the State retains discretion to apply standards of performance to individual sources that are more or less stringent, which indicates that Congress recognized that the EPA may promulgate emission guidelines that are consistent with CAA section 111(d) even though certain individual sources may not be able to achieve the degree of emission limitation identified therein by applying the controls that the EPA determined to be the BSER. Note further

which is not included on a list published under section 7401(b)(2) of this title, and section 7412 of this title

(ii) to which a standard of performance for a new source, and

(B) provides for the imposition of the Administrator's standard of performance to any source for which such standard applies, among other things, the standard applies.

should apply if such existing source were a

standards of performance. Regulations promulgated under this paragraph to take into account the remaining useful life of the existing source to which such

NOPR: “RULOF”

Why National Legislation is Needed

Power Plant Rule: Hypothetical

Judicial Review

- Pr [CCS and H co-firing are BSER] .80
- Pr [112 carve out inapplicable] .90
- Pr [rule is not reversed using MQD] .80
- Pr [RULOF or other red state noncompliance
doesn't swallow rule] .95

Political risk

- Pr [rule not repealed by GOP president] .70
- Pr [rule not repealed by Congress] .95

Cumulative probability = 36%

**POLARIZATION &
REPUBLICAN
MOMENTS**

Condition #1: Massive Party Dominance

Legislation During the Three Major Regulatory Eras

Populist Era

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Periods of unified government (one party control of Congress and the presidency) with large voting margins in Congress. The ***smallest*** Democrat ***margins*** during the New Deal were **23** seats in the Senate and **126** seats in the House.

*Denotes legislation imposing significant regulatory constraints directly on the energy sector.

**Condition #2:
Issue
Competition
and Ideology
(temporary,
fragmented
bipartisanship)**

Legislation During the Three Major Regulatory Eras

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Partisan competition for the mantle of “progressive” and “environmental” leadership (emerging issues)

OR

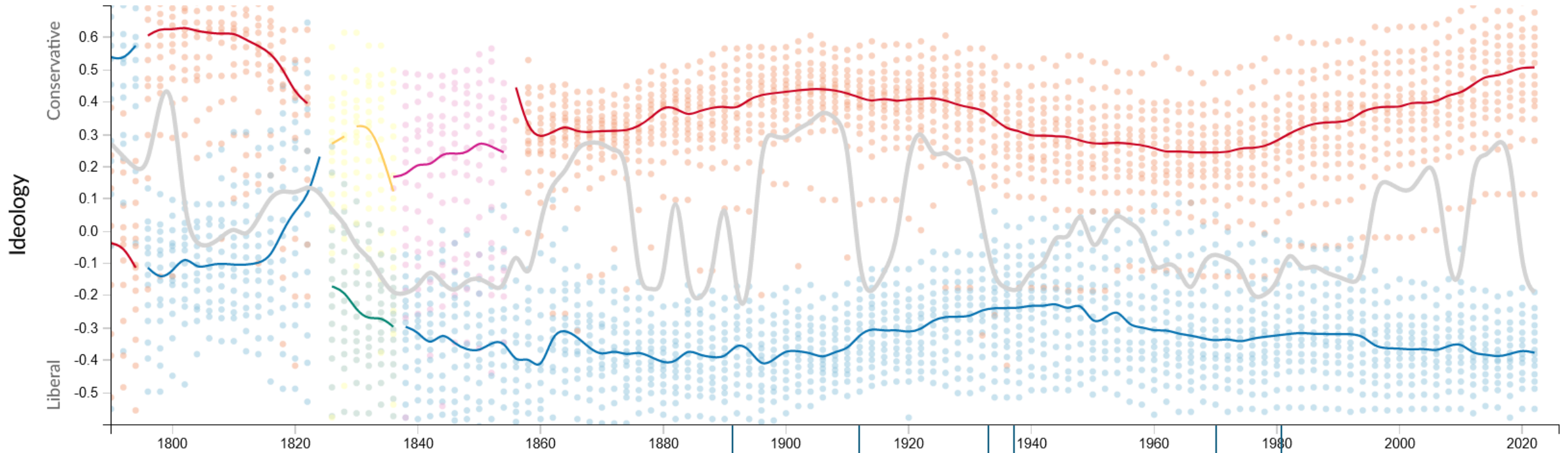
Periods of relatively low levels of cross-party ideological disagreement on regulatory issues

*Denotes legislation imposing significant regulatory constraints directly on the energy sector.

Parties > Parties Overview

Figure source: Voteview.com

Congress at a Glance: Major Party Ideology



Legend: — Congress Median Ideology — Party Median Ideology • Range of Party Ideology

Chart shows major parties only. Mouserover for party details.

Populism and
Progressivism

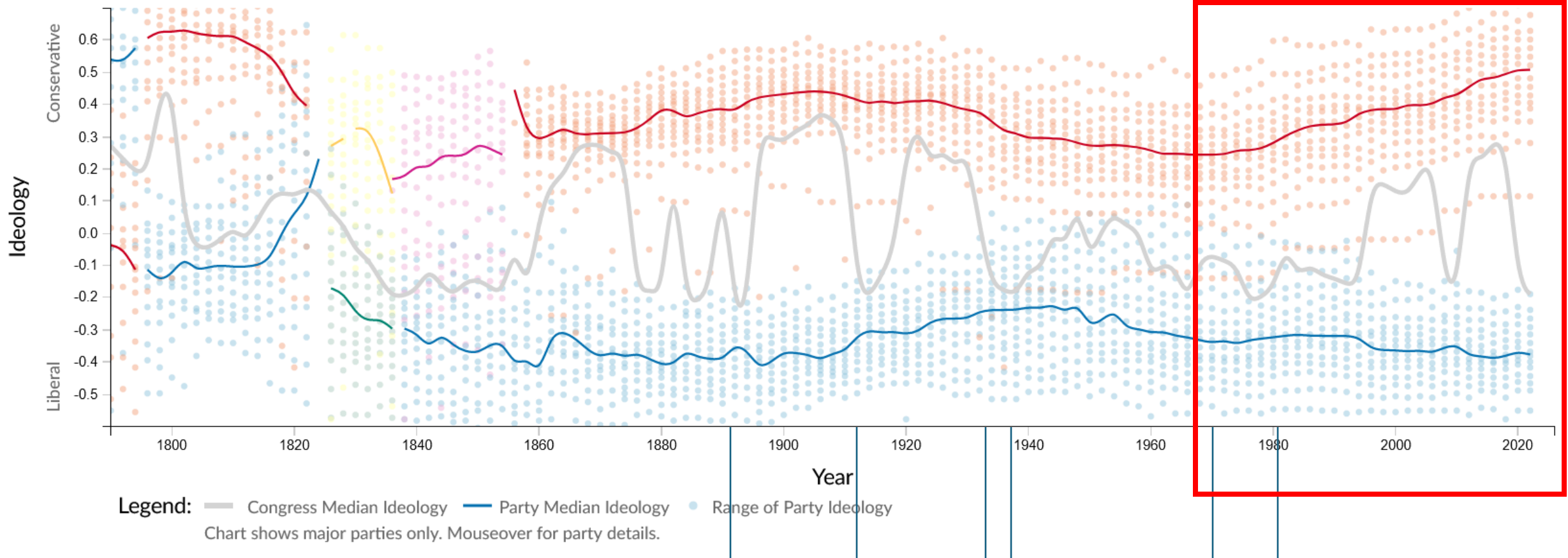
The
New Deal

“Environment
al Decade”

Parties > Parties Overview

Figure source: Voteview.com

Congress at a Glance: Major Party Ideology

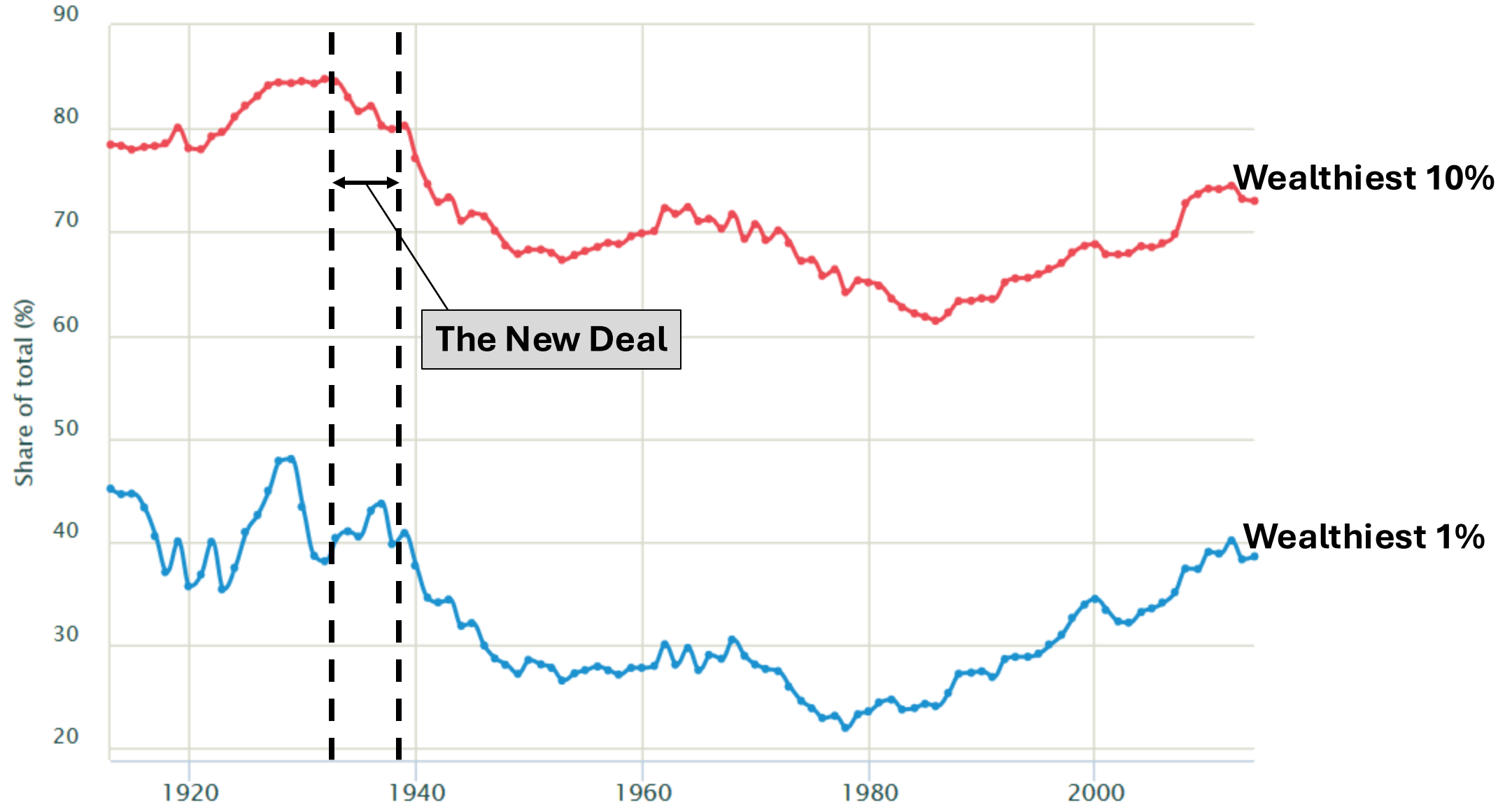


Populism and
Progressivism

The
New Deal

“Environment
al Decade”

Figure ZZ: Wealth Inequality, United States, 1914-Present



DATA SOURCE: World Inequality Database

MEDIA, BIASES & PARTISAN TRIBALISM

2000+ years of political economic philosophy, from Aristotle's *Politics* (4th c. BCE) to Adam Smith's *Wealth of Nations* (1743) and Karl Marx's *Das Kapital* (1867).

Alfred Marshall's *Principles of Economics* (1890) signaled a more **scientific (mathematical) approach and to economics and separation of the social sciences** into distinct disciplines

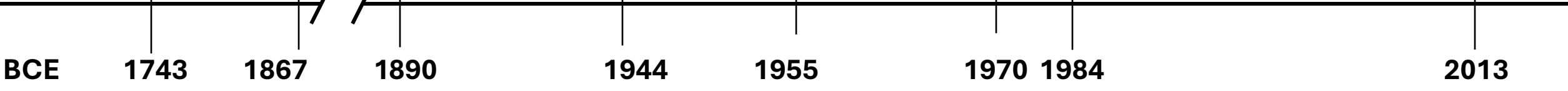
Friedrich Hayek's *Road to Serfdom* (1944); Milton Friedman *New York Times* Op-Ed (1970).

Herbert Simon introduced the idea of "satisficing" (1955); **Kahneman & Tversky's *Choice Value and Frames*** (1984); Thomas Picketty's *Capital in the 21st Century* (2013)

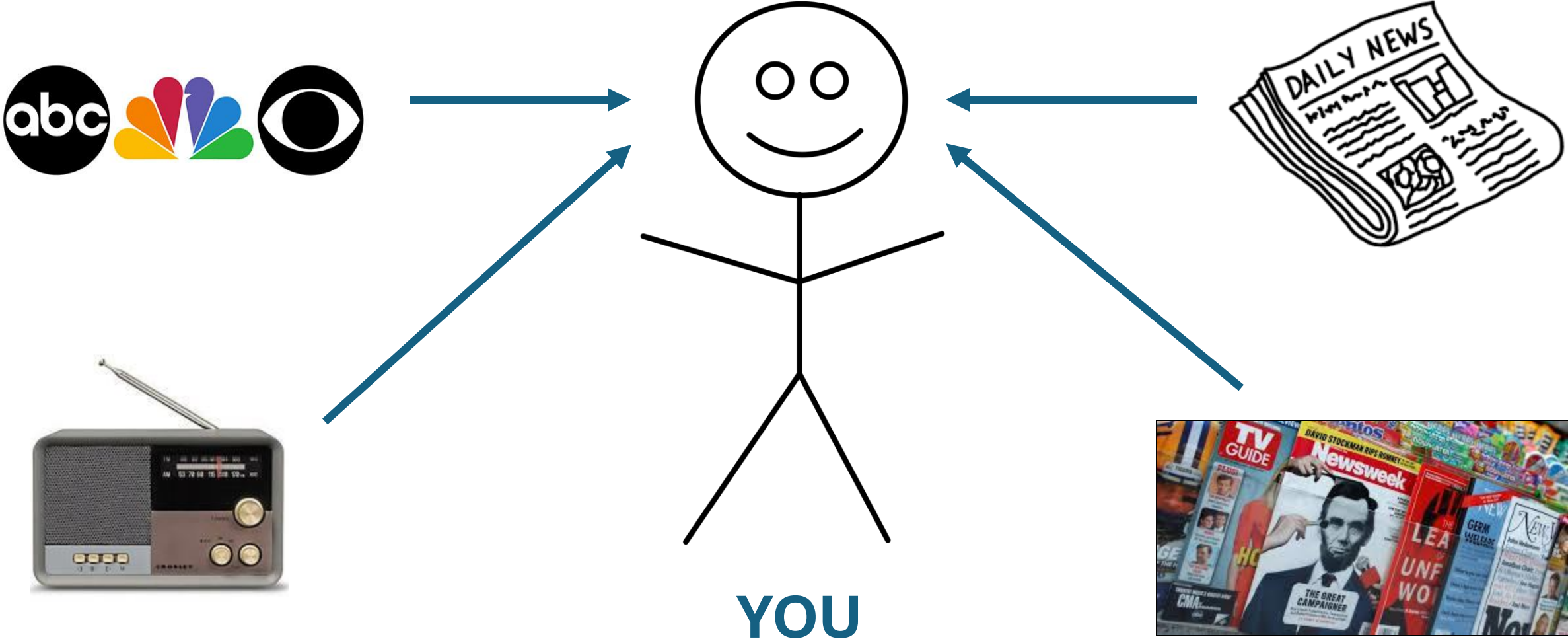
The era of political economy

Behavioralism and resurgence of political economy

Era of scientific economics



Gathering news in 1974



Gathering news today

Volume /

Curation

Specialty journalists
with ideologically
narrower audiences

“Advocacy”
journalism

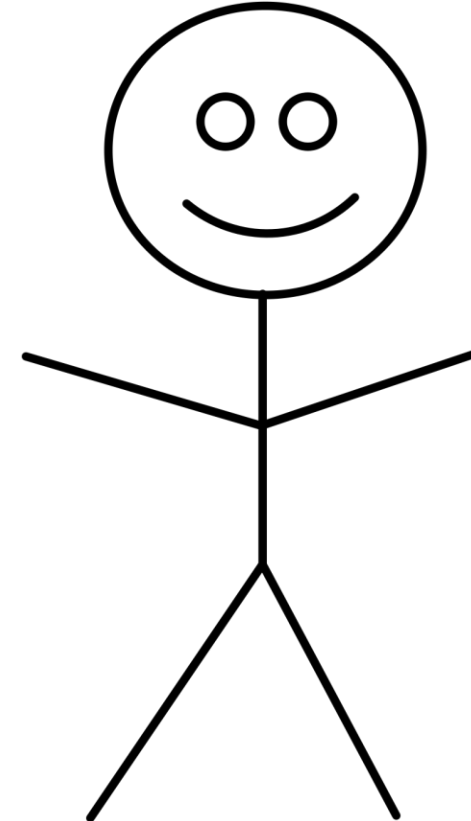
Blogs & Vlogs

Podcasts

New releases

Social media posts

Bots &
Disinformation



I'm not thinking the way I used to think. I can feel it most strongly when I'm reading. Immersing myself in a book or a lengthy article used to be easy. My mind would get caught up in the narrative or the turns of the argument, and I'd spend hours strolling through long stretches of prose. That's rarely the case anymore. Now my concentration often starts to drift after two or three pages. I get fidgety, lose the thread, begin looking for something else to do.

Nicholas Carr (2008)



TL;DR

FOMO

**Ideological
Bunkers**

- Lack of **in-person** exposure to different points of view
- Reasonableness = dominant belief in my filter bubble
- Policy adversaries must be ignorant or malicious

4 Pillars of the COP28 'Action Agenda' - (1) fast tracking a just and orderly energy transition; (2) fixing climate finance to make it more available, affordable, and accessible; (3) focusing on people, nature, lives and livelihoods; and (4) fostering full inclusivity in climate action.

COP28 climate conference is not just the Super Bowl of virtue signaling. It's doing real damage

COP28, the annual UN climate conference, is underway. And, once again, the Biden White House is making costly climate promises



COP28's alarming conflict of interest

How the world's most important climate summit was seemingly infiltrated by Big Oil.

What Economics Is and Isn't

SCIENCE

Carbon Tax, Beloved Policy to Fix Climate Change, Is Dead at 47

It reshaped how the world thought about climate change. But its prized trait—bloodless economic efficiency—won it few friends on the right or left.

The Atlantic

JULY 20, 2021

By Robinson Meyer



#MMT #MoralMoneyTime @samvega · Oct 26, 2019

Replying to @DoctorVive

As demonstrated by the Nordhaus 'Nobel' and Tol's publication, peer review for **climate economics is dead**.



Paul M. @ArizonaPaul · Jul 29, 2021

Keynesian **economics is dead**. Stimulus is a waste if you're not the country of manufacture. Killing American industry under a phony **climate** crisis and passing out crumbs so people can buy overpriced, Chinese garbage from walmart does nothing for this country or her people.



Carty @carty777 · Jun 6

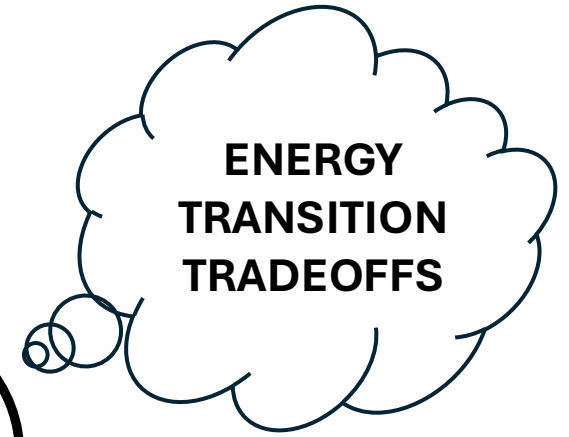
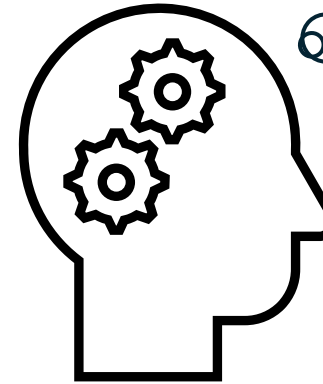
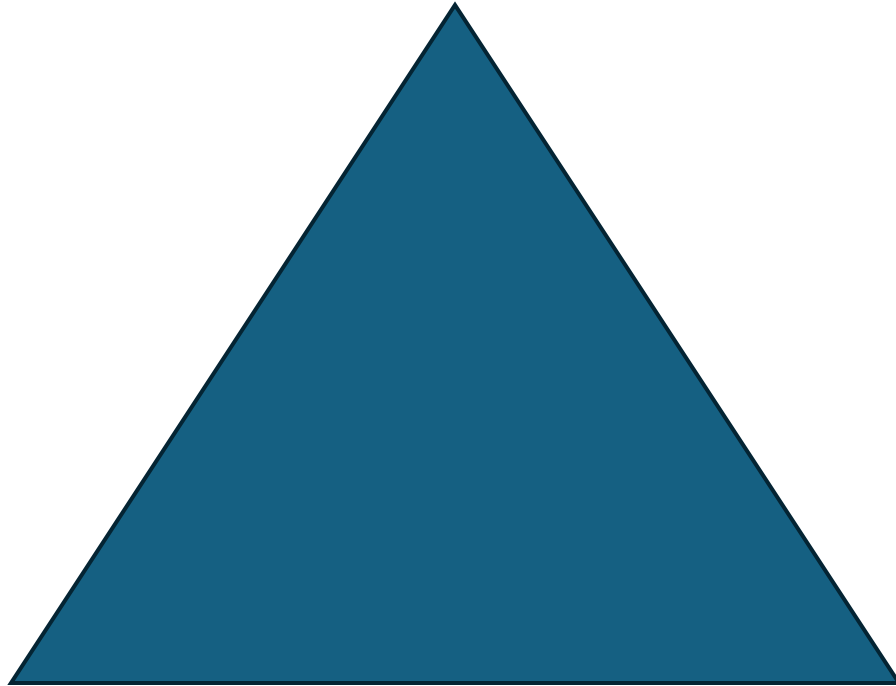
Replying to @murphymike and @YouTube

What a load of rubbish. Somebody should tell this guy that neo classical **economics is dead** and that there is a little thing called **climate** change he should maybe have a look at.

CAPTURE / BUSINESS DOMINANCE

Reliability

“security” / “resilience” / “access” (to energy)

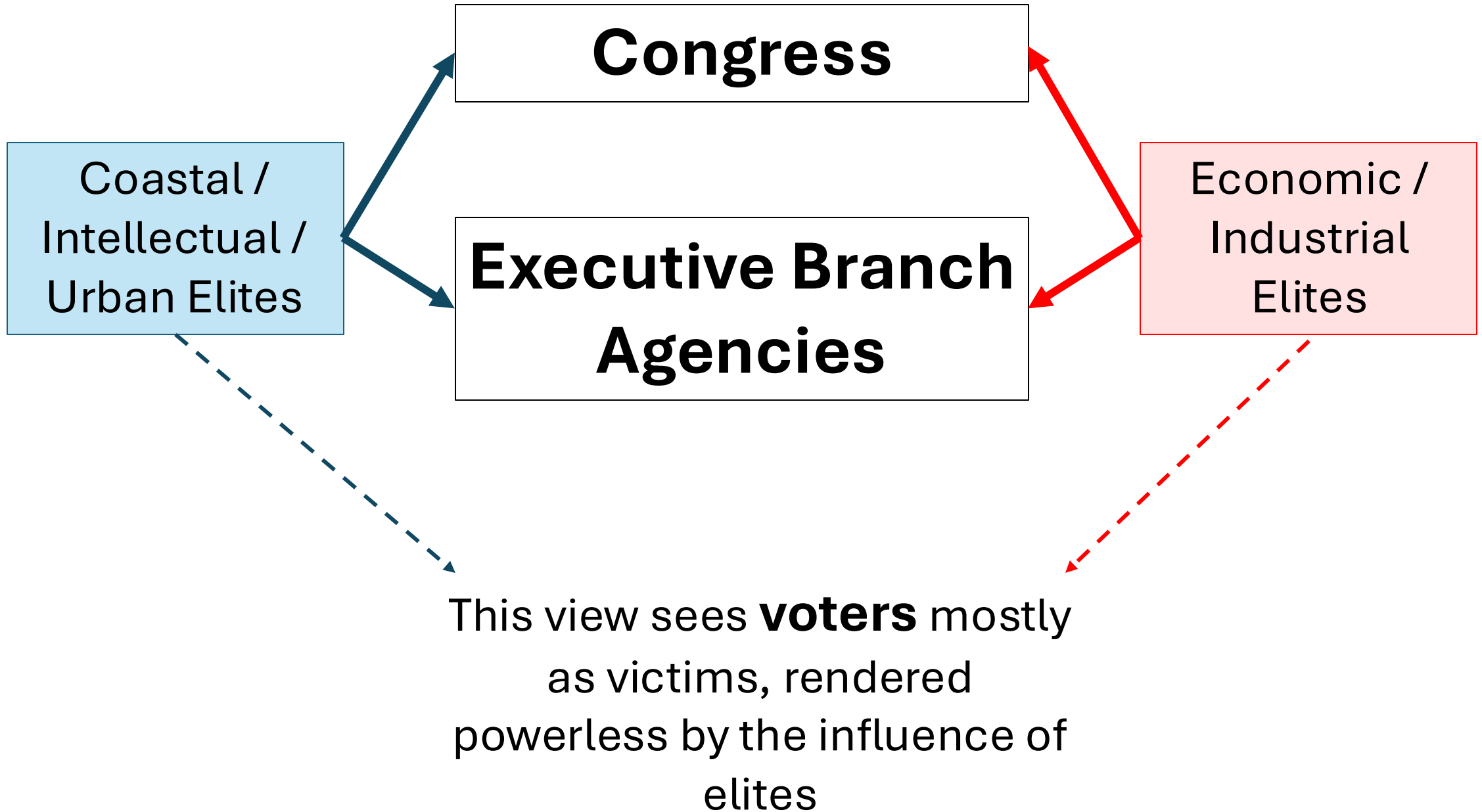


Affordability

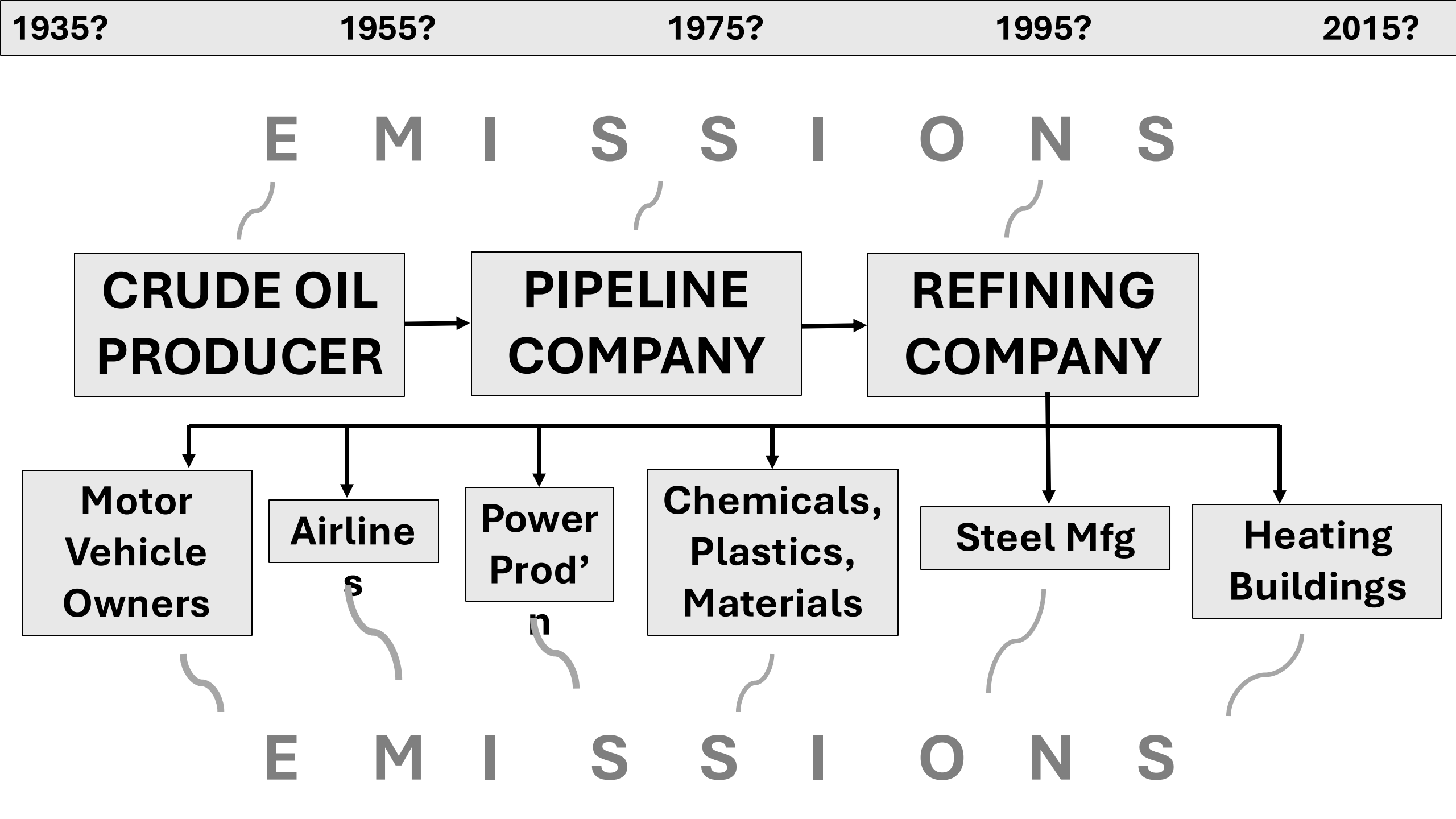
for whom? access to capital?

Environmental Performance

carbon emissions / other impacts / distribution

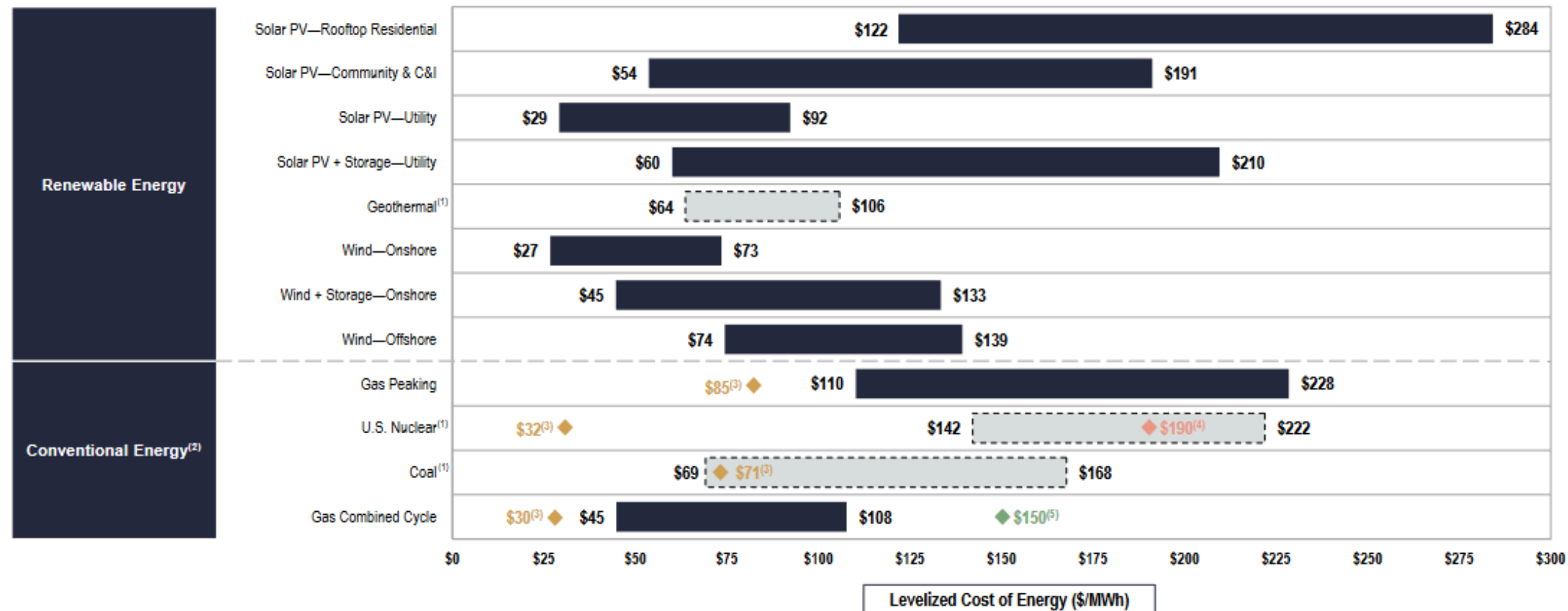


MISC.



Levelized Cost of Energy Comparison—Version 17.0

Selected renewable energy generation technologies remain cost-competitive with conventional generation technologies under certain circumstances



Source: Lazard and Roland Berger estimates and publicly available information.

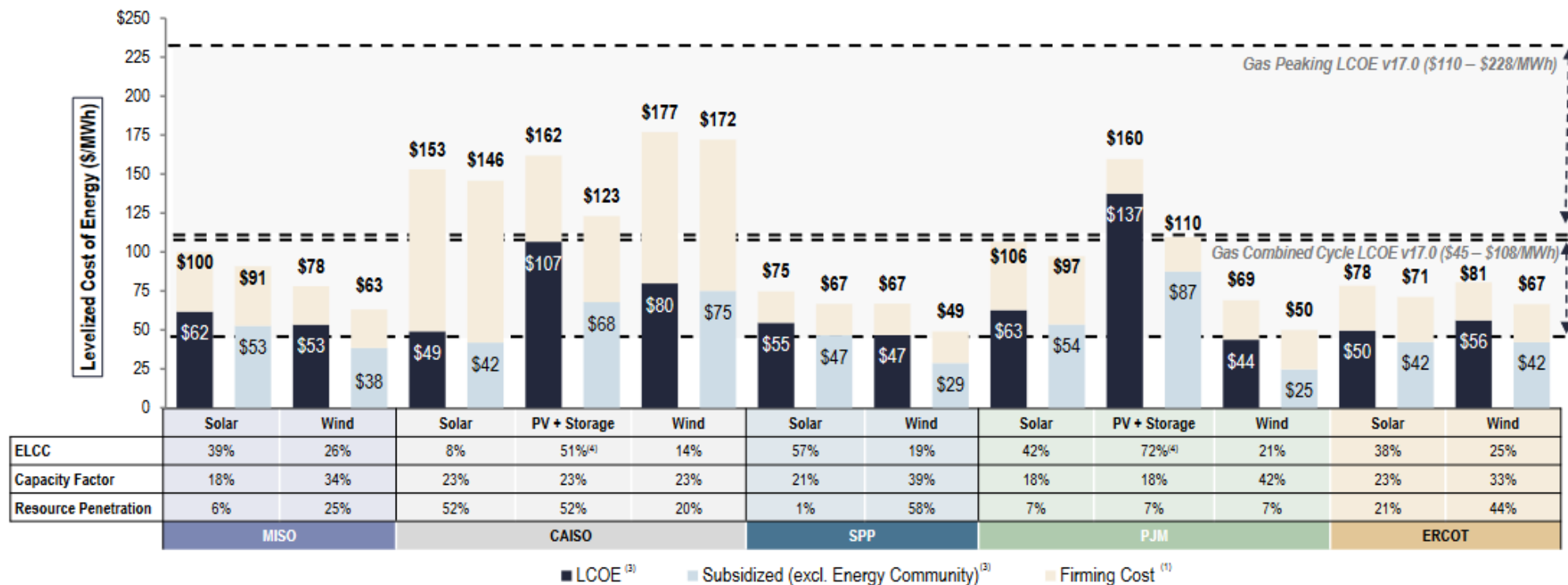
Note: Here and throughout this analysis, unless otherwise indicated, the analysis assumes 60% debt at an 8% interest rate and 40% equity at a 12% cost. See page titled "Levelized Cost of Energy Comparison—Sensitivity to Cost of Capital" for cost of capital sensitivities.

- (1) Given the limited public and/or observable data available for new-build geothermal, coal and nuclear projects the LCOE presented herein reflects Lazard's LCOE v14.0 results adjusted for inflation and, for nuclear, are based on then-estimated costs of the Vogtle Plant. Coal LCOE does not include cost of transportation and storage.
- (2) The fuel cost assumptions for Lazard's LCOE analysis of gas-fired generation, coal-fired generation and nuclear generation resources are \$3.45/MMBTU, \$1.47/MMBTU and \$0.85/MMBTU respectively, for year-over-year comparison purposes. See page titled "Levelized Cost of Energy Comparison—Sensitivity to Fuel Prices" for fuel price sensitivities.
- (3) Reflects the average of the high and low LCOE marginal cost of operating fully depreciated gas peaking, gas combined cycle, coal and nuclear facilities, inclusive of decommissioning costs for nuclear facilities. Analysis assumes that the salvage value for a decommissioned gas or coal asset is equivalent to its decommissioning and site restoration costs. Inputs are derived from a benchmark of operating gas, coal and nuclear assets across the U.S. Capacity factors, fuel, variable and fixed operating expenses are based on upper- and lower-quartile estimates derived from Lazard's research. See page titled "Levelized Cost of Energy Comparison—New Build Renewable Energy vs. Marginal Cost of Existing Conventional Generation" for additional details.

Levelized Cost of Energy Comparison—Cost of Firming Intermittency

The incremental cost to firm⁽¹⁾ intermittent resources varies regionally—as such is defined by the relevant reliability organizations using the current effective load carrying capability (“ELCC”)⁽²⁾ values and the current cost of adding new firming resources

LCOE Including Levelized Firming Cost (\$/MWh)⁽³⁾

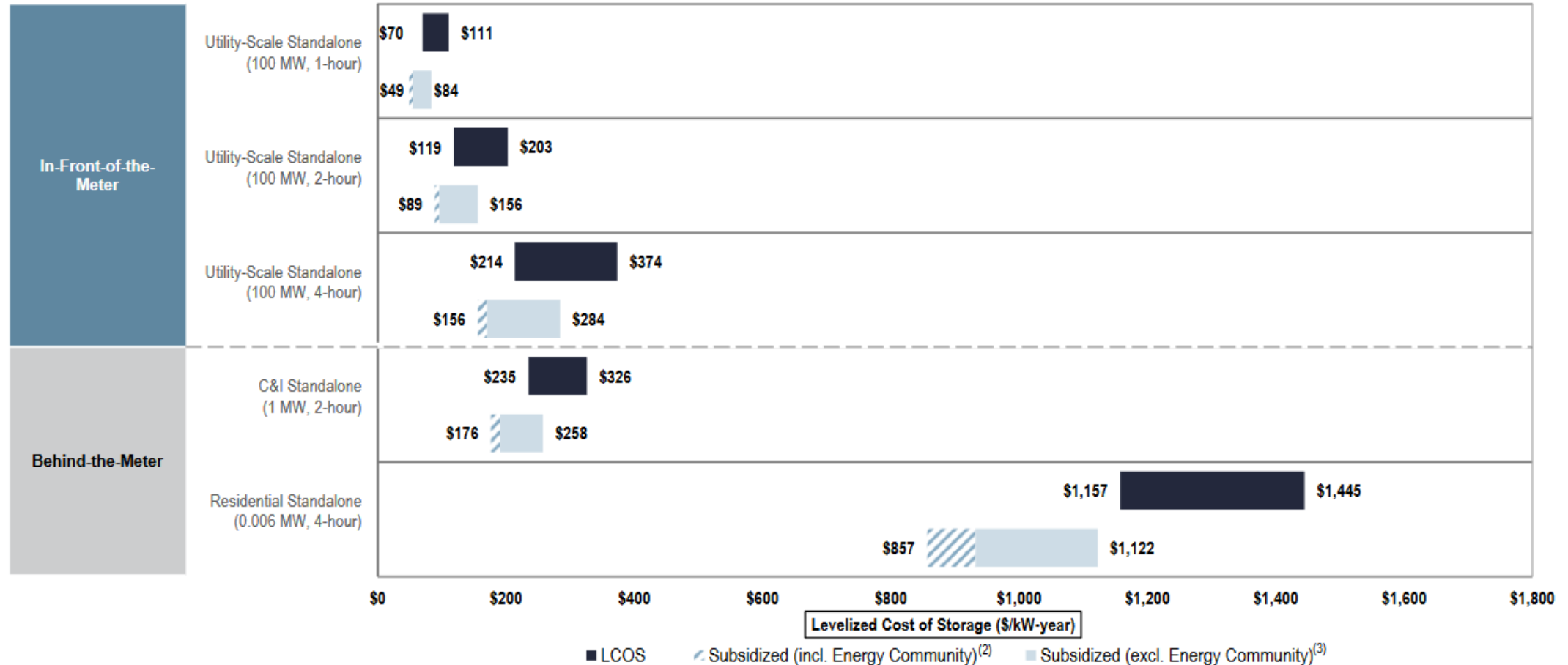


ELCC	39%	26%	8%	51% ⁽⁴⁾	14%	57%	19%	42%	72% ⁽⁴⁾	21%	38%	25%
Capacity Factor	18%	34%	23%	23%	23%	21%	39%	18%	18%	42%	23%	33%
Resource Penetration	6%	25%	52%	52%	20%	1%	58%	7%	7%	7%	21%	44%
	MISO		CAISO			SPP		PJM		ERCOT		

Source: Lazard and Roland Berger estimates and publicly available information.
 Note: Total LCOE, including firming cost, does not represent the cost of building a 24/7 firm resource on a single project site, but, instead, the LCOE of a renewable resource and the additional costs required to achieve the resource adequacy requirement in the relevant reliability region based on the net cost of new entry (“Net CONE”). ISO ELCC data as of April 2024.
 (1) Firming costs reflect the additional capacity needed to supplement the net capacity of the renewable resource (nameplate capacity * (1 – ELCC)) and the Net CONE of a new firm resource (capital and operating costs, less expected market revenues). Net CONE is assessed and published by grid operators for each regional market. Grid operators use a natural gas peaker as the assumed new resource in MISO (\$8.22/kW-mo), SPP (\$8.56/kW-mo) and PJM (\$10.20/kW-mo). In CAISO, the assumed new resource is a 4-hour lithium-ion battery storage system (\$18.92/kW-mo). For the PV + Storage cases in CAISO and PJM, assumed storage configuration is 50% of PV MW and 4-hour duration.
 (2) ELCC is an indicator of the incremental reliability contribution of a given resource to the electricity grid based on its contribution to meeting peak electricity demand. For example, a 1 MW wind resource with a 15% ELCC provides 0.15 MW of capacity contribution and would need to be supplemented by 0.85 MW of additional firm capacity in order to represent the addition of 1 MW of firm system capacity.
 (3) Reflects the average of the high and low of Lazard’s LCOE v17.0 for each technology using the regional capacity factor, as indicated, to demonstrate the regional differences in project costs.
 (4) For PV + Storage cases, the effective ELCC value is represented. CAISO and PJM assess ELCC values separately for the PV and storage components of a system. Storage ELCC value is provided only for the capacity that can be charged directly by the accompanying resource up to the energy required for a 4-hour discharge during peak load. Any capacity available in excess of the 4-hour maximum discharge is attributed to the system at the solar ELCC. ELCC values for storage range from 90% to 95% for CAISO and PJM.

Levelized Cost of Storage Comparison—Version 9.0 (\$/kW-year)

Lazard’s LCOS analysis evaluates standalone energy storage systems on a levelized basis to derive cost metrics across energy storage use cases and configurations⁽¹⁾



Source: Lazard and Roland Berger estimates and publicly available information.

Note: Here and throughout this section, unless otherwise indicated, the analysis assumes 20% debt at an 8% interest rate and 80% equity at a 12% cost, which is a different capital structure than that used in Lazard’s LCOE analysis. Capital costs are comprised of the storage module, balance of system and power conversion equipment, collectively referred to as the energy storage system, equipment (where applicable) and EPC costs. Augmentation costs are not included in capital costs in this analysis and vary across use cases due to usage profiles and lifespans. Charging costs are assessed at the weighted average hourly pricing (wholesale energy prices) across an optimized annual charging profile of the asset. See Appendix B for charging cost assumptions and additional details. The projects are assumed to use a 5-year MACRS depreciation schedule.

(1) See Appendix B for a detailed overview of the use cases and operation parameters analyzed in the LCOS.

(2) This sensitivity analysis assumes that projects qualify for the full ITC and have a capital structure that includes sponsor equity, debt and tax equity and also includes a 10% Energy Community adder.

(3) This sensitivity analysis assumes that projects qualify for the full ITC and have a capital structure that includes sponsor equity, debt and tax equity.

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