

A photograph of several wind turbines in a grassy field under a clear sky. The image is tinted with a greenish-blue color. The turbines are of varying heights and are positioned at different angles. In the background, there are some power lines and a small cluster of trees.

BUILDING UP IN 2029

HOW TO MAKE GREEN STATECRAFT DURABLE

July 2026
Edited by Todd N. Tucker

Acknowledgments

Oskar Dye-Furstenberg gave research assistance for the conference and volume; Hannah Groch-Begley, Brian Mandel, and Toyosi Odusola gave logistics support; Katherine De Chant, Julie Hersh, and Todd N. Tucker gave editorial support for the essays; Joel Michaels and Narayan Subramanian gave helpful reflections at the 2025 conference; and Ted Fertik, Noah Kaufman, Hannah-Garden Monheit, Suzanne Kahn, and Elizabeth Wilkins offered helpful comments on an earlier iteration of the introductory essay. We thank all of the essay authors and conference attendees and note that these essays represent individual views; none necessarily represent the positions of their organizations or a consensus of all authors.

About the Roosevelt Institute

The Roosevelt Institute is a think tank, a student network, and the nonprofit partner to the Franklin D. Roosevelt Presidential Library and Museum that, together, are learning from the past and working to redefine the future of the American economy. Focusing on corporate and public power, labor and wages, and the economics of race and gender inequality, the Roosevelt Institute unifies experts, invests in young leaders, and advances progressive policies that bring the legacy of Franklin and Eleanor Roosevelt into the 21st century.

Table of Contents

Introduction *Todd N. Tucker*

How to Govern It?

Reconstruct the Bureaucracy, Don't Just Rebuild It *K. Sabeel Rahman*

Use and Defuse the Cold War's Unexploded Ordinance *Timothy Meyer*

Take Senate Reform Seriously *Will Dobbs-Allsopp*

Staff Up Quickly and Competently *Sara Meyers*

How to Plan It?

Fix Modeling and Cost-Benefit Analysis *Heather Boushey and Noah Kaufman*

Stand Up a National Climate Service *Madison Condon*

Use and Expand Subfederal Power *Rohan Sandhu*

Marshal the Power of Utilities *Shelley Welton*

How to Finance It?

Take More and Better Financial Risks *Satyam Khanna*

Create a New Kind of Sovereign Wealth Fund *Saule Omarova*

Take Equity Stakes for Public Purposes *Lenore Palladino*

Build Durable Capacity Internationally *Erin Graham*

How to Produce It?

Clean Up the Machines *Leah C. Stokes*

Construct Public Factories *Joel Dodge*

Decarbonize America's Growth Model *Jonas Nahm and Daniel Driscoll*

Rebalance Capital and Labor *Ted Fertik*

Introduction

BY TODD N. TUCKER



Todd N. Tucker is a political scientist and director of industrial policy and trade at the Roosevelt Institute, where he leads Roosevelt's work on the role of governance and institutions (both national and international) in facilitating economic transformation.

He is author of *Judge Knot: Politics and Development in International Investment Law* (Anthem Press, 2018), along with other academic research published by Cambridge University Press, Oxford University Press, and other publishers. Prior to his doctoral work, he led research on international issues for a number of DC think tanks and research organizations.

Todd received his BA from the George Washington University and his PhD and MPhil from the University of Cambridge, where he was a Gates Scholar. He has taught at Johns Hopkins University and the University of New Hampshire.

Three things can be true in 2026. First, the climate crisis is materially harming Americans, even as politicians, pundits, and philanthropists second-guess their prior commitments to addressing it. Second, policies to limit or reverse these damages are moving in the wrong direction, as the Trump administration's so-called Department of Government Efficiency (DOGE) and One Big Beautiful Bill Act (OBBBA) axed large swaths of the Biden administration's climate-oriented Inflation Reduction Act (IRA). Third, somewhat ironically, the Trump administration has shown what an IRA 2.0 might look like, by both exposing the IRA's vulnerabilities and breaking glass on new tools of economic statecraft that could be beneficial for green priorities in future governing moments in 2029 and beyond.

This first-of-its-kind, 17-essay collection brings together 19 scholars and practitioners to sketch out what a future governing agenda for climate could look like, post-DOGE. Its recommendations are rooted in the lessons of the past decade as well as the New Deal, married with other ideas that have worked at the subfederal or international level. The goal: making green statecraft more durable—and more supportive of a good life for all Americans¹—than what came before.

This introductory essay is divided into three sections. First, it explains why there are reasons to be bullish about this agenda: The climate problem is more necessary to address than ever, new policy tools can help the government address the problem more effectively, and the politics are more supportive than some pundits suggest. Second, it previews the agenda presented in this collection's essays, divided into four sections on governing, planning, financing, and producing the next phase of the energy transition. Together, they constitute a slice of what a "Project 2029"-type effort for climate would look like, including adapting Donald Trump's means to progressive ends.² I then conclude with observations about why green statecraft can help us solve structural problems (e.g., outsize power of finance and the courts) that narrower approaches like affordability or abundance cannot.

Reasons to Be Bullish About Future Climate Action

The policy studies literature has developed frameworks for understanding when policy change happens. Namely, action is more likely when multiple streams converge:

1. a **problem** is identified (a) that violates important social values, (b) for which government is seen as responsible for addressing, and (c) that is urgent or can otherwise command scarce policymaker attention;
2. a **policy** is available that is feasible to implement and address the problem; and
3. the **politics** is ripe for anti-status quo action.

Climate action is challenging under this framework, because the effects gradually accumulate (over a time span longer than presidential terms), and many of its most salient effects are felt in some places but not others.³ As recently as 2017, a leading social movement scholar argued that the issue was nearly impossible to organize around, given the US government's bias against spending money and lack of grassroots infrastructure to advocate for emissions reduction.⁴ Indeed, this author remembers attending countless retreats over the 2000s and 2010s where climate organizations seemed to operate from a theory of change that put scientific and moral considerations over power-building.

What a difference a few years make. Between 2019 and 2022, the jobs-and-development-forward Green New Deal was introduced (buoyed by an unexpectedly favorable response by establishment politicians to an insurgent youth movement), proposals emerged from both political parties to enact industrial policies that had long been out of favor (in order to address the three c's of COVID, China competition, and climate), and the US government committed hundreds of billions in spending to green innovation and jobs. Can this dynamic be recreated, or a new one emerge? While the 2019–22 period was special, there are good reasons to believe that the problem, policy, and politics could again converge.

State of the Problem: The Climate Crisis Is (Still) Hurting Americans

The last three years had the worst weather- and climate-related disasters in recent memory. From the record-breaking \$61.2 billion damages of the LA wildfires to the deadly flash flooding in Texas Hill Country, the US now sees over two dozen billion-dollar-plus disasters a year, up from an average of nine in 1980.⁵ According to a recent estimate, US emissions between 1990 and 2020 have caused \$10.2 trillion in damages—one-third of that on the US economy, and two-thirds on the rest of the world.

Even if emissions were radically curbed today, the prior ones already exist in the atmosphere: A child born in 2020 will see these historical emissions generate as much as \$100 trillion in damages by the time they reach 80 years of age (i.e., the year 2100), assuming emissions are not removed. These estimates reflect only those impacts that are well measured in GDP, such as crop failure and lower productivity; other impacts like damages to health, loss of ecosystem function, and sea level rise could increase the numbers substantially, as would inclusion of future emissions.⁶

These costs will disproportionately fall on working people and others who cannot afford to shelter themselves. Recent studies show that the average person experiences nearly three months of health-threatening temperatures, which cause five million deaths a year.⁷ Many of these threats occur on the job: 70 percent of workers are exposed to extreme heat, causing over 22 million injuries. Younger men and those of lower socioeconomic status are particularly vulnerable, as are those in industries like construction, agriculture, fishing, forestry, firefighting and emergency services, transportation, and tourism.⁸ Increases in particulate matter from wildfires could cost Americans \$608 billion annually in health damages, while warming trajectories could cause two weeks of poorer sleep for the average person. Other studies suggest an increase in intergroup and domestic violence as a result of stresses from temperature changes, while others suggest asylum applications could increase by 30 to 190 percent.⁹ Tick infestations are spreading throughout the US as a result of climate and landscape changes, causing food allergies, brain inflammation, and death—at a massive cost to the economy's productivity.¹⁰

These challenges require government action. The United Nations estimates that \$4 to \$6 trillion a year is needed globally to transition to a clean energy economy, while other estimates put the number closer to \$10 trillion.¹¹ If this were only a resource question, one might argue that the private sector could deliver all or most of the money. But, between the negative externalities that fossil fuel firms do not price in, the positive externalities that clean energy firms struggle to capture, the considerable coordination hurdles involved in getting innovation and supply chains to emerge in the right sequence, and the considerable distributional impacts of acting and failing to act, climate change is a cluster of overlapping market failures that the private sector has not and will not address.¹²

Moreover, *how* we address climate also has substantial implications for wealth inequality—one of the other major crises of our time. If the wealthiest 1 percent of the population financed and owned all clean energy infrastructure, their share of global wealth would go from 38.5 percent today to 46 percent by 2050. If, in contrast, that infrastructure were built by the public sector and financed by a wealth tax, the 1 percent's share would go down to 26 percent.¹³

Mitigation, adaptation, and carbon removal require strong and capable states. A solution without government power isn't a solution.

State of the Policy: A Larger Toolbox than Ever

The US began to make a dent in its climate impact with the trio of Inflation Reduction Act (IRA), Bipartisan Infrastructure Law, and CHIPS and Science Act. The main policy tool was a suite of uncapped tax credits that was (compared with other countries) relatively automatic and easy for private investors and producers to take advantage of, and (compared with past US policies) designed to incentivize pro-labor and pro-economic development business practices.¹⁴ These acts triggered hundreds of billions of dollars of publicly and privately funded upsurge in clean energy construction and investment, making the US the envy of the world.¹⁵

These credits were paired with other innovations in governance. The Department of Energy transformed from an agency focused on nuclear research to the nation's premier green bank and grantmaker. The

Department of Commerce went from a sleepy agency to a major investor in semiconductors and the technology stack needed to “electrify everything.” The US Department of Agriculture and the Environmental Protection Agency’s Greenhouse Gas Reduction Fund plowed billions into helping farms and households decarbonize. Even US trade policy began to be reorganized around a clean energy future.¹⁶

For all of its accomplishments, the Biden administration’s climate approach remained self-describedly “government-enabled and private sector-led.” While this rhetoric and approach undoubtedly helped gain votes in the evenly divided US Senate, it also had limitations that time would reveal. It put a lot of stock in the private sector anticipating supply chain needs, being able to make profits in an inflationary environment, and moving at a speed that would generate political rewards for politicians. Moreover, it didn’t resolve ways in which government itself gets in the way of speedy implementation through permitting and other bureaucratic hurdles.¹⁷ Finally, it underestimated the extent to which a highly motivated rollback strategy from Elon Musk, Russell Vought, and other Trump appointees could sabotage existing grants and loans (though these appointees in turn overestimated how much courts would go along with their plans).¹⁸

Enter an important and unexpected innovation of the second Trump administration: public equity stakes. One of the red lines in US policymaking over the last several decades has been the appearance or reality of policy being firm-specific. The role of government, in this line of thinking, is to set basic rules of the road that all firms have to follow, and let the market determine which firms succeed or fail. This approach has much to recommend it: Government may not have as high-quality information as the private sector has via price signals (so it could bet on the wrong firm), and there is a risk of corruption if policymakers exploit firm-specific policy to boost their own private wealth.

And yet, in a world of monopolies, oligopolies, and imperfect market competition, price signals may not be that reliable for the private sector either, and there are reasons to think that public service norms can make civil servants behave selflessly.¹⁹ More to the point, governments that are concerned about where and how goods and services are produced have an interest in not ceding too many consequential decisions completely over to the private sector, which in contemporary America has its own short-term profit biases.

Whether for these reasons or less strategic ones,²⁰ Trump’s Departments of Commerce, Defense, and Energy have embarked on a bold experiment in state capitalism—the academic term for greater state ownership and control over the means of production.²¹ The government has acquired tens of billions of dollars worth of shares in private companies, from rare earths to steel to quantum computing. Table 1 groups some of the interventions of the last few years, organized by their degree of ownership and control.

Table 1. Varieties of the New State Capitalism

	More Control	Intermediate Control	No Formal Control
More Ownership	Largest possibility of public/private alignment: UK nationalizes British Steel; French assembly supports same for ArcelorMittal’s steel operations. Bernie Sanders proposes 50% equity stake in AI companies, with full board representation and half of shareholder votes.	Corporate short-termism limited: US will own 15% of MP Materials, and becomes largest shareholder. Does not get a board seat, and must vote its shares in accordance with board priorities. Company agrees to end stock buybacks and China business deal. US will have informal influence through wraparound policies like price floors and offtake agreements.	Lots of money for—but no accountability to—the public: US converts CHIPS grant for Intel to 10% equity stake, with no project milestones, no board seat, and must vote its shares in accordance with board priorities.
Intermediate Ownership	Owning shares, owning controversy: US will own 10–20% of Trilogy Metals and get a board seat on the Canadian company, in exchange for clearing permits and other hurdles for Alaska project—including a divisive road project.	Accountability to public through milestones: US will own around 10% of USA Rare Earth and tie disbursements to project milestones around building an “ex China” magnet supply chain. No board seat.	A portfolio approach avoids “picking winners”: US to get a “minority, non-controlling stake” in an ecosystem of nine quantum computing companies that compete against one another.
No Ownership	Leveraging merger review to steer investment: US takes a noneconomic, “Class G” “golden share” in US Steel (bought by Japan’s Nippon) to ensure over \$10 billion in investment and alignment with national security.	Using national security powers to structure markets: US uses the Defense Production Act Title I to allocate private market energy services capacity to Sable Offshore.	Using the bully pulpit: Trump publicly lobbies Carrier to not offshore jobs (2016). Biden walks a UAW picket line, calls on Big Three to make a deal (2023).

Source: SEC Filings and Periodicals; examples are from 2025–26 unless noted.

A few points are worth underlining here. First, while the Trump administration did not use climate rationale to justify these interventions, they represent important precedents for clean energy policymaking. Many of the companies produce minerals and goods that can help decarbonization. Moreover, some of the deals involve board seats that give the government eyes, ears, and voice on setting corporate priorities in a way that one-off grants do not (and with lower transaction costs than the latter). While this power can be bad in the wrong hands, it can be useful in the right ones. Future policymakers could use these levers to mandate faster decarbonization, recognizing labor unions, “buying American,” or banning stock buybacks (as the US did in the context of the MP Materials investment). The companies themselves recognize this in their securities filings (linked above), noting that government equity stakes create the potential that future governments will look to change deal terms or project priorities.

Second, equity investments are more budgetarily attractive for the taxpayer in the tight fiscal environment we are likely to see in 2029.²² While grants are one-way outlays from the public to the private sector, equity investments on the front end generate a stream of dividend payments from the private to the public sector on the backend—ensuring that the public shares in the upside. Moreover, if government sells its shares, it stands to make a further profit. From the company perspective, equity stakes can be attractive as a form of patient capital that does not force decisions solely on the basis of being able to service a loan. To the extent that, say, the manufacturing business requires significant capital outlays and may not make money as quickly as the double-digit returns of more speculative investments, patient government capital can make the world safe for more modest 5 percent returns.²³ Revisions to government budget rules can and should make it easier to “score” equity investments as the revenue generator they can be,²⁴ while guardrails can ensure government decision-making is not corrupted by these arrangements.

Third, the examples in Table 1 show that there can be trade-offs between how much ownership or control the public sector has. Since buying 10 percent of Intel in 2025 (upper right tile), the US has seen the value of its shares quintuple to over \$50 billion. However, the government gave away virtually any formal say over how the company conducts its business, from getting rid of Joe Biden’s project milestones to forgoing board representation. In contrast, the US spent no money and will receive no

return on its golden share in US Steel (lower left tile). However, it will have veto power over a dozen categories of corporate decisions. Likewise, there are many ways to structure deals to create formal leverage (releasing funding only after milestones are met, e.g. USA Rare Earths), non-equity influence (being a company's sole or major buyer, e.g. MP Materials), or informal influence (pushing customers to the company, e.g. Sable Offshore). Indeed, even with no ownership or formal control (bottom row), Trump's and Biden's jawboning of companies forces them to stand up and take greater notice of how their actions are being perceived by the public and government.

To be sure, equity stakes are neither necessary nor sufficient for a robust climate agenda. But their new availability shows that the Overton window is rapidly shifting on the US government's tool kit. To wit, in June 2026, Sen. Bernie Sanders (I-VT) and the Trump administration embraced the idea of taxing AI companies through a takeover of shares for a new sovereign wealth fund. If AI turns out to be a bubble, the idea won't cost the government anything. If the industry finds a viable revenue model, the plan could generate trillions of dollars for climate and other priorities²⁵—multiples larger than the IRA without having to spend a dime of taxpayer money. This is an example of how policies on AI, defense, and China competition can provide numerous vehicles for the “what” for climate action. The “how” can be provided by old tools like grants, loans, taxation, and regulation, alongside more novel tools like sovereign wealth funds, public factories, international carbon clubs, and climate macroeconomic planning.

State of the Politics: Better than the Hot Takes Suggest

So the climate problem is real and increasingly felt, and the policy solutions are within reach: But are both swimming against insurmountable political hurdles?

Some would say yes. In the wake of the 2024 election, when Democrats lost all seven swing states to the climate change-denying Donald Trump, there were understandable calls to ask whether progressives had done—or talked—*too much* about climate. Some questioned why

politicians should put climate high in the policy queue in the future if some of the advocacy groups that demand action did not unambiguously cheer on the IRA and reward its architects.²⁶ This was put most forcefully by the Searchlight Institute, who wrote, “How to talk about climate change: don’t.”²⁷ This idea appears to be resonating with other gatekeepers: Philanthropists have cut back or failed to step up climate funding in the face of Trump’s threats,²⁸ and news teams focused on climate reporting are shuttering.²⁹ There is even a name emerging for those that embrace a quiet or “not at all” strategy: “climate hushers.”³⁰

Yet the data show that addressing climate change in a responsible way remains highly popular with Americans, and that progressives have perhaps the biggest issue advantage on the topic. Renewable energy is not only the cheapest but also the most popular form of energy. Moreover, since Trump has been in office, the share of adults that think the president should do more to address climate change has increased—from 54 to 59 percent nationally, becoming the majority opinion in all but three highly fossil-dependent states. In contrast, majorities in 18 states in 2023 did not rate climate change as a should-be presidential priority.³¹ In more recent polling, University of California researchers found that—while climate ranked as a low-priority issue for most voters—those voters that rank it as a voting issue are much more likely to favor than oppose climate action, by a 56 to 11 percent margin. This gap widens even further if it is restricted to voters that are persuadable to voting for progressive candidates (66 to 8 percent). Moreover, the scholars found no evidence that emphasizing climate cost votes.³²

Moreover, to the extent that long-term climate investments failed to have immediate-term political payoffs in 2024, this was not because the policies were unpopular (they were popular) but because they were insufficiently attributed back to the national lawmakers who approved the funds (as opposed to on-the-ground governors, often in red states, disbursing the funds).³³ The reluctance of federal officials to actually campaign on climate investments likely compounded this disconnect.³⁴ While this is certainly a policy design, execution, and communications challenge, it is not an insurmountable one. Moreover, it is actually a good thing for climate policy to once again be bipartisan, whether at the state or federal level. Thanks to quiet lobbying from industry and Republican lawmakers, the One Big Beautiful Bill Act (OBBBA) preserved a surprising amount of Biden’s subsidies for clean energy technologies and products,

and federal budget watchdogs now expect spending to be multiples higher than the original estimates for the IRA. As of this writing, it appears about half of the grants obligated during the Biden years have actually been paid out—not good, but not apocalyptic either.³⁵ Rationalizing and putting some structure around these credits and the equity stakes above represent something that might even be advanced in divided government during 2027.

Another way to think about the political window: Are competitive candidates for higher office still talking about climate, and, if so, how? Here are climate-specific messages or pledges from candidates in the most competitive US Senate races. These are anonymized and are not endorsements:

“The climate crisis is not a future threat. It’s here in the forms of historic storms battering [our] farms, flooding that overwhelms [our] neighborhoods, and severe weather that has become the new normal across our state. Oil and gas dependence doesn’t just poison our air, it finances foreign entanglements and enriches the same corporations that have spent decades lying to us about what they knew. [My state] deserves better. That’s why I’ll fight for a pathway to 100% renewable energy. We will anchor it in massive investment in solar, wind, and battery storage, a modernized smart grid, and the energy efficiency upgrades that put money back in families’ pockets. Every step of that transition must be built on good union jobs because solving the climate crisis, rebuilding the American middle class, and providing reliable, affordable power are not competing goals—they are the same goal.”

“If any state can figure out how to grow our economy, lower costs, and combat climate change, it’s [my state]. . . . If we invest in innovation, we can add to our hundreds of thousands of oil, gas, wind, solar, and battery jobs by creating new jobs in cutting-edge technologies like geothermal and hydrogen-fueled energy. . . . And we can better prepare for climate disasters instead of constantly being caught flat-footed when they hit our state.”

“[Candidate] is fighting to protect our natural environment, address the existential threat of climate change, and invest in lower-cost, clean energy solutions. [Candidate] supports an all-of-the-above energy strategy to meet the needs of [state], lower costs, and ensure America can become truly energy independent. That is why [candidate] secured federal funding to bolster clean energy in [state], build out EV charging infrastructure, and help families weatherize their homes and invest in alternative energies that keep their costs down. [Candidate] passed the largest climate change legislation in history, the *Inflation Reduction Act*, and championed vital climate resilience funding in the *Bipartisan Infrastructure Law*.”

“We only have one planet, and we must ensure it’s livable for future generations and address climate change. The innovation, development, and deployment of renewables are critical to energy security in the 21st century and to mitigating the extreme weather impacting us all. . . . [Candidate] believes we need to take action to fight climate change, protect our planet, and invest in climate adaptation. In this country, we continue to consume more electricity every year. [Candidate] opposes the Trump Administration’s rollback of investments in clean energy and supports clean energy solutions like wind and solar that also create new union jobs in all areas of our state.”

“Energy prices are out of control, and [state] needs solutions from every angle. . . . [Candidate] will fight to restore federal tax credits for solar, wind, hydropower projects that were cut by DC’s reconciliation bill.”

“Modernize our energy grid to lower energy costs for consumers. Too much of our grid is old and inefficient. By modernizing parts of it we can increase reliability, create good-paying jobs and lower costs for families.”

In short, far from appearing like a toxic “c-word,” climate, energy costs, and related jobs appear to be commitments that candidates want to highlight.

A final way to think about the political valence of climate is to look at whether the social movement activity of the next few years is likely to be friendly to transformative action on climate. Looking first to the left, one way of posing this question is whether the ground game politics of climate are ever going to be as good as they were in 2019–22. But that question exaggerates the objective strength of climate organizing in that period, and underestimates some new assets. In hindsight, establishment lawmakers saw a loosely organized youth movement as more of a threat, prize, and policy bulwark than was probably merited. Things look different today, when many of these activists have grown up, gotten organized, and can meaningfully dole out political punishment and rewards. The union-backed Working Families Party and Democratic Socialists for America are building a national footprint with over 700,000 members, are influencing key political races, and prominently embrace the same jobs-development-and-climate logic that propelled the Green New Deal.³⁶

They are not alone. Rural and blue-collar-oriented populists are gaining ground in other parts of the country, building on a growing rejection of the power of fossil, financial, tech, and other oligarchs.³⁷ In the center, “varieties of Abundance” are developing into a large and well-funded network of YIMBY organizations highly motivated by climate and competitiveness concerns.³⁸ All of the foregoing factions are investing energy in tackling the affordability problem, which is pushing the Overton window on acceptable market interventions around energy, from price controls to forcing data centers to build the grid.³⁹ On the right, young Republicans are significantly more likely to support clean energy and oppose fossil energy than their older counterparts, though there does not appear to be an organizational home for these views.⁴⁰

Thus, while no one can predict where the political winds will go, lawmakers and social movements are honing muscles that could be useful in a future climate moment. If fundamental democracy reform can be made a part of the climate movement’s project, then the favorable public opinion can be translated into policy outcomes.

Our Authors' 2029 Green Statecraft Agenda

Conservatives made waves with Project 2025, a multiyear, multi-organization effort to reimagine the American state and democracy in the interest of a far-right, climate-regressive agenda. This was no mere policy wish list, but rather a set of structural interventions across and beyond government agencies. President Trump, after distancing himself from Project 2025 when it became politically inconvenient in the 2024 elections, soon implemented many of its recommendations.⁴¹

An adequate response to this has to be similarly structural in nature and needs to reimagine how the relationship between the government and the governed needs to shift to make the many desirable policies feasible and durable. Thus, while progressive “building up” demands more of Congress than the right-wing project of tearing government down, an agenda at scale envisions a role for all branches and levels of government, as well as for civil society. As the writer Jamelle Bouie has noted, a true 2029 agenda needs a vision of a new constitutional order.⁴² This is particularly true for climate change, which never has been a narrow problem of a pollution externality but rather an existential problem that will remake economies and political systems—either haphazardly through our not responding at speed and scale, or generatively if we rise to the challenge.

Our authors took on this task, and returned ideas in four categories. The first order of business for the next phase of green statecraft is figuring out **how to govern it**: which branches and agencies should do what, with what authorities and what kind of staffing. Importantly, in the context of a Supreme Court that has gutted deference to executive branch expertise, cut back human rights protections, and parted with Donald Trump only when it served the interest of big business,⁴³ this is a story about *power*, and how the next administration can effectively use it.

Second, **how to plan it**. The Biden administration made some steps in this regard, moving beyond one-off policy interventions and publishing (e.g.) lift-off reports that tried to imagine how clean industries could be developed or reshored over multiple years and decades. But the scale of mitigation, adaptation, and carbon removal challenges requires more

systematic planning, of the kind attempted (ultimately imperfectly) during the New Deal.⁴⁴ While some of this will involve more centralization of planning capacity, the last few years have shown that some of those levers need to be decentralized around the country, away from single points of failure.

Thirdly, **how to finance it**. This section is in part about how to raise resources to expeditiously fund the energy transition, but—as our authors show—it is also a particular site where decisions about governing and planning are made. In other words, these ideas are deeply structural. Sovereign wealth funds, operating domestically and internationally, are playing an increasing role in bringing the interests of private finance in line (or to heel) with decarbonization and other existential threats like AI.⁴⁵ These too have a long but forgotten history in the US context, through entities like the Reconstruction Finance Corporation.⁴⁶ As multiple authors note, these funds can be a way of rooting out corruption and personalism. Yet setting up these bodies will necessitate a confrontation with the Supreme Court, in the wake of the double standard in *Cook v. Trump* and *Trump v. Slaughter* that only the Federal Reserve (whose mission is dear to the financial sector) merits independence.⁴⁷

Last but not least, green statecraft means little if its impacts do not show up in factory floors and service centers around the country: We have to figure out **how to produce it**. This means figuring out the labor, natural resources, and capital needed to get the job done—which can be privately owned, privately operated, publicly owned, publicly operated, or some mix. All of the governing, planning, and financing strategies matter a lot for how effective this all is, as do the underlying class and macroeconomic growth dynamics of the country.

How to Govern It

K. Sabeel Rahman, former head of the Office of Information and Regulatory Affairs, argues for a Reconstruction project on par with other great episodes in US statebuilding, from the original namesake period in the 1860s–70s to the New Deal and Civil Rights eras. He calls for a two-step process, whereby the authoritarian and personalist tendencies of the Trump administration are rolled back and disempowered, while other new capacities are built up. For clean energy, this means being

eyes-wide-open about how new surveillance technologies can target climate activists, and centralizing and professionalizing the one-off deals the administration has made in critical minerals and other sectors. He calls for less energy on trying to “Supreme Court-proof” regulations, and instead a greater willingness to confront that branch’s oligarchic power.

Timothy Meyer calls for a different kind of two-step approach, where a future administration would use Cold War authorities to combat the climate crisis through international carbon clubs and other measures, and then work with Congress to put guardrails on them going forward. He is concerned with an asymmetry whereby fossil-oriented presidencies use these powers to the hilt, while clean-oriented presidencies hold themselves back in the name of (no longer operative) norms. He finds that the worst of all worlds. While he notes how US courts have become biased against environmental regulation, he argues that time spent fighting the courts would be better spent rebuilding capacity in Congress to try to meet judges’ demand for more legislative direction.

Zooming out, **Will Dobbs-Allsopp** finds fault with the structure of Congress itself—namely a US Senate that disproportionately represents fossil-dependent states and minorities of the American population. Recounting how the IRA’s shape was distorted by the vote of a single senator from a fossil state, he predicts this will happen in future legislation as well, absent removal of counter-majoritarian chokeholds like the filibuster and an integration of climate strategy with the growing movement for fundamental democracy (and Senate) reform.

Zooming in, **Sara Meyers** notes that how staffing works inside agencies tasked within agencies is equally important as the big picture constitutional questions. As chief of staff to the Department of Commerce’s CHIPS Office, she had a front-row seat to an experiment in hiring and managing a federal workforce where merit and skill were cultivated and rewarded. From aligning executives’ incentives with the productivity of their workforce to adequately funding administrative expenses to building a strong organizational culture, Meyers lays out dos and don’ts for rebuilding faith in government, including its ability to address existential challenges.

How to Plan It

Heather Boushey and **Noah Kaufman**, alums of the White House’s Council of Economic Advisers, note that a major constraint on bureaucracies fulfilling their mission is veto points from within, including economists and their use of outmoded economic models and cost-benefit analysis. They note how Biden opened the door to greater use of nonquantifiable benefits and costs in macroeconomic and regulatory projections, but failed to make such exercises mandatory on agencies—while Trump abandoned the effort altogether. This creates an opening for future administrations to rethink the behind-the-scenes forecasting work to be more climate action-forcing rather than climate action-stopping, and to have federally produced economic research be more credible.

Madison Condon envisions a new National Climate Service, which would combine data produced by agencies like NASA with ground-level engineering expertise. Noting some successful precedents in states like California and Connecticut, as well as the dangers of too much reliance on private proprietary data, she sees great potential for a new federal “public option” for data that can help states and localities plan for climate shocks. By going beyond highly aggregated average data on weather patterns and focusing more on the potential for localized extremes around (say) fragile dam infrastructure, Condon shows how “trusting the science” can be more than a professional class mantra and offer tangible benefits to people in their daily lives.

Rohan Sandhu shows how overreliance on federal decision-making is itself part of the instability problem in climate policy. Calling for a new centrifugal approach to the clean energy transition, he shows the value of funding and empowering the existing (but underappreciated and underrecognized) stock of place-based agencies in states and localities. This decentralized strategy can ensure that energy investments are well matched to the workforces and populations they are serving, which vary significantly in how ready they are to make these developmental leaps.

Striking a similar vein, **Shelley Welton** notes that public utility law already provides a powerful mandate and set of planning tools for driving decarbonization below the federal level. She tells the history of how this

mode of regulation developed in the US as a form of control over monopolies, creating spaces of state capacity that are not always legible to experts from other countries with more centralized power systems. While today often co-opted by fossil interests, repurposed utilities could speed up grid buildout, derisk investments in nuclear and other clean power sources, and balance the distribution of costs of the transition on everyday ratepayers.

How to Finance It

Satyam Khanna, one of the architects of the Environmental Protection Agency's Greenhouse Gas Reduction Fund, argues for a much nimbler federal financing strategy for the energy transition. He notes that government has become less tolerant of risk than private venture capital companies—even though the former is spared the need to make profits. Khanna also notes that the Biden approach of emphasizing the supply side of clean energy required lots of paperwork and process, whereas more future focus on the demand side (“if you build it, we will buy it”) could be less cumbersome while sending clearer market signals.

Saule Omarova makes the case for one particular type of financial institution: a US sovereign wealth fund. She notes that these entities are increasingly common around the world, account for a growing share of new US domestic investments, and have bipartisan interest domestically. Omarova points out that sovereign funds like her proposed National Investment Authority solve two interlinked problems: replacing private capital's short-termist, high return orientation with patient public management toward clean transition priorities, and freeing a source of public money from the constraints of the congressional appropriations cycle or of a narrower public agency's preferred financial instrument (loans, grants, etc.).

Lenore Palladino zooms in on a particular type of instrument that a sovereign wealth fund might hold and manage: public equity stakes. She notes that the Obama administration took shares in auto companies in a temporary manner (thus missing an opportunity to push decarbonization), and the Trump administration is doing the same in critical minerals in a more open-ended manner. To ensure these stakes serve the public interest going forward, Palladino recommends a series of guardrails and design decisions, including the timing of when the public

earns returns on its investment and whether dollars come with board seats.

Turning to the international stage, **Erin Graham** looks at how the New Deal went global through the architecture of multilateral development banks, and how China is lapping the US on a similar energy effort now. She makes the case that the next administration must prioritize operationalizing some of the instincts embedded in Biden's Foreign Policy for the Middle Class framework, including by putting climate finance on firmer post-DOGE footing and embedding the political economic strategy of green industrial policy in places with structural power in the global economy like the World Bank.

How to Produce It

Leah C. Stokes showcases one high-value decarbonization strategy: electrifying industrial heat. From paper to chemical to milk manufacturers, such processes have historically relied on fossil sources. Policy can incentivize utilities to use energy storage technologies that make energy affordable for manufacturers and households alike—boosting national competitiveness and improving health outcomes for Americans historically left behind.

Joel Dodge reaches back to the experience of the Roosevelt administration to show that industrial policy need not rely only on accommodations and nudges with private factory owners. The public sector can directly establish factories that it owns, operates, or both—using preemption powers to get around legal and procedural hurdles like permitting blockages. The scale of Chinese producers' monopolization of certain clean energy inputs, and domestic shortages in key electrical grid components, create potential use cases for public producers (freed from undue profit pressures or the need to squeeze wages).

Council of Economic Advisers alumnus **Jonas Nahm** and **Daniel Driscoll** shift the focus from manufacturing to the services sector. They argue that an industrial strategy that prioritizes clean energy installation, construction, and software jobs over directly manufacturing clean energy inputs is more in keeping with what social scientists call the “growth model” of the United States. Nonetheless, they note that there are

coalitional, national security, and other reasons that US policymakers may want to hedge their bets with a manufacturing focus that cuts against that growth model. Either way, they argue for an open-eyed examination of the trade-offs involved with either strategy.

Finally, **Ted Fertik** argues that past administrations have been too timid in their embrace of labor, which is not a sideshow but rather core to any productive process. He notes that there were reasons to be hopeful about Biden's relative friendliness to labor unions, but that ultimately policymakers were more motivated by seeing companies accept public subsidies rather than be disciplined by either government or labor. Now, after a Trump administration that is actively trying to lock in a fossil equilibrium in our political economy, the next administration must use public leverage to force greater collaboration with organized labor as a way of institutionalizing a green feedback loop—with green jobs driving green ambition and vice versa.

Conclusion

The climate policy experimentation and ideation of the last decade have been instructive. Efforts to impose carbon taxes to reduce demand for fossil fuels ran headlong into political blind spots in an era of stagnant wages and cost anxieties. The pivot to industrial policy laudably focused on the supply side and making clean energy cheaper, but did not do enough to boost state capacity and get government out of its own way on questions like permitting and grid interconnections. The Abundance discourse identified underappreciated technocratic hurdles and too much reliance by environmentalists and others on litigation, but it didn't poll well and lacked a comprehensive theory of power . . . until democratic socialists adopted the agenda and gave it one. Populists homed in on weaknesses in all of these building efforts and showed that not-in-my-backyard(NIMBY)ism is alive and well when it comes to blocking energy-guzzling data centers. The affordability agenda became many advocates' North Star, but it speaks to people as consumers of energy and other products, rather than full civic and economic subjects that care as much about income, dignity, and time. And neither NIMBYism nor the affordability agenda has much to say about the direction for (or what structural changes are needed to) our economy and

democracy to confront the dislocations that await us from climate change, artificial intelligence, and geoeconomic reordering.

This is not a knock against any one of these projects: We are in an interregnum period where ideologies are in flux, and “thin-centered” projects like populism or abundance will eventually fade or be paired with deeper left or right-leaning worldviews.

The essays in this collection are far from the final word on climate. They say little about the topics that currently consume the most oxygen in the debate, like permitting reform, the economically optimal phaseout of fossil fuels, or whether specific clean energy technologies still need subsidies. Our hope, however, is that they shed light on what kind of state we need to start building to get us through the climate challenges of the 2020s, 2030s, and beyond.

Notes

1. Elizabeth Wilkins et al., *The Good Life Agenda* (Roosevelt Institute, 2026), <https://rooseveltinstitute.org/publications/the-good-life-agenda>.
2. For a more general set of recommendations for a future administration, across policy areas, see Hannah Garden-Monheit and Tresa Joseph, *Building a More Effective, Responsive Government: Lessons Learned from the Biden-Harris Administration* (Roosevelt Institute, 2025), <https://rooseveltinstitute.org/publications/building-a-more-effective-responsive-government>.
3. Dana A. Dolan, "Multiple Partial Couplings in the Multiple Streams Framework: The Case of Extreme Weather and Climate Change Adaptation," *Policy Studies Journal* 49, no. 1 (2021): 164–89, <https://doi.org/10.1111/psj.12341>.
4. Doug McAdam, "Social Movement Theory and the Prospects for Climate Change Activism in the United States," *Annual Review of Political Science* 20 (2017): 189–208, <https://doi.org/10.1146/annurev-polisci-052615-025801>.
5. "2025 in Review: U.S. Billion-Dollar Disasters," *Climate Central*, January 8, 2026, <https://climatecentral.org/climate-matters/2025-in-review>.
6. Marshall Burke et al., "Quantifying Climate Loss and Damage Consistent with a Social Cost of Carbon," *Nature* 651, no. 8107 (2026): 959–66, <https://doi.org/10.1038/s41586-026-10272-6>. For a general caveat on these numbers, see Noah Kaufman, "The Climate Question That Economists Cannot Answer," *The Atlantic*, January 14, 2026, <https://theatlantic.com/science/2026/01/climate-economics/685609>.
7. Adam Dean and Jamie K. McCallum, *Extreme Heat Is Killing America's Workers* (Groundwork Collaborative, 2026), <https://groundworkcollaborative.org/work/extreme-heat-is-killing-americas-workers>.
8. Michelle C. Turner et al., "Occupational Health in the Era of Climate Change and the Green Transition: A Call for Research," *The Lancet Regional Health – Europe* 54 (July 2025), <https://doi.org/10.1016/j.lanepe.2025.101353>.
9. Solomon Hsiang, "The Global Economic Impact of Climate Change: An Empirical Perspective," *Annual Review of Economics* 18, March 30, 2026, <https://doi.org/10.1146/annurev-economics-102224-021145>.
10. Jonathan Mingle, "We're Living in a Tick Nightmare. It's Time to Go to War." *New York Times*, July 11, 2026, <https://nytimes.com/2026/07/11/opinion/ticks-disease-lyme-alpha-gal.html>.
11. UNFCCC, *Sharm el-Sheikh Implementation Plan* (United Nations Climate Change, 2022), <https://unfccc.int/documents/624444>. For the (contested) attempts at an upper-bound estimate, see Caroline Alberti, "The Cost of Inaction," Climate Policy Initiative, January 4, 2024, <https://climatepolicyinitiative.org/the-cost-of-inaction>.
12. Sarah C. Armitage et al., "Innovation Market Failures and the Design of New Climate Policy Instruments," NBER Working Paper no. 31622, August 2023, <https://doi.org/10.3386/w31622>.
13. Lucas Chancel et al., "Climate Change and the Global Distribution of Wealth," *Nature Climate Change* 15, no. 4 (2025): 364–74, <https://doi.org/10.1038/s41558-025-02268-3>.
14. Dan Gearino, "Red States Stand to Benefit From a 'Layer Cake' of Tax Breaks From Inflation Reduction Act," *Inside Climate News*, May 11, 2023, <https://insideclimatenews.org/news/11052023/inside-clean-energy-red-states-inflation-reduction-act-tax-breaks>.
15. Betony Jones and Joe Peck, *The Receipts: The Untold and Underappreciated Outcomes of Biden's Clean Energy Strategy* (Roosevelt Institute, 2026), <https://rooseveltinstitute.org/publications/the-receipts-the-untold-and-underappreciated-outcomes-of-bidens-clean-energy-strategy>.
16. For more on these changes, see Betony Jones, *Tying Labor Standards to Clean Energy Incentives: How Biden's Department of Energy Tackled Climate Industrial Policy* (Roosevelt Institute, 2025), <https://rooseveltinstitute.org/publications/tying-labor-standards-to-clean-energy>; Todd N. Tucker et al., *How Industrial Policy Gets Done: Frontline Lessons from Three Federal Officials* (Roosevelt Institute, 2024), <https://rooseveltinstitute.org/publications/how-industrial-policy-gets-done-frontline-lessons-from-three-federal-officials>; Todd N. Tucker, *The New US Trade Agenda: Institutionalizing Middle-Out Economics in Foreign Commercial Policy* (Roosevelt Institute, 2024), <https://rooseveltinstitute.org/publications/the-new-us-trade-agenda>; Lisa Held, "How Four Years of Biden Reshaped Food and Farming," *Civil Eats*, January 15, 2025, <https://civileats.com/2025/01/15/how-four-years-of-biden-reshaped-food-and-farming>.
17. Todd N. Tucker et al., *Industrial Policy 2025: Bringing the State Back In (Again)* (Roosevelt Institute, 2024), <https://rooseveltinstitute.org/publications/industrial-policy-2025>.
18. Marianne Lavelle, "One Year After Green Bank's Demise, Court Mulls Future of Grant-Based Climate Policy," *Inside Climate News*, March 11, 2026, <https://insideclimatenews.org/news/11032026/epa-greenhouse-gas-reduction-fund-court-case>. See "Inflation Reduction Act Tracker - Litigation," Sabin Center for Climate Change Law, 2026, <https://iratracker.org/litigation>.
19. Ha-Joon Chang, "Breaking the Mould: An Institutionalist Political Economy Alternative to the Neo-Liberal Theory of the Market and the State," *Cambridge Journal of Economics* 26, no. 5 (2002): 539–59, <https://jstor.org/stable/23600312>.

20. See concerns about Trump family self-dealing in Paul Sonne and Eric Lipton, “Trump Cut a Billion-Dollar Mining Deal. His Sons Stand to Profit.” *New York Times*, June 28, 2026, <https://nytimes.com/2026/06/28/world/europe/trump-lutnick-sons-kazakhstan.html>.
21. Ilias Alami and Adam D. Dixon, *The Spectre of State Capitalism* (Oxford University Press, 2024), <https://doi.org/10.1093/9780198925224.001.0001>.
22. Jared Bernstein et al., *The US Budget Math Is Looking Dangerous* (Stanford Institute for Economic Policy Research, 2025), <https://siepr.stanford.edu/publications/policy-brief/us-budget-math-looking-dangerous>.
23. Todd N. Tucker and Oskar Dye-Furstenberg, *Against Manufacturing Doomerism: Why and How Making Stuff Matters* (Roosevelt Institute, 2026), <https://rooseveltinstitute.org/publications/against-manufacturing-doomerism>.
24. Arnab Datta and Alex Williams, *Accounting For Industrial Policy: How An Obscure Rule Is Holding Back US-Led Commercialization of SMRs* (Employ America, 2023), <https://employamerica.org/expanding-the-toolkit/accounting-for-industrial-policy-how-an-obscure-rule-is-holding-back-us-led-commercialization-of-smrs-2>.
25. Sen. Bernie Sanders, “NEWS: Sanders Introduces Legislation to Create \$7 Trillion AI Sovereign Wealth Fund,” press release, June 18, 2026, <https://sanders.senate.gov/press-releases/news-sanders-introduces-legislation-to-create-7-trillion-ai-sovereign-wealth-fund>.
26. Robinson Meyer, “How ‘Pothole Socialism’ Solves the New Left’s Biggest Challenge,” *Heatmap*, June 22, 2026, <https://heatmap.news/daily/mamdani-climate-socialists>; David Weigel, “View: The Green New Deal Fades as Climate Activism Evolves,” *Semafor*, March 25, 2026, <https://semafor.com/article/03/25/2026/the-green-new-deal-fades-as-climate-activism-evolves>.
27. “The First Rule About Solving Climate Change,” *Searchlight Institute*, September 22, 2025, <https://searchlightinstitute.org/research/the-first-rule-about-solving-climate-change>.
28. David Gelles et al., “Environmental Groups Face ‘Generational’ Setbacks Under Trump,” *New York Times*, August 16, 2025, <https://nytimes.com/2025/08/16/climate/environmental-strategy-trump.html>; Michael Kavate, “76% of Americans Want Climate Action. Just 2.6% of U.S. Foundations Fund It,” *Inside Philanthropy*, November 20, 2025, <https://insidephilanthropy.com/home/76-of-americans-want-climate-action-just-2-3-of-u-s-foundations-fund-it>.
29. Sammy Roth, “Breaking: Washington Post Gutting Its Climate Team,” *Climate Colored Goggles*, February 4, 2026, <https://climatecoloredgoggles.com/p/washington-post-climate-bezos>.
30. Lisa Friedman and Brad Plumer, “Democrats Once Vowed to Stop Oil and Gas. Now They’re Not So Sure.” *New York Times*, June 11, 2026, <https://nytimes.com/2026/06/11/climate/democrats-climate-change-oil-gas.html>.
31. Matt Burgess, “Climate Change Did Not Cost Democrats the 2024 Election,” *Guided Civic Revival*, June 11, 2026, <https://guidedcivicrevival.substack.com/p/climate-change-did-not-cost-democrats>.
32. Gabriel De Roche et al., *Politicians Shouldn’t Hide From Climate* (UC Santa Barbara 2035 Initiative, 2026), <https://2035initiative.com/climate-hush>.
33. Alexander F. Gazmararian et al., “Why Biden-Era Clean Energy Investment Policies Had Limited Political Returns,” *Proceedings of the National Academy of Sciences* 123, no. 9 (2026), <https://doi.org/10.1073/pnas.2526802123>.
34. Kiley Bense et al., “Why Didn’t Climate Change Come Up More in the Presidential Campaign?,” *Inside Climate News*, November 5, 2024, <https://insideclimatenews.org/news/05112024/climate-change-barely-mentioned-during-presidential-campaign>.
35. High Road Analytics, “Investing in America Funding Tracker,” updated April 2026, <https://iitracker.highroadanalytics.org/awards>. As explained elsewhere, the total amount of expected outlay was initially \$369 billion, ballooning to more than twice that in later estimates, before then coming back down. Joe Peck and Todd Tucker, “Where America’s Clean Energy, Manufacturing, and Emissions Trajectories Stand One Year After the OBBB,” Roosevelt Institute, July 28, 2026, <https://rooseveltinstitute.org/blog/where-americas-clean-energy-manufacturing-and-emissions-trajectories-stand-one-year-after-the-obbb>.
36. Robert Kuttner, “The Working Families Party Goes National,” *The American Prospect*, April 22, 2026, <https://prospect.org/2026/04/22/working-families-party-goes-national>; David Duhalde, “‘Movement Parties’ and Democratic Socialists of America,” *Jacobin*, February 9, 2026, <https://jacobin.com/2026/02/movement-parties-dsa-organize-ecosocialism>.
37. William Steakin et al., “Bernie Sanders’ Candidates Just Keep Winning,” *Politico*, June 10, 2026, <https://politico.com/news/2026/06/10/bernie-sanders-platner-progressives-primary-wins-00955571>.
38. Steven Teles, *Varieties of Abundance* (Niskanen Center, 2025), <https://niskanencenter.org/abundance-varieties>; Mike Scutari, “This New Pooled Fund Seeks to ‘Recode’ the Administrative State,” *Inside Philanthropy*, November 3, 2025, <https://insidephilanthropy.com/home/this-new-pooled-fund-seeks-to-recode-the-administrative-state>.

39. Neale Mahoney and Bharat Ramamurti, "Economists Hate This Idea. It Could Be a Way Out of the Affordability Crisis." *New York Times*, November 16, 2025, <https://nytimes.com/2025/11/16/opinion/price-controls-affordability-crisis-economy.html>; Naveena Sadasivam, "Data Centers Are Straining the Grid. Can They Be Forced to Pay for It?," *Grist*, April 6, 2026, <https://grist.org/accountability/data-centers-are-straining-the-grid-can-they-be-forced-to-pay-for-it>.
40. "There Is a Large Republican Age Divide on Climate and Energy Policies," Institute for Climate and Sustainable Growth, October 23, 2025, <https://climate.uchicago.edu/insights/there-is-a-large-republican-age-divide-on-climate-and-energy-policies>.
41. "How Much of Project 2025 Has Trump Enacted?," *PBS News*, April 16, 2026, <https://pbs.org/newshour/show/how-much-of-project-2025-has-trump-enacted>.
42. Jamelle Bouie, "America Broke Something When It Gave Trump a Second Chance," *New York Times*, June 3, 2026, <https://nytimes.com/2026/06/03/opinion/project-2025-2029-democrats.html>.
43. Shahrzad Shams and Todd N. Tucker, "Trump's Attacks on SCOTUS Are Personal—But Real Court Reform Should Be a Progressive Priority," Roosevelt Institute, March 4, 2026, <https://rooseveltinstitute.org/blog/trumps-attacks-on-scotus-are-personal>.
44. Patrick D. Reagan, *Designing a New America: The Origins of New Deal Planning, 1890-1943* (University of Massachusetts Press, 2000).
45. Harold Meyerson, "Trump and Bernie Agree: Let's Own All!," *The American Prospect*, June 15, 2026, <https://prospect.org/2026/06/15/trump-bernie-sanders-ai-spacex-big-tex-anthropic>.
46. Suzanne Kahn, *The Public Options Tool Kit: Ensuring Access, Public Value, and Accountability in the Economy* (Roosevelt Institute, 2026), <https://rooseveltinstitute.org/publications/the-public-options-tool-kit-ensuring-access-public-value-and-accountability-in-the-economy>.
47. Nidhi Hegde et al., "After Trump v. Slaughter, the Answer Is Court Reform," Roosevelt Institute, June 30, 2026, <https://rooseveltinstitute.org/blog/after-trump-v-slaughter-the-answer-is-court-reform>.
48. Daniel Driscoll, *Why Carbon Taxes Failed* (Oxford University Press, 2026).
49. Lily Bermel, *Glass Half Full: Building a Decarbonized U.S. Power Sector*, CEEPR RC 2026-07 (MIT, 2026), <https://ceepr.mit.edu/workingpaper/glass-half-full>.
50. Elena Schneider, "Democratic Research Finds Voters Prefer Populism over 'Abundance,'" *Politico*, September 4, 2025, <https://politico.com/news/2025/09/04/democratic-research-finds-voters-prefer-populism-over-abundance-00543188>; Andrew Prokop, "How 'Abundance' Lost the Democratic War of Ideas," *Vox*, June 30, 2026, <https://vox.com/politics/493628/democrats-abundance-reformers-losing-left-socialists>.
51. For the idea of "thin-centered" ideologies, see Cas Mudde and Cristobal Rovira Kaltwasser, *Populism: A Very Short Introduction*, 2nd ed. (Oxford University Press, 2017). On the interregnum, see Gary Gerstle, *The Rise and Fall of the Neoliberal Order: America and the World in the Free Market Era* (Oxford University Press, 2022).

HOW TO GOVERN IT?

Reconstruct the Bureaucracy, Don't Just Rebuild It

BY K. SABEEL RAHMAN



K. Sabeel Rahman is a professor of law at Cornell Law School. He ran the Office of Information and Regulatory Affairs and previously served as president of Demos. He is a cofounder of the Law and Political Economy Project and author most recently of *Remaking the State: A New Blueprint for American Democracy* (Columbia Global Reports, 2026).

In the late 2010s, grassroots calls for more transformative climate action steadily gained momentum. By the end of 2020, these calls for climate action combined with calls for urgently needed economic relief from the COVID-19 pandemic shock and broader movements for racial justice, prompting the newly elected Biden administration to commit to an ambitious approach to green industrial policy, using public investments to shift the technologies and the political economy of domestic energy production. These efforts led to significant investments and pushed the existing bureaucratic capacities of the federal government. But a range of institutional, ideological, and practical limitations also constrained the efficacy of more structurally transformative policies.¹ The climate challenges facing a future administration will be even greater. The second Trump administration has not only rolled back many previous efforts but also aggressively dismantled the capacity and vitality of the federal government, through the efforts of Elon Musk's so-called Department of Government Efficiency and Russell Vought's weaponization of the Office of Management and Budget. This dismantling has been severe when it comes to government's capacities to shape climate, energy, and markets through regulation and spending. This dismantling has not been just a generic "return" to market-friendly visions of deregulation; rather, it constitutes an explicit attempt to systematically stop and preclude future efforts at using the state to advance normative values of economic and social equality and climate resilience.²

The task of reimagining the bureaucracy will be central to any future climate policy and industrial policy agenda. This essay calls for a specific approach to the administrative capacities that a next pro-democracy administration will need to stand up in the future. The task ahead must be more than merely rebuilding in a marginally more optimized form the

kinds of bureaucratic systems we had before. Rather, the task ahead is one of reconstruction—partly in the literal sense that the damage to the federal administrative state is so extensive that more thorough reconstruction will be needed. But the idea of reconstruction is also meant to evoke a level of scale, ambition, and moral orientation. Like prior reconstructive moments—from the post–Civil War Reconstruction to the New Deal to the Second Reconstruction of the Civil Rights Movement—the next administration will need new bureaucratic tools and systems that are capacious and ambitious enough to effectuate major social change. And like those past moments, the next administration will have to build and defend these new bureaucratic systems with a firm moral commitment to the kind of inclusive, egalitarian, and ultimately democratic governance that we aspire to make real.

From Green New Deal to Dirty New Scam

In the face of a continued—if not accelerated—climate crisis, the Trump administration’s climate and energy policy has been one of aggressive rollback: undoing regulations on fossil fuel emissions, withdrawing from the Paris Accords, and clawing back and dismantling—arguably illegally³—many of funding streams that the Biden administration put in place to help spark a clean energy boom. More than a simple rollback, the aggressive dismantling of these programs, coupled with the administration’s attempt to eliminate civil service positions en masse, reflects an attempt to not just undo, but render impossible, a restoration of prior clean energy policy efforts. The world is closer than ever to exhausting its remaining carbon budget, blowing past several benchmarks for limiting projected warming.

But at the same time that it is dismantling clean energy and climate regulatory capacities, the Trump administration is weaponizing and personalizing administration in ways that are equally threatening: using regulatory powers over corporations (including antitrust oversight, as well as control over government funding streams as a threat) to pressure companies into adopting stances favorable to the current administration; deploying state investment and ownership (such as the taking of shares over Intel) while operating pay-to-play schemes—from the president’s ballroom to his memecoin—that make government activity in the marketplace highly suspect, if not outright corrupt. The irony is that in

the attempt to wrest the country back toward fossil fuels and toward other corporate allies of the administration, this administration is engaging in industrial policy at a massive scale—but in a form that does little to serve public purpose, and instead taints the enterprise with the stench of corruption and autocratic state control. The dismantling agenda and the weaponizing agenda are two sides of the same coin, and are a hallmark of MAGA governance beyond the climate context.⁴ What unites these seemingly disparate approaches is a common *substantive* goal of attempting to remake our social and economic order: in this case, away from the emerging clean energy revolution, to triple down on serving fossil fuel interests.

How then should a next administration approach the redesign and rebooting of a bureaucracy, and in particular one capable of meeting the climate crisis with speed and scale?

This is more than a policy design question; it is fundamentally an *institutional* design question about how to reconfigure institutions and power. First, a range of capacities need to be built, where government needs to be more capacious and empowered than it has previously been, such as new capacities for financing, new capacities for planning, new structures for federal agencies themselves—including potentially new forms of hybrid public-private governance that better insulate longer-term policymaking from bad-faith presidents. Second, a range of capacities in government need to be constrained, if not dismantled altogether: from the rise of the surveillance state to the outsized power of captured courts to interfere with public-serving governance.

Building New Capacities

The first imperative is to *build* new governing capacities that are suited for the scale of the clean energy transition needed, and to alter the underlying political economy of the energy sector. This is where blue-sky, transformative ideas should be fleshed out now. If the United States actually intends to decarbonize quickly and at scale, perhaps it is finally time to charter a National Investment Authority to coordinate and catalyze industrial policy in ways that are both transformative *and* more insulated from the kinds of corrupt, partisan, or self-dealing practices we see in the current administration. Similarly, the reanimation of regional-

level public utilities offers another potentially transformative form of energy infrastructure and governance. Both of these kinds of efforts—sketched out in this collection by Saule Omarova and Shelley Welton, respectively—combine an attention to the underlying political economy of the sector with a thoughtfulness about what governing institutions are best suited to advancing these goals over the long run.

It is worth dwelling for a moment on what would make such newly empowered bodies effective in comparison to prior models. First, the centralization of functions in a dedicated mission-driven entity that is empowered to advance its goals effectively—whether a regional utility or a national investment authority—creates a more powerful center of gravity, greater capacity, and tighter mission alignment. This approach contrasts with what too often happens in context of big policy goals: the cobbling together of a myriad of authorities and policies from across a diffuse set of agencies and authorities in ways that, while potentially impactful, are clunky and—as we have seen—relatively easy to attack politically and dismantle institutionally. Second, this approach contrasts with, say, the model of the Federal Reserve, in that this approach envisions chartering a new body that has a dedicated and clear mandate, with the appropriate tools and internal culture to match. Instead of grafting a set of objectives onto a body that culturally and institutionally is lukewarm at best about these new missions, we should imagine new bodies that can attack these issues with vigor and commitment. The analogy would be closer to the creation of the Consumer Financial Protection Bureau after the 2008 financial crisis, rather than the glomming of financial regulatory obligations onto a skeptical Federal Reserve. Third, this approach to centralization differs in other respects from, say, long-standing institutions like the Office of Information and Regulatory Affairs: the authority is not invested solely in the president to shape decisions, and—crucially—the centralization operates as a capacity-expander, not an additional layer of negative constraint or compliance review.

This blue-sky approach to building also applies to the rebooting of the hobbled federal bureaucracy. As we think about how to restore the gutted civil service, we should ask which offices and skill sets are most urgently needed, including those that were underrepresented in the pre-DOGE era, rather than simply reinstating offices to their status quo ante. Similarly, we should not be precious about prior intra-executive branch protocols and frameworks that are not built to engage the

realities of the climate crisis with the alacrity needed. Methods of cost-benefit analysis, for example, have long been a central debate in climate policy, and while there are obvious fixes on technical matters like the discount rate and social cost of greenhouse gases, we should also consider wholly different frameworks like those discussed by Heather Boushey, Noah Kaufman, and Madison Condon in this collection to enable the kind of creativity and transformative scale that public policy will need beyond those fixes. Similarly, intra-agency processes for legal and policy review could be transformed.

We should ask which offices and skill sets are most urgently needed, including those that were underrepresented in the pre-DOGE era, rather than simply reinstating offices to their status quo ante.

At a more structural level, we should also consider whether the agencies themselves need to be reorganized—through legislation or agency-specific reorganization authorities. The administrative state is a cacophony of different offices and agencies; new leadership (among agency heads or the White House) often counteracts this diffuseness to coordinate more effectively. But is that coordination effort itself a second-best? Does the configuration of offices and authorities within agencies like the Department of Energy (DOE) or Department of Commerce (DOC) make sense, or are there better ways to configure authority, policy leadership, and expertise? At a macro level, if there is legislative appetite for action on this front, would it make sense to reconfigure agencies themselves? Should climate response authorities be as diffused as they are across the Environmental Protection Agency, DOE, DOC, the Federal Emergency Management Agency, or is there a better way to combine these structures? Or, as Hannah Garden-Monheit and Tresa Joseph have argued elsewhere, does the need for fast and traceable policy lend itself to favoring existing agencies? The climate movement and philanthropy need to be having this conversation now.

Democratizing Administration

Building these affirmative new administrative structures requires that policymakers also balance the need to build with the need to dismantle

or rein in the autocratic excesses that we have seen in this current administration. Some of the tools that this administration has built and weaponized can and should be jettisoned: the expansive surveillance of Americans, for example, or the supercharged billions of dollars of funding for and unshackling of immigration enforcement to terrorize residents across the country. The task of dismantling these autocratic capacities cannot be treated as merely a matter of “border policy”; instead, the climate movement—like other social change and economic justice movements—should understand these infrastructures as direct threats to democracy itself, and to the ability of any organization or coalition to advocate for and realize a more just, equal, and resilient future.

Second, when it comes to affirmative state powers that we need to build, we should consider how to *democratize* these efforts through participation and collaborative governance approaches. These models will be important, not only to build trust and legitimacy with stakeholders but also to build structures of power that contribute to the durability of the policy regime. Rather than conventional town hall or litigation-heavy forms of stakeholder engagement, we should consider models that engage and empower affected interests—including beneficiaries of the new regime—in more upstream governance, such as in co-governance models, tripartite models, and the like.⁵ In the climate context, this could involve a deeper integration of impacted stakeholders—from unions to employers to vulnerable and historically marginalized communities—in planning decisions as well as commitments to higher-road practices, while at the same time overriding more downstream paperwork, procedures, and veto points that older legal frameworks might impose. The trade would be for more empowered and meaningful power in shaping decisions at a system, sector, or regional level, rather than narrowing participation to the more suffocating and constrained channels of conventional approaches to permitting or zoning decisions.

And finally, a future pro-democracy administration will have to design policy in a way that addresses head-on the ways in which the Supreme Court has accumulated outsized power to selectively edit policies to its own liking. Indeed, the court’s administrative jurisprudence is not actually one of expanding executive power in ways that can serve different policy goals equally. Rather, the through line has been the validating of autocratic executive power when it advances conservative and corporate interests, while blocking executive and administrative

powers when they advance a more equitable and sustainable vision of political economy.⁶ The extreme nature of this jurisprudence and the ongoing potential for bad-faith accumulation of judicial power means that any agenda of building affirmative climate capacities will have to also engage with the project of dismantling and democratizing the excess concentration of power in the court. This will have to involve both policy and political interventions. The Supreme Court will have to be reformed, with Congress reasserting its primacy as the first and most democratic branch of government. Legislation should explore court expansion, aggressive ethics requirements, and narrowing the jurisdictional reach of both the Supreme Court and its accountability-evading tactics like its abuse of the “shadow docket.” Politically, it means foregrounding explicitly the role the court has played—and the opprobrium it deserves—in doing the dirty work demanded by fossil fuel corporations, wealthy oligarchs, and reactionary white supremacist policymakers. This is a broader issue of structural reform but a critical one for the success of a climate agenda. Court reform should be table stakes for any future vision of the administrative state. And future policymakers should be prepared to respond to bad-faith judges not by trimming their policy ambitions but instead by making their case forcefully and compellingly to the public and to Congress.

Conclusion

In the aftermath of the current crisis, whenever it comes, future policymakers will have to avoid different sets of dangers. Some will be tempted to focus just on specific policies that are visible and popular in a narrow sense. But as important as that effort is, success will require attending to these deeper questions of designing and transforming our governing institutions and the underlying balance of power that makes policy possible. These underlying structural questions are essential to achieving the goals of sustainability, social and economic equality, and well-being for our communities. A different danger will come from those who, in response to the very real autocratic threats of the moment, seek to ramp down the government’s capacity to do big things—in ways that undermine the more public-serving transformative aspirations that the country demands and needs. Yet another danger will come from those who propose to uncritically take on board the new powers claimed by this current imperial presidency, rather than seeking to forge alternative

structures of public administration that are both capable and genuinely democratic.

These dilemmas call for a level of institutional creativity and ambition in a next governing moment. Like in prior reconstructive moments following crisis, future policymakers will need to approach their work with clear moral vision and ambitious-yet-creative institutional innovation that works not just at the level of policy but at the level of institutional creation and transformation. Anything less will fail to meet the moment.

Notes

1. See Hannah Garden-Monheit and Tresa Joseph, *Building a More Effective, Responsive Government: Lessons Learned from the Biden-Harris Administration* (Roosevelt Institute, 2025), <https://rooseveltinstitute.org/publications/building-a-more-effective-responsive-government>.
2. See K. Sabeel Rahman, “Anti-Domination and Administration,” *New York University Law Review* 100, no. 6 (2025), <https://nyulawreview.org/issues/volume-100-number-6/anti-domination-and-administration>.
3. There are several court cases and strong legal arguments on this. For a recent ruling against the Trump administration’s attempts to block energy funding streams, see *City of Saint Paul v. Christopher Wright* (DDC 2026), https://storage.courtlistener.com/recap/gov.uscourts.dcd.286703/gov.uscourts.dcd.286703.28.0_5.pdf.
4. For a broader analysis of this distinct form of “reactionary administration,” see Rahman, “Anti-Domination and Administration.”
5. See K. Sabeel Rahman, “Power and Participation,” *Harvard Civil Rights-Civil Liberties Law Review* (forthcoming 2026).
6. See Rahman, “Anti-Domination and Administration.”

Use and Defuse the Cold War's Unexploded Ordinance

BY TIMOTHY MEYER



Timothy Meyer is the vice dean and Richard Allen/Cravath distinguished professor, as well as the codirector of the Center for International and Comparative Law, at Duke University School of Law. He is an expert in international trade and investment law, international environmental law, and US foreign relations law. Meyer serves on the Board of Editors of the *American Journal of International Law* and the *Journal of International Economic Law* and is a member of the American Law Institute.

Regulation of the US economy runs on (at least) two tracks. On one, which includes the majority of domestic environmental regulation, Congress passes broadly worded statutes that generally delegate authority to administrative agencies to establish the regulations that actually govern private conduct. In recent years, however, courts have become increasingly skeptical of administrative action, declining to defer to agency interpretations of the statutes they administer and enjoining a wide range of executive branch actions. On the second track, presidents regulate the US economy under Cold War-era emergency and foreign affairs delegations that contain few (if any) limits, while courts broadly look the other way. Given political polarization in Congress and the differences in how courts review actions on the two tracks, future administrations will likely be tempted to use these powers to solve a wide range of problems. To date, however, only the Trump administration has given into the temptation, while Biden's largely did not. This essay argues that the next administration should deploy these powers aggressively in the short term to encourage the development of a greener, more equitable US economy. In the medium term, the next administration should work with Congress to codify its green economy policies into law in exchange for reforming the president's emergency and foreign affairs powers.

How We Got a Trade War

Within the federal government, Congress has exclusive constitutional authority over trade.¹ For much of the 20th century, it largely delegated this power to the executive, which in turn negotiated trade agreements and dealt with the ordinary concerns of importers and corporations. But,

in a century marked by two world wars and a decades-long contest for global influence with the Soviet Union, Congress also worried about the extraordinary. It therefore passed a series of laws that armed the president with the power to regulate the national economy and raise barriers to foreign trade in response to emergencies or other national security threats.² These statutes usually did not require any meaningful deliberative process before the executive branch could act, nor did Congress embed any of its own substantive policy choices as limits on executive discretion. Instead, Congress gave the executive branch what often amounted to *carte blanche* to act when the administration thought it necessary to do so. Many of these authorities were used sparingly, if at all, and those that were used regularly were deployed for specific purposes like sanctions. But collectively they provided presidential administrations with the authority to respond to crises like the Iranian Revolution and hostage crisis, the Arab oil embargo, and balance of payments issues.

At the end of the Cold War, Congress left these statutes on the books. They thus lay in the US Code like so much unexploded ordinance, waiting for some future administration to stumble upon them. In its effort to “move fast and break things,” the Trump administration unearthed these authorities and has used them to seize unprecedented unilateral control of US economic policy. During his first term, President Trump used Section 232 of the Trade Expansion Act, which authorizes the president to “adjust the imports” of products he determines threaten to impair the national security, to impose tariffs on steel and aluminum imports.³ Under Section 301 of the Trade Act of 1974, which authorizes a range of trade restrictions in response to other nations’ discriminatory or unfair trade policies, he imposed substantial tariffs on Chinese imports. President Trump opened his second term with tariffs on virtually all countries’ exports to the United States under the International Emergency Economic Powers Act (IEEPA), which authorizes the president to “regulate . . . importation,”⁴ and used the tariffs to negotiate potentially significant agreements with approximately a dozen US trading partners, including the European Union, Japan, and South Korea.⁵ After the Supreme Court held that IEEPA does not authorize tariffs, the administration moved to reimpose tariffs under several other Cold War statutes, including Section 301.

The Promise and Peril of Cold War–Era Foreign Commerce Statutes

These Cold War–era statutes present both opportunities and dangers for policymakers looking to address policy priorities like climate change, inflation, and economic inequality that have been neglected by the Trump administration. In terms of opportunities, these authorities allow swift action. As the Trump administration has shown, notwithstanding their foreign focus, these statutes can be used to pursue a domestically focused industrial policy agenda. Using them this way is attractive. Congress today struggles to even fund the government on a regular basis, let alone provide comprehensive legislation to address the nation’s most pressing concerns. And the executive branch is not hampered by the internal polarization and multiple veto points that afflict Congress. The executive branch’s incentives are generally to act to address problems that it can take credit for solving and for which it will be blamed if they go unaddressed, while the collective nature of Congress makes its incentives to solve problems considerably weaker. Finally, notwithstanding the recent courtroom defeats for some of the Trump administration’s tariff policies, judicial review of actions taken under these statutes is often considerably more deferential than for actions taken pursuant to domestic delegations. This limited role for judicial review flows in part from the fact that these statutes are drafted in very broad terms, in part from the fact that the delegations are often to the president and hence not subject to review under the Administrative Procedure Act, and in part from the fact that courts often defer to the executive branch in matters of foreign affairs and national security, while the Supreme Court’s *Loper Bright* decision curtailed deference to agencies with respect to domestic delegations.⁶

And yet, giving Congress pride of place where the economy is concerned makes a lot of sense. Courts can only outright strike down congressional acts if they are unconstitutional, which reduces some of the concerns about variable standards for judicial review in the context of executive actions. Policy changes made by Congress are also more durable than policies made by executive order, which can be reversed by the next president or, as the Trump administration has demonstrated, can sometimes change day-to-day even within a single administration. That

certainty, in turn, allows the business community to invest in reliance on a stable legal framework over the period of time it takes to bring new projects online—a critical feature for driving new investments in the United States, especially in nascent industries like those that populate green technology.

A Two-Track Use-and-Defuse Agenda

The trade-offs between executive and congressional action might seem to put the next administration in a bind. Indeed, the Biden administration seemed torn about how to proceed. With some exceptions, such as somewhat timid use of the Defense Production Act, it resisted the urge to rapidly deploy these authorities. At the same time, though, it left in place the basic framework the first Trump administration established, adjusting policies on the margins in response to specific concerns or negotiations with allies. The result was that the Biden administration neither used these extraordinary powers that the Trump administration had unlocked in a more targeted, effective way,⁷ nor did it work with Congress to reform them in order to prevent their future abuse.

Fortunately, the next administration does not face an either/or choice in this regard. Upon taking office, it should rapidly deploy the executive branch's broad authorities to support a green transition in a way that addresses the economic insecurity now keenly felt throughout so much of the United States. Space does not permit a comprehensive list of policy proposals, but one place to start is with the Section 232 duties on metals, which provide a natural starting point to build a US carbon border adjustment mechanism.⁸ The Biden administration, under the auspices of the Global Arrangement on Sustainable Steel and Aluminum (GASSA), attempted to implement exactly this kind of plan through negotiations with the EU. If successful, GASSA would have created a transatlantic trade agreement that would have decreased consumption of dirty steel in two of the world's largest markets, which could have later been expanded to other countries.⁹ Ostensibly, the negotiations foundered on technical disagreements related in part to the different structures of EU and US carbon-reduction measures.¹⁰ But the Trump administration, upon retaking office and imposing tariffs, was able to reach a deal quickly with the EU involving meaningful trade concessions, including a commitment to work toward increased flexibilities in the

administration of the EU's Carbon Border Adjustment Mechanism and Deforestation Regulation.¹¹ The key to a deal with the EU, in other words, was the willingness to act boldly and decisively.

Decisive action, though, should not preclude working with Congress to reform the system of emergency and foreign affairs delegations. Direct action on priorities, such as the creation of a carbon border adjustment or the use of the Defense Production Act to encourage the development of green technology domestically, sets the stage for negotiations between the next president and Congress. The basic structure of a deal would involve codifying the president's policies in exchange for the president agreeing to put guardrails—such as automatic sunset provisions for emergency actions, limitations on the president's ability to enact domestic regulations based on trade agreements not approved by Congress, and more robust judicial review of these limits—on the use of emergency and national security authorities. For example, the incoming president could impose a carbon border adjustment on high-carbon products under Section 232 of the Trade Expansion Act. The president could then agree to sign legislation amending Section 232 to create limits on its future use, such as by imposing time limits on any measures adopted or defining more precisely what counts as a threat to US national security, in exchange for a separate statute establishing the US carbon border adjustment mechanism and delegating to the president the ability to administer it, including via negotiations with foreign countries.¹²

Conclusion

Codifying the president's priorities would give them a much firmer foundation, ensuring that they are not immediately overturned by the next president. At the same time, reforming Cold War-era statutes would allow Congress to reclaim its central role in economic regulation. Both branches thus stand to benefit from this type of deal. The most important winner, though, would be the American public. Such a bargain would allow Congress to act as a check on the type of arbitrariness and regulation-by-whim that has been the hallmark of the Trump administration. Restoring the United States' global leadership in energy and economic matters starts with implementing thoughtful, targeted

policies to spur sustainable economic growth, while rebuilding our domestic institutions.

A deal reforming the president's statutory emergency and national security powers is also more feasible than wishcasting for broader constitutional reforms that will prove difficult, if not impossible, to secure. Progressives have tended to view the courts, especially the Supreme Court, as biased against progressive policy goals and in favor of conservative ones.¹³ Court reform was a central issue in the 2020 Democratic primary, and many leading thinkers on the left have proposed remaking the Supreme Court through devices such as term limits or court packing.¹⁴ There is also little doubt that past Supreme Court decisions—most notably *INS v. Chadha*, which ruled the legislative veto unconstitutional—have undermined congressional oversight of the executive branch.¹⁵

But in a political environment in which presidential administrations seem able to pass one major piece of legislation per term, focusing on court reform delivers too little at too high a political cost. To be sure, decisions like *Loper Bright* and *West Virginia v. EPA*¹⁶ have resulted in a narrower reading of the executive branch's delegated powers. But the courts have applied doctrines that require narrowly reading statutory authorities to the Trump administration as well. Most notably, the Supreme Court struck down the IEEPA tariffs under the major questions doctrine, the same doctrine that the court used to strike down the Obama-era Clean Power Plan. More generally, the courts have been the most reliable bulwark against the Trump administration's most arbitrary and unlawful acts.¹⁷

Our current crisis is therefore not primarily one of judicial overreach; it is one of congressional abdication. Constraining arbitrary executive economic regulation requires reengaging Congress to close the gap between the broad powers that the president enjoys under emergency and foreign affairs statutes and the narrower powers he enjoys under domestic delegations. Encouraging the development of an equitable green economy in the United States depends on putting in place aggressive incentives for private firms to invest in clean technology and jobs. A grand bargain to codify those policies in exchange for reforming executive powers offers an achievable way to meet both objectives.

Notes

1. Kathleen Claussen and Timothy Meyer, “The Foreign Commerce Power,” *California Law Review* 114 (2026): 407–477, <https://californialawreview.org/print/foreign-commerce-power>.
2. Kathleen Claussen, “Trade’s Security Exceptionalism,” *Stanford Law Review* 72 (2020): 1097–1164, <https://review.law.stanford.edu/wp-content/uploads/sites/3/2020/05/Claussen-72-Stan.-L.-Rev.-1097.pdf>.
3. 19 U.S.C. § 1862.
4. 19 U.S.C. § 2411.
5. For the content of these deals, see Inu Manak and Allison J. Smith, “Tracking Trump’s Trade Deals,” Council on Foreign Relations, March 27, 2026, <https://cfr.org/articles/tracking-trumps-trade-deals>.
6. Timothy Meyer and Ganesh Sitaraman, “Presidential Regulation,” *Yale Journal on Regulation* 42 (2025): 803–871, <https://dx.doi.org/10.2139/ssrn.5131247>.
7. For some ideas on how industrial policy can be done effectively, including with these authorities, see Timothy Meyer and Ganesh Sitaraman, *A Blueprint for a New American Trade Policy* (Roosevelt Institute, 2018), <https://rooseveltinstitute.org/publications/a-blueprint-for-a-new-american-trade-policy>; Kyunghoon Kim, Saule T. Omarova, Jonas Algers, Andrea Furnaro, César F. Rosado Marzán, and Lenore Palladino, *Industrial Policy 2025: Bringing the State Back In (Again)* (Roosevelt Institute, 2024), <https://rooseveltinstitute.org/publications/industrial-policy-2025>; Mike Williams and Ryan Mulholland, *No More Reacting: An Argument for a Clean Industrial Policy—and Against Competitiveness as an Organizing Economic Principle* (Center for American Progress, 2026), <https://americanprogress.org/article/no-more-reacting-an-argument-for-a-clean-industrial-policy-and-against-competitiveness-as-an-organizing-economic-principle>.
8. Todd N. Tucker and Timothy Meyer, *A Green Steel Deal: Toward Pro-Jobs, Pro-Climate Trans-Atlantic Cooperation on Carbon Border Measures* (Roosevelt Institute, 2021), <https://rooseveltinstitute.org/publications/a-green-steel-deal-towards-pro-jobs-pro-climate-trans-atlantic-cooperation-on-carbon-border-measures>; Timothy Meyer and Todd N. Tucker, “A Pragmatic Approach to Carbon Border Measures,” *World Trade Review* 21 (2022): 109–120, <https://doi.org/10.1017/S1474745621000409>; Ryan Mulholland, Trevor Sutton, and Timothy Meyer, *Designing a New Paradigm in Global Trade* (Center for American Progress, 2024), <https://americanprogress.org/article/designing-a-new-paradigm-in-global-trade>.
9. Stefania Relva, Ryan Mulholland, and Luísa Banchet, “Unilateralism in Trade Calls for New Approach,” International Network of Energy Transition Think Tanks, April 29, 2026, <https://inett.org/news-blog/unilateralism-in-trade-calls-for-a-new-approach-to-build-a-green-future>.
10. Ellie Belton and Max Gruenig, *The Future of the EU–US Trade and Technology Council* (Heinrich Böll Foundation, 2025): 11, <https://us.boell.org/en/2025/01/17/future-eu-us-trade-and-technology-council>.
11. European Commission, “Joint Statement on a United States-European Union Framework on an Agreement on Reciprocal, Fair and Balanced trade,” August 21, 2025, https://policy.trade.ec.europa.eu/news/joint-statement-united-states-european-union-framework-agreement-reciprocal-fair-and-balanced-trade-2025-08-21_en.
12. For more details on potential reforms to US trade laws, see Kathleen Claussen and Timothy Meyer, “Economic Security and the Separation of Powers,” *University of Pennsylvania Law Review* 172 (2024): 1955–1988, https://scholarship.law.duke.edu/faculty_scholarship/4329.
13. E.g., Devon Ombres, “The Supreme Court Has Fully Embraced an Antidemocratic, Right-Wing Agenda,” Center for American Progress, July 3, 2024, <https://americanprogress.org/article/the-supreme-court-has-fully-embraced-an-antidemocratic-right-wing-agenda>.
14. Presidential Commission on the Supreme Court of the United States, “Final Report,” American Presidency Project, December 8, 2021, <https://presidency.ucs.edu/node/376063>. For a review of possible reforms, see Daniel Epps and Ganesh Sitaraman, “The Future of Supreme Court Reform,” *Harvard Law Review Forum* 134 (2021): 398–414, <https://harvardlawreview.org/forum/vol-134/the-future-of-supreme-court-reform>; Ryan D. Doerfler and Samuel Moyn, “Democratizing the Supreme Court,” *California Law Review* 109 (2021): 1703–1772, <https://californialawreview.org/print/democratizing-the-supreme-court>.
15. *INS v. Chadha*, 492 US 919 (1983); Josh Chafetz, “The Chadha Presidency,” *Georgetown Law Journal* 115 (forthcoming 2026), <http://dx.doi.org/10.2139/ssrn.5360131>.
16. *Loper Bright Enterprises v. Raimondo*, 603 U.S. 869 (2024); *West Virginia v. EPA*, 597 U.S. 697 (2022).
17. Emma Schartz et al., “The Trump Administration Has Been Sued 650 Times. Track These Cases.” *New York Times*, May 26, 2026, <https://nytimes.com/interactive/2026/us/trump-administration-lawsuits.html>.

Take Senate Reform Seriously

BY WILL DOBBS-ALLSOPP



Will Dobbs-Allsopp is a lawyer and senior fellow at the Democracy Revival Center, where he focuses on the structural features of the US political system that impede progress and thwart multiracial democracy. Most recently, he served as the policy director at Governing for Impact, where he worked on the Supreme Court's evolving administrative law jurisprudence and environmental and other forms of regulation. He received his JD from Harvard Law School, and previously worked as a reporter covering Congress.

Policymakers trying to make green statecraft more durable must understand and grapple with the deep structural inadequacies of the US political system. While some may think of climate and democracy as separate problems, many advocates have long understood that the two issues are inextricably linked.¹ This essay illustrates that connection by explicating one of our most misrepresentative institutions, the US Senate. After reflecting on the structural flaws of the Senate, the essay offers some strategic takeaways for clean energy policy advocates.

Our Grossly Unrepresentative Upper Chamber

The US Senate is simultaneously among the most powerful and the least representative chambers in the world.² Equal state apportionment—granting each state two senators, no matter its population—refracts a series of often-overlooked biases throughout American politics.

The first and most basic bias arises between the residents of different states: The Senate accords a Wyoming resident 68 times the voting power of a California one. Though over 50 percent of the US population resides in just 9 states, their representatives collectively constitute only 18 percent of the chamber.³ And this disparity will likely grow worse. Thanks in part to the way that climate change will impact patterns of population clustering over time, one projection estimates that the inequity between the most over- and underrepresented states will double by the century's end.⁴

Another bias, the more outrageous, concerns the way that equal state apportionment maps onto residential patterns of racial and ethnic minorities. According to a *New York Times* analysis, the Senate accords the average Hispanic American 55 percent of the voting power of the average white American. Those numbers for Black Americans and Asian

Americans are 75 and 72 percent, respectively.⁵ (These Senate biases now have a pernicious sibling in the House of Representatives following *Louisiana v. Callais*, which has empowered state legislatures to effectively disenfranchise most voters of color in the South.⁶ For the foreseeable future, neither chamber of Congress will be capable of effectuating the multiracial democracy that the United States supposedly stands for.) Of course, these are some of the same communities that are disproportionately exposed to the harms of climate change and air pollution (and among the most motivated to address those threats).⁷

These imbalances—alongside the widely studied partisan ones⁸—hold obvious implications for using Congress to build a green industrial economy. Some of the most overrepresented states in the Senate are among the nation’s largest fossil fuel producers, giving extraction-dependent economies an outsize voice in energy policy.⁹ One recent study found that Senate malapportionment systematically biases policy outcomes in a conservative direction, and that even modestly reweighting Senate votes would produce meaningfully increased support for the pro-environment position.¹⁰ Another comparative study found that malapportioned bodies that overrepresent rural voters, as the US Senate does, correlate with lower gasoline taxes and rejection of the Kyoto Protocol.¹¹

Malapportionment in Action: From BBB to the IRA

Of course, clean energy advocates need not resort to the political science literature to grasp the implications of Senate malapportionment. In 2021–22, they lived it. That cycle’s 50-member Democratic caucus represented 56.5 percent of the population.¹² Yet Joe Manchin was able to dispatch Build Back Better (BBB) and then unilaterally dictate the terms of the Inflation Reduction Act (IRA), while representing just one-half of a state where only 0.5 percent of Americans live.¹³

In early December 2021, Manchin quipped to a gaggle of reporters that if his colleagues wanted to make seminal, New Deal-style investments, they “should elect more liberals.”¹⁴ The problem, however, is that doing so may prove nearly impossible under the logic of equal state apportionment. (By contrast, imagine Manchin’s irrelevance in a Senate that assigned voting power according to the principle of one person, one vote—if, by virtue of

representing 56-plus percent of the population, Senate Democrats in 2021 had instead held 56 seats.) Indeed, Manchin himself distills the problem into synecdoche.

Manchin's parochial opposition to climate policy and his potential self-dealing understandably villainized him in the eyes of the climate movement—and yet his reputation risks obscuring a blunt truth.¹⁵ Manchin was an electoral miracle, a Democrat who in 2018 won reelection in a state that Donald Trump carried by 39 points two years later.¹⁶ From this perspective, Manchin's opposition to the Build Back Better package was merely the cost of doing business: Without his seat, Congress would never have enacted the Inflation Reduction Act.

Somewhat bemusingly, given his reputation, voting for the largest climate investment in history likely proved Manchin's political undoing. According to Morning Consult, his statewide approval ratings rose from 40 to 57 percent (the largest improvement of any senator) over the course of 2021 and early 2022, as he pruned and eventually killed Biden's Build Back Better agenda. But several months after signing off on the IRA, Manchin's approval had fallen precipitously to 38 percent.¹⁷ The raw political lesson for any swing state senator, through whom any path to a majority runs, is dismayingly clear: The key to electoral vitality may be to publicly and dramatically oppose your own party's policy agenda—and, unlike Manchin, not give in.

Near-Term Planning

A few takeaways from these reflections come to mind.

First, securing a Senate majority supportive of clean energy policy is no easy feat—and green industrialists should plan accordingly.

Constructing that coalition requires pitching the electoral equivalent of a perfect game two cycles in a row. (It is easy to forget, for example, that the 50 senators who voted for the IRA included two who won in nail-biter runoffs in Georgia that easily could have gone the other way.)¹⁸

As a result, those advocating for new clean energy policy should not put all their eggs in the legislative basket; it is quite possible that a new president will be forced to make policy exclusively through

executive-branch agencies. Clean tech and industrial policy experts should therefore spend some time planning for that scenario. Of course, doing so is less exciting than crafting a legislative agenda, given the inherent limitations of executive policymaking—to say nothing of the judicial hostility to the administrative state evinced by the current Supreme Court majority (which was constructed by a Mitch McConnell-led Senate “majority” that represented a minority of the population).¹⁹

Second, even if clean energy’s legislative allies secure the chamber, any majority is likely to be slender, relying on swing votes from senators in traditionally conservative states. Of course, the electoral considerations imposed by equal state apportionment do not *exclusively* predict the voting behavior of individual senators; personal commitments or idiosyncrasies can play an important role. Yet all things being equal, reformers should anticipate needing to solve for a Manchin redux in which the deciding vote will likely have electoral incentives to make marquee breaks with party orthodoxy.

Specifically, green industrialists might question whether the traditional strategy for waging a legislative campaign—winning an intraparty coalitional fight to get their priority included in the party’s signature legislative effort—is always the soundest strategy. Hypothetically, it might behoove clean tech advocates to position their intervention as bipartisan, as the geothermal community has done,²⁰ lest they fall prey to the same political dynamics that led Manchin to excise so much of the Build Back Better agenda (such as the Clean Electricity Performance Program). Of course, depending on the specific policy intervention at issue, this strategy may not be available in practice.

Third, policymakers should consider building new institutions or programs that assume a competitive electoral environment. As the Senate illustrates, our highly competitive electoral environment is to some degree manufactured by unrepresentative formulas baked into the political system. But for now those formulas dictate political outcomes. Absent exogenous shocks or substantial party realignment, we should expect that a pro-climate governing coalition, even if obtained, will prove ephemeral.

Consequently, clean energy advocates should attempt to design their programs and proposals in expectation that policymakers less enthused

by clean energy will take power sooner rather than later. One example for how to do this comes from Saule Omarova, whose National Investment Authority proposal features a number of design choices that would help insulate the new institution from political backlash—such as financial independence after a one-off congressional appropriation, a multilayered quasi-corporate structure, and stakeholder input into the board nomination process.²¹

Longer-Term Necessities

If these nearer-term recommendations sound incommensurate to the dramatic scale of the climate crisis, that is in some ways the point. The aperture for achieving our clean energy policy ambitions under this counter-majoritarian political system is narrow and contingent—and may well prove unsustainably so. Accordingly, climate thinkers and advocates should join the growing movement for more fundamental political system reform.

To that end, lawmakers will ultimately need to address the Senate’s severe malapportionment. Roughly speaking, existing reform proposals break down into two categories: denuding the Senate’s powers and reapportioning the chamber’s voting power.

To reduce the Senate’s power, the lowest-hanging fruit would be to eliminate the filibuster, which adds a further counter-majoritarian layer to an already egregiously counter-majoritarian institution. This can be accomplished with the support of a simple majority of senators.²² More creative, and constitutionally ambitious, proposals would reassign core senatorial prerogatives—confirming nominees, ratifying treaties—to the House or, taking a page from 20th-century reforms to the House of Lords, impose new limitations on the Senate’s ordinary legislative powers.²³

Reapportioning voting power within the Senate would require contending with Article V’s stipulation that “no State, without its Consent, shall be deprived of its equal suffrage in the Senate.” Taking that proscription as valid,²⁴ the most obvious, if partial, mitigation is to add new states by statute: Granting statehood to Washington, DC, and Puerto Rico would help ameliorate some of the outrageous racial and ethnic

disparities baked into equal state apportionment. Others have proposed dividing up existing states or adding a set of nationally elected at-large Senate seats.²⁵ Finally, some, including the late John Dingell, the longest-serving member of the House of Representatives in US history, have called for outright abolition of the Senate and a shift toward a unicameral legislature.²⁶

Conclusion

Fixing institutions like the Senate will require years of work and may ultimately entail changes to the Constitution, a daunting endeavor that some might characterize as fanciful. But then again, the same could be said of addressing the climate crisis. On both fronts, the scale of the challenge does not obviate the need for action.

Notes

1. Brigid Kennedy, "Climate Change Group Sunrise Movement Goes After Joe Manchin with Succinct, Three-Word Statement," *The Week*, September 2, 2021, <https://theweek.com/joe-manchin/1004485/climate-change-group-sunrise-movement-goes-after-joe-manchin-with-succinct>.
2. On comparative malapportionment, see David Samuels and Richard Snyder, "The Value of a Vote: Malapportionment in Comparative Perspective," *British Journal of Political Science* 31, no. 4 (2001): 651–71, <https://doi.org/10.1017/S0007123401000254>.
3. Author's calculations from US Census Bureau population estimates. See also Christopher Z. Mooney, "The U.S. Senate: The Most Unrepresentative Body," *NPR Illinois*, February 9, 2021, <https://nprillinois.org/politics/2021-02-09/the-u-s-senate-the-most-unrepresentative-body>.
4. Todd N. Tucker, *Fixing the Senate: Equitable and Full Representation for the 21st Century* (Roosevelt Institute, 2019), <https://rooseveltinstitute.org/publications/fixing-the-senate-equitable-full-representation-21st-century>.
5. David Leonhardt, "The Senate: Affirmative Action for White People," *New York Times*, October 14, 2018, <https://nytimes.com/2018/10/14/opinion/dc-puerto-rico-statehood-senate.html>.
6. Jasmine Carrera Smith, "The Supreme Court's Louisiana v. Callais Decision Is the End of Multiracial Democracy in the South," *LSE United States Politics and Policy* (blog), London School of Economics and Political Science, May 8, 2026, <https://blogs.lse.ac.uk/usappblog/2026/05/08/the-supreme-courts-louisiana-v-callais-decision-is-the-end-of-multiracial-democracy-in-the-south>.
7. Rachel Morello-Frosch and Osagie K. Obasogie, "The Climate Gap and the Color Line—Racial Health Inequities and Climate Change," *New England Journal of Medicine* 388, no. 10 (2023): 943–49, <https://doi.org/10.1056/NEJMsb2213250>.
8. Lee Drutman, "The Senate Has Always Favored Smaller States. It Just Didn't Help Republicans Until Now," *FiveThirtyEight*, July 29, 2020, <https://fivethirtyeight.com/features/the-senate-has-always-favored-smaller-states-it-just-didnt-help-republicans-until-now>.
9. For example, Wyoming and North Dakota—the smallest and fourth-smallest states by population—each produces several times more fossil fuel than California, and both rank in the top 10 state producers nationally. "State Energy Data System (SEDS): Table P2, Primary Energy Production Estimates in Trillion BTU, 2023," US Energy Information Administration, accessed May 12, 2026, <https://eia.gov/state/seds/seds-data-complete.php>.
10. Richard Johnson and Lisa Miller, "The Conservative Policy Bias of US Senate Malapportionment," *PS: Political Science & Politics* 56, no. 1 (2023): 10–17, <https://doi.org/10.1017/S104909652200111>.
11. J. Lawrence Broz and Daniel Maliniak, "Malapportionment, Gasoline Taxes, and Climate Change," APSA 2010 Annual Meeting Paper, SSRN, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1642499.
12. Stephen Wolf, "How Minority Rule Plagues the Senate," *Daily Kos*, February 23, 2021, <https://dailykos.com/stories/2021/2/23/2013769/-How-minority-rule-plagues-Senate-Republicans-last-won-more-support-than-Democrats-two-decades-ago>.
13. West Virginia's 2020 Census population was approximately 1.79 million, or roughly 0.54 percent of the total US population of 331.4 million. Source: "2020 Census Apportionment Results," US Census Bureau, <https://census.gov/data/tables/2020/dec/2020-apportionment-data.html>.
14. Lindsey McPherson, "Manchin Repeats Call for 'Strategic Pause' in Big Spending Package," *Roll Call*, December 7, 2021, <https://rollcall.com/2021/12/07/manchin-repeats-call-for-strategic-pause-in-big-spending-package>. See also Tim Hains, "Joe Manchin to Progressives: 'We Only Have 50 Votes,' Elect More Liberals," *RealClearPolitics*, September 30, 2021, https://realclearpolitics.com/video/2021/09/30/joe_manchin_to_progressives_we_only_have_50_votes_elect_more_liberals.html.
15. Fredreka Schouten, "Joe Manchin, Who Just Torpedoed Democrats' Climate Agenda, Has Long Ties to Coal Industry," *CNN*, July 15, 2022, <https://cnn.com/2022/07/15/politics/joe-manchin-coal-financial-interests-climate/index.html>. See also Daniel Boguslaw, "Joe Manchin's Dirty Empire," *The Intercept*, September 3, 2021, <https://theintercept.com/2021/09/03/joe-manchin-coal-fossil-fuels-pollution>.
16. In 2018, Manchin won reelection with 49.6 percent of the vote against Republican Patrick Morrisey's 46.3 percent. In 2020, Donald Trump carried West Virginia by 38.9 points (68.6 percent to 29.7 percent). "Dave Liep's Atlas of US Presidential Elections," <https://uselectionatlas.org>; "West Virginia Election Results," *New York Times*, November 3, 2020, <https://nytimes.com/interactive/2020/11/03/us/elections/results-west-virginia.html>.
17. Eli Yokley, "Joe Manchin's Approach Is Paying Off," *Morning Consult*, April 25, 2022, <https://pro.morningconsult.com/trend-setters/joe-manchins-approach-paying-off>; Eli Yokley, "West Virginia Sen. Joe Manchin Remains One of America's Least Popular Officials," *Morning Consult*, October 30, 2023, <https://pro.morningconsult.com/analysis/senator-governor-rankings-joe-manchin>.
18. In the January 5, 2021, Georgia runoffs, Raphael Warnock defeated Kelly Loeffler by 2.0 points (51.0 percent to 49.0 percent) and Jon Ossoff defeated David Perdue by 1.2 points (50.6 percent to 49.4 percent). See Michael Andre et al., "Georgia Senate Runoff Election Results," *New York Times*, <https://nytimes.com/interactive/2021/01/05/us/elections/results-georgia-runoffs.html>.

19. See, for example, *Loper Bright Enterprises v. Raimondo*, 603 US 369 (2024), https://supremecourt.gov/opinions/23pdf/22-451_7m58.pdf, which overruled *Chevron* deference; and *West Virginia v. EPA*, 597 U.S. 697 (2022), https://supremecourt.gov/opinions/21pdf/20-1530_n758.pdf, which invoked the major questions doctrine to limit the Environmental Protection Agency's authority. Three of the six justices in the *Loper Bright* majority were confirmed by Senate Republican majorities that represented a minority of the US population.
20. Matthew Zeitlin, "Geothermal Could Be the Big Winner of This Election Cycle," *Heatmap News*, November 25, 2024, <https://heatmap.news/politics/bipartisan-geothermal>.
21. Saule T. Omarova, *The National Investment Authority: An Institutional Blueprint*, Cornell Legal Studies Research Paper No. 24-01 (Berggruen Institute, 2022), SSRN, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4685133.
22. Alternatively, scholars have proposed a method of "democratizing" the filibuster toward a more majoritarian formula. See John S. Gould et al., *Democratizing the Filibuster* (American Constitution Society, May 2021), <https://aclaw.org/wp-content/uploads/2021/05/Democratizing-the-Filibuster.pdf>.
23. See, for example, Garrett Epps, "How to Fix the Senate by Essentially—Though Not Quite—Abolishing It," *Washington Monthly*, January 3, 2022, <https://washingtonmonthly.com/2022/01/03/how-to-fix-the-senate-by-essentially-though-not-quite-abolishing-it>.
24. Not all scholars consider such "entrenchment clauses" legitimate. See, for example, Richard Albert, "Constitutional Handcuffs: Legislating Constitutional Unamendability," *Arizona State Law Journal* 42 (2010): 663.
25. David B. Froomkin and A. Michael Froomkin, "Saving Democracy from the Senate," *Utah Law Review* 2024, no. 2 (2024): 397, <https://doi.org/10.63140/7k3wt4nrhn>; H.J. Res. 23, 118th Cong. (2023), <https://congress.gov/bill/118th-congress/house-joint-resolution/23>.
26. John Dingell, "I Served in Congress Longer Than Anyone. Here's How to Fix It," *The Atlantic*, December 4, 2018, <https://theatlantic.com/ideas/archive/2018/12/john-dingell-how-restore-faith-government/577222>.

Staff Up Quickly and Competently

BY SARA MEYERS



Sara Meyers is a managing director at Three Cairns Group, where she leads work to scale climate solutions for carbon markets and aviation. Prior to this she served as the founding chief of staff and chief operating officer of the CHIPS Program Office at the US Department of Commerce. Earlier in her career, she held senior public-sector leadership roles spanning education, housing, and disaster recovery. Sara is also a senior advisor at the Institute for Progress and coauthor of *Factory Settings*, a newsletter about state capacity and industrial policy.

The next administration will have a narrow political window to deliver solutions for the climate crisis, and it will be inheriting a depleted federal workforce. But that doesn't have to be a disadvantage; it's an opportunity to innovate. The state capacity movement is rightly focused on needed generational reforms.¹ But to address the risks we face from climate change—and, indeed, to change the perception that government is incapable of delivering results—the next administration will need to act quickly, likely before those reforms are in place.

What follows are recommendations on what the next administration can do in the interim. They include both administration-wide and program-specific considerations to ensure that any green industrial policy initiative can hire the teams it needs to deliver results.²

Administration-Wide Posture

The next administration will have a narrow window to establish the posture and institutional capacity that will shape its overall approach toward climate policy and likelihood of success.

Reshape the Workforce

The so-called Department of Government Efficiency (DOGE) was possible in part because the government had already lost credibility on delivery. The response from the next administration must be to build a workforce that more visibly performs. But there is wide recognition that restoring the pre-DOGE organizational chart is a bad idea.³ I agree, for two reasons (among many) that should inform how the administration approaches rebuilding:

- AI has fundamentally reshaped what work requires human participation and what does not—freeing staff to focus on negotiation, judgment calls, and relationship management. Routine document review, compliance monitoring, data reconciliation, and first-pass analysis of applications are all areas where AI tools can meaningfully augment or replace manual work. There are real risks in public-sector AI deployment, ranging from data security and algorithmic bias to hallucinations requiring human quality assurance, but a rebuilding administration should set the expectation that it will deploy these tools wherever they can safely multiply the work of humans.
- Some of the folks who are gone should stay gone. Alongside the hardworking public servants who left rather than serve under the Donald Trump administration and those who were callously and wrongly terminated, the departures also included people who had stopped pushing. This is not a new observation: For years, the Federal Employee Viewpoint Survey (FEVS) asked federal workers whether “steps are taken to deal with a poor performer who cannot or will not improve.” The positive response never topped 42 percent.⁴

Reshaping the federal workforce will be easier said than done. Federal law includes important protections for employees displaced by reductions in force. Reemployment Priority Lists (RPLs) require agencies to give priority to their own displaced employees before looking outside. The Interagency Career Transition Assistance Plan (ICTAP) extends similar priorities to employees displaced from other agencies for up to two years. These rules are an important part of the bargain federal employees make when they sign up to serve, and I don’t mean to suggest they should be circumvented in general. But it would be a shame to hire back people whose roles are truly not necessary or those who were a drag on the system, just when there is an opportunity to accelerate progress. When necessary, these protections could be bypassed through both genuine position redesign and the use of excepted service authority.⁵ Both approaches let programs hire the talent they need without being constrained by displacement priority rules. But this will be a significant and sensitive undertaking, and deciding on an administration-wide posture toward this reshaping early enough to matter will require focused attention.

Put Hiring Ownership in the Right Hands and Run

Once the hiring landscape is mapped, the posture should be aggressive. Hiring must be understood as a first-tier leadership priority, not an HR matter. This could mean declaring broad critical shortage categories to unlock hiring authorities across particular swaths of the workforce, based on what the transition teams find. It could also take the form of a “talent cabinet”—modeled on the oversight structure that then Vice President Joe Biden ran for the American Recovery and Reinvestment Act (ARRA), where he convened weekly cabinet-level accountability meetings to track implementation.⁶ The ARRA model worked because it created a regular, high-level forum that forced agency leadership and senior staff to focus and drive progress each week.

Signaling that hiring is a priority also has implications for appointments: The people chosen to lead agencies need to be operationally minded and willing to treat hiring as a core executive function. The Office of Personnel Management (OPM)—the federal government’s central human resources agency, created by the Civil Service Reform Act of 1978 to manage hiring, pay, and workforce policy—should function as an enabler, not a gatekeeper. A well-resourced OPM that can quickly evaluate and adjudicate hiring-related requests can make a meaningful difference in the speed of execution. Its turnaround times should be tracked and reported. The administration-wide posture should be maximally permissive on specialized authorities for priority programs. Within agencies, the same principle applies: Cabinet officials and other agency heads need to treat hiring as a core priority alongside program design. Commerce Secretary Gina Raimondo’s focus on talent from day one was a real factor in the success of the CHIPS Program Office. Each agency should designate a senior official from outside of HR with explicit responsibility to work across units, unstick bottlenecks, and report on progress. And everyone in the chain, from hiring managers to interview panelists, must make time for hiring: They should not see this work as incidental to their “day jobs.”

Program-Level Design Choices That Matter

Especially for new programs, design choices can determine whether they can staff up and execute expeditiously.

Consider Funding, Hiring Authorities, and Program Placement

Our most significant advantage at the CHIPS Office was ample funding for administrative costs. At CHIPS, a 2 percent administrative set-aside on a \$39 billion program yielded \$780 million for staffing, contracts, and other operational infrastructure. That funding supported meaningful capacity, which was critical to our success. But while set-asides are somewhat standard, they only really work at scale. For example, a 3 percent set-aside on a smaller program, the Regional Technology and Innovation Hub Program (commonly known as Tech Hubs), yielded only \$13.77 million.⁷ Based on a fully loaded estimate of \$250,000 per year,⁸ that's roughly 55 person-years. If the program ran for five years, that would allow for a team of 11 people, but that's assuming the program forgoes all other administrative expenses. A program that isn't adequately resourced is more likely to falter, reinforcing the general perception that government can't execute.

Some of the other core advantages in the full suite of tools we used at CHIPS⁹ included legislative authority to hire senior talent outside standard civil service pay bands (the CHIPS-25 authority),¹⁰ direct hire authority, and excepted service appointments granted by OPM. CHIPS-25 authority gave us flexibility on compensation, direct hire authority let us short-circuit the hiring process, and excepted service created new positions outside of Title 5—the body of law governing the federal civil service—which effectively let us skip the hiring process almost entirely. These authorities helped us bring on talent in an average of 67 days, well under the government-wide average of more than 100 days in 2024.¹¹

There are also tools we didn't use at CHIPS that deserve more attention: intergovernmental personnel agreements (IPAs) to bring in academic, state, and local expertise¹² and the Defense Production Act's executive volunteer authority, which allows industry executives to be brought into

government service in the national interest.¹³ Both may be worth considering.

Another core component beyond funding and authorities is a dedicated and scalable operations team. At CHIPS we were set up well both because our operations personnel were excellent, and because we were technically housed within the National Institute of Standards and Technology (NIST), whose operations teams were also excellent. We also benefited from their working capital fund (WCF) model—a revolving fund that allows NIST’s operations to charge programs for their shared services, like HR, IT, and procurement, sustaining itself on fee revenue rather than appropriations. The WCF model meant we could flexibly use CHIPS administrative funds to hire more staff on the operations side as well as the program side.

Congress and advocates should consider these authorities and appropriate administrative funding not as exceptions to be justified program by program, but as a package of default design considerations for any high-priority industrial policy program.¹⁴

Build a Durable Cross-Sector Team

Beyond these structural underpinnings, building a fit-for-purpose talent strategy for a new program is crucial. For an industrial policy program, hiring talent from industry to work alongside experienced civil servants is essential. At CHIPS, the deliberate combination of industry veterans and career feds across different career stages produced better outcomes, as they each brought different approaches to management, risk, and problem-solving.

But hiring from industry requires both proactive recruiting strategies¹⁵ and real ethics infrastructure.¹⁶ At CHIPS we put in significant effort to attract and retain the talent we needed from the private sector. We found that the private-sector talent we needed didn’t naturally come to us—we went to them, through personal networks and direct outreach. While sometimes early- and mid-career professionals were worried about the financial and career risks of leaving their current path, we ultimately closed them on the strength of the mission and by persuading them that they could have a meaningful impact in a short period, enabling them to later return to the private sector if they chose. After the fact, they

overwhelmingly reported that they “absolutely” or “probably” would recommend a stint in government to colleagues.

We also built a robust ethics program modeled in large part on the requirements for presidential appointees. We moved vetting upstream so we understood the conflicts and divestment required before we sent an offer letter, we took a comprehensive view of potential conflicts and required divestiture of broad categories of stock, we leaned into ethics training as a day-one priority, and we borrowed conflict-of-interest procedures used in grant review processes to provide additional assurance that the team understood their obligations. Without that infrastructure, we knew we could be putting the entire enterprise at risk—a single perceived conflict of interest could distract from or even undermine our critical mission.

These were both substantial undertakings for our program, but they were necessary to build the right mix of talent and were essential to our success. Future industrial policy programs will face many of the same pressures and can learn from our experience.

Build Culture from Day One

Even with the right talent in place and an exciting and unifying mission, it's essential to build culture intentionally. Especially in high-stakes, fast-moving teams, culture can sometimes be an afterthought. But sustained intensity without careful consideration of the shared experience risks burnout and attrition, which can undo the work you did to build the team. New programs have a unique advantage over established organizations: They can build norms that reflect both the existing qualities and the aspirations of the team from the outset. This starts at the point of hire: Set the expectation that this is a high-urgency, high-performance environment, but also one where there are norms for how everyone shows up. Then reinforce the culture actively and consistently.

At CHIPS, we spent significant leadership time on this work. We ran a listening tour across the program, crowdsourced team norms rather than imposing them from above, built them into onboarding for every new hire, and ran an annual awards program centered on the norms. Some people rolled their eyes. But when we surveyed the team after nearly two

years of sustained intensity, over 90 percent said we brought urgency and purpose to the work, and a majority said we were living up to our norms across the board. I don't think we could have retained the talent we did, or sustained the pace we did, without that foundation.

The norms also created a shared set of expectations we could manage to. When someone wasn't showing up productively, the norms gave us language and legitimacy to address it directly—up to and including counseling people out.¹⁷

Conclusion

Some of what this piece recommends can happen on or before day one: reshaping the inherited landscape, putting operationally minded people in charge of OPM and agency hiring. Some of it requires careful program design at the legislative stage: administrative funding set-asides, hiring authorities, the decision about where to situate a new program. All of it, though, is in service of the same end: demonstrating that—with the right talent in place at the right time—the government can indeed deliver at the pace and scale required to address the core challenges of our time.

Notes

1. The growing body of work on state capacity reform—including on federal hiring, procurement, permitting, and civil service rules—is well summarized in Jennifer Pahlka and Andrew Greenway, *The How We Need Now: A Capacity Agenda for 2025 and Beyond* (Niskanen Center, December 2024), https://niskanencenter.org/wp-content/uploads/2024/12/Niskanen-State-Capacity-Paper_-Jen-Pahlka-and-Andrew-Greenway-2.pdf.
2. These are in addition to clearly understanding the many personnel policy and process changes the new administration will inherit, such as the renamed Schedule F, finalized in February 2026.
3. See Pahlka and Greenway, *The How We Need Now* (arguing for structural reform of government capacity rather than restoration of the status quo); Jennifer Pahlka, “Announcing the Recoding America Fund,” *Eating Policy*, Substack, October 22, 2025, <https://eatingpolicy.com/p/announcing-the-recoding-america-fund> (“The government we have today is no longer fit to the work we need it to do . . . The job now is to shape that disruption in the public interest”); and Jennifer Pahlka, *Recoding America: Why Government Is Failing in the Digital Age and How We Can Do Better* (Metropolitan Books, 2023).
4. The Federal Employee Viewpoint Survey (FEVS)—administered annually by the US Office of Personnel Management since 2010—asked federal employees whether, in their work unit, “steps are taken to deal with a poor performer who cannot or will not improve.” The item was consistently among the lowest-scoring on the survey. Positive responses (“agree” or “strongly agree”) peaked at 42 percent, reached in both 2020 and 2021, the last two years the question was asked; OPM dropped it beginning with the 2022 survey. See US Office of Personnel Management, *2020 Federal Employee Viewpoint Survey: Governmentwide Management Report* (2020), 3, <https://opm.gov/fevs/reports/governmentwide-reports/governmentwide-reports/governmentwide-management-report/2020/2020-governmentwide-management-report.pdf>; US Office of Personnel Management, *2021 Federal Employee Viewpoint Survey: Governmentwide Management Report* (2021), 2, <https://opm.gov/fevs/reports/governmentwide-reports/governmentwide-reports/governmentwide-management-report/2021/2021-governmentwide-management-report.pdf>.
5. Position redesign means creating genuinely new roles rather than backfilling eliminated ones. Excepted service appointments are positions outside the standard competitive hiring process, typically used for temporary, specialized, or confidential roles. These two position types operate outside the RPL queue.
6. Office of the Vice President, *A New Way of Doing Business: How the Recovery Act Is Leading the Way to 21st Century Government* (The White House, February 2011), https://obamawhitehouse.archives.gov/sites/default/files/new_way_of_doing_business.pdf.
7. The Tech Hubs program was technically a \$500 million program in total, but the funding came in two different appropriations in the FY23 omnibus. PL117 328 Division B title 1 appropriated \$41 million to Division N (Disaster Relief Supplemental), and Title II appropriated \$459 million to Tech Hubs and gave a 3 percent administrative funding carve-out.
8. Fully loaded federal cost includes salary, benefits (health insurance, retirement contributions, and other mandatory costs), and overhead (office space, IT, equipment, and administrative support). The government-wide average cost for one executive-branch civilian employee was approximately \$160,000 in 2023. (See “How Much Do We Spend on the Federal Workforce?,” Peter G. Peterson Foundation, July 2025, <https://pgpf.org/article/how-much-do-we-spend-on-the-federal-workforce>, drawing on OMB and Bureau of Economic Analysis data.) Industrial policy programs, however, likely recruit disproportionately from mid- to senior professional grades (GS-13 through GS-15 and equivalents) in high-cost localities, where base salaries range from \$120,000 to \$191,000. Applying the OMB standard fringe benefit rate of 36.25 percent (OMB Memorandum M-08-13) and a conservative overhead factor yields a range of roughly \$200,000 to \$250,000 per person-year for the talent profile typical of these programs.
9. Sara Meyers, “Hiring: Damned If You Do, Damned If You Don’t,” *Factory Settings*, Substack, Institute for Progress, November 2025, <https://factorysettings.org/p/hiring-damned-if-you-do-damned-if>.
10. CHIPS and Science Act, Pub. L. 117–167, §103(b), 136 Stat. 1366, 1379 (2022) (amending Section 9909 of the William M. [Mac] Thornberry National Defense Authorization Act for Fiscal Year 2021, Pub. L. 116–283). Subsection 9909(a)(5) authorizes the Secretary of Commerce, “notwithstanding section 3104 of title 5, United States Code, or the provisions of any other law relating to the appointment, number, classification, or compensation of employees,” to appoint up to 25 scientific, engineering, and professional personnel at rates not exceeding the compensation payable under section 104 of title 3 (that is, the vice president’s salary, currently \$284,600).
11. “OPM Public Time to Hire Dashboard,” OPM, <https://opm.gov/data/data-products/time-to-hire-dashboard>. The government-wide weighted average time to hire was 101 days in FY2024. Time to hire is defined as the average number of calendar days between a hiring manager’s validation of need and the candidate’s entrance on duty, weighted by hires per agency. Data covers Chief Human Capital Officers Act agencies only.
12. Intergovernmental Personnel Act of 1970, Pub. L. 91–648, 84 Stat. 1909, codified at 5 USC §§3371–3376; implementing regulations at 5 CFR Part 334. The IPA Mobility Program allows temporary assignments of personnel between federal agencies and state, local, and tribal governments, institutions of higher education, and other eligible organizations. See “Intergovernment Personnel Act,” OPM, <https://opm.gov/policy-data-oversight/hiring-information/intergovernment-personnel-act>.

13. Defense Production Act (DPA) of 1950, §710(e), 50 USC §4560(e), as implemented by Executive Order 13603, §501 (March 16, 2012). Section 710(e) authorizes the establishment of a National Defense Executive Reserve composed of people of recognized expertise from the private sector for training and employment in executive positions in the federal government in the event of a national defense emergency. See Congressional Research Service, “The Defense Production Act of 1950: History, Authorities, and Considerations for Congress,” R43767.
14. This approach to hiring authorities is admittedly only a Band-Aid for the structural reforms needed, and I am sympathetic to the point that it increases fragmentation and reduces urgency for those reforms. But I don't see how we can wait for those reforms at the beginning of an administration that will need to run fast to prove it can deliver.
15. Arrington Luck, “A Cheat Sheet for Attracting Private Sector Talent to Government,” *Factory Settings*, Substack, Institute for Progress, May 20, 2026, <https://factorysettings.org/p/a-cheat-sheet-for-attracting-private>.
16. Sara Meyers, “How to Hire from Wall Street Without Compromising Your Government Program,” *Factory Settings*, Substack, Institute for Progress, April 2026, <https://factorysettings.org/p/how-to-hire-from-wall-street-without>.
17. NIST’s probation posture was refreshing: If someone wasn’t working out, NIST HR expected their manager to act promptly. This was in stark contrast to prior experiences I’d had at other agencies, where leniency was encouraged. But the excepted service’s two-year probation period is a double-edged tool: The same flexibility that allowed us to hire quickly and gave us a runway to figure out if someone was a good fit also enabled DOGE to fire 40 CHIPS staff unceremoniously in 2025, damaging the program.

HOW TO PLAN IT?

Fix Modeling and Cost-Benefit Analysis

BY HEATHER BOUSHEY AND NOAH KAUFMAN



Heather Boushey is a professor of practice at the Kleinman Center for Energy Policy at the University of Pennsylvania's Stuart Weitzman School of Design. She served in the Biden administration as a member of the White House Council of Economic Advisers and chief economist to the President's Invest in America Cabinet. Prior to that, she cofounded and served as the president and CEO of the Washington Center for Equitable Growth.



Noah Kaufman is an economist and senior research scholar at the Center on Global Energy Policy at Columbia University's School of International and Public Affairs. He is the cofounder and codirector of the Resilient Energy Economies initiative. Previously he served as a senior economist on the White House Council of Economic Advisers and the deputy associate director of energy and climate change on the White House Council on Environmental Quality.

The federal government's core economic models—used to forecast growth, estimate budget impacts, and evaluate policy—systematically mishandle one of the most powerful forces reshaping the economy: climate change and the transition to clean energy. While these models are often outdated and underfunded, the root of the problem is that policymakers and the modelers they rely on face strong incentives to produce and use analyses that appear comprehensive and defensible, regardless of whether the underlying frameworks actually support that appearance.

This institutional bias leads to two predictable failures. The first is a failure of omission. The macroeconomic frameworks developed in the early- to mid-20th century by economists such as Simon Kuznets, Richard Stone, and James Meade were built to track short-term fluctuations and manage the business cycle. Adding deeply uncertain and potentially transformational economic effects risks visibly contaminating the credibility of those models. So those effects get left out entirely. In other contexts, the failure runs in the opposite direction: The pressure to appear comprehensive leads to falsely precise claims that appear to settle contested questions rather than usefully inform debate. The effects of climate change and the energy transition are of a scale, complexity, and novelty that frequently elude meaningful quantification, yet the standard cost-benefit framework is routinely applied to them as if they do not.

Correcting these failures requires three complementary reforms. The first is to replace a culture of false comprehensiveness with greater transparency about model limitations, deep uncertainties, and the value-laden judgments often embedded invisibly in technical assumptions. The second reform is to improve the underlying models in situations where better quantification is genuinely achievable, narrowing the range of effects that must be handled qualitatively. The third reform is to incorporate those improved models into federal macroeconomic

frameworks so that climate risk and energy transition dynamics are reflected in the baseline economic picture that informs federal decision-making.

The Omission Failure

Failing to incorporate climate change and the transition to clean energy into macroeconomic projections distorts the overall picture of the economy. Policymakers relying on these projections are therefore making decisions based on incomplete and potentially misleading information.

Two types of climate-related economic effects are important to incorporate into federal modeling exercises. First are the physical effects of climate change. These include the destruction of infrastructure from hurricanes and other extreme weather events, as well as more slow-moving implications for labor productivity, agricultural yields, and capital stock from hotter temperatures and more volatile weather.¹ While it is difficult to parse the causes of any given event, in 2024 alone the United States experienced 27 weather and climate disasters causing more than \$1 billion in damages each.²

Second are the economic effects associated with the transition to a lower-carbon economy. The transition will require reconfiguring how energy is generated, how goods are manufactured, and how people and products move through the economy. This will have direct consequences for investment, employment, trade patterns, supply chains, and geoeconomic power.³ While some of these effects may be modest in isolation, their interaction and simultaneity creates the risk of compounding into unanticipated shocks that are larger than the sum of their parts.

Macroeconomic tools often miss these shocks. For example, the rapid transition away from coal-fired power generation has devastated local Appalachian economies. The collapse of coal employment has led to not only job losses but also losses in tax revenues that fund schools, infrastructure, and other public services. Yet most models lack the geographic granularity to capture these localized economic shocks.⁴

Simultaneously, climate risk is already reshaping the insurance sector, with implications for household wealth and financial stability. As insurers withdraw from high-risk markets or raise premiums sharply, homeowners in affected areas face a stark choice between absorbing higher costs or going uninsured. Either outcome depresses property values, eroding the primary store of wealth for many American families. Falling property values in turn shrink local tax bases, threatening the public services and fiscal stability of communities that are often already economically vulnerable.⁵

How to Incorporate Climate into Federal Macroeconomic Frameworks

The Council of Economic Advisers, Office of Management and Budget, and Treasury jointly produce macroeconomic assumptions that underpin the President's Budget. These include projections of GDP growth, interest rates, and employment that policymakers rely on to understand the trajectory of household wealth, financial stability, and local public finance. These projections provide a common baseline for estimating revenues and expenditures, shaping decisions across the federal government.

These macroeconomic tools were not designed to capture large-scale structural transformations. They generally treat the composition of the economy—its industries, technologies, and energy systems—as fixed in the near term, assuming that the economic relationships observed in the past will continue. This assumption is always limiting but is especially problematic in the face of major structural economic shifts, including climate change and the transition to a net-zero-emissions economy, both of which are already beginning to reshape patterns of investment, production, and trade.⁶

Consider the automobile industry: A shift from internal combustion engine vehicles to electric vehicles could fundamentally restructure the auto manufacturing industry and its extensive domestic supply chain, particularly if foreign manufacturers capture market share that domestic producers currently hold. The resulting losses in manufacturing employment, supplier revenues, and regional tax bases would not show

up in baseline projections that assume the industry's economic footprint evolves as it has historically—a miscalibration that compounds across a 10-year projection window into significant misdirection for budget and policy planning.

Redesigning these tools requires both technical upgrades and a more fundamental shift in how analysts and policymakers think about what models can and cannot do. A growing body of work has begun to do this. The International Monetary Fund, World Bank, and Network for Greening the Financial System have developed approaches to incorporate physical and transition risks into macroeconomic models. Several governments, including Denmark, France, and the United Kingdom, have begun integrating these risks into their official economic projections. In the United States, the Congressional Budget Office has taken initial steps to incorporate the effects of changing temperature, precipitation, and hurricane patterns into its long-term outlook.⁷

The White House should learn from these approaches rather than start from scratch. But it should also recognize that these newly developed models should be understood as early steps rather than mature methodologies. The underlying models remain works in progress, and they raise difficult questions about how to handle deep uncertainty and avoid false precision.

Recognizing the Limits of Quantification

The same institutional pressure that produces omission also produces its opposite: analyses that claim more precision than the underlying methods can support.

Quantification is most useful when the projected future resembles the historical record on which models are built, and when analysts have granular data on the places and sectors being studied. Climate-related analyses routinely violate both conditions. They involve long horizons over which technologies, economic structures, and human behavior will change in impossible-to-predict ways, and effects that cascade through every sector of the global economy.

Yet modelers and political principals alike face strong incentives to quantify as much as possible, since a more complete-looking set of numbers confers greater perceived analytical authority and makes regulatory justifications harder to challenge, regardless of whether the underlying estimates are reliable enough to bear that weight.

A prominent example is incorporating estimates of the benefits of avoided damages from reducing greenhouse gas emissions (referred to as the social cost of carbon dioxide emissions) into regulatory benefit-cost analysis. Quantitative estimates of global climate damages over the many centuries that greenhouse gas emissions remain in the atmosphere lie far beyond our analytical capabilities. These models omit many (or perhaps most) of the potential harms that changes in the climate will impose on society, and they unrealistically assume that human behavior will adjust to unprecedented changes in ways consistent with historical experience. The estimates also embed strong moral judgments that are rarely acknowledged as such: how much more we value consumption today versus in the future, how much weight to give the risk of highly uncertain catastrophic outcomes, and how much more to weigh harms falling on the most vulnerable people relative to those who are better off.⁸

The result is a profound tension between what rigorous analysis requires and what tractable models can deliver. Nevertheless, it has become common to integrate estimates of the social cost of emissions into benefit-cost analysis and present the results as justifications for policy decisions.⁹

The same dynamic plays out in assessments of green industrial strategies. Policymakers pursue these strategies for a broad range of reasons: to build domestic productive capacity, reduce exposure to geopolitical risk, support regional economic stability, accelerate innovation with broad spillovers, and sustain political coalitions for long-term policy commitments. These are legitimate policy goals, but they have real costs, including the distortions introduced by trade barriers and the inefficiencies and corruption that can accompany directing capital toward favored sectors.

Existing models are poorly suited to weighing these benefits and costs, tending to capture only a narrow slice of either side of the ledger. Some studies omit important potential benefits of green industrial strategies and project negative outcomes,¹⁰ while others ignore key drawbacks and

find that these strategies boost growth and jobs.¹¹ Too commonly, these analyses draw overconfident conclusions about their net economic effects, presenting partial and uncertain estimates as guidance for policymakers who should be encouraged to both use models and rely on a richer array of evidence.¹²

Recommendations

Correcting these failures requires three mutually reinforcing reforms. The most fundamental is not to the models themselves but to the decision-making framework within which the models operate: replacing the culture of false comprehensiveness with increased transparency about model limitations.

The 2023 revision to the federal government's guidance on regulatory benefit-cost analysis (Circular A-4) made genuine progress in providing clearer guidance on nonquantifiable benefits and costs.¹³ But in layering this new guidance on top of the older norms rather than replacing them, it created an awkward hybrid in which analysts were encouraged to acknowledge what they could not quantify while still facing institutional pressure to produce comprehensive-looking net-benefit numbers.

For example, the updated Circular A-4 allowed agencies to voluntarily move beyond the Kaldor-Hicks potential compensation principle that treats a policy as justified if those who gain could in theory compensate those who lose. However, within a culture that requires comprehensive-seeming estimates of net benefits, abandoning the Kaldor-Hicks principle would force federal agencies to make difficult judgments about the societal benefits of regulatory changes with important distributional consequences. In practice, agencies defaulted to the familiar approach, even in contexts like climate change, where the assumption that winners could compensate losers is clearly just a convenient fiction.¹⁴

The Trump administration's abandonment of the A-4 update, while damaging in the short term, creates an opportunity for the next administration to try again with greater clarity and ambition. A revised Circular A-4 should be explicit that only under narrow conditions are quantified estimates of benefits and costs sufficiently reliable and comprehensive to warrant direct comparison. The circular should also

require agencies to identify when those conditions are not met. Outside those conditions, agencies should be guided away from producing net-benefit estimates altogether, presenting instead a transparent account of what is known, what is uncertain, and what value judgments are required. In this way, quantitative analysis of costs and benefits would serve its proper role as one input among several that accountable decision-makers weigh in reaching a conclusion, rather than an illusory bottom line that forecloses the judgment that good governance requires.

The same principle applies to the macroeconomic modeling that underlies the federal budget. The current practice of presenting point estimates of GDP growth as the basis for budget projections implies a false precision that is difficult to defend even before accounting for climate and energy transition dynamics. At a minimum, the Council of Economic Advisers, Treasury, and Office of Management and Budget should replace point estimates with a scenario-based approach that presents a range of plausible economic trajectories. This would also create a natural framework within which climate risks and energy transition dynamics could be incorporated without the appearance of contaminating an otherwise precise forecast. Establishing honest analytical boundaries is not a retreat from quantification.

A second complementary reform is to improve the underlying models. The federal government has an important role to play in funding and supporting that work. The government should invest in better quantification where it is genuinely achievable. Improved models must come with explicit acknowledgment of their limitations so they do not become a new vehicle for false precision. There may be ways to deploy new data and/or new analytic capacities toward these goals—including AI—and the White House should explore those options.

Several areas are ripe for investment. Climate damage modeling has advanced considerably in academic work, moving away from the traditional top-down “damage function” approach toward more rigorous analysis of how climate change affects specific sectors and drivers of economic growth. Models underlying green industrial policy analysis should also be improved to better account for the motivations that drive these policies, including the desire to build domestic productive capacity and reduce exposure to geopolitical risk. Finally, regional economic modeling remains underdeveloped. Dedicated federal investment in modeling local labor markets, effects on local fiscal outcomes, and

broader community impacts would generate both better analysis and the data infrastructure needed to evaluate whether place-based interventions are achieving their goals.

With analytical boundaries established and underlying models improved, the case for incorporating climate and energy transition effects into federal macroeconomic frameworks becomes both more compelling and more credible. It no longer rests on an overreach beyond what models can deliver, but on a genuine account of what improved models can and cannot tell us.

Conclusion

When economic analysis systematically overstates its own precision, it not only misleads policymakers but crowds out the transparent engagement with trade-offs and value judgments that sound decision-making requires. And when the numbers underlying policy decisions are eventually exposed as unreliable, the credibility loss damages not just the analysis, but also the policies built on top of it.

The reforms proposed here point toward a different model of what economic analysis is for. A future administration that replaces false precision with transparent accounts of what is known and unknown, who gains and who loses, and what value judgments underlie a policy decision would be better positioned to make the case for climate and industrial policies on a broader set of grounds. Many of the considerations that matter most for these policies—the long-run resilience of communities, the strategic imperatives of energy security, and the moral case for protecting those least able to bear the costs of inaction—resist meaningful quantification. Making them explicit, rather than burying them in technical assumptions or omitting them entirely, gives policymakers a more defensible and transparent basis for the decisions they are already making.

Better federal modeling is not just a technocratic project. It is a prerequisite for the kind of evidence-based, politically durable climate governance that the scale of the challenge demands. What is needed is the institutional will to stop pretending that we know more than we do, and to govern confidently from what we actually know.

Notes

1. Intergovernmental Panel on Climate Change, *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, ed. Hans-Otto Pörtner et al. (Cambridge University Press, 2022), <https://doi.org/10.1017/9781009325844>.
2. Adam B. Smith, “2024: An Active Year of U.S. Billion-Dollar Weather and Climate Disasters,” Climate.gov, National Oceanic and Atmospheric Administration, January 10, 2025, <https://climate.gov/news-features/blogs/beyond-data/2024-active-year-us-billion-dollar-weather-and-climate-disasters>.
3. Council of Economic Advisers and Office of Management and Budget, *Assessing Methods to Integrate the Physical Risks and Transition Risks and Opportunities of Climate Change into the President’s Macroeconomic Forecast*, white paper (Executive Office of the President, April 2024); Jean Pisani-Ferry, *Climate Policy Is Macroeconomic Policy, and the Implications Will Be Significant*, Policy Brief 21-20 (Peterson Institute for International Economics, August 2021), <https://piie.com/publications/policy-briefs/2021/climate-policy-macroeconomic-policy-and-implications-will-be>.
4. Adele C. Morris et al., *The Risk of Fiscal Collapse in Coal-Reliant Communities* (Center on Global Energy Policy, Columbia University, and Brookings Economics Studies, July 2019), https://energypolicy.columbia.edu/wp-content/uploads/2019/07/RiskofFiscalCollapseinCoalReliantCommunities-CGEP_Report_040424.pdf.
5. Council of Economic Advisers, *Economic Report of the President 2023* (The White House, 2023), chapter 9, <https://bidenwhitehouse.archives.gov/wp-content/uploads/2023/03/ERP-2023.pdf>.
6. Council of Economic Advisers and Office of Management and Budget, “Assessing Methods to Integrate the Physical Risks and Transition Risks.”
7. Jean Pisani-Ferry and Selma Mahfouz, *The Economic Implications of Climate Action: A Report to the French Prime Minister* (Republic of France, 2023); Evan Herrnstadt and Terry Dinan, “CBO’s Projection of the Effect of Climate Change on U.S. Economic Output,” Working Paper 2020-06 (Congressional Budget Office, 2020); *Annual Report 2024* (Network for Greening the Financial System, 2025), <https://ngfs.net/en/publications-and-statistics/publications/annual-report-2024>; Jens Sand Kirk et al., Development of the GreenREFORM Model (Danish Research Institute for Economic Analysis and Modelling, 2024), <https://dreamgroup.dk/publications/2024/april/development-of-the-greenreform-model>.
8. Noah Kaufman, “The Social Cost of Carbon Is Gone—and That May Be Good News for Future US Climate Policy,” *Energy Explained* (blog), Center on Global Energy Policy, Columbia University School of International and Public Affairs, July 23, 2025, <https://energypolicy.columbia.edu/the-social-cost-of-carbon-is-gone-and-that-may-be-good-news-for-future-us-climate-policy>.
9. Justin Gundlach and Michael A. Livermore, “Costs, Confusion, and Climate Change,” *Yale Journal on Regulation* 39 (2022): 564, <https://openyls.law.yale.edu/server/api/core/bitstreams/d24dfe42-f627-47ff-a6c4-acb62da6da8d/content>.
10. International Monetary Fund, *Fiscal Policy in the Great Election Year* (2024), <https://imf.org/en/Publications/FM/Issues/2024/04/17/fiscal-monitor-april-2024>.
11. Robert Pollin, Jeannette Wicks-Lim, Shouvik Chakraborty, Gregor Semieniuk, and Chirag Lala, *Employment Impacts of New U.S. Clean Energy, Manufacturing, and Infrastructure Laws* (Political Economy Research Institute, 2023), https://peri.umass.edu/images/publication/BIL_IRA_CHIPS_9-18-23-1.pdf.
12. Noah Kaufman and Chris Bataille, “Avoiding Misuses of Energy-Economic Modelling in Climate Policymaking,” *Nature Climate Change* 15 (2025): 463–65, <https://doi.org/10.1038/s41558-025-02280-7>.
13. Office of Management and Budget, “Circular A-4: Regulatory Analysis,” Executive Office of the President, November 9, 2023, <https://bidenwhitehouse.archives.gov/wp-content/uploads/2023/11/CircularA-4.pdf>.
14. J. Paul Kelleher, *The Social Cost of Carbon: Ethics and the Limits of Climate Change Economics* (Oxford University Press, 2025).

Stand Up a National Climate Service

BY MADISON CONDON



Madison Condon is a professor at Boston University School of Law, where she teaches classes on environmental law, corporations, law and capitalism, and climate risk and financial institutions. She writes about issues at the intersection of climate science, economics, and administrative law.

That we need to rebuild national capacity in the natural sciences is obvious to anyone who has been paying attention to the cascade of alarming headlines over the past year and a half. In that short time Donald Trump has done a tremendous amount of damage: shutting down National Forest Service offices, cutting off funding for climate-related research in both academia and the government, and attempting to sell off assets from the National Center for Atmospheric Research to the highest bidder.¹

But even before the destruction began, our approach to climate science needed a strategic overhaul. While American scientists were among the best resourced and regarded in the field of atmospheric modeling—a field that explores how our Earth will change over time as we continue to pump out greenhouse gases—we were arguably understaffed and uncoordinated in helping people figure out what to do about these changes on the ground.² On questions of climate *mitigation*, we know as much now as we’ve ever needed to know: We should stop burning fossil fuels, as fast as possible. We don’t need more models to tell us that.

But when it comes to climate *adaptation*, there is a lot of work to be done. The United States remains one of the very few countries in the world without a national adaptation plan.³ The majority of states similarly lack plans, which would at the very least tell local governments what to expect in the decades ahead.⁴ As climate scientist Adam Sobel has memorably argued, we need more *usable* climate science that can help particular people in particular places make decisions in the present.⁵

We need a National Climate Service that can coordinate modeled climate data from science agencies like the National Oceanic and Atmospheric Administration and NASA with ground-level engineering and exposure information. Such a service will serve many purposes, but I highlight two main goals here: The first is to provide free public-facing information about climate risk to end users like states, municipalities, and

homeowners. The second is to bolster the federal government's own planning capacity, both to make decisions about physical adaptation and also to aid in crucial oversight of our macroeconomy and financial sector.

Localized Information Is Power

Insurers already see this connection between climate science and our ability to anticipate and respond to local economic impacts. The American Academy of Actuaries—the professional association of insurance actuaries in the United States—submitted a comment letter protesting the Trump administration's plan to dismantle the National Center for Atmospheric Research (NCAR). “NCAR's continuity is not only a scientific necessity,” the actuaries wrote, “but an economic one.”⁶ The actuaries explained that NCAR's supercomputer-generated data was essential for their evolving understanding of climate impacts like hurricanes, wildfires, and changing precipitation patterns. Without NCAR's publicly available research, they argued, the insurance industry would be left in the dark. This heightened uncertainty could lead them to raise premiums. Or the lack of data could lead them to underestimate total risk, which could result in any number of effects, including inadequate capital reserves, insurer insolvency, or higher volatility in pricing.⁷

So far, the states have taken varying approaches to modeling asset-level climate risks. In 2025, California passed legislation funding the construction of the nation's first public wildfire catastrophe model, which aims to be an “open-source, community data-driven modeling framework” built with expertise from universities in the state.⁸ While the impetus for the model was the desire to oversee premium pricing from private insurers, the legislation acknowledges that it can be used to inform a range of decisions, including emergency planning, wildfire risk mitigation, and broad oversight of the insurance sector, including solvency.⁹ While California's innovation in this area should be lauded, not every state can mimic this approach. Catastrophe models require years of work from an interdisciplinary team of PhD-level experts, with costs reaching into the millions of dollars. California has set aside an initial \$8.5 million over the next three years.¹⁰ This is for modeling just one hazard: fire. Especially for states with smaller budgets and fewer research

universities, federal help is needed to model the many increasing hazards in the years ahead, from water scarcity to flooding to hail.

Connecticut has taken a different approach, simply licensing climate-risk information from a third-party private data provider and giving residents access to climate risk scores.¹¹ As I've written elsewhere, and others have echoed, solely relying on for-profit providers has serious drawbacks.¹² The government is endorsing information created by black-box models in which it has no control over data inputs or methodology. Developing these tools in the public sector would not only ensure transparency but would also help train future generations of climate scientists to improve upon and maintain the models. While the private sector should be encouraged to continue to develop and use its own analytics, government-maintained models serve as an important public option, providing a free source of information that can be used to double-check private-sector claims.¹³

Climate Services for Macroeconomics

Updates in granular physical risk modeling are needed not just for local planning but for economic forecasting as well. Last February, Federal Reserve Chair Jerome Powell admitted to the Senate Banking Committee that areas of the United States may become uninsurable: “[In] 10 or 15 years there are going to be regions of the country where you can’t get a mortgage.”¹⁴ But while Powell conceded that this “will have significant economic consequences,” he wasn’t ready to concede that this is “a financial stability issue.” I’m not so sure about that. It certainly would be nice to know how large and where we expect these areas to be. Yet Federal Reserve researchers themselves wrote in 2024 that “surprisingly little is known about U.S. climate-related financial stability risks,” as they were only just beginning to “integrat[e] climate-related risks . . . into modeling frameworks.”¹⁵

Concerningly, mainstream economics mostly works with climate-model outputs in the form of regional averages, which means that their models ignore local extremes.¹⁶ But these local extremes are likely the very things we care most about for certain economic impacts. Our built infrastructure was designed to withstand certain thresholds, including flood height, temperature level, and rainfall intensity. When those

thresholds are surpassed—even just once—infrastructure can fail (for example, a dam can break), which can lead to cascading catastrophic effects.

It's not just the housing market that exposes us to potential macroeconomic repercussions. Climate impacts can disrupt supply chains with systemic effects. For example, right after Hurricane Helene, the world learned that a majority of the electronic industry's high-quality quartz comes from just two mines outside of Asheville, North Carolina.¹⁷ While the mines were able to recover quickly from flooding, it was a wake-up call for the industry. Whether it is low water levels in the Panama Canal slowing down international shipping or food price inflation from too-hot European summers, we've already had enough lessons to know that an extreme climate event in one place can have reverberating economic impacts in many places.¹⁸

The President's Council of Advisors on Science and Technology (PCAST) under the Biden administration recognized this need for granular information on climate impacts. The council called for increased support for high-resolution modeling capabilities at government agencies and the designation of a lead agency to host an extreme weather data portal.¹⁹ This should certainly be done. But better information on the likelihood of extreme weather events is just the initial step in giving people decision-useful information. To understand a home's flood risk, you need to know not only how intense a rainfall event could get, but also whether the surrounding drainage infrastructure is up to the challenge. In other words, risk depends on how vulnerable or resilient a given entity is in the face of the hazard.

Which means that a tremendous amount of nonweather data is also needed: drainage system design specifications, building material, topography, and more. Of course, building a model this granular for the entire United States would be a massive undertaking, but government agencies could start by prioritizing risk modeling for the areas and infrastructure of likely systemic significance. One example might be dams: There are more than 90,000 dams in the US, many of which are aging and most of which were designed many decades ago for a climate we no longer have.²⁰ A dam collapse from an extreme weather event will inevitably have downstream impacts and could destroy roads or even entire towns in its flood path.

President Biden’s Council of Economic Advisors (CEA) endorsed the PCAST recommendations and, in a notable first, called for coordination between the economic and environmental science agencies. The CEA called for the creation of a “National Catastrophic Modeling platform able to quantify extreme weather event risk . . . at a high spatial resolution across the country.”²¹ This model could then be used to inform macroeconomic modeling and adaptation investment planning.²² Catastrophe models have long been used by the insurance industry for modeling asset-level tail risks. While updating them for climate relevancy will require domain expertise from climate scientists, they are an important tool for modeling extreme events in particular places.

While the PCAST and CEA reports were exciting acknowledgments of the weakness of current US government economic modeling approaches, it’s not clear that much progress has been made in implementing their recommendations. The Treasury Department separately established a Climate Data and Analytics Hub, but, contrary to the recommendations of this essay, it was not developed in collaboration with the science agencies. Of course, over Trump’s time in office, he has implemented an extreme reversal on our capacity to understand our changing climate at the local level.

Conclusion

A new administration must bridge the methodological gap between the economic and science agencies. It’s time to make the National Climate Service (NCS) a reality. To effectively meet the needs outlined in this essay, an NCS should be designed around a hub-and-spoke approach. A centralized convening institution should focus on high-computational challenges and data coordination across science agencies, while a network of regional centers should work with local stakeholders on consultation, research, and communication. As advocated by climate scientist Bob Kopp, these regional centers could build upon our existing network of land-grant universities that already work to meet the needs of farmers and local governments in their areas.²³

A new administration must bridge the methodological gap between the economic and science agencies. It's time to make the National Climate Service (NCS) a reality.

To hit the ground running and show value early on, a National Climate Service might facilitate conversations around the future of insurance. Insurance companies are reluctant to share their modeled risk data, so a public data option could help local officials come to the negotiating table or design legislative reforms that can endure.

It's going to be a rocky few decades ahead of us: Let's put our world-class science to use in helping us navigate them.

Notes

1. Eric Niiler, "Forest Service Will Close Research Stations That Study Wildfire Risk," *New York Times*, April 3, 2026, <https://nytimes.com/2026/04/03/climate/forest-service-research-stations.html>; James Temple, "The Trump Administration Has Shut Down More Than 100 Climate Studies," *MIT Technology Review*, June 2, 2025, <https://technologyreview.com/2025/06/02/1117653/the-trump-administration-has-shut-down-more-than-100-climate-studies>; Paul Voosen, "White House Plan to Break Up Iconic Climate Lab Moves Forward," *Science*, March 10, 2026, <https://science.org/content/article/white-house-plan-break-iconic-u-s-climate-lab-moves-forward>.
2. Madison Condon, "Climate Services: The Business of Physical Risk," *Arizona State Law Journal* 55 (2023).
3. See, for example, Doug Parsons, host, *America Adapts* podcast, "Federal Climate Adaptation Plans: Part 2—Where Is the U.S. National Adaptation Plan?," November 28, 2021 (noting that the US is the only Group of 20 country without a plan).
4. See "State Adaptation Policy Tracker," Georgetown Climate Center, <https://georgetownclimate.org/adaptation/plans.html>.
5. Adam Sobel, "Usable Climate Science Is Adaptation Science," *Climatic Change* 166 (April 20, 2021).
6. American Academy of Actuaries, "Re: Shutdown of the National Center for Atmospheric Research," letter to the National Science Foundation, February 9, 2026, <https://actuary.org/wp-content/uploads/2026/02/Academy-NCAR-Comment-Letter.pdf>.
7. American Academy of Actuaries, "Re: Shutdown."
8. Climate and Sustainability Branch, "California Wildfire Safety and Risk Mitigation Program & Public Wildfire Model," presentation, California Department of Insurance, December 2, 2025, <https://insurance.ca.gov/01-consumers/180-climate-change/upload/Public-Cat-Model-Webinar-2Dec2025-updated.pdf>.
9. California Senate Bill 429, Wildfire Safety and Risk Mitigation Program, February 18, 2025, <https://legiscan.com/CA/text/SB429/id/3269988>.
10. Administrator of the Wildlife Fund, "Enhancing California's Resiliency to Natural Catastrophes," California Earthquake Authority, April 7, 2026, <https://cawildfirefund.com/sites/wildfire/files/documents/2026/sb-254-natcatresiliencyreprt-4-7-26v3.pdf>.
11. CT Insurance Department, "Free Climate Risk Mapping Tool for Connecticut Residents," State of Connecticut, https://portal.ct.gov/cid/resource-library/free-climate-risk-mapping-tool?language=en_US.
12. Condon, "Climate Services"; Justin Mankin, "The People Have a Right to Climate Data," *New York Times*, January 20, 2024, <https://nytimes.com/2024/01/20/opinion/climate-risk-disasters-data.html>.
13. See, for example, Suzanne Kahn, *The Public Options Tool Kit: Ensuring Access, Public Value, and Accountability in the Economy* (Roosevelt Institute, April 2026), <https://rooseveltinstitute.org/publications/the-public-options-tool-kit-ensuring-access-public-value-and-accountability-in-the-economy>.
14. "Fed's Powell Says Some Areas of U.S. May Be 'Uninsurable' in Next Decade," ABA Banking Journal, American Bankers Association, February 18, 2025, <https://bankingjournal.aba.com/2025/02/feds-powell-says-some-areas-of-u-s-may-be-uninsurable-in-next-decade>.
15. Celso Brunetti et al., "Climate-Related Financial Stability Risks for the United States: Methods and Applications," *Economic Policy Review* 30 (2024), Federal Reserve Bank of New York, https://newyorkfed.org/medialibrary/media/research/epr/2024/EPR_2024_climate-financial-stability_brunetti.pdf.
16. A. J. Pitman et al., "Acute Climate Risks in the Financial System: Examining the Utility of Climate Model Projections," *Environmental Research: Climate* (August 18, 2022); see also Madison Condon, "Damage Functions (Or Why I Am Mad at Economists)," Law and Political Economy Project blog, June 13, 2023, <https://lpeproject.org/blog/damage-functions-economics-climate-science>.
17. Sana Pashankar, "Hurricane Helene Halts Quartz Mines Vital for Chipmaking and Solar," Bloomberg, October 2, 2024, <https://bloomberg.com/news/articles/2024-10-02/hurricane-halts-quartz-mines-vital-for-chipmaking-and-solar>.
18. Samuel E. Muñoz et al., "Drying of the Panama Canal in a Warming Climate," *Geophysical Research Letters* 52 (September 17, 2025), <https://doi.org/10.1029/2025GL117038>; Aline Schuiling, Bill Diviney, and Aggie van Huisseling, "Hot Summer to Fuel Eurozone Inflation," ABN-AMRO, September 10, 2025, https://assets.ctfassets.net/1u811bvgythc/1CMNtEI0Enl2uHdTrm2tc7/ff6dbefe390ed170d8d73a96b37dc326/Hot_summer_to_fuel_eurozone_inflation.pdf.
19. President's Council of Advisors on Science and Technology, *Extreme Weather Risk in a Changing Climate: Enhancing Prediction and Protecting Communities* (Executive Office of the President, April 2023), https://bidenwhitehouse.archives.gov/wp-content/uploads/2023/04/PCAST_Extreme-Weather-Report_April2023.pdf.
20. Kristopher Tigue, "America's Aging Dams Are a Catastrophe Waiting to Happen," *Wired*, July 13, 2024, <https://wired.com/story/climate-change-failing-aging-dams-us-america-catastrophe>.

21. Council of Economic Advisers, Office of Management and Budget, Department of the Treasury, “Memorandum: Tools to Support the Management of Near-Term Macroeconomic and Financial Climate Risks,” December 22, 2023, https://bidenwhitehouse.archives.gov/wp-content/uploads/2023/12/Memo_Tools-for-Near-Term-Climate-Risk-Management.pdf.
22. See also “Economic Report of the President,” March 2023, <https://bidenwhitehouse.archives.gov/wp-content/uploads/2023/03/ERP-2023.pdf>. The report describes the development of “federal capacity for catastrophic climate risk modeling” as a “major opportunity.”
23. Robert E. Kopp, “Land-Grant Lessons for Anthropocene Universities,” Climatic Change, March 2021.

Use and Expand Subfederal Power

BY ROHAN SANDHU



Rohan Sandhu is the founding director of the Reimagining the Economy (RtE) initiative at the Harvard Kennedy School. His research focuses on industrial strategies, place based economic development, services-led growth, and institutional capacity. He leads RtE's communities of practice with local economic development leaders and applied research projects around federal programming, green industrial policies, and workforce development strategies.

For the past few years, the US conversation on industrial policy has been dominated by big numbers and big legislations: the Inflation Reduction Act, the CHIPS and Science Act, the Bipartisan Infrastructure Law. These involved standing up new federal offices, hiring new federal employees, and expanding federal funding streams. The last year and a half has highlighted the fragility of that approach, as priorities have abruptly changed and several of these initiatives have been curtailed. The excessive focus on headline numbers and policy maneuvers in Washington, DC, also obfuscates the invisible but critical architecture that intermediates the on-the-ground process of converting ambitious goals into deliverables. Looking ahead to 2029, then, it is worth scoping out strategies that are less vulnerable to the vicissitudes of federal policy by empowering the hidden developmental state that exists outside of DC.

The Existing Stock of Place-Based Strategies and Institutions

Historically, federal responses to regional decline have relied on two imperfect tools: individual transfers and fragmented place-based programs. Means-tested transfers to individuals and households—such as unemployment insurance, disability, and Social Security—are essential safety nets.¹ But they do not rebuild productive capacity or institutional ecosystems. When support arrives only as a check, it places the burden on the recipient to find their way; it does not change the broader economic conditions within which they operate. Without concomitant interventions on the labor demand side, even workforce development strategies that are directed at skilling or reskilling workers fail to move the needle on economic opportunity.²

Over the past few decades, individual transfers have consistently dwarfed place-based transfers.³ The goal of the latter is to upgrade the productive

capacities of regions through investments in various domains, including job creation, workforce development, and research and development (R&D).⁴ Yet while they are substantially smaller in magnitude, federal place-based programs have existed in the US for much of the past century. One type of programming includes commissions and agencies like the Appalachian Regional Commission and the Tennessee Valley Authority, both created by the federal government to address regional distress and disparities.

Another type of place-based programming includes federal programs that fund economic development, workforce, and innovation programs in specific regions. During World War II, for instance, the Office of Scientific Research and Development provided funding to a range of existing and new research laboratories, including the MIT Radiation Lab and Caltech's Jet Propulsion Lab, for applied research. This funding had long-term impacts on regional employment, innovation, and economic indicators.⁵ Postwar technological development advanced this framework, creating federally funded R&D centers across the country. Similarly, the Department of Labor provides funding to community colleges, the Economic Development Administration (EDA) to multicounty economic development districts, and the Small Business Administration to Small Business Development Centers.

The product of all this is what Gordon Hanson, Dani Rodrik, and I have characterized as a “place-based policy supply chain.”⁶ Funding—as loans or grants—flows from federal departments to local actors to implement specific programs in specific places. However, because these intermediary institutions have been put in place through policies over time and by programs spread across federal departments, this supply chain is fragmented. The federal government has typically operated in a siloed manner, which means the burden of coordination is transferred to the local level. Consider, for instance, the extent of fragmentation that rural regions must contend with: 400 economic and community development programs across 13 departments, 10 independent agencies, 50 offices and subagencies, and 14 legislative committees.⁷

While local actors are expected to implement programs and create coherence across these domains, they seldom receive support to build their organizational capabilities. Government programs are often project oriented, funding training initiatives and facilities instead of the broader institutional infrastructure needed to strategize and orchestrate

long-term planning. They also take the form of episodic competitions with tight timelines, favoring regions that already have grant-writing and convening capacity. Local philanthropy often steps in to fill the gap, funding nonprofits and public-private organizations. But philanthropic institutions underinvest in rural and distressed regions, which exacerbates regional inequities.⁸

The federal government has also been slow to adapt new local practices. For instance, regional cluster-based approaches became prominent in the 1980s and 1990s, stemming from a combination of Cold War R&D funding and patent-sharing regulations in the 1980s. The cluster approach famously became codified as a field of knowledge by Michael Porter in the mid-1990s. But in federal policy, clusters began to gain prominence only in the 2010s, as a strategy outlined in President Barack Obama's 2009 Strategy for American Innovation. Since then, this local consortium approach has underpinned a number of programs—including, most notably, several Biden-era programs, like the Build Back Better Regional Challenge, Tech Hubs, and Recompete. But unless this approach is sustained beyond special one-off competitions, it may well be ephemeral.

What a Decentered Approach Would Look Like

Running alongside this story of fragmented federal programming is another, more hopeful one: the emergence of local “systems hubs.” Instead of being intermediaries for federal programming, these institutions act as entrepreneurial orchestrators of regional economic development. In fossil fuel regions, organizations like Coalfield Development in West Virginia and Shaping Our Appalachian Region in Eastern Kentucky have played key orchestration roles, combining training, wraparound services, small business support, and land reuse into locally grounded diversification strategies. Similarly, in Oklahoma, Tulsa Innovation Labs works across a range of partners to synchronize R&D, commercialization, capital, and talent, with the goal of making the region a hub for energy tech start-ups and the clean energy transition. The importance of these hubs stems from their role as embedded but autonomous⁹ interlocutors that can help state and federal agencies learn about local constraints without becoming captured.¹⁰ In places where

they are effective, they also play a coordination function, connecting workforce development, infrastructure, finance, and land use.¹¹

If industrial policy is about constructing place-bound capabilities, then building the apparatus to do that work must be understood as a central goal, not an afterthought. The green energy transition will have vastly different impacts across local labor markets. Regions with renewable potential aren't the same as those that will lose fossil jobs.¹² Fossil regions need deep diversification, workforce development, and often new fiscal arrangements. Even regions that appear like they can make an immaculate transition to renewables are constrained by economic, governance, and political barriers.¹³ Such regions need integrated transition plans linking coal retirement, renewables deployment, workforce transitions, and fiscal reform. And finally, regions with high renewable potential must turn resource potential into investable projects and industrial demand. This requires customized and context-specific action by empowered local actors.¹⁴ One-size-fits-all policies will misfire, especially in regions facing long-term distress and joblessness.

Moving beyond one-off competitions, federal programs should provide multiyear, flexible operating support to systems hubs. These funds should underwrite the convening, planning, and coordination work that rarely fits neatly into project budgets, such as coalition building, employer outreach, community engagement, and local experimentation. Biden-era competition-based programs were a valuable first step, but with limited funding and short time horizons, they should be seen as pilots for further expansion. Several elements of Recompete should become the norm for the EDA's standard programming: a specific program objective of addressing prime-age employment gaps, strategy and implementation supports, waiving of local match requirements, a broader definition of economic development, and diversity of coalition leaders across applicants.

The federal government needs a more robust institutional mechanism to coordinate both horizontally—across the portfolio of place-bound federal investments from different departments—and vertically, with state and regional programming. This is a role that could be played by the EDA, which along with its regional Economic Development Representatives should serve as the data and strategy clearinghouse for local orchestrators. But to do all this, the EDA needs to be a more empowered

federal agency, which means its authorization and appropriations cannot perpetually hang in the balance.

With funding of several initiatives severely curtailed over the last year, future federal funding needs to follow “risk” by appropriately identifying communities that might fall short of realizing their goals, especially in cases where state and philanthropic funding did not make up the deficit. Federal policy often faces a credibility deficit in being appropriately implemented on the ground, especially in energy communities.¹⁵ Investing in this place-based apparatus embedded in communities can serve as a valuable opportunity to build credibility and depoliticize energy transition goals.

The integration of workforce development and economic development is needed across both fossil-dependent and renewable-potential communities. No federal green industrial strategy will be complete without attendant workforce programming, for both distressed communities and those with renewable innovation potential. Workforce development has traditionally operated with different incentives than economic development—prioritizing enrollment instead of broader labor market outcomes. Recent state-level reforms like California’s dual enrollment programs, which enable partnerships between high schools and local community colleges, and Texas’s outcomes-based funding to community colleges could serve as valuable models for federal policy. The CHIPS Incentives Program’s strategy of conditioning subsidies on firms’ investment in local workforce institutions could be applied more broadly. At the same time, community colleges require broader general funds to help build their capacities, particularly to collaborate more effectively with local employers.

Finally, we need to evaluate industrial policies where they land. Building the data infrastructure to answer these questions at the local labor market level is itself a form of industrial policy: It equips both local and federal actors to learn and adjust in real time.¹⁶ We currently track dollars obligated and national aggregates but rarely ask whether the economic structure and livability of Pike County, Kentucky, or Roswell, New Mexico, have changed in ways residents can feel. We also have limited ways to conceptualize and measure local capacity. That disconnect between what federal agencies measure and what communities care about is itself a source of mistrust.

Conclusion

While the US often touts its decentralized governance approach, this ends up being a double-edged sword for local institutions. The decentralization of the practice of economic development has been less a strategy and more a consequence of federal retreat and neglect, starting in the 1970s, after a few decades of strong federal investments in the postwar years. What we need is a new centrifugal arrangement, with strong, consistent, and flexible federal support for sustained local action.

The success of any future incarnation of green industrial policy will not be judged in aggregate emissions graphs alone. It will be evaluated in coal towns deciding whether their children should stay, in rural communities weighing new investments, and in renewable-rich regions considering whether clean-energy projects repeat previous extractive practices or serve as reliable pathways to prosperity. The statecraft required for such policy, therefore, cannot be envisioned through a narrow aperture of federal appropriations and legislative processes. It has to engage with the quotidian exercise of building and coordinating local capabilities, led by local institutions that can braid national goals with local realities.

Notes

1. Robert Greenstein, *Changes in the Safety Net over Recent Decades and Their Impact* (Hamilton Project, Brookings Institution, 2025).
2. Carl Van Horn, Tammy Edwards, and Todd Greene, eds., *Transforming US Workforce Development Policies for the 21st Century* (Federal Reserve Bank of Atlanta and W. E. Upjohn Institute for Employment Research, 2015).
3. See “Policy Tracker,” Economy in Place, Reimagining the Economy Project, Harvard Kennedy School, 2026, <https://economyinplace.com/policy>.
4. Timothy J. Bartik, “Place-Based Policy: An Essay in Two Parts,” Policy Paper no. 2020-021, W. E. Upjohn Institute for Employment Research, 2020.
5. Daniel P. Gross and Bhaven N. Sampat, “America, Jump-Started: World War II R&D and the Takeoff of the US Innovation System,” *American Economic Review* 113, no. 12 (2023): 3323–56.
6. Gordon H. Hanson, Dani Rodrik, and Rohan Sandhu, “The U.S. Place-Based Policy Supply Chain,” in *The Economics of Place-Based Policies*, ed. Cécile Gaubert, Gordon H. Hanson, and David Neumark (University of Chicago Press, 2025).
7. Anthony F. Pipa and Natalie Geismar, *Reimagining Rural Policy: Organizing Federal Assistance to Maximize Rural Prosperity* (Brookings Institution, 2020).
8. Nora Leinen, Matt Ehlman, and Dwight Burlingame, “Philanthropy in Rural America: A Scoping Review of the Last 25 Years,” *Online Journal of Rural Research & Policy* 20, no. 1 (2025): 1.
9. Peter B. Evans, *Embedded Autonomy: States and Industrial Transformation* (Princeton University Press, 2012).
10. Maryann Feldman and Nichola Lowe, “Policy and Collective Action in Place,” *Cambridge Journal of Regions, Economy and Society* 11, no. 2 (2018): 335–51.
11. Joseph Parilla, Ryan Donahue, and Sarena Martinez, *Institutionalizing Inclusive Growth: Rewiring Systems to Rebuild Local Economies* (Brookings Institution, 2022).
12. Gordon H. Hanson, “Local Labor Market Impacts of the Energy Transition: Prospects and Policies,” Working Paper 30871 (NBER, 2023).
13. Daniel Raimi et al., *The Fiscal Implications of the U.S. Transition Away from Fossil Fuels* (Resources for the Future, 2022).
14. Jacob Greenspon and Rohan Sandhu, “From Transition to Transformation: The Role of Local Actors in Energy Communities,” Reimagining the Economy Working Paper, Harvard Kennedy School, 2026.
15. Alexander Gazmararian and Dustin Tingley, *Uncertain Futures: How to Unlock the Climate Impasse* (Cambridge University Press, 2023).
16. Heather Boushey, Frances Fitzgerald, and Rohan Sandhu, “All Economics Is Local: Evaluating Industrial Policy Where It Lands,” Reimagining the Economy Working Paper, Harvard Kennedy School, 2026.

Marshal the Power of Utilities

BY SHELLEY WELTON



Shelley Welton is presidential distinguished professor of law and energy policy at the University of Pennsylvania Carey Law School and the Kleinman Center for Energy Policy. She teaches environmental law, energy law, climate change law, and a seminar on networks, platforms, and utilities. Her scholarship focuses on how climate change is transforming energy governance within the United States and transnationally.

The United States is in a new energy crisis. Ballooning electricity demand—driven largely by data centers but also by manufacturing and electrification—is straining the grid’s affordability and reliability.¹ Aggressive and geopolitically incoherent military actions, first in Venezuela and then in Iran, have exacerbated the situation by causing spikes in oil and gas prices. Domestically, this new energy crisis has raised difficult questions for energy regulators, including how to manage surging grid interconnection requests, who should pay for new infrastructure, and whether regional electricity markets’ designs can accommodate the pressures they face.

What does all of this mean for climate change? The answer is complex and underdetermined: Swelling electricity demand has increased plans to build new gas-fired generation,² but gas turbine shortages and rising gas prices make renewable energy appear an ever more affordable choice.³ In another give-and-take, Congress’s repeal of solar and wind energy tax incentives and the Trump administration’s antipathy to renewable energy render their project financing more precarious, but fossil fuel price surges and data centers’ need for near-term power could bolster demand for renewables and energy storage.

It is thus a critical time to reevaluate the tools we have to manage the electricity system—most centrally, public utility regulation. Decisions made by public utility regulators regarding how to respond to today’s energy crisis will shape the future of the US electricity grid for decades to come. If we manage it poorly, we may lock in fossil fuel infrastructure in ways that make planetary climate stability ever more elusive. But if we manage it well, this piece argues, public utility law presents a potent yet underappreciated avenue for accelerating climate progress. Given shared jurisdiction over electricity in the United States, a collaborative effort to reorient federal and state regulation will be necessary to transform the field.

The American Model of Public Utility Law

The US electricity sector has long been regulated predominantly through public utility law, which emerged in the late 1800s as a distinctly American answer to the question of how to regulate large infrastructure monopolies.⁴ Since that time, this body of law has sought to control access to and prices for vital services including energy, water, transportation, and telecommunications through commission regulation of state-sanctioned monopolies' prices and practices.⁵ Over its century-plus of existence, the public utility model has faced critiques that it is inefficient, ineffective, and prone to capture.⁶ In the latter part of the 20th century, these critiques resulted in substantial deregulation of certain sectors, including transportation, fossil fuels, and telecommunications.⁷

However, for electricity—a vital good that requires second-by-second balancing of supply and demand—deregulation proved elusive.⁸ Although the deregulatory era prompted the integration of market constructs into the electricity sector, the public utility regulatory framework has remained basically unchanged. Federal and state commissions still oversee the rates and practices of utilities: The federal government ensures that transmission planning processes and wholesale electricity markets produce “just and reasonable” outcomes, and the state commissions ensure that retail rates and planning and payments for the distribution system remain “just and reasonable.”⁹

How to Redeem Public Utility Law

What does this public utility model have to do with green statecraft? Although utilities are occasionally addressed as an impediment to the clean energy transition,¹⁰ more often the literature on industrial policy and political economy sidelines public utility law. These fields give substantial attention to modes of derisking, coercive regulation, and ownership models, but little to the generative possibilities of public utility regulation.¹¹ This inattention is likely due in large part to a century of accretive—and often quite fair—critiques of the model.¹²

Yet in a moment of sectoral pressure and the need for significant infrastructural transformation, public utility holds considerable untapped potential. As energy law scholar William Boyd has argued, public utility at its core is “a collective project aimed at harnessing the power of private enterprise and directing it toward public ends.”¹³ How to direct this power toward new public ends like climate change is a central question worth interrogating.

Planning in Public Utilities

Three functions of public utility law give it potential as a tool of climate progress. First, the systematic coordination needed for the electricity grid makes **planning** central to the public utility model. At the federal level, regulators oversee regional planning processes for building and paying for new transmission infrastructure and managing “queues” for resources that want to interconnect to the grid.¹⁴ Concurrently, states often engage in “integrated resource planning” to determine the right mix of generation resources to build to meet anticipated future demand.¹⁵

Scholars and policy analysts have critiqued current regional and state planning processes for failing to produce socially optimal outcomes, as plans often reflect biases for fossil resources and local transmission investments grounded in incumbent utility preferences.¹⁶ But revamped planning processes and enhanced regulatory scrutiny could transform utility-sector planning into a potent climate tool. Indeed, studies have found that good transmission planning alone could save consumers billions of dollars while significantly accelerating clean energy deployment.¹⁷

A priority federal planning reform should be to establish a National Grid Planning Authority charged with selecting a suite of interregional and large regional transmission lines to anchor the US grid’s expansion in clean and affordable directions. While legislation establishing such an authority would be the cleanest and most robust path forward, existing public utility legal frameworks also offer federal regulators the ability to exert far more control over the shape of federal grid planning.¹⁸

Derisking Public Utilities

Second, public utility is not only a planning tool but also a muscular **derisking** tool. When regulators approve utilities' planned additions to the grid, these investments gain a presumption of prudence. This presumption, in turn, guarantees the utility the ability to recover its expenditures plus an established rate of return from customers, absent later negligent behavior by the utility.¹⁹

The reason that Georgia, a traditionally regulated state, built the only new nuclear power plant in the United States this century has everything to do with this guaranteed cost recovery: The utility made it clear that it would not construct the plant without legislation enshrining a supercharged version of the presumption of prudence into law.²⁰ The results of Georgia's experiment—a projected \$14 billion plant that ultimately ballooned to \$36 billion—suggest that staking ratepayer money to fund new infrastructure must be done with caution, so as not to overburden captive customers with long-term costs.²¹

Nevertheless, public utility is able to stimulate investment where markets often cannot. This ability could be deployed to great benefit to launch promising technologies to address climate change. For example, at the federal level, regulators could revamp efforts to offer enhanced rates of return on priority investments such as long-distance transmission lines and transmission optimization infrastructure. At the state level, regulators could incentivize both experimental central-scale technologies like advanced nuclear and geothermal and more dispersed technologies, including distributed storage and virtual power plants. Federal tax incentives and loan guarantees could again help steer states toward certain preferred categories of investments by rendering the economics of certain technologies more favorable, just as they helped spur Georgia's nuclear investment.²² These strategies—if deployed thoughtfully and with appropriate oversight—could help marshal additional green finance outside the tax base.

Managing Energy Affordability

Third and finally, public utility law holds potential as a tool for **managing affordability** through the clean energy transition because of its ability to control and allocate costs. Recent attention has focused on how utilities

under public utility regulation are earning outsized profits on their investments—but bold regulators can equally use the model to rein these in.²³ Federal and state regulators have approval authority over utilities' capital structures and can bring down the costs of infrastructure financing through tools including greater debt-to-equity ratios, lowered returns on equity (especially for nonpreferred projects), and the use of public financing authorities.²⁴

Public utility law can also address the concern that data centers are causing significant price increases for residential electricity users and thereby slowing electrification.²⁵ Coordinated federal and state rate structure reforms are critical to ensure that data centers and other large users pay for the costs they put on the grid, as well as help respond to the reliability strain they create.²⁶ Indeed, if planned and managed well, data center-induced demand growth could actually cause residential ratepayers' portion of infrastructure costs to fall in the coming years, as the costs of the grid are spread over a wider pool.

Conclusion

Public utility law has a set of core characteristics that could be revamped into a potent strategy for achieving an affordable, just, and faster clean energy transition. Public utility tools could help federal and state regulators plan a better system, secure commitments from utilities to build priority resources, and balance energy transition costs among system users. One critical first step in this direction will be to ensure adequate federal and state commission capacity, capable of scrutinizing utility filings and independently analyzing key information, to drive forward creative solutions and push back against incumbents that would stand in the way of climate progress. With revamped capacity and a renewed sense of purpose, a new administration can and should make public utility law a core tool of green statecraft.

Notes

1. See Claire Brown, “Data Centers and Your Power Bill,” *New York Times*, February 19, 2026, <https://nytimes.com/2026/02/19/climate/data-centers-power-bills.html>.
2. See “U.S. Power Demand Surge from Data Centers Could Lift Fossil Fuel Generation, EIA Says,” *Reuters*, March 12, 2026.
3. See Aaron Larson, “Gas Turbine Supply Chain Bottlenecks Could Reshape the Generation Mix in 2030 and Beyond,” *Power*, January 15, 2026.
4. See William J. Novak, *New Democracy: The Creation of the Modern American State* (Harvard University Press, 2022), 113–127; Morgan Ricks et al., *Networks, Platforms, & Utilities: Law & Policy* (Columbia Law School Faculty Books, 2022); Joshua C. Macey and Brian Richardson, “The Public Law of Public Utilities,” *Yale Journal on Regulation* 42, no. 179 (2025). In other countries, nationalized industries were typically the early norm, and when many of these were privatized in the later 20th century, they often were handed over to only a few firms, making their administration different from the distinctly plural, decentralized US system. See Paul Joskow, “Lessons Learned from Electricity Market Liberalization,” *Energy Journal* 29, no. 9 (2008).
5. See William Boyd, “Public Utility and the Low-Carbon Future,” *UCLA Law Review* 61 (2014).
6. See, for example, William J. Hausman and John L. Neufeld, “The Market for Capital and the Origins of State Regulation of Electric Utilities in the United States,” *Journal of Economic History* 62, no. 4 (2002): 1050–73; Stephen G. Breyer, *Regulation and Its Reform* (Harvard University Press, 1982); George J. Stigler, “The Theory of Economic Regulation,” *The Bell Journal of Economics and Management Science* 2, no. 1 (1971); Richard A. Posner, “Natural Monopoly and Its Regulation,” *Stanford Law Review* 21 (1969); Harold Demsetz, “Why Regulate Utilities?,” *Journal of Law and Economics* 11 (1968); George J. Stigler and Claire Friedland, “What Can Regulators Regulate? The Case of Electricity,” *Journal of Law and Economics* 5 (1962); Horace M. Gray, “The Passing of the Public Utility Concept,” *Journal of Land and Public Utility Economics* 16 (1940); William E. Mosher et al., *Electrical Utilities: The Crisis in Public Control* (Harper and Brothers, 1929).
7. See Joseph D. Kearney and Thomas W. Merrill, “The Great Transformation of Regulated Industries Law,” *Columbia Law Review* 98 (1998).
8. David B. Spence, “Can Law Manage Competitive Energy Markets?,” *Cornell Law Review* 93 (2008).
9. Federal Power Act, 16 U.S.C. § 824.
10. See Joel B. Eisen and Heather E. Payne, “Utilities with Purpose,” *Florida Law Review* 76 (2024); Leah Cardamore Stokes, *Short Circuiting Policy: Interest Groups and the Battle over Clean Energy and Climate Policy in the American States* (Oxford University Press, 2020); Shelley Welton, “Rethinking Grid Governance for the Climate Change Era,” *California Law Review* 109 (2021).
11. See, for example, Daniela Gabor, “The European Union’s Derisking State,” *Review of International Political Economy* 52 (2025); Leah Downey and Mark Blyth, “Macrofinance and the Green Transformation: Nudging, Attracting, and Coercing Capital Towards Decarbonization,” *Review of International Political Economy* 32 (2025); Brett Christophers, *The Price Is Wrong: Why Capitalism Won’t Save the Planet* (Verso, 2024).
12. See, e.g., sources cited *supra* note 6.
13. Boyd, “Public Utility and the Low-Carbon Future,” 1619. See also K. Sabeel Rahman, “Infrastructure Regulation and the New Utilities,” *Yale Journal on Regulation* 35 (2018), which traces the origins of the “public utility tradition” back to concerns of access and fairness.
14. See Joshua Macey and Elias van Emmerick, “Towards a National Transmission Planning Authority,” *Harvard Environmental Law Review* 49 (2025).
15. See Bruce Biewald et al., *Best Practices in Integrated Resource Planning: A Guide for Planners Developing the Electricity Resource Mix of the Future* (Synapse Energy Economics and Berkeley Lab, November 2024, revised December 2024), <https://emp.lbl.gov/publications/best-practices-integrated-resource>.
16. See Catherine Hausman, “Power Flows: Transmission Lines, Allocative Efficiency, and Corporate Profits,” *American Economic Review* 115 (2005).
17. See Patrick R. Brown and Audun Botterud, “The Value of Inter-Regional Coordination and Transmission in Decarbonizing the US Electricity System,” *Joule* 5 (2021); Alexander E. MacDonald et al., “Future Cost-Competitive Electricity Systems and Their Impact on US CO2 Emissions,” *Nature Climate Change* 6 (2016), <https://doi.org/10.1038/nclimate2921>.
18. Shelley Welton, *Toward a National Grid Planning Authority* (Hamilton Project, Brookings Institution, May 2024), https://hamiltonproject.org/wp-content/uploads/2025/05/20240522_THP_Climate_GridGovernance_Proposal.pdf; Macey and van Emmerick, “Towards a National Transmission Planning Authority”; Will Gorman et al., “Grid Connection Barriers to Renewable Energy Deployment in the United States,” *Joule* 9 (2025).
19. Megan Wachspress, “Dear Prudence: The Atomic Origins, Decarbonization Deployment, and Transformative Potential of a Regulatory Principle,” forthcoming in *Utah Law Review* (2026), <http://dx.doi.org/10.2139/ssrn.6308639>.

20. See Shelley Welton and Conor Harrison, “Lessons in Climate Derisking: The United States’ Failed Nuclear Renaissance,” *University of Pennsylvania Law Review* 173 (2025).
21. Aneil Kovvali and Joshua C. Macey, “Private Profits and Public Business,” *Texas Law Review* 103 (2025).
22. Welton and Harrison, “Lessons in Climate Derisking.”
23. Mark Ellis, *Rate of Return Equals Cost of Capital: A Simple, Fair Formula to Stop Investor-Owned Utilities from Overcharging the Public* (American Economic Liberties Project, January 2025), <https://economicliberties.us/wp-content/uploads/2025/01/20250102-aelp-ror-v5.pdf>; Daniel Tait, Shelby Green, and Sue Sturgis, *Paying for Their Profits: How Ratepayers Foot the Bill for Soaring Utility Profits* (Energy & Policy Institute, March 2026), <https://energyandpolicy.org/utility-profit-report>.
24. Good examples of such innovations exist in state transmission authorities, as well as in efforts by the Biden administration’s Transmission Facilitation Program. See Maeve Allsup, “The Rise of the State Transmission Authority,” Latitude Media, May 15, 2026, <https://latitudemedia.com/news/the-rise-of-the-state-transmission-authority>; “Transmission Facilitation Program,” US Department of Energy, <https://energy.gov/oe/transmission-facilitation-program>.
25. See Monitoring Analytics, *2025 State of the Market Report for PJM: Volume II* (Monitoring Analytics, 2025).
26. More specifically, certain proposals suggest that data centers that do not supply their own generation could be required to provide some flexibility services to the grid, accepting curtailment of power in reliability crises before system-wide responses are triggered. See, for example, PJM, *Powering Reliability through Market Design* (PJM, May 6, 2026), <https://pjm.com/-/media/DotCom/library/reports-notice/special-reports/2026/20260506-powering-reliability-through-market-design.pdf>.

HOW TO FINANCE IT?

Take More and Better Financial Risks

BY SATYAM KHANNA



Satyam Khanna is the president of Khanna Economic Strategies, a financial regulatory and sustainable finance advisory firm. He served in the Biden administration as senior advisor in the Office of the Environmental Protection Agency (EPA) Administrator, where he was a lead architect of the Greenhouse Gas Reduction Fund. Khanna also served as a senior counselor to former Securities and Exchange Commission (SEC) Commissioner Allison Lee and chief of staff to former SEC Commissioner Robert Jackson. Prior to the SEC, he was an advisor at the Financial Stability Oversight Council at the US Treasury Department. Khanna received his JD from Columbia Law School and BA from Washington University in St. Louis.

By 2029, the urgency of climate change, energy affordability, and infrastructure modernization will have sharply intensified. Meeting these challenges will require marshaling investment on a generational scale. Given long-standing frustrations with our balkanized bureaucracy, calls to create entirely new institutions to drive this investment are understandable. Some of these ideas are important and valuable. Building new institutions, however, takes time—it will take months or years for new programs to be stood up and even longer before the proverbial shovels hit the ground. But a progressive administration will enter office intending to deliver quickly. That means the institutions we have now will need to be fully mobilized.

What's more, addressing these challenges will require a wider aperture—beyond a focus on the pathologies of markets that have led to underinvestment in clean technologies.¹ After years of policy shifts and uncertainty, ensuring greater policy durability will become a central objective to a new administration.

Accordingly, the federal government will need to reimagine its role to one of market-building for the long term. Call it a “whole-of-market” strategy: deploying tools across both the supply and demand sides of the ledger in order to seed and shape markets. The Trump administration recently recognized these dynamics in the defense and minerals sectors to promote its goal of securing domestic supply chains, providing demand certainty through price floors and offtake commitments. The next administration can apply this basic logic to help green markets grow—and better position them to endure beyond political cycles.

While major elements of the Inflation Reduction Act (IRA) and Bipartisan Infrastructure Law (BIL) were reversed before the laws' impact could be fully realized, the experiences of implementing those laws still offer crucial lessons. This new phase of green finance post-2029 should start with three broad shifts.

Give Greater Demand Certainty So Private-Sector Bets Pay Off

The IRA's supply-side arsenal was unprecedented in its breadth and depth. However, often the more acute challenge has been not only producing the technologies but securing a reliable market for them. The trade-off of a heavy focus on supply is that firms may build capacity but struggle to attract financing if demand for products is uncertain. Addressing this challenge means embracing the role of the government as a coordinator—supporting demand functions, as well as supply, to help critical new technologies and industries scale. By anchoring early demand, the government can accelerate a technology's journey to commercial viability, offering a path to policy durability.²

The course of clean hydrogen markets illustrates this dynamic. Despite a raft of federal incentives—a hydrogen production tax credit in the IRA, expanded DOE loan authority, and research and development funding—numerous hydrogen projects stalled as buyers resisted long-term contracts that could lock them into uncompetitive pricing.³ Without executed offtake agreements, developers could not secure the financing needed to bring products to market. An industry benefiting from robust production-side incentives failed to get off the ground due to a lack of customers.

Demand-side or -pull tools are designed to overcome such barriers, addressing the risks that customers will not materialize or that prices will fall below what is needed to justify an investment.⁴ The federal demand-pull tool kit varies across agencies and statutes but generally ranges from direct procurement (the government buying a specified amount of a product) and offtake contracts (a guarantee for the government to purchase a quantity of product at a preset price), to advance market commitments (guaranteeing the purchase of a critical product still being developed) and consumer-side incentives.

We don't have to look far for precedents—the Trump administration has presented multiple. In the case of rare earth minerals producer MP Materials, investors had been reluctant to commit to projects exposed to China's dominance of supply chains and export restrictions.⁵ The

administration responded with a mix of supply and demand support, providing financing to expand the company's domestic production coupled with offtake commitments and a price floor. By effectively announcing a market for the company's output, the government sent a signal that channeled investment toward its goal of domestic production. Operation Warp Speed was perhaps the highest-profile example of the use of demand-side tools: There, the federal government committed billions of dollars to purchase vaccines still under development via advance market commitment-like mechanisms, guaranteeing a market upon the vaccines' release.⁶ In both examples, public investment didn't just fund production but built a market.

To its credit, the Biden administration did explore leveraging these tools in the critical minerals and clean hydrogen sectors during the latter half of its tenure, including announcing a cross-sector consortium in January 2024 to design hydrogen demand-side mechanisms.⁷ These efforts were promising but were undercapitalized and established too late, relative to the grant programs and tax credits, to have a meaningful impact.

Demand-pull tools also offer a more practical benefit: They can be implemented more quickly and with less administrative architecture than major supply-side incentives, which may necessitate successive rounds of rulemaking and interpretive guidance.⁸ Still, a demand tool must be tailored to the risk at hand, or it will fail to catalyze the investment it is seeking to induce.⁹

A whole-of-market strategy means coordination across both supply and demand functions, and future administrations should view demand-side support as a key part of their investment arsenal. By deploying these authorities systematically, they can accelerate the creation of green markets that can outlast electoral cycles.¹⁰

Take Risks Like the Private Sector

Financing a clean energy transition will require the government to catalyze hundreds of billions in private investment. Doing so means being willing to make bold bets across multiple industries. However, federal green finance has long been characterized by a low tolerance for risk, with investments gravitating to safer projects rather than the kinds of

higher-risk ones that could transform the economy. Changing this dynamic will be as much a cultural challenge as a financial one.

Take the Department of Energy (DOE) Loan Programs Office (LPO), now the Office of Energy Dominance Financing. In 2024 the office emphasized its low loss rate of approximately 3.1 percent of loan value.¹¹ LPO's lifetime loan loss rate, in fact, sits at around 2 percent, just above that of commercial banks at 1 percent.¹² While a low rate may help avoid the ire of an auditor or congressional committee, it signals underperformance for an agency whose statutory mandate is to catalyze next-generation clean technologies. If a public investment program maintains a loss rate comparable to a bank, it is reinforcing the status quo, not transforming it.

This timidity traces back to recent political history—namely, the fallout during the Obama administration from the highly publicized bankruptcy of Solyndra, the solar company that collapsed in 2011 after receiving a DOE loan guarantee two years earlier.¹³ Ever since, officials have treated “avoiding another Solyndra” as an implicit objective for investment programs. But there is no such thing as a free lunch.¹⁴ Public investments that over-index on avoiding controversy inevitably steer capital toward lower-risk, more mature technologies and away from those with transformative upside.¹⁵ Indeed, as of 2024, around 90 percent of the LPO's battery-related deployment commitments had gone toward standard lithium-ion batteries, while less than 1 percent went toward next-generation solid-state battery technologies.¹⁶

Venture capital investing offers a useful analogue. There, firms expect most of their investments to underperform or fail and a small number of outsize successes to ultimately drive returns.¹⁷ Or take green banks: While mostly nonprofit or quasi-public, they, too, embrace a more risk-tolerant philosophy. Armed with mandates to create new markets in underserved communities, green banks place calculated bets on technologies where markets have been slow to act, and they do so with a variety of risk-bearing products like subordinated or first-loss positions.¹⁸

There is much the government can learn from markets in this respect. Policymakers should measure success, at a minimum, across a portfolio—not project by project with the benefit of hindsight.

Get Agencies to Sharpen All Their Tools

The experience of the IRA and BIL also exposes a fundamental misalignment between the ambition to build new markets and the government's capacity to do so. Bridging this gap will require restoring and expanding agency resources. More fundamentally, though, it will necessitate confronting the institutional path dependencies and pressures that prevent agencies from leveraging the full weight of their tools.

The DOE, for instance, entered the Biden administration with decades of experience funding and supporting research and development but far less experience coordinating large-scale commercialization. To its credit, DOE quickly moved to recruit hundreds of experts and establish senior managerial positions focused on clean energy deployment, most notably a new undersecretary for infrastructure.¹⁹ Yet the agency's primary mechanisms for deploying funds—financial assistance grants and cooperative agreements with cost-reimbursement structures—were unsuited for the remarkably complex task of structuring multiparty infrastructure transactions.²⁰

DOE did have more flexible authorities (some of which dated back to the 1970s), which allowed it to partner with nontraditional outside actors, negotiate bespoke commercialization agreements, and support scaled clean energy deployment in ways traditional grant-making could not.²¹ But these authorities were underdeveloped and rarely had been used at scale. Facing pressure to get money out the door quickly, the agency prioritized issuing solicitations and awards. The difficult task of building the internal capacity to use these authorities to structure complex offtake agreements, among other multifaceted transactions, received less up-front attention—leaving these capabilities stuck in infancy. The lesson is that even if the scope of its mission changes through expansive new legislation, agencies will still tend to default to their institutional memory.²²

Going forward, true capacity building means flexing new, or even long-dormant, muscles, especially the kind required to grow green markets at scale.

Conclusion

To deliver more lasting impact, the federal government should embrace the role of a sophisticated market builder. Ultimately, this requires a public sector that is not just better resourced but ambitious enough to embrace a whole-of-market strategy, take on smart financial risks, and deploy the full range of its tools. The real gauge of success will be policy that fosters markets capable of driving clean energy investment long after federal support has receded.

Notes

1. See generally Eugénie Dugoua and Jacob Moscona, “The Economics of Climate Innovation: Technology, Climate Policy, and the Clean Energy Transition,” NBER Working Paper No. 34601, December 2025, https://nber.org/system/files/working_papers/w34601/w34601.pdf.
2. But see Alexis Harmon and Reed Blakemore, “Innovation as Resilience: Demand-Side Strategies for Critical Mineral Supply Chain Security,” Atlantic Council, June 2026, <https://atlanticcouncil.org/wp-content/uploads/2026/06/innovation-as-resilience-demand-side-strategies-for-critical-mineral-supply-chain-security.pdf>. The report notes that “demand-side industrial policy can generate strong initial signals but those signals are often not sufficiently credible over investment time horizons” and accordingly recommends that Congress “establish policy continuity mechanisms” for these tools.
3. Dafni Papapolyzou and Anne-Sophie Corbeau, “The US Has a Hydrogen Demand Problem—Despite Generous Incentives,” Center on Global Energy Policy, Columbia University, November 7, 2024, <https://energypolicy.columbia.edu/the-us-has-a-hydrogen-demand-problem-despite-generous-incentives>.
4. See Xan Fishman et al., “Kickstart Markets for Clean Energy Technologies,” Bipartisan Policy Center, January 2024, <https://bipartisanpolicy.org/report/demand-side-support-for-energy-technologies>. The report breaks down the primary demand-side risks into volume, price, or both.
5. Alice Wu, “Unpacking the DoD-MP Materials Partnership,” Federation of American Scientists, July 15, 2025, <https://fas.org/publication/unpacking-dod-and-mp-partnership>.
6. Sarosh Nagar, Anil Cacodcar, and Aaron S. Kesselheim, “Advance Market Commitments and Their Role in Public Innovation,” *Journal of Law, Medicine, and Ethics* (Fall 2025), <https://cambridge.org/core/journals/journal-of-law-medicine-and-ethics/article/advance-market-commitments-and-their-role-in-public-innovation/BE2C66E0A161471F58D71CAE977A0A1F>. Nagar et al. write, “The AMC-like commitments of Operation Warp Speed aggregated societal demand in a single pre-market contract signed by the government, establishing a clear mechanism for the government to purchase COVID-19 vaccines.”
7. Office of Manufacturing and Energy Supply Chains, US Department of Energy, “Notice of Request for Information on Critical Materials Market Dynamics,” Federal Register 89, no. 77, April 19, 2024, <https://federalregister.gov/documents/2024/04/19/2024-08391/notice-of-request-for-information-rfi-on-critical-materials-market-dynamics>. The RFI sought information on “market dynamics for critical material producers” and federal government support or coordination “to mitigate market volatility.” See also Office of Clean Energy Demonstrations, US Department of Energy, “DOE Selects Consortium to Bridge Early Demand for Clean Hydrogen by Providing Market Certainty,” January 2024, <https://energy.gov/cmei/oced/articles/doe-selects-consortium-bridge-early-demand-clean-hydrogen-providing-market>.
8. Tax Law Center, “Key Implementation Lessons for Future Clean Energy Tax Policy,” NYU Law School, April 15, 2026, <https://taxlawcenter.org/blog/key-implementation-lessons-for-future-clean-energy-tax-policy>. The report noted that clean energy tax credit implementation took “tremendous amounts of time and interagency bandwidth to resolve, creating a drain on the overall [IRA] implementation effort.”
9. John Jacobs, Tanya Das, Xan Fishman, and Danny Broberg, *Kickstart Markets for Clean Energy Technologies* (Bipartisan Policy Center, January 2024), https://bipartisanpolicy.org/wp-content/uploads/2024/01/BPC_Clean-Energy-Demand-Side-Support-Guide.pdf. The report notes that “choosing the right tool for the job requires a clear understanding of the risks that need to be mitigated.” See also Pablo del Río and Christoph P. Kiefer, “Which Policy Instruments Promote Innovation in Renewable Electricity Technologies? A Critical Review of the Literature with a Focus on Auctions,” *Energy Research & Social Science* 89 (July 2022): 102501, <https://doi.org/10.1016/j.erss.2022.102501>. Río and Kiefer write, “If the demand-pull side of innovation processes is missing due to the implementation of an instrument (auctions) which does not generate such demand-pull, then the RET [renewable electricity technologies] innovation processes which are needed in the clean energy transition may be put at risk.”
10. Brian Deese, Zehra Khan, and Robert Reese, “Concentrating Risk Without Promoting Resilience: What the MP Materials Deal Means for U.S. Critical Mineral Strategy,” MIT Center for Energy and Environmental Policy Research, April 2026, <https://ceepr.mit.edu/workingpaper/concentrating-risk-without-promoting-resilience-what-the-mp-materials-deal-means-for-u-s-critical-mineral-strategy>. The authors “conclude that U.S. rare earth strategy would be better served by a Congressionally authorized, market-wide price insurance program . . . [by] reducing taxpayer risk, encouraging competition, and building more durable domestic resilience over time.”
11. Loan Programs Office, “Investing with LPO,” US Department of Energy, March 15, 2024, https://energy.gov/sites/default/files/2024-03/DOELPO_Deck_InvestingWithLPO_2024-03-15_PUB.pdf.
12. Katelyn O'Dell Dean and Zahava Urecki, “Three Big Ideas for Modernizing DOE’s Loan Programs,” EFI Foundation, December 15, 2025, <https://efifoundation.org/insights/three-big-ideas-for-modernizing-does-loan-programs>; US Department of Energy, “EDF Portfolio Performance,” updated June 30, 2026, <https://energy.gov/edf/edf-portfolio-performance> (providing current loss rate figures).
13. Office of Inspector General, “The Department of Energy’s Loan Guarantee to Solyndra, Inc.,” Special Report: 11-0078-I (US Department of Energy, August 24, 2015), <https://energy.gov/ig/articles/special-report-11-0078-i>.
14. Milton Friedman, *There’s No Such Thing as a Free Lunch: Essays on Public Policy* (Open Court, 1975).

15. Varun Sivaram, Noah Gordon, and Daniel Helmecki, “Winning the Battery Race: How the United States Can Leapfrog China to Dominate Next-Generation Battery Technologies,” Carnegie Endowment for International Peace, October 2024, <https://carnegieendowment.org/research/2024/10/winning-the-battery-race-how-the-united-states-can-leapfrog-china-to-dominate-next-generation-battery-technologies>.
16. Sivaram, Gordon, and Helmecki, “Winning the Battery Race.” See also Joshua Zoffer, “Elon Musk Needs to Teach Our Government How to Lose More Money,” *New York Times*, December 27, 2024, <https://nytimes.com/2024/12/27/opinion/elon-musk-industrial-policy.html>.
17. Yosef Bonaparte, “Unicorn Investing: Measuring and Predicting the Rise of Billion-Dollar Startups,” preprint, SSRN, September 21, 2025, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5514379. Bonaparte writes, “Unicorns symbolize both aspiration and risk.”
18. Ilmi Granoff, “The End of the Beginning for US Green Banks,” Roosevelt Institute, April 5, 2024, <https://rooseveltinstitute.org/blog/the-end-of-the-beginning-for-us-green-banks>.
19. Betony Jones, “Tying Labor Standards to Clean Energy Incentives: How Biden’s Department of Energy Tackled Climate Industrial Policy,” Roosevelt Institute, October 1, 2025, <https://rooseveltinstitute.org/publications/tying-labor-standards-to-clean-energy>. Jones observes that after the passage of the IRA and BIL, the DOE “recruit[ed] for a broader range of skills and expertise” and “created a new undersecretary for infrastructure focused on full-scale deployment and commercialization.”
20. Narayan Subramanian, “How Institutional Path Dependence Shapes Industrial Policy: The Case of DOE and Hydrogen Hubs,” New Energy Industrial Strategy Center, Substack, December 9, 2025, <https://neiscenter.substack.com/p/how-institutional-path-dependence-shapes-industrial-policy>.
21. “Contracts, leases, etc., with public agencies and private organizations and persons,” 42 USC § 7256(g). This statute is often known as “Other Transaction Authority.” See also “Use of Partnership Intermediaries,” 15 USC § 3715.
22. See Subramanian, “How Institutional Path Dependence Shapes Industrial Policy.”

Create a New Kind of Sovereign Wealth Fund

BY SAULE OMAROVA



Saule Omarova is the Earle Hepburn professor of law at Penn Carey Law School. A political scientist and lawyer, she specializes in regulation of financial institutions and markets, banking law, and political economy of finance. Before joining Penn Carey Law School, she was the Beth and Marc Goldberg professor of law and director of the Jack Clarke Program on the Law and Regulation of Financial Institutions and Markets at Cornell Law School.

Prior to joining academia, Saule Omarova practiced law in the Financial Institutions Group of Davis Polk & Wardwell, a premier New York law firm, where she specialized in a wide variety of corporate transactions and advisory work in the area of financial regulation. From 2006 to 2007, she served at the US Department of the Treasury as a special advisor for regulatory policy to the Under Secretary for Domestic Finance.

She holds a PhD in political science from the University of Wisconsin-Madison and a JD from Northwestern University School of Law.

Over the past several years, sovereign wealth funds have moved from technocratic backwater to fashionable policy. Canada recently announced the Canada Strong Fund, billed as its first national sovereign wealth fund.¹ In the United States, Biden-era officials explored a federal sovereign wealth fund focused on national security investments, while President Donald Trump later signed an executive order directing the Treasury and Commerce Departments to develop a plan for one.²

Abroad, long-standing state investment vehicles—like Singapore’s GIC and Temasek, the Abu Dhabi Investment Authority and Mubadala, Saudi Arabia’s Public Investment Fund, and the Qatar Investment Authority—have continued to expand aggressively into global, and especially US, assets. Temasek, for example, has announced plans to invest another \$30 billion in the United States, while Gulf sovereign investors have helped finance major US media-sector transactions, including Paramount Skydance’s bid for Warner Bros. Discovery.³

Yet despite this renewed enthusiasm, too little attention has been paid to the institutional design question: how to build a durable public investment vehicle that can avoid the weaknesses, politicization, and corruption risks frequently associated with governments taking equity stakes in private economic enterprise. This essay explains why the United States should set up such an institution, and why the model I developed for a National Investment Authority (NIA) offers a particularly useful way to structure it.

How Finance Gets Ignored in the Debate

The debate on the future of the US industrial strategy tends to focus on identifying the right substantive agenda: which sectors to build or which goals to prioritize. Interestingly, however, the problem of *financing* this transformative agenda is often framed in strikingly thin terms, as if it were simply about assembling enough money from public or private sources.

But financing large-scale economic change is never just a quantitative exercise, nor is it an ancillary matter. Finance is a universal input into every kind of economic activity. Every factory, transmission line, housing development, transit system, and semiconductor plant requires investment of capital, delivered through specific legal and institutional mechanisms. In that sense, finance is not simply a source of funding. It is a lever of power: It shapes what gets built, when, by whom, on what terms, and for whose benefit. The dynamics of this power are complex and hidden from view. In the United States, the bulk of investment capital is privately owned and managed, yet it is the US public's "full faith and credit" that underwrites vast swaths of private finance and constitutes the most valuable financial resource.⁴

That is why the central problem economic policymakers face is not merely mobilizing *larger* sums of money. Nor is it simply choosing between public money and private money. The real challenge is institutional. Capital always flows through individual institutions' balance sheets, which fundamentally reflect their owners' unique goals, incentives, and constraints. Public and private balance sheets allocate risk, value projects, and distribute returns differently. They are often interlinked and interdependent, but they represent different strategic choices. Therefore, if we care about reindustrialization, decarbonization, regional development, or resilience, we need to channel investment through the right architecture and hierarchy of public and private balance sheets.⁵

How Governance Gets Ignored in the Debate

Unfortunately, today's economic policy debate often proceeds mechanically, as if there were only two possible funding models for the nation's long-term development goals. The first is direct congressional appropriation. The second is private capital, typically accessed through the bond market. But neither of these sources is sufficient alone. Appropriations are indispensable for many public purposes, yet they are vulnerable to fiscal brinkmanship, partisan stalemates, and the short horizon of electoral cycles. Private capital markets, by contrast, demand credible revenue streams and commercially legible risk-return profiles. That is why they undersupply investment in projects whose returns are diffuse, social, long-term, or dependent on broader structural change.

A similar narrowing of vision affects debates over what to do with the money once it is mobilized. Public discussion often centers on discrete policy tools: subsidies, guarantees, public-private partnerships, green banks, tax credits, procurement mandates, conditional lending, equity stakes, or derisking mechanisms. Many of these are valuable ideas and deserve serious consideration. But in isolation, each is only a partial fix in search of a governing framework. The question of what the state should do in any particular context cannot be answered separately from the question of which public entity should do it, with what authority, under what governance rules, and through what operational structure. Policy tools do not implement themselves. They require an institutional platform capable of deploying them coherently, consistently, and accountably over time.⁶

Enter the National Investment Authority (NIA)

I propose the NIA as an institutional platform of that kind. It begins from a premise still oddly absent in most American policy discussions: Effective public investment is a coordination problem.⁷ In a complex economy, it is not enough to subsidize isolated projects and hope that the right aggregate result emerges.

Substantive nationwide objectives—including decarbonization, industrial upgrading, supply-chain resilience, employment security, and regional economic revival—all require capital to be directed coherently across sectors, time horizons, and geographies. That means the state needs an institution dedicated not only to supplying funding for various projects, but also to formulating and coordinating the investment strategy itself. The NIA is designed to perform exactly that role: identifying structural bottlenecks, setting development priorities, translating them into concrete investment decisions, and implementing those decisions over time.

That is why the NIA should be seen as a platform for implementing many of the most promising public investment ideas now circulating in policy debate. It does not make those ideas redundant or obsolete; it gives them an institutional home. Rather than forcing policymakers to choose abstractly among lending, guarantees, equity investments, industrial- policy targeting, or transition support for affected communities, the NIA offers a structure within which these (and many other) tools can be combined, sequenced, and adapted to particular problems. Its purpose is not to add one more instrument to the tool kit but to create the public capacity necessary to use a range of instruments well.⁸

Layered Structure

The proposed NIA's design reflects that dual mission of coordination and financing. At the top of the NIA system sits the governing board, an independent federal agency charged with designing and executing a cohesive national investment strategy. Beneath this board sit operating subsidiaries, which are federally chartered government corporations that carry out the NIA's market activities. A critical layer of the NIA system is the broad network of regional offices that connect national priorities to local needs and public input. The aim is to create an institution able to think strategically at the national level while remaining responsive to communities, labor, and place-based development concerns on the ground.

Two Business Models for NIA Financial Market Operations

The NIA's financial market operations are designed to follow two principal business models. The first is a credit mobilization and securitization model, housed in the proposed National Infrastructure Bank. This arm would lend directly, purchase project and municipal bonds, bundle and securitize infrastructure-related assets, issue its own bonds, and help create a deeper national market for financing public infrastructure. In effect, it would do for long-term development finance what earlier federal credit institutions did for housing finance and other strategic markets: standardize, aggregate, and scale flows of investment that are otherwise too fragmented, illiquid, or risky for private actors to manage efficiently.

This model matters because many nationally important projects are unattractive within existing market structures, but not in any absolute sense. Local and regional infrastructure needs are often too dispersed, slow-moving, or uncertain to fit neatly into conventional portfolios. By purchasing, pooling, and securitizing these obligations—and by issuing its own securities against a diversified portfolio—the NIA could lower financing costs, improve liquidity, and create a reliable channel for large-scale credit mobilization without forcing every investment to satisfy narrow upfront profitability tests.

The second business model is an equity-based, venture-capital-style model, housed in the proposed National Capital Management Corporation. This arm would sponsor and manage investment vehicles open to public pension funds and other strategically aligned investors with long investment horizons.⁹ As a public asset manager with discretion to invest this blended capital, it would take equity stakes in transformative or high-risk projects that credit markets are poorly suited to support. It could also manage direct public stakes in firms during crises or sectoral transitions, enabling the federal government to preserve productive capacity, protect jobs, and reorganize troubled firms on a new technological basis rather than simply socializing losses and reprivatizing gains.

This equity model is crucial because ownership and control matter. A lender can impose terms, but an equity holder can directly shape governance, resource allocation, technological direction, labor standards, and exit strategy. That is especially important in projects involving network effects, uncertain commercial timelines, or large systemic spillovers. Public policy experts increasingly recognize this fact. Yet there is surprisingly little understanding of concrete institutional mechanisms that would enable the state to act as an equity holder in productive enterprise. The NIA's distinctive venture capital model gives it the flexibility to act proactively and entrepreneurially, while keeping public goals at the center of investment decisions. It also shows how a wide range of current policy proposals—support for strategic industries, transition management, green innovation, regional revitalization, and worker protection—can be folded into a broader institutional framework.

Relationship with the Fed

To make these business models viable, the NIA proposal relies on a critical but limited use of the Federal Reserve's balance sheet. The idea is not for the Fed to run industrial policy, but for it to provide backup liquidity support that lowers the NIA's cost of capital and frees it from dependence on short-term market sentiment. The NIA proposal envisions Federal Reserve purchases of NIA-issued bonds and a backup liquidity line for NIA subsidiaries, supplemented by a Treasury credit line as a secondary contingency. This arrangement would allow the NIA to finance projects whose public value is high, even when its short-term cash returns are uncertain or intentionally muted. In other words, it would use the state's monetary and financial capacities to support long-term public investment, without reducing everything to annual appropriations.

Governance

Just as important is governance. Any institution with this much power over capital allocation must be designed to resist both private capture and bureaucratic drift.¹⁰ The NIA proposal therefore seeks to balance democratic accountability with the operational flexibility required of a real market actor. Its governing board is

envisioned as broadly representative, with mechanisms for including expertise from finance, law, engineering, and environmental science alongside representation linked to labor, nonprofit, and community constituencies. Because its operating arms would be federally chartered public corporations, they would have the flexibility to act in markets with speed and sophistication. Annual reporting, audits, public-interest oversight, and procedural project-selection rules are meant to anchor that flexibility in transparency and democratic control.

Conclusion

The broader point is that institutional design is not a secondary technicality. It is the substance of the problem. If finance is a universal input and a lever of power, then the institutions that structure finance actually structure development itself. We will not build an environmentally sustainable, regionally balanced, and socially just growth model simply by appropriating more money or by hoping private markets will eventually discover the public interest. Nor will we get there simply by identifying clever policy tools one by one. We need new and more effectively tailored financial instruments and public investment institutions capable of coordinating, financing, and governing long-term transformation of the US economy.

The idea behind the National Investment Authority is an attempt to move beyond the stale binary of budget spending versus private capital and beyond the fragmented debate over isolated policy devices, by drawing on the rich arsenal of financial engineering and institutional governance to build something better suited to the demands of our moment. In that sense, the NIA is not just a proposal for funding economic transition. It is a proposal for reclaiming finance itself as a public capacity—and for giving many of today’s most compelling ideas about public investment a comprehensive institutional form.

Notes

1. Department of Finance, “Canada Strong Fund,” news release, Government of Canada, modified April 27, 2026, <http://canada.ca/en/department-finance/news/2026/04/canada-strong-fund.html>.
2. Josh Wingrove, “Biden Aides Working on Proposal for US Sovereign Wealth Fund,” Bloomberg/Yahoo Finance, September 6, 2024, <https://yahoo.com/news/biden-aides-working-proposal-us-194426708.html>; Executive Order 14196, “A Plan for Establishing a United States Sovereign Wealth Fund,” February 3, 2025, <https://whitehouse.gov/presidential-actions/2025/02/a-plan-for-establishing-a-united-states-sovereign-wealth-fund>.
3. Temasek, “Expanding Temasek’s US Footprint,” September 23, 2024, <https://temasek.com.sg/en/news-and-resources/stories/values-and-people/50-by-fifty/expanding-temasek-US-Footprint>; Federico Maccioni and Rachna Uppal, “Hollywood-Hungry Gulf States Bankroll Paramount’s Warner Bros Bid,” Reuters, December 9, 2025, <https://reuters.com/business/finance/hollywood-hungry-gulf-states-bankroll-paramounts-warner-bros-bid-2025-12-09>.
4. See Robert C. Hockett and Saule T. Omarova, “The Finance Franchise,” *Cornell Law Review* 102 (2017).
5. See Saule T. Omarova, “The Public Ledger: How to Democratize Money and Finance the Economy,” *Vanderbilt Law Review* 74 (2021); Saule T. Omarova, “Public Banking as an Institutional Design Project,” *Yale Journal on Regulation* 41 (2024).
6. For an analysis of different state choices in this area, see Saule T. Omarova, “Finance as a Tool of Industrial Policy: A Taxonomy of Institutional Options,” in *Industrial Policy 2025: Bringing the State Back In (Again)* (Roosevelt Institute, February 12, 2024), <https://rooseveltinstitute.org/publications/finance-as-a-tool-of-industrial-policy>.
7. For the full NIA proposal, see Saule T. Omarova, *The National Investment Authority: An Institutional Blueprint* (Berggruen Institute, March 24, 2022), <https://berggruen.org/news/the-national-investment-authority-a-blueprint>. See also Saule T. Omarova, “Why We Need a National Investment Authority,” Research Paper No. 20-34 (Cornell Legal Studies, 2020), SSRN, <https://ssrn.com/abstract=3566462>; Saule T. Omarova, “Crises, Bailouts, and the Case for a National Investment Authority,” *Just Money*, April 1, 2020, <https://justmoney.org/s-omarova-crises-bailouts-and-the-case-for-a-national-investment-authority>; Saule T. Omarova, *The Climate Case for a National Investment Authority* (Data for Progress, 2020), <https://filesforprogress.org/memos/white-paper-nia.pdf>; Saule Omarova, “Public Investment Reimagined: A National Investment Authority,” *American Prospect*, December 1, 2020, <https://prospect.org/economy/public-investment-reimagined-a-national-investment-authority>.
8. For a full elaboration of the details of the NIA proposal summarized here, see Omarova, *The National Investment Authority*.
9. See Lenore Palladino, “Nicky Mac: A ‘Public Option’ for Workers’ Capital,” *American Prospect*, December 1, 2020, <https://prospect.org/economy/nicky-mac-a-public-option-for-workers-capital>.
10. For an analysis of the dynamics and mechanisms of democratic accountability in the context of public investment, see Saule T. Omarova and Brian Richardson, “Public Investment as Constitutional Power and Accountability Challenge,” *University of Chicago Law Review* 92 (2025).

Take Equity Stakes for Public Purposes

BY LENORE PALLADINO



Lenore Palladino is associate professor in the Department of Economics and the School of Public Policy at UMass Amherst. She is a research associate at the UMass Amherst Political Economy Research Institute and a senior fellow at the Roosevelt Institute. She holds a PhD from the New School University in economics and a JD from Fordham Law School. Her portfolio of work is available at lenorepalladino.com.

Palladino's research focuses on the political economy of corporations and finance. She is the author of *Good Company* from the University of Chicago Press. She has testified on the impacts of shareholder primacy and stock buybacks before the US Congress Joint Economic Committee (2022) and the House Financial Services Committee (2019).

Prior to joining UMass, Palladino was senior economist and policy counsel at the Roosevelt Institute and a lecturer in economics at Smith College. She was previously vice president for advocacy at Demos and a lecturer in economics at New York University. Earlier in her career, she was campaign director at MoveOn, a lead organizer with the labor union CSEA-AFSCME, and national director of United Students Against Sweatshops.

For the past year and a half, the Trump administration has been engaged in an ad hoc form of industrial policymaking, focused on what appears to be a more permanent form of past administrations' temporary public equity investments. Public equity stakes in private corporations could bring about a major change to the current dynamics of corporate governance and thus the productive potential of US innovative enterprises. In an industrial policy program oriented toward the necessary energy transition, public equity stakes could play a positive role in strengthening labor rights and bringing a public interest perspective in corporate governance in industries like solar and wind. But for them to play that transformative role, the US must get over the twin pathologies of using such stakes only in moments of crises and relinquishing them as quickly as possible (thus giving up any opportunities for capacity building) or using them for short-sighted reasons and perhaps personal gain.

The US Experience—Timely, Temporary, Targeted . . . or Trumpy?

The 2008 financial crisis was a moment of extreme systemic risk to the financial system and the broader economy.¹ During the crisis and the recession in its aftermath, the federal government—under both the Bush and Obama administrations—took equity stakes in financial institutions and troubled auto companies.² The Emergency Economic Stabilization Act of 2008 (EESA) Section 113 established the Troubled Asset Relief Program (TARP) and empowered the Treasury secretary to purchase corporate equity in the interest of “stabiliz[ing] the financial system and restor[ing] confidence.”

TARP made the federal government a significant shareholder in AIG, Citigroup, General Motors, Chrysler, and GMAC.³ The \$700 billion TARP

asset purchase program included \$125 billion of public equity stakes, though the initial Capital Purchase Program included “no specific requirements regarding how banks that received the government equity infusion should use it.”⁴ The deals were negotiated ad hoc by members of the Obama administration who had previously worked as dealmakers in the financial sector.⁵ This dealmaking approach to the crisis meant that different institutions were dealt with differently, and there was no consistent approach to what it meant for the government to take an equity stake—how it would behave as a shareholder.⁶

The Trump administration has embraced its own form of industrial policymaking. Through a series of bespoke corporate deals, the administration acquired equity stakes in Intel, Lithium Americas, and Trilog Metals. In June 2025 it secured a perpetual “golden share” in US Steel that grants the president veto power over plant closures and production decisions. In July that year, the Department of Defense became the single largest shareholder in the only rare earths mine in the United States, MP Materials, guaranteeing the company a minimum price and a guaranteed buyer for a decade.⁷ The administration has also extracted profit-sharing agreements from Nvidia and AMD, requiring them to pay 15 percent of their China chip sales revenues to the government. The dealmaking has taken place through executive action, bypassing Congress entirely and, in the case of Intel, dispensing with the taxpayer safeguards in the Biden administration’s CHIPS Act.⁸

The stated goal of these deals is to ensure that production in key sectors like steel and rare earth metals stays or grows in the United States. For example, the US Steel golden share enabled Japanese company Nippon Steel to complete its purchase of US Steel but gave the Trump administration continued power in the new company to ensure that production remains in the United States. A core issue is that the deals reflect “Trump’s strongman tendencies: He has claimed for himself concentrated power to oversee and influence corporate decision-making.”⁹ The Trump administration’s actions make clear the urgency of defining best practices for public equity stakes.

Designing Public Equity Stakes in the Public Interest

In thinking through how to do equity stakes better in 2029 and beyond, we do not need to design from scratch. Many countries have more robust and transparent approaches to public equity stakes. European governments have taken equity stakes in their emergency interventions: In Germany, the federal government took a 25 percent stake in Lufthansa as part of its pandemic response.¹⁰ The French government spent 4 billion euros to bail out Air France, but the stake included climate-oriented conditions (though the French government did not have the enforcement mechanisms necessary to ensure full compliance).¹¹ Golden shares—a type of public equity stake with special governance authority even when the government is not the majority shareholder—have been used by European governments to privatize previously public entities.¹² For example, golden shares enabled the UK government to keep essentially veto power over core entity decisions, like mergers and acquisitions, as a hedge against foreign government control, even though the shares were set up in the context of problematic privatization. But while global examples of equity stakes, state holding companies, and even sovereign wealth funds can provide useful insights, the US corporate governance regime, corporate and financial laws, and state investment capacity are uniquely challenging and mean that we cannot simply import a European approach to industrial policy.

US labor unions have a long history of using investment and governance rights in companies to good use (though this money is not public money). Coauthors and I have discussed the little-known history of pension fund investment in affordable housing in the United States:¹³ Labor pension funds in New York and San Francisco enabled the growth of co-op housing in these cities, and the AFL-CIO Housing Investment Trust has been investing in affordable housing for half a decade. Public pension funds are a public financial asset, and elsewhere I have proposed the creation of a public asset manager to channel public pension funds toward useful industrial policy goals while supporting the long-term retirement security of the US public-sector workforce.¹⁴

In a forthcoming article, I outline the design choices that policymakers should consider when adopting public equity stakes.¹⁵ Just as private companies have a wide range of options in how they structure and sell equity to private financial institutions, there are options for designing public equity stakes. I do not suggest that there is one best design for all public equity stakes, but rather lay out the choice points to encourage further discussion of this industrial policy tool. For example, public equity stakes could be structured such that the federal government receives a variable financial return on an investment; could enable involvement in governance, including the ability to veto certain kinds of company actions; or could be accompanied by both economic and governance rights. Establishing the stake also requires deciding: What kinds of economic benefits should the stake earn, and where should those benefits go?

Managing Returns in Public Equity Stakes

One policy design choice is about the flow of finance into a company and how to manage potential government returns. The goal of public equity stakes is not to replicate the dynamics of shareholder primacy for the public sector—that is, with the shareholder focused solely on asset appreciation as often and as quickly as possible. With participation rights, the public equity holder can engage in board-level decision-making over dividends (income payments made to holders of shares) and other corporate financial decisions. Preferred stock held by the government can have differential dividend rights so that the government stake does not earn dividends in the same way as other shareholders. For example, during the financial crisis, preferred stock issued by AIG included the provision that dividends were payable at various specified rates and times.¹⁶

One option for dividends is to structure the public equity stake like any other stake, so that the government earns the capital gains from stock price appreciation and the income from authorized dividends. The government would then also take the same level of risk of loss as any other shareholder. The government would realize capital gains if it converted shares to common stock and sold them, or if the company repurchased them. Of course, when and how the government sells shares should be determined not by asset appreciation but by whether it is in the public interest to continue to hold the equity stake.

Governing Public Equity Stakes

Another policy design choice is about governance: Public equity stakes could enable involvement in governance, including the ability to veto certain company actions. This raises further policy design questions about how the government should engage as a shareholder: How should the public interest affect how the federal government votes? What part of the government infrastructure should hold and manage public equity stakes?

In previous bailouts, public equity stakes took the form of both voting and nonvoting shares. To meet the goals of a proactive industrial policy, public equity stakes should be voting shares and should enable shareholders to participate. A federal statute could specify that the duties of care and loyalty—the legally binding fiduciary duties that all directors have—run to the public interest when a director is representing a public equity stake. Boards set corporate priorities, including how to allocate corporate funds between uses to improve productivity, like investing in a well-paid workforce and research and development versus increasing executive compensation and authorizing stock buyback programs. Publicly held equity would give the public interest a role in board discussions that can meaningfully impact the productive potential of such businesses.¹⁷

In an industrial policy program oriented toward the necessary energy transition, public equity stakes could play a positive role in strengthening labor rights and bringing a public interest perspective in corporate governance in industries like solar and wind.

Conclusion

General Motors (GM) gives us one counterfactual to think concretely about the effects of public equity stakes. If the government had taken a public equity stake when it bailed out GM during the financial crisis, and kept the share since then, the government could have stayed involved as an active shareholder and promoted the public interest in the electric vehicle transition. The federal government became the majority shareholder in GM during the collapse (all bailouts to GM totaled \$51 billion), but despite its enormous commitment to the company and its employees, it sold the shares at a loss of \$11 billion. By 2019, GM announced major closures despite robust profits.¹⁸

If the federal government had held on to its stake throughout the decade, it could have had a seat at the table for such discussions. GM received federal investment through the IRA to spur the transition to electric vehicles. Yet despite historic gains by the UAW in the 2023 strike, GM announced that it would spend \$10 billion on stock buybacks in November 2023 to bolster its share price while reducing overall investment in electric vehicles. A public equity stake, managed by a competent public asset manager with a mandate to operate in the public interest, could have ensured that these public funds spent on industrial policy supported the long-term public interest of a sustainable and equitable economy.

Notes

1. The pandemic crisis spurred another round of public shareholding as authorized by the CARES Act, which appropriated \$500 billion for loans, loan guarantees, and other investments to both public and private entities. The act required the Treasury to receive warrants or other equity interests for any loans to air carriers and other “businesses critical to maintaining national security.”
2. L. L. Broome, “Government Investment in Banks: Creeping Nationalization or Prudent, Temporary Aid,” *FIU Law Review* 4 (2009): 409–34.
3. Barbara Black, “The U.S. as Reluctant Shareholder: Government, Business and the Law,” *Entrepreneurial Business Law Journal* 5, no. 2 (2010): 561–96.
4. Broome, “Government Investment in Banks,” 412.
5. Steven M. Davidoff and David Zaring, “Regulation by Deal: The Government’s Response to the Financial Crisis,” *Administrative Law Review* 61 (2009): 463.
6. This was not the first time the US government took public equity stakes: In 1984, the FDIC took an 80 percent stake in a troubled bank, Continental Illinois, and held the stock for seven years before it divested. The FDIC was an active shareholder, though it was careful to distinguish its role as an active shareholder from nationalization: It recruited and selected the new CEO and chair of the board. The stock had no voting rights, though it did have veto power over directors. The bailout cost the FDIC \$1.1 billion (Black, “The U.S. as Reluctant Shareholder,” 576–8).
7. Thea Riofrancos, “Trump’s Resource Nationalism Is the Worst of All Worlds,” *Financial Times*, September 3, 2025.
8. Mike Schmidt and Todd Fisher, “Uncle Sam Shouldn’t Own Intel Stock,” *Wall Street Journal*, August 24, 2025, <https://wsj.com/opinion/uncle-sam-shouldnt-own-intel-stock-ccd6986d>.
9. Joel Dodge, “Trump’s Industrial Policy: What’s Right and Wrong,” *Washington Monthly*, September 3, 2025, <https://washingtonmonthly.com/2025/09/03/trump-industrial-policy>.
10. Mariana Mazzucato, “Rethinking the Social Contract Between the State and Business,” Working Paper WP 2022/18 (University College London Institute for Innovation and Public Purpose, 2022), https://ucl.ac.uk/bartlett/sites/bartlett/files/mazzucato_m_2022_rethinking_the_social_contract_between_the_state_and_business_a_new_approach_to_industrial_strategy_with_conditionalities.pdf.
11. Government Shareholding Agency (APE), *Annual Report: 2021-2022* (Ministry of Economics and Finance, France, 2022), https://economie.gouv.fr/files/files/directions_services/agence-participations-etat/Documents/Rapports-de-l-Etat-actionnaire/2022/RapportEtatactionnaire2022ENGL.pdf; Mazzucato, “Rethinking the Social Contract.”
12. Larry Catá Backer, “The Private Law of Public Law: Public Authorities as Shareholders, Golden Shares, Sovereign Wealth Funds, and the Public Law Element in Private Choice of Law,” *Tulane Law Review* 82 (2008): 1801. Backer discusses the golden share decisions made by the European Court of Justice from 2002 to 2007 and the choice of law implications of states participating in markets. For more on golden shares, see Saule Omarova, “Bank Governance and Systemic Stability: The Golden Share Approach,” *Alabama Law Review* (2017).
13. Vonda Brunsting et al., *Investing for the Common Good: How Workers’ Pensions Can Help Solve the Housing Crisis* (Americans for Financial Reform, 2025).
14. Lenore Palladino, “Establishing a Public Option for Asset Management in the United States,” *Review of Social Economy* (2023): 1–20.
15. Lenore Palladino, “Public Equity Stakes in U.S. Economic Policymaking,” *Journal of Law and Political Economy*, forthcoming.
16. Joan MacLeod Heminway, “Federal Interventions in Private Enterprise in the United States: Their Genesis in and Effects on Corporate Finance Instruments and Transactions,” *Seton Hall Law Review* 40 (2010): 1487.
17. For more background on the fiduciary duties of corporate boards under shareholder primacy and recommended policy reforms, see Lenore Palladino, “Economic Policies for Innovative Enterprises: Implementing Multi-Stakeholder Corporate Governance,” *Review of Radical Political Economics* 54, no. 1 (2021): 5–25.
18. The announcement of plant closures made its stock price soar, in a clear example of the lack of a focus on production in the logic of shareholder primacy.

Build Durable Capacity Internationally

BY ERIN GRAHAM



Erin Graham is an associate professor of global affairs at the University of Notre Dame, focusing on international organizations, law, and climate finance. She published *Transforming International Institutions: How Money Quietly Sidelined Multilateralism at the United Nations* with Oxford University Press in 2023.

Her research has been published in journals such as *International Organization*, *Journal of Politics*, *International Studies Quarterly*, and other outlets. Her current work focuses on how climate funding from multilateral organizations is being used to de-risk private capital investment. Graham has served as a consultant to organizations on resource mobilization and funding modalities, including the CGIAR and USAID.

Before joining Notre Dame, Graham was a visiting scholar at the University of Pennsylvania's Perry World House and a postdoctoral fellow at the Niehaus Center for Globalization and Governance at Princeton University. She received her PhD in political science from The Ohio State University.

To limit the catastrophic warming that threatens national and economic security, the United States must not only transform its domestic energy system but also contribute constructively to the global energy transition. International climate finance is essential in this regard: When implemented effectively, it helps reduce carbon emissions and build poor countries' resilience to climate change effects like famine, conflict, displacement, and migration. Alongside the benefits gained through improved global and regional stability, support to friends and allies can help build out green supply chains that are critical to the domestic transition.

Yet like its overall climate policy, the US international climate finance strategy has suffered from deep seesawing between administrations. Inconsistency interrupts the flow of funds and undermines the US ability to design and implement coherent policy, let alone see its effects materialize. While the Biden administration tried to articulate a vision for a "foreign policy for the middle class" that more tightly yoked US economic interests to those of the world's needy, it was more thought experiment than reality, and was quickly undone by the Trump administration.

How might the administration in 2029 make the global climate finance agenda more durable? This essay proposes three ways of doing so: building a new cadre of climate finance experts, infusing multilateral development banks (MDBs) and other finance institutions with domestic green statecraft, and taking concrete steps to broaden domestic political support to sustain progress across administrations.

On the Seesaw: Industrial Policy and Climate

As in the domestic debate, American ideas about the role of the state in economic development abroad have shifted over time. Guided by the idea that economic stability is necessary to sustain democracy, New Deal economists like Harry Dexter White envisioned MDBs as a means to support industrial policy to grow economies in Latin America and beyond.¹ The Roosevelt administration hoped to establish an MDB for Latin America to support allies, win new ones, and curb the appeal of Nazism and other radical nationalist movements. MDB policies waxed and waned over time, but the winds shifted dramatically during the 1980s debt crisis. In that decade, the World Bank reorganized its lending in response to US demands that lending be made conditional on market-liberalizing reforms. This ushered in an era of privatization, spending cuts, and removal of barriers to trade.² Now ideas have evolved again: MDBs are contemplating how best to support economic growth through industrial policy,³ with emphasis on the green variety.⁴

If the shifting fortunes of industrial policy to promote development over the decades is akin to a gentle seesaw, US climate finance policy in the last five years qualifies as whiplash. In 2021, the Biden administration released the first US International Climate Finance Plan, which set goals for providing more climate finance abroad and outlined a whole-of-government approach to achieving them.⁵ The plan called for the following: doubling US public international climate finance relative to an Obama-era baseline; prioritizing climate investments, with an emphasis on leveraging private capital from the Department of State, USAID, the Development Finance Corporation (DFC), the Export-Import Bank (EXIM), and other domestic agencies; exerting US influence at the MDBs to push for ambitious climate lending; and renewing US leadership and funding for the Green Climate Fund (GCF) and other multilateral climate institutions. Overall, the administration exceeded its goals in increasing international climate finance, which reached more than \$11 billion in 2024, with adaptation finance increasing sixfold, to over \$3 billion.⁶

Since then, the US government has done an about-face. On the bilateral side, USAID, which was central to delivering adaptation finance, was entirely eliminated. The DFC and EXIM, which had yet to meet their green investment potential,⁷ are steering away from renewables. On the

multilateral side, under Donald Trump the US has pushed the World Bank to roll back climate goals and fund fossil fuel projects.⁸ US funding for the GCF, the world's largest climate fund, has been eliminated entirely along with support to the World Bank's Clean Technology Fund. State Department staff who worked on climate policy and negotiations have been fired.⁹

Current policy is a more extreme version of a persistent trend: Support for delivering climate finance abroad has never been durable in the United States. Policymakers that support action struggle to win congressional budget approval to support multilateral climate funds, while those that oppose it have cut funding or abolished it altogether.

Develop a Cadre of Climate Finance Experts to Bring the US Government Up to Speed

Gutting climate expertise across the government is a devastating blow to state capacity, but it provides an opportunity for strategic hiring to improve future US investments. Hiring should prioritize those with knowledge of the climate strategies and instruments of MDBs, international climate funds, and bilateral aid and finance institutions.

As the US retreats to propping up coal,¹⁰ the rest of the world is moving forward. Chinese investment in clean manufacturing abroad has accelerated rapidly since 2022.¹¹ Annual climate finance from MDBs is estimated to reach \$120 billion by 2030.¹² This active and innovative landscape of institutions is building experience in mitigation and adaptation finance through sharing risk, mobilizing private capital, and providing grant-based technical assistance to build capacity in developing states.

The US government should learn from this experience and rebuild its bilateral infrastructure to reflect best practices. This is especially true for DFC and EXIM, where personnel must share a commitment to accelerating green investments and ending support for fossil fuels. In addition to renewing calls for MDBs to increase climate lending and restoring US funding to multilateral climate funds, the US should become an expert partner to these mechanisms, helping productively guide the multilateral system. Once the US has a clear sense of the capabilities of

existing architecture, it can make an assessment about the need for additional multilateral initiatives, like expanded Group of Seven coordination in clean energy supply chains.¹³

Infuse Multilateralism with Domestic Green Statecraft

Despite changes in the wake of the 2008 financial crisis,¹⁴ neoliberal economic policies have had lasting influence at the World Bank. The current emphasis on derisking to mobilize private capital¹⁵ raises concerns that policies like Maximizing Finance for Development¹⁶ are the latest iteration of neoliberalism, prioritizing international private investors without addressing the needs of vulnerable developing states.¹⁷ Yet the so-called Washington Consensus is no longer dominant at MDBs. Neoclassical economic ideas remain, but they exist alongside green growth ideas that draw on Keynesian thinking.¹⁸ MDBs are partnering more often with national development banks,¹⁹ and a new World Bank report notes that “industrial policy is more replicable than previously thought,” advocating for carefully targeted state interventions.²⁰

The moment is ripe for the US to push MDBs and international climate finance institutions to ensure that investments serve the social purpose of building developing states’ capacity to drive and cope with their own green energy transitions.²¹ This means advocating for grant-based finance to build green state capacity in government ministries, national development banks, and local commercial banks. MDBs can partner with domestic banks that have developed their own green industrial policy to accelerate their climate investments and increase the likelihood that projects are aligned with state priorities. International organizations are known—and sometimes notorious—teachers of norms:²² Alongside teaching states how to mobilize private capital, the US should encourage MDBs and climate finance institutions to teach states how to discipline capital to protect taxpayers, ensure provision of public goods, and avoid unduly constraining future domestic policy. By working to infuse these ideas and practices in multilaterals, the US can achieve more consistency with citizen-centered domestic economic values.

Broaden Support for International Climate Finance

The US is the largest cumulative carbon emitter in history. The US clearly owes developing countries climate finance so they can adapt, and finance for mitigation serves US interests. Despite this, American foreign policy treats bilateral climate funding through USAID or contributions to MDBs, the GCF, or similar mechanisms as aid or charity. Worse, the right wing's climate denial makes climate finance politically toxic. The result is that the US rarely contributes its fair share. Under the Biden administration, Congress failed to fulfill the president's \$3 billion pledge to the GCF, leading the administration to reallocate \$1 billion in discretionary funding. Even that required pushing back against efforts by Rep. Tom Cole (R-OK) and colleagues to prohibit any funding.²³

A durable commitment to delivering climate finance abroad requires taking the political opposition into account and working to expand support. It is particularly important to join with like-minded states to push the MDBs on building green state capacity. MDBs are difficult to steer, but once they turn, they are more likely to stay on track. Development policy scholars see efforts by Treasury Secretary Janet Yellen²⁴ as important in this regard. The US must also ramp up funding to multilaterals that retain some bipartisan support. These tend to be institutions that work on general environmental issues rather than those focused solely on climate, like the Global Environment Facility. The Montreal Protocol fund provides another example: Ostensibly focused on reducing ozone-depleting substances rather than on climate, it supports the Kigali Amendment to phase out hydrofluorocarbons, which are potent greenhouse-gas emitters. The US should generously fund multilateral environment funds that have positive spillover effects for climate to help compensate for potential US shortfalls elsewhere.

Conclusion

After years of seesawing in policy, the US climate movement is questioning its tactics yet again. Some advocates are urging a sole focus

on affordability rather than climate jobs or emissions reductions. Others recommend not using the “C word” (climate) at all.²⁵ But too much of this debate takes the basic discursive parameters around climate as immutable, rather than malleable. International climate finance can be delivered and structured in ways that upend narratives about aid. The financial model of MDBs makes them remarkably inexpensive instruments of statecraft for wealthy states, and contributions to grant-based multilaterals take advantage of substantial burden-sharing benefits. In other words, these institutions serve US interests on the cheap.

Climate coverage in the US press fell for the fourth straight year in 2025.²⁶ Congressional knowledge of how international institutions work has never been especially strong.²⁷ Mischaracterizations of institutions like the GCF and Clean Technology Fund as “radical” and “wasteful”²⁸ are harmful, particularly when there is no alternative narrative. Ironically, these institutions explicitly reflect US preferences to prioritize private-sector collaboration. The GCF supports a large private-sector facility;²⁹ engages in lending, guarantees, and equity investments like an MDB; and works through a wide range of “accredited entities” to implement projects. These policies could be recoded to reflect the pro-market entities and strategies that they are.

To build congressional support, the US should take steps to access GCF funding directly by pursuing accreditation for bilateral aid agencies. Organisation for Economic Co-operation and Development (OECD) countries including Germany, Japan, and France have successfully pursued GCF accreditation, and bilateral institutions account for approximately 11 percent of all projects and 13 percent of all funding.³⁰ Accrediting bilateral entities also ensures that these countries’ bilateral priorities are reflected in the GCF portfolio and are funded. The US should seek accreditation for a rebuilt USAID and potentially for the DFC to take advantage of these opportunities to ensure the GCF portfolio reflects US interests. Doing so facilitates learning, coordination, and productive oversight, and just might broaden congressional support and improve durability.

Notes

1. Eric Helleiner, *Forgotten Foundations of Bretton Woods* (Cornell University Press, 2014).
2. Sarah Babb and Alexander Kentikelenis, "Markets Everywhere: The Washington Consensus and the Sociology of Global Institutional Change," *Annual Review of Sociology* 47, no. 1 (2021): 521–41.
3. Ana Margarida Fernandes and Tristan Reed, *Industrial Policy for Development: Approaches in the 21st Century*, Policy Research Reports (World Bank, 2026), <http://doi.org/10.1596/978-1-4648-2276-6>.
4. Stephane Hallegatte, Marianne Fay, and Adrien Vogt-Schilb, "Green Industrial Policies: When and How," Policy Research Working Paper No. 6677 (World Bank, 2013), <http://hdl.handle.net/10986/16892>.
5. The White House, "U.S. International Climate Finance Plan," 2021, <https://climate.law.columbia.edu/sites/climate.law.columbia.edu/files/content/U.S.-International-Climate-Finance-Plan-4.22.21-Updated-Spacing.pdf>.
6. Melanie Robinson, "Statement: United States Achieves Biden's Climate Finance Goal," World Resources Institute, November 18, 2024, <https://wri.org/news/statement-united-states-achieves-bidens-climate-finance-goal>.
7. Sherri Ombuya and Igor Shishlov, "Alignment of the United States Export-Import Bank (US EXIM) with the US Climate and Development Policy Objectives," research report (Perspectives Climate Research and Oxfam, December 2023), https://webassets.oxfamamerica.org/media/documents/US_EXIM_report.pdf.
8. Scott Bessent, "Statement from U.S. Secretary of the Treasury Scott Bessent for the World Bank Development Committee and IMF International Monetary and Financial Committee," US Department of the Treasury, October 15, 2025, <https://home.treasury.gov/news/press-releases/sb0280>.
9. Jake Spring, "The State Department Fires Remaining Employees Who Worked on Climate Change," *Washington Post*, July 11, 2025, <https://washingtonpost.com/climate-environment/2025/07/11/state-department-layoffs-climate-change>.
10. Executive Order 14261, "Reinvigorating America's Beautiful Clean Coal Industry and Amending Executive Order 14241," April 8, 2025, <https://whitehouse.gov/presidential-actions/2025/04/reinvigorating-americas-beautiful-clean-coal-industry-and-amending-executive-order-14241>.
11. Xiaokang Xue and Mathias Larsen, "China's Green Leap Outward: The Rapid Scale-Up of Overseas Chinese Clean-Tech Manufacturing Investments," Net Zero Industrial Policy Lab, September 9, 2025, <https://netzeropolicylab.com/china-green-leap>.
12. "Joint Multilateral Development Banks (MDBs) Statement for COP 29 – MDBs' Support to Implementing the Paris Agreement," World Bank, <https://thedocs.worldbank.org/en/doc/bede9b0aeb98d9ca20d9140a208b9e1-0020012024/original/Joint-MDB-Statement-for-COP29.pdf>.
13. Bentley Allan, *Regaining Geopolitical Advantage: How to Focus U.S. Foreign Policy for Clean Energy* (Carnegie Endowment for International Peace, February 26, 2025), <https://carnegieendowment.org/research/2025/02/regaining-geopolitical-advantage-how-to-focus-us-foreign-policy-for-clean-energy>.
14. Ali Burak Güven, "Whither the Post-Washington Consensus? International Financial Institutions and Development Policy Before and After the Crisis," *Review of International Political Economy* 25, no. 3 (2018): 392–417.
15. Erin R. Graham and Jiayi (Sonia) Zhang, "Multilateral Climate Finance in Pursuit of Private Capital: How the De-Risking Agenda Is Changing International Organizations," *Global Environmental Politics* (2025), <https://doi.org/10.1162/GLEP.a.700>.
16. World Bank Group, "Maximizing Finance for Development (MFD)," <https://documents1.worldbank.org/curated/en/168331522826993264/pdf/124888-REVISED-BRI-PUBLIC-Maximizing-Finance.pdf>.
17. Daniela Gabor, "The Wall Street Consensus," *Development and Change* 52, no. 3 (2021): 429–59.
18. Bentley Allan and Jonas Meckling, "Creative Learning and Policy Ideas: The Global Rise of Green Growth," *Perspectives on Politics* 21, no. 2 (2023): 443–61.
19. Stephany Griffith-Jones and José Antonio Ocampo, eds., *The Future of National Development Banks* (Oxford University Press, 2018).
20. Ana Margarida Fernandes and Tristan Reed, *Industrial Policy for Development: Approaches in the 21st Century*, Policy Research Reports (World Bank, 2026), <https://doi.org/10.1596/978-1-4648-2276-6>.
21. Rosie Collington, "State Capacities for Decarbonization: From Investable Transitions to Green Transformations," *Environmental Politics* (2026): 1–26.
22. Martha Finnemore, "International Organizations as Teachers of Norms: The United Nations Educational, Scientific, and Cultural Organization and Science Policy," *International Organization* 47, no. 4 (1993): 565–97.

23. Courtney Federico, “The Road to Baku, Belém, and Beyond: A 5-Year Outlook for U.S. International Climate Finance,” Center for American Progress, June 11, 2024, <https://americanprogress.org/article/the-road-to-baku-belem-and-beyond-a-5-year-outlook-for-u-s-international-climate-finance>.
24. Kevin P. Gallagher et al., “Reforming Bretton Woods Institutions to Achieve Climate Change and Development Goals,” *One Earth* 6, no. 10 (2023): 1291–1303; Kevin P. Gallagher and Rishikesh Ram Bhandary, *World Bank Evolution as if Development and Climate Change Really Mattered: Four Foundations for Successful Reform*, Global Economic Governance Initiative Policy Brief (Boston University Global Development Policy Center, March 2023), https://bu.edu/gdp/files/2023/03/GEGI_PB_023_KG-WB-Reform-FIN.pdf.
25. Searchlight Institute, “The First Rule About Solving Climate Change,” September 22, 2025, <https://searchlightinstitute.org/research/the-first-rule-about-solving-climate-change>; Reid J. Epstein, “A New Democratic Think Tank Wants to Curb the Influence of Liberal Groups,” *New York Times*, September 17, 2025, <https://nytimes.com/2025/09/17/us/politics/democrats-liberals-jentleson-searchlight.html>.
26. YaleEnvironment360, “Global News Coverage of Climate Change Falls for Fourth Straight Year,” *E360 Digest*, Yale School of the Environment, March 11, 2026, <https://e360.yale.edu/digest/climate-news-coverage>.
27. Erin R. Graham, *Transforming International Institutions: How Money Quietly Sideline Multilateralism at the United Nations* (Oxford University Press, 2023), chapter 6.
28. Sara Schonhardt, “US Ditches World’s Biggest Climate Fund,” *E&E News* by Politico, January 8, 2026, <https://eenews.net/articles/us-ditches-worlds-biggest-climate-fund-in-storm-of-departures-by-trump>.
29. “Investors,” Green Climate Fund, <https://greenclimate.fund/partners/investors#private-sector-facility>.
30. Erin R. Graham and Alexandre Lacaze, “Orchestrating Decarbonization: Can IOs Mobilize Third Parties to Accelerate Green Energy Transitions?” working paper (2026).

HOW TO PRODUCE IT?

Clean Up the Machines

BY LEAH C. STOKES



Leah C. Stokes is the Anton Vonk associate professor of environmental politics at the University of California–Santa Barbara, the policy director at the 2035 Initiative, and the host of the podcast *A Matter of Degrees*. She is the author of two books: *The Carbon Wave*, which tells the inside story of how the largest climate law in American history passed, and the award-winning *Short Circuiting Policy*.

Since the last election, clean energy and climate advocates have been working through what we will do differently with federal power the next time there's a window of opportunity. Clearly, we need to move faster, getting dollars spent in communities much quicker. When I look back on the successes and failures of the Inflation Reduction Act, it's clear we needed to do more on electrification—especially industrial electrification, since the machines that make our paper, chemicals, and food still run overwhelmingly on fossil fuels. Although there were some pilot programs, such as the Industrial Demonstrations Program, the limited progress we did make in this area has since been rolled back by the Trump administration: grants clawed back, manufacturing contracts left unsigned, tax credits cut short.

If we are serious about cutting carbon the next time there is an opportunity for federal climate action, cleaning up these machines—from the factory floor to the home garage—must be central to our clean energy and climate agenda. And if we want to get these clean machines deployed, we must stay focused on keeping electricity affordable.

From the Home to the Factory Floor

Across the economy, fossil fuel machines currently provide the backbone for the electricity, transportation, buildings, and industrial sectors. On a factory floor, that usually means burning natural gas in large boilers to create steam—the invisible workhorse that dries pulp into paper, distills chemicals, pasteurizes milk, and cooks much of the food we find on our grocery shelves. Nationally, about 40 percent of all the fossil fuel burned in manufacturing goes into simply making steam.

But it doesn't have to be this way. Clean, electric machines are here, whether it's a solar panel, electric vehicle, heat pump, induction stove, or industrial electric dryer. And these machines are increasingly ready for the factory, not just the home. Both industrial heat pumps and electrode boilers can raise the same high-pressure steam that gas boilers do. The

industrial heat pumps are so efficient that they can put out more heat than the electricity they draw in, harvesting free warmth from the surrounding air. Next-generation geothermal systems offer a third option, drawing heat from deep underground to supply industrial processes directly.¹ For the low- and medium-temperature heat that makes up a large share of manufacturing, the technology we need in order to electrify is already on the shelf. That was one of the clearest findings from the report we published at the University of California–Santa Barbara’s 2035 Initiative last year—which included a detailed engineering analysis on electrifying low- and medium-temperature industrial heat.²

We found that electrifying heat processes in just three manufacturing sectors—chemicals, pulp and paper, and food and beverage—could cut cumulative greenhouse gas emissions by 930 to 1,320 million metric tons of carbon dioxide equivalent through 2050. That is up to 26 percent of the climate pollution from major facilities in those sectors. And it’s already starting to happen: In Colorado, New Belgium Brewing now makes beer with clean electric heat using a steam heat pump installed by the company AtmosZero. The pump boils the wort in place of a gas boiler, and at full capacity it already meets 30 to 40 percent of the brewery’s steam needs.³

Increasingly, these clean machines in factories are also paired with storage, allowing them to operate more flexibly in the middle of the day, when the sun is shining and electricity is plentiful and cheap. In the industrial sector, large-scale thermal batteries can support manufacturing electrification. These batteries charge up on cheap midday power, hold it as heat hot enough for industrial processes, and release it on demand across a plant’s shifts. American companies are already building these batteries at scale: Antora Energy manufactures them at a California factory.⁴ Scaling up storage is turning out to be essential to the transition.

Storage Is the Key

To get these clean machines deployed everywhere from homes to factories, we need to change how our electricity system works. For well over a century now, it has operated in a top-down way. Large coal and

gas plants located on the fringes of cities churn out power every hour of the day—alongside an unhealthy dose of pollution that disproportionately harms lower-income groups and communities of color. But today, our electricity system can operate from the bottom up. Solar panels, wind turbines, and batteries are dotted throughout the landscape. The fact that they cannot operate constantly is usually seen as a problem—but as storage continues to grow exponentially, the abundant, cheap power in the middle of the day becomes a solution.

We haven't yet reckoned with how completely storage will transform our energy system. It does something the grid can't on its own: save the midday sun and spend it after dark. Take my own home as a toy example. It's fully electrified with a heat pump HVAC, heat pump water heater, induction stove, plus an electric car and e-bikes. My rooftop solar charges a battery the moment it starts producing. Meanwhile, I pull from the grid when it's cleanest and cheapest in the middle of the day—any extra power I draw is almost certainly my neighbors' solar. If I charge my car or heat my water tank, I'm literally storing that cheap clean energy for later.

When I say “storage,” I'm not just talking about standalone lithium-ion batteries. I'm talking about all these ways we can use extra power during the middle of the day and shave demand later. There are already more than 4 million electric vehicles (EVs) on the road in this country, and every one of them is a place to store power in the middle of the day, when solar electricity is cheap and abundant. Once you start thinking of EVs as storage, it's easy to see they need to be operated differently than they are today. The trick is getting these cars to charge at the right time—in the middle of the day. Charge them optimally and carbon pollution falls much faster, while the grid can far more easily absorb the extra load.

It's crucial we pass the policies to make that happen now, before there are 10 million EVs on the road. That means making it easy to plug in EVs during the middle of the day. Ideally, we would incentivize people to drive to work in electric vehicles and charge there, especially since many parking structures now have solar panels on their roofs. And with the rise of remote work, many people could just as easily charge at home: Already one in five Americans works remotely at least some of the time, and can plug in midday with no trouble. We also need many more chargers in

multifamily and apartment buildings. State and federal funds should make all of this happen.

Hot water tanks can provide another form of storage. Heat pump water heaters can be set to draw more power in the middle of the day, and then switch off when the sun goes down and power is more expensive and dirty. This works even better with larger tanks. And we can even think of a building as storage: If we preheat or precool a building when clean energy is cheap and abundant, that's storage. This kind of "thermal energy storage" can apply across the economy, and it works particularly well for manufacturing.

But this storage will not happen if utilities continue with outdated electricity tariffs. They should be offering cheap electricity between 10 am and 2 pm. Instead, most set the same power rates at noon, when electricity is cheap and clean, as after 9 pm, when electricity is the dirtiest. This is an absurd approach that needs updating in every state quickly.

Cheap Power Is the Whole Game

We need to get electricity prices right, because in most states everyone from industrial facilities to homeowners is paying more for electricity than natural gas. This is called the "spark gap"—the difference between what it costs to make the same heat with natural gas versus clean electricity. High electricity prices imperil progress on electrification in the building and industrial sectors. Since 2020, they have risen 31 percent on average across the country. Some states are particularly bad: In California, PG&E has hiked rates nearly 70 percent over that same period.⁵

We need policymakers to focus on bringing electricity costs down. In a recent essay in *The Atlantic*,⁶ I outlined three ideas to do that.

Make Power Cheap at Midday

First, we should make power genuinely cheap in the middle of the day. Free electricity at noon is not a fantasy; it is already happening in

wholesale markets. Abundant solar generation means that wholesale electricity prices sometimes go negative in the middle of the day. The challenge is getting that value through to retail and industrial customers. Well-designed “time-of-use” or “dynamic” rates can pass these low midday prices directly to consumers, incentivizing smart appliances with storage to shift demand.

There are early examples: In Illinois, residential customers have been able to buy electricity at hourly market prices for nearly two decades. ComEd has offered a real-time hourly rate since 2007, and customers who move their use into cheaper hours have saved close to a fifth on the supply portion of their bills.⁷ A counterpart program downstate posts the next day’s hourly prices each evening. The Australian government provides an even bolder example: Starting on July 1, 2025, electricity retailers began offering households at least three hours of free power each day around noon.⁸ We can do this in the US, too.

The same logic is even more powerful for industry. The thermal batteries described earlier are built to draw power exactly when it is cheapest and cleanest. But most industrial customers cannot yet buy electricity at prices that move with the grid. Opening up dynamic rates and rewarding factories that shift their demand into the sunny midday hours would let manufacturers close that price gap, while turning their flexible load into an asset for the grid rather than a strain on it. In California, State Senator Josh Becker has proposed legislation to help make this happen by reducing fixed, “nonbypassable” charges on bills.⁹ Since these parts of a bill are not dynamic, they would erode savings even if factories could access real-time pricing. The legislation would let regulators trim those charges for new industrial process heat load, so a manufacturer that shifts its demand to the right hours actually sees the reward.

End Utility Profiteering

Second, we need to rein in utility profiteering. Regulated utilities earn a guaranteed rate of return on their capital investments. This creates a perverse incentive: The more they spend, the more they earn. Reforming utility regulation to align profits with consumer outcomes—lower bills, greater reliability, faster clean energy deployment—is essential. States have the power to demand this of their public utility commissions, but too few have done so with the urgency the moment requires.

This is why I'm particularly excited about the work of the newly formed Utilize Coalition.¹⁰ State by state, they are working to pass laws that force utilities to actually use the grids they've built, rather than endlessly expanding them for the sake of their profits. Today, the US electric grid operates at just 53 percent of its total capacity on average, meaning generation, transmission, and distribution infrastructure sits idle for much of the year. Flexible industrial demand is part of the fix. When electrified factories ramp up during the cheap, sunny middle of the day and ease off when the grid is stressed, they fill that idle capacity instead of forcing utilities to keep building more—using the grid we already have rather than padding rates to expand it.

Don't Pass the Costs of Climate Change onto Consumers

Third, the costs of climate change itself should not be loaded onto electricity bills. When wildfires destroy utility infrastructure, when storms knock out power for days, when extreme heat forces costly grid upgrades—these costs too often end up as charges on household electricity bills. That is the wrong approach. The social costs of fossil fuels should be borne more broadly, through tax policy and insurance markets, not dumped onto the electricity rate base, where they only make the transition harder.

Potential State and Federal Action

How would lower electricity rates work in practice, especially to incentivize industrial electrification? States could pass laws to direct public utility commissions to create dedicated electricity rates for electrified manufacturing plants, as already exist for homes with EVs. They could also allow these facilities to access real-time pricing, which would change plant behavior and maximize storage. Colorado offers an early model: A 2021 law now requires the state's largest electric utilities to file "beneficial electrification" plans and lets those utilities recover their costs and even earn performance bonuses for beating their electrification and emissions targets.¹¹ It is a telling reversal of the usual incentives: Rather than profiting by selling more gas, the utility profits by helping its customers get off it.

At the federal level, Congress could pass a clean heat tax credit, as Senator Martin Heinrich's Industrial HEAT Act proposes. The bill would cover up to 30 percent of the cost of low-carbon heating equipment and make the credit refundable, so that even firms with little tax liability could claim it. A companion approach would reward clean heat by the unit of heat produced rather than the equipment installed, which keeps the most efficient technologies, like heat pumps, from being penalized. The US Department of Energy (DOE) could fund the demonstration projects and low-cost loans that help first movers take the plunge. The DOE's Industrial Demonstrations Program was doing exactly this before the Trump administration clawed much of it back. Layering these tools with cheap financing through DOE's loan programs and state green banks would steadily bring down both the cost and the risk of going electric.¹²

Conclusion

None of this is easy. Utility regulation is among the most arcane and politically captured areas of US public policy. In my book *Short Circuiting Policy*,¹³ I documented how electric utilities have spent decades deploying lobbyists, funding think tanks, and cultivating regulatory commissioners to protect their profits. Breaking that grip requires organized political pressure, state-level advocacy, and a willingness to fight for structural reform over the long haul.

Several years ago, my friends Saul Griffith and Sam Calisch calculated that the US needs to replace roughly 1 billion machines—the furnaces, water heaters, stoves, and dryers in our homes and commercial buildings—with clean electric alternatives.¹⁴ Since then, we've started to make progress on electrification in the buildings, transportation, and industrial sectors. But if we want to finish this job, policymakers need to make sure electricity remains affordable.

Notes

1. Nathan Mariano et al., *Unlocking Next-Generation Geothermal Heat for Industry* (2035 Initiative, UC Santa Barbara, 2025), <https://2035initiative.com/unlocking-next-generation-geothermal-heat-for-industry>.
2. Nathan Mariano et al., *The Clean Heat Climate Opportunity: A Roadmap for Electrifying Low- and Medium-Temperature Industrial Heat* (2035 Initiative, UC Santa Barbara, 2025), <https://2035initiative.com/reports/clean-manufacturing.pdf>.
3. Alison F. Takemura, “Inside the Colorado Factory Where AtmosZero Is Electrifying Steam,” *Canary Media*, October 15, 2025, <https://canarymedia.com/articles/heat-pumps/colorado-factory-atmoszero-industrial-decarbonization>.
4. “A Manufacturer of Thermal Batteries Foresees an Industrial Boom,” National Association of Manufacturers, May 30, 2025, <https://nam.org/a-manufacturer-of-thermal-batteries-foresees-an-industrial-boom-34109>; Antora Energy, “Antora Energy Announces U.S. Thermal Battery Manufacturing Facility,” October 24, 2023, <https://antora.com/insights/manufacturing-facility>.
5. Owen Comstock, “U.S. Electricity Prices Continue Steady Increase,” *Today in Energy*, US Energy Information Administration, May 14, 2025, <https://eia.gov/todayinenergy/detail.php?id=65284>. On PG&E, see Matthew Green, “The Average PG&E Utility Bill Has Gone Up Nearly 70% Since 2020,” KQED, March 29, 2025, <https://kqed.org/news/12033386>.
6. Leah C. Stokes, “Electricity Should Be Free at Noon,” *The Atlantic*, 2025, <https://theatlantic.com/science/2025/12/electricity-costs-climate/685123>.
7. “About,” ComEd’s Hourly Pricing, ComEd, accessed 2026, <https://hourlypricing.comed.com/about>.
8. Minister for Climate Change and Energy, “More Australian Homes to Get Access to Solar Power,” media release, Department of Climate Change, Energy, the Environment and Water of Australia, November 4, 2025, <https://minister.dccew.gov.au/bowen/media-releases/more-australian-homes-get-access-solar-power>.
9. SB 943, “Public Utilities: Electricity: Transmission Charge: Industrial Transition Usage,” California Legislature, 2025–2026 Reg. Sess., https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202520260SB943.
10. “America Needs More Power, More Affordably,” Utilize Coalition, <https://utilizecoalition.org>.
11. SB 21-246, “Electric Utility Promote Beneficial Electrification,” Colorado General Assembly, 2021, <https://leg.colorado.gov/bills/sb21-246>.
12. Mariano et al., *The Clean Heat Climate Opportunity*.
13. Leah C. Stokes, *Short Circuiting Policy: Interest Groups and the Battle Over Clean Energy and Climate Policy in the American States* (Oxford University Press, 2020).
14. Saul Griffith and Sam Calisch, “No Place Like Home” (Rewiring America, 2020), <https://content.rewiringamerica.org/reports/households-technical-white-paper.pdf>.

Construct Public Factories

BY JOEL DODGE



Joel Dodge is the director of industrial policy and economic security at the Vanderbilt Policy Accelerator. With Ganesh Sitaraman, he recently coauthored an academic report, *Public Factories*, and has authored the white paper *Public Factories for Critical Energy Components*. His writing on public policy issues has appeared in numerous outlets, including *The Atlantic*, *Washington Monthly*, *Heatmap News*, and more. He was previously an attorney practicing public interest law and constitutional law.

Green industrial policy was the Biden administration's principal strategy for advancing a clean energy transition in the United States. Centered in the Inflation Reduction Act (IRA), Bidenomics was premised heavily on deploying favorable tax credits and subsidies to nudge the private market to invest in domestic green supply chains. This approach has had some important successes.¹ However, it also has some significant drawbacks.² Incentive-based industrial policy is fundamentally indirect, relying on dangled carrots to coax green production in places and sectors deemed in the public interest. This poses significant challenges: Policymakers must create carrots that are generous enough to generate the investment levels we need without overly subsidizing private companies.

Setting a Goldilocks subsidy can be a moving target as market conditions shift, whether from inflation, Federal Reserve monetary policy, or changes to firms' perceived investment payoffs. When industrial policy relies on private firms to do the work of investing in green productive capacity, it is implicitly pinning its hopes on an investment calculus that may change course as firms alter their profit calculations. Indeed, even before the second Trump administration's assault on clean energy, we saw a raft of offshore wind and green manufacturing projects canceled as inflation and high interest rates prevented planned investments from profitably penciling out.³

Much of the current thinking on how to do an IRA 2.0 assumes private ownership of the green industrial base as a given. For example, other essays in this collection suggest a greater public role for governing, planning, and financing but leave the world of ultimately making things to profit-driven firms. But it's a fundamentally risky bet to rely entirely on the private sector to generate the production we need to meet the climate crisis—and a bet that is at odds with how the United States has scaled production in prior “mobilization moments.” It doesn't have to be that way: Public factories are a part of America's past, and can be a part of its future.

How Roosevelt Built Public Producers

In May 1940, as the US government mobilized military production to support the Allied war effort in Europe, President Franklin D. Roosevelt used a fireside chat to recognize the limits of the private sector to meet the moment: “I know that private business cannot be expected to make all of the capital investment required for expansions of plants and factories . . . which this program calls for at once,” he told the nation. “It would be unfair to expect industrial corporations . . . to do this, when there is a chance that a change in international affairs may stop or curtail future orders a year or two hence.” With those limits in mind, he said, “the Government of the United States stands ready to advance the necessary money to help provide for the enlargement of factories, [and] the establishment of new plants.”⁴

Under the auspices of the Reconstruction Finance Corporation and its subsidiary Defense Plant Corporation, the federal government rapidly built—and retained ownership over—nearly two-thirds of all new factories constructed for the World War II mobilization effort. The government came to own more than 10 percent of the country’s total industrial stock.⁵ By 1945, the federal government had become the country’s leading manufacturer in the aircraft, shipbuilding, rubber, and aluminum industries.⁶ Most of these factories were owned by the government but operated by private manufacturers as contractors.

Even further back, there is a long, if forgotten, American tradition of mobilizing critical production through publicly owned factories.⁷ Throughout American history the US federal government, states, and localities have regularly turned to public factories to produce important goods across the defense, steel, agriculture, healthcare, and other sectors. Since the American Revolution, public factories have mobilized for emergencies, secured supply abundance, countered monopoly power, promoted innovation, and advanced economic development. American public factories are older than the republic, with the Continental Congress encouraging states to create their own weapons factories during the Revolutionary War. Public factories for arms, battlefield drugs, and other war-related supplies played a critical role in powering the Union to victory in the Civil War. Public factories even appeared in FDR’s New Deal response to the Great Depression, as his administration

created a public rum factory in the US Virgin Islands as a means of regional economic relief.

How to Use Public Production for the Energy Transition

Today's energy challenges may call for reviving that tradition: Decarbonization may simply demand production of critical energy components at a speed and scale beyond what the private sector on its own can fairly be expected to provide. Meeting the climate threat, along with a host of related challenges—outpacing China for advanced energy technologies, rapidly recalibrating energy supply to meet a shift in demand, and overcoming private-sector bottlenecks that constrain abundance and affordability—calls for the type of government-led manufacturing mobilization that Roosevelt launched during World War II. To start, the government could use public factories to increase the domestic supply of critical energy components like batteries and transformers.⁸

Batteries

Batteries are an increasingly important energy resource and are necessary inputs for a wide range of strategic and defense-related technologies. They are critical to the electrical grid, with 28 percent of new US electricity-generating capacity this year coming from utility-scale batteries—double the amount from wind, and four times the amount from natural gas.⁹ Yet China dominates lithium-ion battery supply chains, thanks to two and a half decades of its own industrial policy.¹⁰ While the US has successfully reshored a significant amount of final battery assembly in just the last few years, manufacturers remain heavily dependent on essential minerals and active materials imported from China.¹¹

However, the US has an opportunity to leapfrog China¹² to commercialize next-generation battery technology that provides key performance improvements and strategic advantages, such as longer charge duration and better safety.¹³ Deploying next-generation batteries would also eliminate US dependence on Chinese-controlled inputs. Using public

factories to produce these next-generation batteries would not only enable the US to achieve rapid scale in this emerging sector and beat China to a strategic technology, but also give the United States a domestic production base of advanced batteries.¹⁴

While other industrial policy tools could help the United States expand production of next-generation batteries, public factories are a uniquely powerful tool to achieve a rapid and dominant position in scaling this technology. Public factories are particularly effective when time-sensitive production is needed to win a “race,” whether an environmental race to decarbonize or a geostrategic race to outcompete China. And while research and development has given the US a technological lead with next-generation batteries, China is racing—and investing—to catch up.¹⁵

Transformers

Meanwhile, the US has also experienced severe shortages of grid equipment needed to transmit electricity, including large power transformers that connect large generation stations to high-voltage transmission. New orders now have a lead time of two to three years.¹⁶ These transformers are expensive to produce, difficult to transport, and highly customized.¹⁷ Their prices have increased by more than 80 percent since 2020.¹⁸ These production lags have created bottlenecks across the economy, delaying and increasing costs for new housing construction and infrastructure projects,¹⁹ hindering renewable energy projects,²⁰ and slowing disaster recovery efforts.²¹

Transformer shortages are the result of a combination of demand-side and supply-side pressures. Demand has increased due to the need to replace aging grid infrastructure; surging electricity demand from data centers, electric vehicles, and home electrification; and the addition of new generation sources to the grid.²² However, because transformer demand has historically been cyclical, producers have been reluctant to significantly scale up production, leading to a projected ongoing 30 percent shortfall in supply.²³ Transformers have also been constrained by input bottlenecks, particularly for grain-oriented electrical steel, which is currently only produced by a single domestic steelmaker at volumes insufficient to meet domestic demand. This has left transformer

producers dependent on foreign imports, which puts them at risk of global trade disruptions like tariffs.²⁴

The United States could create public factories to increase the supply of transformers. The government could work with utilities to identify a common set of transformer designs they could use for new distribution lines to promote greater standardization. Public factories could overcome demand cyclical concerns that hold back private-sector investment, and could thereby narrow the gap between expected demand and planned productive capacity. Public factories could also produce the core electrical steel used in transformers to expand domestic capacity and curb monopoly power in the US market. Other public factories could promote innovation to steer the grid toward advanced transformer technologies.

How to Create Public Factories Today

Policymakers could pursue a number of different pathways to create public factories for critical energy components. The executive branch could rely on statutory authority under the Defense Production Act or lending programs like the Department of Energy's Loan Programs Office. It could incorporate public factories into new and novel trade deal investment funds financed by Japan and South Korea.²⁵ And it could use the military's statutory authorities to establish public factories for critical energy components for defense-related uses.

Congress could also enact new legislation authorizing public factories for critical energy components. Alternatively, Congress could amend the existing Department of Energy authority to allow it to provide department-owned factory space for pilot production and larger-scale production. This could help scale emerging energy technologies from development toward commercialization. Congress could also appropriate Defense Production Act funding for critical energy components, which could be used to create public factories. DPA is particularly useful here, because it can be used to preempt permitting hurdles at the federal and sub-federal levels.²⁶

States and localities could also create public factories for critical energy components. These could be used first to meet in-state demand for

batteries and transformers. They could then generate additional revenue by selling across state lines to meet out-of-state demand. Such public factories could advance economic development goals, a model that states like Mississippi pioneered in the 1930s. To achieve fiscal scale, states could coordinate with each other to optimize the use of their public factories for critical energy components.

Conclusion

In December 1940, as the government-led industrial mobilization for World War II was underway, President Roosevelt took to the airwaves to declare that the United States would be “the great arsenal of democracy” to arm the Allies to win the war.²⁷ That American arsenal was to be heavily powered by public factories. Today, public factories for critical energy components could form the foundation for a new global arsenal. If the US develops mass production capabilities for technologies like next-generation batteries and transformers, it could export its surpluses to advance decarbonization and geopolitical priorities. Public factories could help power a durable green statecraft.

Notes

1. See, for example, Betony Jones and Joe Peck, *The Receipts: The Untold and Underappreciated Outcomes of Biden's Clean Energy Strategy* (Roosevelt Institute, April 16, 2026), <https://rooseveltinstitute.org/publications/the-receipts-the-untold-and-underappreciated-outcomes-of-bidens-clean-energy-strategy>.
2. See Joel Dodge and Ganesh Sitaraman, *Public Factories* (Vanderbilt Policy Accelerator, April 2026), <https://cdn.vanderbilt.edu/vu-URL/wp-content/uploads/sites/412/2026/04/15143308/Public-Factories.pdf>.
3. See, for example, Jim Tankersley and Brad Plumer, "Renewable Energy Could Be a Casualty in the War on Inflation. Here's Why," *New York Times*, December 5, 2023, <https://nytimes.com/2023/12/05/climate/renewable-energy-inflation-climate-cop28.html>; Justin Guay, "It's Not Just You—High Interest Rates Are Hurting the Planet, Too," *Heatmap News*, December 11, 2023, <https://heatmap.news/economy/high-interest-rates-clean-energy>.
4. Franklin D. Roosevelt, "Fireside Chat," American Presidency Project, UC Santa Barbara, May 26, 1940, <https://presidency.ucsb.edu/documents/fireside-chat-10>.
5. Gerald T. White, "Financing Industrial Expansion for War: The Origin of the Defense Plant Corporation Leases," *Journal of Economic History* 9, no. 2 (1949): 156–83, <https://doi.org/10.1017/S0022050700063075>. See also James Stuart Olson, *Saving Capitalism: The Reconstruction Finance Corporation and the New Deal, 1933–1940* (Princeton University Press, 1988), 219.
6. Mark R. Wilson, *Destructive Creation: American Business and the Winning of World War II* (University of Pennsylvania Press, 2016), 22.
7. See Dodge and Sitaraman, *Public Factories*.
8. See Joel Dodge, *Public Factories for Critical Energy Components* (Vanderbilt Policy Accelerator, April 2026), <https://cdn.vanderbilt.edu/vu-URL/wp-content/uploads/sites/412/2026/04/15152729/Public-Factories-for-Critical-Energy-Components.pdf>.
9. Office of Energy Statistics, "New U.S. Electric Generating Capacity Expected to Reach a Record High in 2026," In-Brief Analysis, US Energy Information Administration, February 20, 2026, <https://eia.gov/todayinenergy/detail.php?id=67205>.
10. Michael Alan Havlin, "Advanced Lithium-Ion Energy Storage Battery Manufacturing in the United States," Congressional Research Service, R48538, November 26, 2025, <https://congress.gov/crs-product/R48538>.
11. Teo Lombardo et al., "Global Battery Markets Are Growing Strongly—And So Are the Supply Risks," International Energy Agency, February 13, 2026, <https://iea.org/commentaries/global-battery-markets-are-growing-strongly-and-so-are-the-supply-risks>.
12. See Bentley Allan et al., *How the U.S. Can Stop Losing the Race for Clean Energy* (Carnegie Endowment for International Peace, February 26, 2025), <https://carnegieendowment.org/research/2025/02/how-the-us-can-stop-losing-the-race-for-clean-energy?lang=en>.
13. Advanced Materials and Manufacturing Technologies Office, "Breaking It Down: Next-Generation Batteries," US Department of Energy, <https://energy.gov/eere/ammto/breaking-it-down-next-generation-batteries>; You Xiaoying, "In China, Battery Makers Bet Big on Sodium to Move Away from Critical Minerals," Reuters, March 16, 2026, <https://reuters.com/sustainability/climate-energy/china-battery-makers-bet-big-sodium-move-away-critical-minerals-ecmil-2026-03-16>; Leah Burrows, "Solid State Battery Design Charges in Minutes, Lasts for Thousands of Cycles," Harvard Office of Technology Development, January 15, 2024, <https://otd.harvard.edu/news/solid-state-battery-design-charges-in-minutes-lasts-for-thousands-of-cycles>.
14. See Dodge, *Public Factories for Critical Energy Components*.
15. Varun Sivaram, Noah Gordon, and Daniel Helmecci, *Winning the Battery Race: How the United States Can Leapfrog China to Dominate Next-Generation Battery Technologies* (Carnegie Endowment for International Peace, October 21, 2024), <https://carnegieendowment.org/research/2024/10/winning-the-battery-race-how-the-united-states-can-leapfrog-china-to-dominate-next-generation-battery-technologies>.
16. "Making the Connection: Meeting the Electric T&D Supply Chain Challenge," Wood Mackenzie, September 2025, <https://woodmac.com/products/supply-chain-analytics/multi-client-study-meeting-electric-td-industry-challenges>.
17. *Large Power Transformer Resilience: Report to Congress* (US Department of Energy, July 2024), 12, <https://energy.gov/sites/default/files/2024-10/EXEC-2022-001242%20-%20Large%20Power%20Transformer%20Resilience%20Report%20signed%20by%20Secretary%20Granholm%20on%207-10-24.pdf>.
18. Addressing the Critical Shortage of Power Transformers to Ensure Reliability of the U.S. Grid (National Infrastructure Advisory Council, June 2024), 3–4, https://cisa.gov/sites/default/files/2024-09/NIAC_Addressing%20the%20Critical%20Shortage%20of%20Power%20Transformers%20to%20Ensure%20Reliability%20of%20the%20U.S.%20Grid_Report_06112024_508c_pdf_0.pdf.
19. "NAHB and Other Groups Seek \$1.2 Billion to Boost Transformer Production," National Association of Homebuilders, January 5, 2024, <https://nahl.org/blog/2024/01/boosting-transformer-production>; Ashkat Rath et al., "The Device Throttling the World's Electrified Future," Bloomberg, March 25, 2025, <https://bloomberg.com/features/2025-bottlenecks-transformers>.

20. Nicole Jao, "U.S. Renewable, Grid Battery Projects Battle Transformer Shortage," Reuters, November 15, 2023, <https://reuters.com/business/energy/us-renewable-grid-battery-projects-battle-transformer-shortage-2023-11-15>.
21. Rathhi et al., "The Device Throttling the World's Electrified Future."
22. "DOE and Industry Team Up to Keep the Lights On for America," US Department of Energy, February 22, 2024, <https://energy.gov/oe/articles/doe-and-industry-team-keep-lights-america>.
23. *Addressing the Critical Shortage of Power Transformers*, 5, 12–13; Sonal Patel, "Transformers in 2026: Shortage, Scramble, or Self-Inflicted Crisis?," *Power*, January 6, 2026, <https://powermag.com/transformers-in-2026-shortage-scramble-or-self-inflicted-crisis>; "Power Transformers and Distribution Transformers Will Face Supply Deficits of 30% and 10% in 2025," news release, Wood Mackenzie, August 14, 2025, <http://woodmac.com/press-releases/power-transformers-and-distribution-transformers-will-face-supply-deficits-of-30-and-10-in-2025>.
24. Megan Husted and Alice Wu, "The Little Monopoly Holding Back the Clean Energy Transition," *National Interest*, October 14, 2025, <https://nationalinterest.org/blog/energy-world/the-little-monopoly-holding-back-the-clean-energy-transition>.
25. See Dodge, *Public Factories for Critical Energy Components*, 17–18. For background on these trade agreements, see Peter E. Harrell, "The Global Industrial Development Toolkit: Unpacking Trump's Investment Deals with Japan and South Korea," *American Affairs Journal* (Spring 2026), <https://americanaffairsjournal.org/2026/02/the-global-industrial-development-toolkit-unpacking-trumps-investment-deals-with-japan-and-south-korea>.
26. Joel Dodge and Todd N. Tucker, *Trump Wields Defense Production Act to Promote Fossil Fuels. It Could Instead Be Used to Promote All-of-the-Above Energy Abundance* (Roosevelt Institute, 2026), <https://rooseveltinstitute.org/publications/trump-wields-defense-production-act-to-promote-fossil-fuels>.
27. Roosevelt, "Fireside Chat."

Decarbonize America's Growth Model

BY JONAS NAHM AND DANIEL DRISCOLL¹



Jonas Nahm is the Andrew W. Mellon associate professor at the Johns Hopkins School of Advanced International Studies. His research examines how the resurgence of industrial policy—particularly in clean energy sectors—is reshaping the global economy. From 2023 to 2024, he served as senior economist for industrial strategy on the White House Council of Economic Advisers.



Daniel Driscoll is an assistant professor at the University of Virginia and a nonresident fellow at the Roosevelt Institute. He works at the intersection of climate governance, economic policy, and financial systems, asking how governments and markets can drive a green and just transition—and what holds them back. His book, *Why Carbon Taxes Failed*, is coming out with Oxford University Press in August 2026.

From a distance, American policymakers can seem disproportionately focused on “making stuff in America.” After all, this is a country that has been steadily offshoring production and jobs for decades, and where 9 in 10 Americans work in the service sector. The Trump and Biden administrations had particularly strong producerist rhetoric, but nearly every president before them had some version of this as well. If the US returns to attempting to decarbonize in 2029, policymakers need to have some tough conversations about whether they are getting the right balance between producerist and consumerist logics. We argue that one tool for doing so is growth model theory (GMT), which focuses on how demand drivers vary across countries.²

Growth Models à l'Américaine

In a sense, a country's growth model can be considered its business model: In short, how does a country typically “make money”?³ A country's growth is always driven by some combination of exports, consumption, investment, and government spending—namely, the four components of Keynesian macroeconomic models.

Crucially for policy purposes, a growth model perspective allows researchers to decompose the components of a country's demand to understand what drives its economic growth. Often, scholars find that characteristics and outcomes cluster around countries' specific sources of demand. For example, policymakers governing export-led growth models may focus on keeping wages low to encourage export competitiveness. By contrast, policymakers governing economies where growth is driven by domestic demand may expand credit markets to prop up household consumption.

What type is the US growth model? Growth decomposition and accounting of the US economy is a helpful first step. Notably, the primary growth driver for the United States is household consumption, at 54 percent of GDP. The primary sectors for growth are services, at 50 percent. The US growth model is thus typically categorized as “strongly consumption led,”⁴ driven by household spending that is propped up by debt and credit markets.⁵ The dominance of services, typical of countries once they’ve developed, has risen over the past few decades.

Table 1. Relative Growth Contribution of Growth Model Components, Average 2009–2019

Consumption	Government Spending	Investment	Exports
54%	3%	30%	13%

Note: Values show each component’s average contribution to real GDP growth over 2009 to 2019, not its share of GDP. Contributions are import-adjusted and adapted from Baccaro and Hadziabdic, “Operationalizing Growth Models.”

Table 2. Relative Growth Contribution of Macro Sectors, Average 2009–2019

Low-Tech Manufacturing	High-Tech Manufacturing	Low-End Services	High-End Services	Education and Health	Public Administration	Construction	Commodities and Energy
1%	6%	29%	21%	3%	18%	17%	5%

Note: Adapted from Baccaro and Hadziabdic, “Operationalizing Growth Models.”

The US economy is built around consuming and servicing, not producing and exporting. Manufacturing accounts for just 7 percent of growth,⁶ while services and construction together account for the overwhelming majority. Furthermore, many social scientists argue that consumption-led growth is a feature, not a bug, of hosting the world’s reserve currency.⁷ From this perspective, the status of the dollar structurally overvalues the exchange rate, making certain price-sensitive manufactured exports persistently uncompetitive on global markets. Thus, some of the above macrofinancial realities serve as situational constraints even before industrial policy enters into the picture.⁸

The composition of the US growth model has direct implications for decarbonization strategy, and may complicate manufacturing-based climate policies. For instance, because consumption rather than exports

drives American growth, the economic beneficiaries of green manufacturing will be fewer and weaker than in export-led economies. These constraints thus frame a core strategic choice: Do we decarbonize through strategies that work with the consumption-led growth model, or push against it by attempting to build competitive green manufacturing capacity?

Where Decarbonization Comes In

In the following sections, we examine the different paths to decarbonization that policymakers might take if guided by growth model theory.⁹

Path 1: Decarbonizing with the Growth Model

One path for US decarbonization runs with the grain of its growth model rather than against it. A consumption-led economy with dominant service and construction sectors has real comparative advantages in a green transition, but they are different advantages than those enjoyed by export-led manufacturing economies.¹⁰ The US is already the world's largest importer of manufactured goods, with deep institutional expertise in procurement, logistics, and deployment. Rather than treating import dependence as a policy failure, policymakers could treat it as a feature: deploying cheap Chinese solar panels, electric vehicles (EVs), and batteries at scale, while capturing value domestically in installation, maintenance, grid integration, and consumer financing. Construction and installation employment is, by definition, non-offshorable. The US building trades—electricians, ironworkers, HVAC technicians—are well-positioned to be the primary workforce of a domestic energy transition, regardless of where the hardware is manufactured.

The US also retains genuine comparative advantage as a global innovation hub. American firms still dominate in software, grid management platforms, and intellectual property-intensive cleantech. As the energy system grows more complex—integrating distributed generation, storage, demand response, and EVs—software and system integration become increasingly valuable relative to hardware. A services-led decarbonization strategy that leans into these strengths is

coherent and realistic, even if it looks different from the green industrial strategies of Germany or China.

Path 2: Decarbonizing Against the Growth Model

The alternative path is transforming the US into a competitive exporter of green technologies. This path faces some structural headwinds, but addresses the increasingly important question of where productive capacity and manufacturing knowledge reside. A production-centered strategy has important rationales on its own terms: Manufacturing capacity matters for supply chain resilience, technological autonomy, a defense industrial base, and—proponents argue—the kind of high-wage employment that service-sector alternatives have not historically replicated at scale. The question the growth model framework poses is not whether these objectives are worth pursuing, but under what structural conditions they are achievable.

The US attempted this strategy under the Obama administration and again more ambitiously with the Inflation Reduction Act (IRA) during the Biden administration. In both cases, it assembled manufacturing coalitions that were perhaps narrower and less immediately politically influential than those that underpinned decarbonization in export-led economies.¹¹

Economies that succeeded at creating such coalitions did so not merely because of policy ambition, but also because they possessed preexisting institutional infrastructures complementary to their creation—dense networks of manufacturing small and medium enterprises (SMEs), vocational training systems, and patient regional finance institutions on which green industries could be built.

The US has at least partially dismantled these infrastructures over decades of financialization and offshoring. Regional development banks and vocational training institutions have atrophied, and SME supplier networks have thinned as consolidation and offshoring have reduced the pool of firms with embedded process knowledge. Building such coalitions from scratch is more cumbersome than it would be to activate existing ones. The IRA showed it is possible but slow. Its manufacturing-centered provisions proved more durable than its broader climate ambitions, surviving in the legislative process precisely because producers had

organized effectively around them—even as other parts of the law were unwound.

Navigating the Trade-Offs

Picking whether to lean into or against the growth model is difficult, but a few strategies have proved useful.

Industries' Place in the Growth Model

The first is to examine which industries require more or fewer changes to the existing growth model. The Draghi report worked to clarify those industries for the European Union, focusing on the production of green and digital technologies as future sectors that were within reach of its comparative advantage.

Some industries may now be beyond reach. Chinese dominance in current-generation solar panels is now essentially unassailable on cost. Tariffs that raise solar deployment costs could undermine the consumption-led coalition dependent on low energy costs without building a sustainable domestic manufacturing alternative. Accepting import dependence here can be a strategic choice that frees resources for sectors where the US has an edge, while offering value to the deployment coalition that the consumption-led decarbonization path depends on.

Other industries sit in a middle ground where the question is less about who makes the technology and more about where jobs are located. EV assembly and some battery manufacturing might fall into this category. Domestic content requirements and inward foreign direct investment (FDI) from Korean and Japanese firms represent a defensible version of this approach, trading some economic efficiency for visible employment.

A third category is defined by geopolitics rather than market logic. Grid hardware, advanced nuclear components, and certain semiconductor inputs matter not because the US can compete globally in producing them but because dependence on foreign suppliers creates unacceptable

strategic vulnerability. The goal here is maintaining minimum domestic capacity as insurance, not becoming an export industrial powerhouse.

Finally, there are sectors where the US retains genuine advantages not yet consolidated by competitors—AI-enabled grid management software, next-generation storage, advanced nuclear design, and the smart manufacturing tools discussed earlier. These are the sectors that warrant the most ambitious and sustained policy support, precisely because the window of advantage is real but not permanent.

Coalitional Politics

A second strategy is to think through the coalitional politics of each strategy. Decarbonizing with the growth model—through deployment, services, and consumption—can draw on a genuinely broad domestic coalition. Construction unions, installation and maintenance workers, utilities investing in grid infrastructure, households benefiting from falling energy costs, and large technology firms requiring cheap renewable power all have material interests in a deployment-centered green transition. This coalition is relatively insulated from trade politics, and its core beneficiaries cannot be offshored. As Kupzok and Nahm argue, the political viability of green macrofinancial bargains depends on whether promised economic co-benefits are actually delivered to constituents with political weight.¹² Deployment-based jobs are visible, local, and immediate.

Manufacturing coalitions can coexist with the deployment-style coalitions. But they will be built most plausibly by pursuing a narrower niche in advanced green manufacturing in sectors that complement US strengths in software and AI—not by competing on volume in sectors where Chinese dominance is now largely consolidated. China's growing manufacturing edge derives not from low wages but from increasingly systematic deployment of (and financial support for) AI and robotics on factory floors, yielding productivity per worker that now exceeds comparable US plants across sectors.¹³ The US, for now, is ahead of China in frontier AI development, but has been comparatively slower to deploy these tools in manufacturing contexts at scale.

A targeted industrial policy focused on upgrading manufacturing competitiveness by connecting legacy equipment to digital systems,

building shared infrastructure for small and midsize manufacturers, and retraining workers could in principle close this gap in specific manufacturing niches. This is a narrow and technically demanding strategy. However, in specific sectors it may be the right one, particularly where geopolitical stakes or genuine innovative advantage make the case regardless of growth model constraints.

Conclusion

Neither path is likely to be sufficient on its own. Combining them means accepting import dependence in sectors where Chinese dominance is consolidated, while directing institutional resources toward sectors where the US retains genuine innovative or geopolitical rationale for domestic production. The analytical challenge is compounded by the fact that the relevant policy levers sit across different agencies with different mandates and limited coordination mechanisms: Trade policy, industrial subsidy, and macrofinancial management are rarely integrated in the same institutional venue, even when the strategic logic demands it. The growth model perspective does not resolve these choices, but it clarifies what is actually being traded off in each—and why strategies calibrated for export-led economies are unlikely to transfer directly to the US context.

Notes

1. This essay is loosely informed by the findings and arguments presented in the authors' previous and ongoing research.
2. Lucio Baccaro et al., eds., *Diminishing Returns: The New Politics of Growth and Stagnation* (Oxford University Press, 2022).
3. Phrasing from Daniel Driscoll, *Why Carbon Taxes Failed* (Oxford University Press, 2026) and others.
4. Lucio Baccaro and Sinisa Hadziabdic, "Operationalizing Growth Models," *Quality & Quantity* 58, no. 2 (2024): 1325–60, <https://doi.org/10.1007/s11135-023-01685-w>.
5. Alexander Reisenbichler and Andreas Wiedemann, "Credit-Driven and Consumption-Led Growth Models in the United States and United Kingdom," in *Diminishing Returns: The New Politics of Growth and Stagnation*, ed. Lucio Baccaro et al. (Oxford University Press, 2022), <https://doi.org/10.1093/oso/9780197607855.003.0009>; Herman Mark Schwartz, "Size, Scope, and Status: Why the American Growth and Welfare Model Remains Exceptional," in *Growth Strategies and Welfare Reforms: How Nations Cope with Economic Transitions*, ed. Anke Hassel and Bruno Palier (Oxford University Press, 2025).
6. As others have pointed out, other important multiplier effects from manufacturing can be found when looking at certain economic accounting metrics. Growth model theory is often macro in data scale. See Todd N. Tucker and Oskar Dye-Furstenberg, *Against Manufacturing Doomism: Why and How Making Stuff Matters* (Roosevelt Institute, 2026), <https://rooseveltinstitute.org/publications/against-manufacturing-doomism>.
7. Schwartz, "Size, Scope, and Status."
8. Daniel Driscoll, "The US Dollar and Decarbonization: Exploring Constraints," *Finance and Society* 11, no. 3 (2025): 407–20, <https://doi.org/10.1017/fas.2025.10>.
9. Daniel Driscoll and Mark Blyth, "Decarbonising National Growth Models: Derisking, 'Hobbled States,' and the Decarbonisation Possibility Frontier," *Review of International Political Economy* 32, no. 3 (2025): 617–42, <https://doi.org/10.1080/09692290.2025.2489770>.
10. Driscoll, *Why Carbon Taxes Failed*.
11. Jonas Nahm, "Green Growth Models," in *Diminishing Returns*, ed. Baccaro et al.
12. Nils Kupzok and Jonas Nahm, "Green Macrofinancial Bargains: How Economic Interests Enable and Limit Climate Action," *Review of International Political Economy* 32, no. 3 (2025): 569–92, <https://doi.org/10.1080/09692290.2025.2453502>.
13. Jonas Nahm, "America Has an Edge Over China. Why Won't We Use It?," *New York Times*, February 24, 2026, <https://nytimes.com/2026/02/24/opinion/china-america-manufacturing-ai.html>.

Rebalance Capital and Labor

BY TED FERTIK¹



Ted Fertik has been vice president for manufacturing and industrial policy at the BlueGreen Alliance since 2024. For six years before that he held a variety of roles with the Grassroots Power Project and the Working Families Party, including advocating for what became the Inflation Reduction Act as part of the Green New Deal Network. He holds a PhD in history, with a dissertation about industrial policy in an earlier era of economic crisis and geopolitical fragmentation.

In center-left discussions of climate, energy, and economic policy—in autopsies of the Biden years and in early blueprints for 2029—organized labor tends to appear as either an afterthought or a nuisance. In particular, labor’s demands to implement mandatory job-quality standards, use union labor, and prioritize domestic manufacturing are viewed as rent-seeking that threatens to slow deployment or raise costs. The Abundance movement has made this view intellectually respectable: If the goal is to build clean energy fast, the argument goes, attaching labor conditions to public investment is like an additional tax—making it harder to achieve outcomes we care about.

This essay argues the opposite—and not merely on grounds of fairness or coalition arithmetic, though both matter. The deeper problem is that elite-led economic transformation has a consistent track record: It shifts wealth upward, leaves workers and communities behind, and generates the political backlash that makes sustained policy impossible. Far from being too solicitous of union demands, Biden-era green industrial policy did not go far enough. A simple return to that policy, with the labor and community standards scrubbed out to make it more palatable to capital, is not a shortcut to durable climate action—it is a recipe for the next reversal.

What follows is an argument for treating political economy questions not as a sideshow to green industrial policy but as its central problem. These questions include the balance of power between capital and labor and the conditions under which workers and their communities can trust that large-scale economic change will work out for them.

The New/Old Common Sense

From about 2018 through 2024, something like a “climate common sense” prevailed among both policymakers and investors.² Essentially, they believed that the future was carbon constrained and that advantages would accrue to countries, firms, and communities that moved quickly to seize the potential upsides of a low-carbon economy. The sense that this was the direction of travel eased the path for climate policymaking: It was reinforcing where the economy was going anyway. In turn, aggressive climate policymaking reinforced the sense that this was the direction of travel. Climate action would win the broader base of support necessary to sustain it by delivering “co-benefits,” including in the form of “good, union jobs.”

Biden-era thinking about the importance of union jobs was one piece of a broader rejection of economic orthodoxy. The state was going to step in to improve economic outcomes. The “union” part was not just coalition management, a gesture toward the need for improved job quality, or recognition of the political importance of securing a “just transition” for (often unionized) workers in carbon-intensive economic sectors. It was also a (belated) recognition by some policymakers that deindustrialization and deunionization had weakened the core mediating institutions that connected the interests of working-class people to a broader project of economic governance.³ And, critically, the diminished reach of collective bargaining dramatically reduced the scope for *disciplining capital* from the ground up. Industrial policy was supposed to help rebuild the labor *movement* and give it a powerful foothold in the new clean energy economy. In doing so, it would help rebuild one of the core constituencies needed to sustain active pro-climate economic governance over time at the bargaining table and in the corridors of state power.

There were important wins. The prevailing wage and registered apprenticeship bonus structure of the clean energy tax credits was a gigantic breakthrough for the construction trades, and has had real-world effects on job quality and union density in clean energy deployment.⁴ Savvy organizing strategies and a helpful exercise of administrative discretion contributed to big organizing wins by the United Steelworkers at Blue Bird and Eos, and by IUE-CWA at New Flyer.

And farsighted bargaining demands combined with hard-fought worker organizing led to successful UAW unionization drives at some of the electric vehicle (EV) battery joint ventures between US automakers and Korean battery makers, most notably and poignantly at the Ultium Cells battery facility in Lordstown, Ohio.⁵ Had there been a Harris administration, there likely would have been a good many more successful organizing drives in clean energy.

And yet, especially in manufacturing, Biden-era policies did not succeed in altering the fundamentally anti-union bias of the US political economy, even in the parts of the sector that directly benefited from massive public subsidies. There are many reasons for this, beginning with the fact that in a fundamentally anti-union political economy it is difficult to get pro-union legislation through Congress. In addition, where officials perceived a national security or geopolitical imperative, the Biden administration placed greater emphasis on ensuring that companies accepted the public subsidies than on ensuring that any jobs created would be good jobs. The consequence was that a disproportionate share of manufacturing investment made through Biden-era green industrial policies went to right-to-work states, and many companies deployed the classic union-avoidance playbook, exposing a gulf between the administration's rhetoric and the reality that many workers faced.

Upending the Climate Common Sense

Since coming to power, the Trump administration and Republican Congress have sought not just to reverse climate progress but to upend the climate common sense. Their goal has been to convince everyone that the future is *not* carbon constrained, including by penalizing actors who behave as if it is. They have probably not fully succeeded—for example, the market share of clean vehicles globally is climbing inexorably upward. Their “success” has also been dramatically undermined globally by their war of choice against Iran.

Yet they have shredded any conviction that investors and firms might have had that climate policies, once enacted, will survive the next alternation in power. While future policymakers could take steps to increase the durability of climate action, we are unlikely to see a repeat of the kinds of bets on policy stability that, for example, led automakers

to invest tens of billions of dollars in a rapid transition to electric vehicles, which policy reversals have subsequently caused them to write off. This psychological shift makes a simple return to Biden-era green industrial policy unlikely at both a political and a policy level. The climate policy of the future will need to solve anew for how we get capital to invest in the technologies and sectors that are necessary for a low-carbon economy.

At the same time as it has attempted to bury *green* industrial policy, the Trump administration has embraced an almost unbounded view of the power of the American state to intervene in private markets, however and whenever it sees fit. Some of the Trump administration's industrial policy interventions have targeted industries and sectors that are also important for climate goals. This is for some of the same economic and national security reasons that motivated aspects of Biden-era industrial policy, plus the Trump administration's bet on an unregulated AI boom as an economic strategy and (perhaps) out of unadvertised recognition of the far-reaching importance of lithium-ion batteries. While some of these industrial policy interventions look mostly like subsidies, which private firms are only too happy to take, others appear to have an element of state direction over private investment—of *disciplining* capital, rather than “coaxing” or “derisking” it.

Capitalists are now less likely to make unhedged bets on a low-carbon future. As a result, pundits and some advocates have argued that the key is to remove as many barriers as possible to investment in the clean economy. They say deregulation and abandonment of “everything bagel” social goals—including the goal of greater unionization—are necessary to advance climate goals. Furthermore, the complete absence of transparency or congressional authorization, the gangster-style coercion, and the naked corruption and self-dealing that characterize the Trumpist approach to industrial policy have understandably led some people to rediscover old verities about the proper relationships between states and markets.

Toward a Truly Worker-Centered Climate Policy

Deregulation and constraints on the government's ability to intervene in private markets will not solve the problems of climate politics because

neither addresses the core political economy problem that climate politics faces. It is difficult to build a political economy coalition for clean industrial policy because in recent decades, elite-led projects of economic transformation have mostly gone badly for working people. Working people and their communities simply have no good reason to trust that large-scale economic changes are going to benefit them. Loss aversion is everywhere. Trying to engineer a clean energy transition without solving for this is a recipe for indefinite replays of the Trumpist cleavage politics that we've seen from West Virginia to Michigan and beyond.

Abundance circles worry about pairing policies meant to spur investment in the clean economy with labor and environmental standards, domestic content requirements, and community benefits. They believe these additional conditions will increase costs and timelines, thus limiting investment, slowing deployment, and therefore having less to show for the policies.

However, the whipsaw of the last few years points in the opposite direction—we do not face a carefully calibrated trade-off between faster deployment without conditions and slower deployment with them. We face either constructive climate action with standards, or fossil nihilism. Similarly, when it comes to industrial policy more broadly, we do not really face a trade-off between doing it the “right” way and doing it the “wrong” way. We face a choice between a government empowered to intervene in an economy that is manifestly failing huge numbers of our people and failing to decarbonize, and a government so constrained that we're left at the mercy of the profitability calculus of concentrated corporate capital—which results in continuous upward shifts in wealth and only incidental attention to the climate imperative. Our priority must therefore be building the broadest possible consensus in favor of constructive climate action through bold governance. We will only do that if the climate action we pursue makes the US economy work better for working people.

Labor unions are an essential part of how society can discipline capital to invest in the high-road, low-carbon economy that our people and the planet need. Labor unions make jobs better, and therefore can increase the popularity of policy that helps create those jobs. Labor unions are powerful vehicles for policy advocacy, and their support is typically make-or-break for policy that affects their members whenever

Democrats are in power, including when it comes to advancing proactive and timely permitting and siting solutions. Labor unions exercise their power at the bargaining table to compel companies to invest in the facilities where their members work, and to commit to respecting other workers' right to organize their own unions in new facilities.

The first step toward rebalancing the power of capital and labor ought to be strengthening the right to organize across the board. This step is reflected in legislation like the Protecting the Right to Organize (PRO) Act. The PRO Act dramatically increases penalties for companies that violate workers' right to form a union. It speeds up union certification processes. And it eliminates some of the most egregious anti-union tactics that allow employers, in the name of "free speech," to threaten and intimidate workers who want to organize. The PRO Act also overrides state-level right-to-work laws that allow workers to opt out of union membership while nevertheless requiring unions to represent all workers. This change would significantly reduce the perceived advantage to employers of locating in those states. Paired with the new penalties and protections, it would help unions build density in traditionally anti-union states. Alongside that, a future administration might consider requiring card-check neutrality from companies receiving Defense Production Act investments.⁶ Labor standards can and should be added to manufacturing subsidies, as, for example, a new bill to reauthorize the Export-Import Bank would do.⁷

One of the biggest drivers of deunionization in manufacturing over the past four decades has been offshoring and rising import dependence for manufactured goods. US-based manufacturers routinely wield the threat of offshoring in union organizing drives and contract negotiations to cow workers into accepting lower standards. The more attractive offshoring is to corporate management, the harder it is to build worker power in US manufacturing. Thus in addition to pursuing trade policy that creates a level playing field for US workers, future administrations and Congresses should look at additional ways to disincentivize offshoring. And to shift corporate behavior away from focusing on short-term profitability at the expense of long-term investment, we should be looking to put the brakes on things like stock buybacks.

In pursuit of a revived green industrial policy, the US government could also more powerfully leverage the fact that US companies that are not at the cutting edge of key industries need a partner in the US government

to have a shot at competing. It can also use the fact that many companies that are at the cutting edge badly need access to the US market to be profitable. The Trump administration has attempted to exploit both forms of leverage, securing equity stakes in exchange for generous and comprehensive subsidy packages to US rare earth miners, investments from the Japanese government into US energy infrastructure, and commitments from companies like TSMC and Emirates Global Aluminum to establish or expand their US manufacturing footprint. Unsurprisingly, the Trump administration has not used this leverage to increase union density or secure guarantees of job quality, preferring to offer Trump family members the opportunity to “bid” for slices of government-guaranteed returns. Future administrations and Congresses that recognize the existence of this leverage could use it instead to attach strong labor standards that ensure that jobs created with public money are good jobs and that unions grow in numbers and in strength.

Conclusion

The biggest mistake we could make is to treat these deeper questions of political economy and the balance of power in our society as a luxury or a sideshow in the effort to revivify green industrial policy. They remain as central to the change we need as ever. The climate politics of the next decade will be shaped less by the technical details of any particular policy than by whether we can rebuild a common sense—a widespread conviction that decarbonization and broadly shared prosperity are not in tension but are in fact the same project. Attempting to remove unions from a meaningful say in the shape and direction of investment in the economy in the name of technocratic efficiency will not get us there. A far more powerful labor movement could.

Notes

1. The views expressed here are the author's alone and do not necessarily represent official positions of the BlueGreen Alliance or its member organizations.
2. Ted Fertik, "The Anti-Climate Common Sense," *Phenomenal World*, September 24, 2025, <https://phenomenalworld.org/analysis/the-anti-climate-common-sense>.
3. Alexander Hertel-Fernandez, "Policy Feedback as Political Weapon: Conservative Advocacy and the Demobilization of the Public Sector Labor Movement," *Perspectives on Politics* 16, no. 2 (2018): 364–79, <https://doi.org/10.1017/S1537592717004236>.
4. Betony Jones and Joe Peck, *The Receipts: The Untold and Underappreciated Outcomes of Biden's Clean Energy Strategy* (Roosevelt Institute, April 2024), <https://rooseveltinstitute.org/publications/the-receipts-the-untold-and-underappreciated-outcomes-of-bidens-clean-energy-strategy>.
5. Tom Taylor, Nicole Lepre, and Matthew Vining, "Good Jobs at Ultium Cells in Warren, Ohio," Atlas Public Policy, September 2024, <https://atlaspolicy.com/good-jobs-at-ultium-cells-in-warren-ohio>.
6. Joel Dodge and Todd N. Tucker, *Trump Wields Defense Production Act to Promote Fossil Fuels. It Could Instead Be Used to Promote All-of-the-Above Energy Abundance* (Roosevelt Institute, 2026), <https://rooseveltinstitute.org/publications/trump-wields-defense-production-act-to-promote-fossil-fuels>.
7. Senate Democrats, "Leader Schumer & Senate Democrats Introduce Legislation to Rebuild American Manufacturing, Lower Costs, and Create Good-Paying Jobs," press release, June 15, 2026, <https://democrats.senate.gov/newsroom/press-releases/leader-schumer-and-senate-democrats-introduce-legislation-to-rebuild-american-manufacturing-lower-costs-and-create-good-paying-jobs>.



Roosevelt
Institute

rooseveltinstitute.org