

Conclusion

We must admit that we are losing this battle . . . Yes, we are failing, but there is still time to turn everything around.

—Greta Thunberg¹

If you drive east from Los Angeles towards Palm Springs, you will pass through the humble beginnings of the clean energy revolution. Lining the highway are decades-old wind turbines quietly turning their blades, like ghosts from the not-so-distant past. Where did these strange creatures come from? Like all clean energy technology, policy drove their creation. In 1977, the Carter administration called for 20% of the nation's power to come from renewable energy sources by the year 2000. President Carter signed into law large tax credits for the nascent renewable energy industry. The next year, California enacted a landmark law that set a goal for wind energy to supply 1% of the state's electricity in a decade (Righter 1996a).² These were the first clean energy targets in the country, and they drove unprecedented growth in renewables.

Combined with state tax incentives and the federal Public Utility Regulatory Policies Act (PURPA), these policies kicked off a veritable gold rush in wind energy in California. By 1985, more than 12,000 wind turbines had been built, equivalent to about one and a half coal plants.³ The California experiment was the biggest in the world at the time, representing 96% of global wind energy with total investments over \$2 billion (Righter 1996a; Starrs 1988). By 1987, California met its first goal, and wind supplied 1% of the state's electricity (Starrs 1988). And it wasn't just wind energy that was booming in the Golden State: policies drove utility-scale solar, biomass, and geothermal plants.⁴ By the late 1980s, 90% of all of the solar power generated in the world was made in California.⁵ New clean energy companies grew in the state, in theory creating interest group advocates who could push for more ambitious policy.⁶

But the California case—like the others in this book—is not a simple story of path dependence. The Reagan administration was far less supportive of clean energy than the Carter administration. At the end of 1988, federal tax incentives

expired for all types of renewable energy projects. That same year, the California government suspended important clean energy policies (Smith 2013). This policy retrenchment was devastating for the advocates that early clean energy laws had incubated. With lost revenue and insurance companies failing to pay out claims, many renewable energy projects were abandoned rather than repaired (Morris 2000; Righter 1996a). Little new capacity in wind, solar, biomass, or geothermal was added after 1988. By the 1990s, large clean energy companies were going bankrupt.⁷

In the wake of this devastation for the nascent renewable energy industry, utility companies began lobbying to further weaken clean energy laws. Existing policies forced utilities to buy power from independent companies rather than relying on their own carbon-intensive power plants. As monopolies, electric utilities resented being told what to do and they resisted these rules. For example, in 1995 PG&E tried to create specific surcharges on customers' bills for California's renewables programs and make the legislature approve the clean energy policy each year.⁸ This change would have made the costs more visible to the public and retrenchment more likely since the policy would have to be renewed annually. When California's electricity system was restructured in the late 1990s, clean energy advocates failed to get a renewable portfolio standard (RPS) embedded in the law, due to utility opposition, lack of support from the California Public Utilities Commission (CPUC), and fragmented advocate support. In the 1990s, California lost its global lead in clean energy. It would take almost two decades for the state to get back on track.

This pattern does not just hold for California. Over the past three decades, conflict over the energy system has played out across the United States between advocates for a clean energy future and incumbent utility opponents holding onto a fossil fuel past. These utilities promoted climate denial as they successfully delayed the transition to clean energy. The 1990s and the beginning of the 2000s were lost decades for preventing global climate disaster. If we look only at California's landmark 2018 law—requiring 100% clean energy by 2045—it is easy to believe this is a triumphant story of advocates winning through positive feedback. *But this law came 40 years after the first clean energy target was passed in that state.* As the climate crisis grows worse, we do not have 40 years to wait for every other state to move their goals from 1% to 100% clean energy.

Decarbonizing the US electricity system is the first linchpin globally for mitigating climate change and achieving net zero emissions. Unfortunately, the pace of change in the electricity system across the American states is paltry. After a decade of strong growth, jobs in the solar sector have been falling since 2016. In 2018, only 36% of the US electricity supply came from clean energy sources, including nuclear. Between 2009 and 2018, annual growth in renewable energy was a mere 0.7 percentage points (p.p.). Even in the best years—2016 and

2017—renewable energy only grew by 1.3 p.p. If we assume that new nuclear will continue to struggle, then renewable energy must increase by at least 2 p.p. annually just to keep pace with decarbonizing the existing electricity system by 2050.⁹ Meeting even this modest target at this pace requires all existing nuclear to stay open. If we want to move faster, and decarbonize the grid by 2035, then we need renewables to grow by 3.7 p.p. annually—more than five times faster than they have been growing over the past decade.

That pace ignores two critical factors: the need to expand the grid to electrify other sectors and the need to replace retiring nuclear capacity. First, we must grow the entire electricity system by 50%–120% to electrify other sectors (Iyer et al. 2017; Jenkins et al. 2018; Williams et al. 2014).¹⁰ To keep pace with the decarbonization demands of transportation, buildings and industry means that clean energy needs to grow 5 p.p. and 9.6 p.p. annually for a 2050 and 2035 target, respectively. This would represent a 7–14 times increase over the historic average deployment rates. That said, these targets would be easier to meet with a big push on energy efficiency. If we can power our societies with less energy, it will be much easier to decarbonize the grid and electrify new sectors over the necessary timelines because we will not need to build as much new infrastructure.

Second, we must keep in mind that large amounts of clean energy will be going offline in the coming decades as nuclear plants retire. By 2040, 60% of the existing nuclear plants in the United States are slated for retirement.¹¹ If we assume that only a handful of the existing nuclear plants are still operating in 2050, then this capacity must also be replaced. Since nuclear currently supplies 20% of the grid, and 55% of clean energy, we need growth rates for renewables around 5.7 p.p. annually for a 2050 target. Given that nuclear provides around-the-clock, emissions-free power, this electricity source will be particularly challenging to replace.

In short, if we are targeting 100% clean energy by 2050, we are talking about at least a 8-fold increase in the annual pace of renewable energy deployment. To accomplish 100% clean energy by 2035, if we keep the existing nuclear fleet operating, we will require at least a 12-fold increase over the best years for renewables growth. If nuclear plants are shutdown and little progress is made on energy efficiency, then meeting a 2035 target requires building more than one-tenth of the entire, existing grid infrastructure every year until the deadline. That would mean moving 15 times faster than we have in the past decade. To say this would be a heroic pace is an understatement. Moving at this speed will strain environmental assessment processes and will likely lead to significant resistance at the local level (Stokes 2016). And these dramatic transformations will take place all while we build out transmission and storage across the country at an unprecedented scale. While many believe that the electricity sector will be easy to

decarbonize, these facts speak for themselves—it will not be simple (Davis et al. 2018). Speed and scale are not secondary issues, but the fundamental challenge.

The earth's climate has already warmed by more than 1 °C. Record-breaking hurricanes are now an annual occurrence in the United States. Droughts last longer. Across the world, unprecedented fires rage. How did we get into this mess, as a country and as a planet? One common answer is we are all to blame, through our everyday choices: whether to drive, bike or walk, to take a flight, to buy stuff made of plastic. But this answer is ahistorical and ignorant of how institutions shape the choices we *can* make. No one can unilaterally choose to live in a low-carbon economy. When we fail to take an institutional view, we obscure the role of power in our daily lives. Some actors in society have more power than others to shape how our economy is fueled. We are not all equally to blame.

We must direct our attention to the historical and institutional roots of our current dependence on fossil fuels. In this book, I have shown that our failure to address the growing climate crisis is a result of opposition from electric utilities and fossil fuel companies. These companies have resisted innovation (Hirsh 1999a; Hughes 2004). They have lied about climate science (Anderson et al. 2017; Oreskes & Conway 2010). And they have attacked climate policies. By bending the political system to their will, these companies have created the climate crisis. Until policies are in place that effectively challenge fossil fuel companies and electric utilities' political dominance, the lives of billions of people, communities, species, and ecosystems are in grave danger.

In this conclusion, I begin by reassessing the evidence for interest group influence in American politics, examining its implications for theories of policy feedback and path dependence. I then turn to the specific case of clean energy laws, examining how this book's cases generalize more broadly across the American states. I end the chapter with some practical thoughts on how to make progress on clean energy policies given the entrenched nature of organized combat between interest groups. To address climate change, policy advocates need to win policy conflicts more often. Clean energy advocates must learn from their opponents' playbook.

There are still reasons to hope: in 2019, the Green New Deal and substantial climate plans from all the major Democratic presidential candidates pushed climate policy back onto the national energy agenda. For the first time in a decade, politicians began talking seriously about a national clean energy standard (CES). At the state level, there is also exciting, renewed action. California, Hawaii, New Mexico, New York, Washington State, Colorado, Maine, and Nevada have all passed laws that target 100% clean energy on necessary and feasible timelines.¹² At the time of writing, Maryland and New Jersey have passed bills to get half of their electricity from renewables by 2030. Illinois, New Jersey, and Massachusetts

are similarly considering bills to get to 100% carbon-free energy.¹³ Cities have also joined in.

These laws are not enough to avert the climate crisis, but they are a start. Without the actions of laggard states and with all the inevitable implementation challenges, we would be unwise to rest easily. Ultimately, we must have a federal law to drive renewable energy adoption across all 50 states. The battle for clean energy is not yet over. We have not yet lost the war against climate change. But we must remain clear-eyed about what we are up against: interest groups that profit from and promote pollution. Opponents who seek to keep the status quo. Defeating climate change is, at its core, a political battle over policy. We must be ready to fight.

The Case for Organized Combat and the Limits of Path Dependence

Interest group conflict is at the core of policy change in America. Conflict over policy continues after enactment. In fact, it may increase after implementation as actors learn about policies' effects in practice. When policies are first drafted and passed, there is significant ambiguity and uncertainty. I call this dynamic the "fog of enactment." As I have argued, the fog is more likely under a number of conditions: when policies are new, during major reforms, in technical policy domains, and in cases where policies interact across scales of government.

When policies are novel—and haven't been passed or implemented widely in other jurisdictions—politicians, regulators, and interest groups all struggle to understand their potential implications. In cases of complex, omnibus bills, provisions may be buried deep in proposals that stretch hundreds of pages. In technical policy domains, politicians and interest groups alike may struggle to forecast outcomes. And policy effects can be particularly difficult to anticipate when states and the federal government share jurisdiction. In these cases, actors may creatively combine rules from different levels of government in ways that are difficult to predict in advance. While actors often claim to understand legislation's consequences if passed, in practice this is challenging to do. As the survey data I presented in Chapter 2 shows, it is the norm for politicians and their staff to struggle to anticipate policy outcomes.

However, ambiguity and uncertainty declines over time. After implementation, policy effects become clearer. In part this occurs through networks of interest groups that cross state lines—including national associations and federated groups. Networks play three important roles: they help interest groups learn to anticipate policies' consequences, they help interest groups disseminate

effective political strategies, and they facilitate collective action. Interest groups enabled through policy feedback in early acting jurisdictions can move to other places, driving policy change. In this way, policy feedback can spillover from state to state.

Early on, advocates used networks to successfully push clean energy laws. In part, these networks grew out of earlier policies. For example, many advocates emerged from California after its renewable energy experimentation in the 1980s, and these groups moved into other states. The Energy Foundation also cultivated a national network of advocates in the early 1990s to develop policy ideas, share political strategies, and facilitate collective action. These advocates watched early policies and learned about how they would work in the next state. We know that states can act as a laboratory for ideas, exporting policy ideas to other states. But those ideas do not just move because they are “good” or “successful.” Advocates work to move policy ideas that serve their interests across state lines.

Networks of policy opponents, however, often counter advocates’ efforts. Business and conservative groups that work across state lines have been central to pushing for clean energy laws’ retrenchment. Like advocates’ networks, these groups facilitate collective action, helping opponents learn and disseminate political strategies. For example, the American Legislative Exchange Council (ALEC) created model bills designed to repeal RPS and net metering laws. Conservative think tanks and advocacy groups including Americans for Prosperity (AFP), Americans for Tax Reform, the Beacon Hill Institute, the Cato Institute, the Goldwater Institute, and the Texas Public Policy Foundation have similarly worked to retrench clean energy laws. These groups have strong ties to oil and gas industries as well as electric utilities—when they attack clean energy laws, they are acting in their own interest.

In addition to relying on networks, there are a number of other strategies interest groups use in their battles over policy. When feedback has not yet empowered advocates, opponents work directly with legislators or regulators to weaken laws. Opponents can use lobbying, campaign contributions, relationships, and ideas to try to erode policy and stop path dependence. Often, policy changes unfold with little public visibility, through a kind of “quiet politics” wherein interest groups capture political institutions (Culpepper 2010). However, when positive feedback has begun to take hold and advocates have increased their political influence, opponents may be forced to work indirectly to undermine laws. In these cases, they can expand the scope of conflict by working through the parties, the public, and the courts. While I have focused primarily on how opponents have used these strategies, advocates can also learn to apply them.

Interest Group Battles Through the Parties, the Public, and the Courts

After policy feedback has begun to take hold, and advocates have more political influence, opponents must work indirectly to achieve policy retrenchment. As I have shown in this book, there are three main pathways for indirect influence: the parties, the public and the courts. First, interest groups can work through political parties to promote policy change. On the right, networks of conservative politicians and interest groups, such as ALEC and AFP, try to influence the parties. As interest groups drag the parties further apart, partisan polarization develops. To date and across most policy issues, Republicans have moved farther to the right while Democrats have stayed fairly stable—a trend called asymmetric polarization (Hacker & Pierson 2006). The same is true for climate policy. Climate change is has been found to be the most polarized policy domain (Guber 2012). Clean energy is becoming almost as polarized as climate policy along partisan lines. Why has this occurred? I argue it is driven by interest groups. Utilities and other fossil fuel corporations have worked hard to undermine support for clean energy among Republicans.

When working through the political parties to change policy, primaries are particularly important. Opponents can financially back politicians who support their point of view in an attempt to influence policy (Powell 2012). Although utilities often claim that they do not intervene in political races, in practice they do. As was shown in Chapter 7, the private utility Arizona Public Service (APS) spent at least \$55 million over several years supporting anti-solar candidates in Republican Party primaries and general elections for positions on the Arizona Corporation Commission (ACC).¹⁴ In contrast, the solar companies likely spent half as much.¹⁵ The elections resulted in the opponents' preferred politicians winning office, and these commissioners went on to dramatically rollback solar energy laws.

In the 2010s, the climate movement began to use the same strategies to try to drive action that fossil fuel companies have used to stall it. For example, in 2013 the billionaire Tom Steyer founded a political action committee (PAC), NextGen America. This organization has focused on targeting both Democrats and Republicans if they are not sufficiently pro-climate. Since 2017, the group Justice Democrats has used the primary system to push the Democratic Party to the left on climate change. It helped recruit and elect Representative Alexandria Ocasio-Cortez, who went on to champion the Green New Deal when she took office in 2019. Groups like Future Now are also popping up to contest right-wing, anti-climate networks. The use of primaries to shift party positions on climate is not just available to the right—increasingly, environmental advocates on the left are using this strategy.

Partisan polarization on climate is not inevitable—support could shift back to the bipartisanship we saw before 2008 (Figure 1.1). In the past, Republican lawmakers have backed clean energy laws. Since renewables are popular with the public, ambitious state politicians interested in seeking higher office often champion clean energy laws. This is particularly the case with Republicans, who use these policies as a feather in their cap to show concern for the environment and bipartisanship. Governor George W. Bush did in Texas, before he launched his presidential bid; Speaker Jon A. Husted did this in Ohio, before he campaigned for secretary of state. And both Governor John Kasich of Ohio and Governor Sam Brownback of Kansas were wary of signing laws that would make them seem anti-renewables. There is also a growing cadre of right-wing think tanks and grassroots groups that support climate action: the Niskanen Center; republicEN; the Green Tea Coalition, an alliance between the Tea Party and the Sierra Club; Florida's Conservatives for Energy Freedom and Floridians for Solar Choice; and Michigan's Conservative Energy Forum.

In addition to the parties, interest groups can use the public in their policy campaigns. Political science research has demonstrated that policy change tends to follow public opinion (Erikson et al. 1993; Lax & Phillips 2009; Stimson 2004; Stimson et al. 1995). Studies examining mass feedback effects have also shown how specific entitlements can create new identities among the public, leading to policy stability (Mettler 2002; Mettler & Soss 2004). However, in obscure, low-salience policy domains—a description that applies to many areas—interest groups play a critical role as self-appointed translators for the public (Smith 2000). When turnout is low, organized interest groups have greater sway over the electorate (Anzia 2011).

In a technical policy area that average citizens do not understand, I argue that interest groups—and to a lesser extent politicians—construct public preferences. Building on the idea of outside lobbying, this book has examined the ways that interest groups create public opinion for politicians (Kollman 1998). For example, interest groups commonly run public opinion surveys. Question wording on these surveys may not adhere to accepted scholarly standards, instead falling into the category of a “push poll,” where leading questions all but guarantee certain findings. With the desired results in hand, groups communicate “public preferences” through the media or to politicians directly.

Interest groups may also try to influence public opinion by making the costs of a policy salient to the public. We see this in Ohio, where the 2014 retrenchment bill included a requirement to place a line item for renewables on citizens' electricity bills. By calling out renewables' costs, opponents were trying to increase the likelihood of further retrenchment by raising the salience of the policy with the public. Similarly in Arizona in 2018, the attorney general—who had received significant campaign funding from the utility APS's parent

company—added language to a ballot initiative that highlighted clean energy's costs. The utility's parent company went on to use the same language in its advertisements opposing the measure.¹⁶ By highlighting costs, opponents can try to undermine public support for climate action. Of course, these opponents neglect to communicate the massive and irreversible costs of climate instability.

Even more nefariously, interest groups can run fake campaigns, rather than going to the trouble of actually organizing or polling the public. For example, in New Orleans, Entergy ran an astroturf campaign in 2017, in which they paid actors to deliver speeches in support of a proposed gas plant. For 10 public speakers and 75 demonstrators in front of the City Council, Entergy New Orleans's chief executive officer (CEO) paid \$29,000—a meager investment if the gas plant was approved.¹⁷ Astroturf campaigns are increasingly common in American politics and are used to try to influence politicians and their staff. It is often up to journalists to communicate the true origins of these campaigns through investigative reporting.

These tools to construct and communicate public preferences are not just available to opponents. Overall, support for clean energy policy is quite high—much higher than support for a carbon price, for example (Howe et al. 2015). Hence, these laws start from a place of significant popularity in most states (Stokes & Warshaw 2017). Clean energy advocates have tried to increase public support by highlighting jobs, health benefits from improved air quality, and the dangers fossil fuels pose to the climate. Apart from job creation and air pollution, however, these benefits can often seem intangible to the public, making advocates' task of communicating renewables' benefits difficult. Climate change, in particular, is so polarized that it is usually ineffective as a messaging strategy for clean energy (Stokes & Warshaw 2017).

Despite polarization, advocates can still use public support to campaign for clean energy laws. The Yale Project on Climate Change Communication, for example, creates maps that show what the public thinks in each congressional district—key information that advocates can use to communicate public preferences to politicians (Howe et al. 2015; Mildenberger et al. 2017). Data for Progress, a think tank, similarly creates downscaled public opinion estimates to argue that public policy is often not in line with the majority's preferences. As they show, many left-leaning policies are wildly popular with the public. Using this kind of high-resolution data can help groups communicate public preferences when specific climate policies are proposed, for example, the Green New Deal.¹⁸

The courts are the third pathway interest groups can use in their conflict over policy. If opponents are not able to change the law directly, they seek to resolve their grievances through the legal system. On balance, interest groups prefer using other channels to challenge policy as there is significant uncertainty with

court cases' outcomes. In Colorado, for instance, opponents mounted an unsuccessful Commerce Clause challenge against the state's clean energy law. That said, even when cases are ultimately unsuccessful, legal threats can be powerful. The fear of a court challenge has the potential to shift policy. For example, several clean energy laws that had local content requirements, to encourage local job creation in the state, have since been modified due to fears of a legal challenge (Carley et al. 2018). At the federal level, opponents have pursued cases against climate policy like the Clean Power Plan. This also occurs internationally: in 2019, major challenges to Canada's national carbon price were launched through the legal system. Future work should examine in greater detail the role of the courts in short-circuiting policy feedback.

While opponents have tried to use the legal system to block progress on clean energy, advocates have also taken to the courts for their own ends. In Arizona, SolarCity challenged the legality of net metering charges. More broadly, the legal system is becoming an increasingly important venue for battles over climate policy. Significant investigative reporting and academic work revealed that ExxonMobil knew the science of climate change in the 1970s and 1980s (Supran & Oreskes 2017). Yet, ExxonMobil launched a denial campaign and lied to the public for decades (Oreskes & Conway 2010). In response, the attorney generals of New York and Massachusetts opened legal investigations into the company in 2015 and 2016, respectively.¹⁹ While the New York case was unsuccessful, that does not mean that other challenges will not prevail. States, cities, and counties have similarly instigated suits against several fossil fuel companies, including for compensation from climate damages. This strategy mirrors efforts to hold tobacco companies accountable for fraudulent behavior—an effort that, after decades, eventually succeeded.

Of course, these three indirect pathways to political influence and policy change do not capture all the critical actors, institutions, or interest group strategies in American politics. For example, interest groups often use the media to try to influence policy. To date, the media has done a poor job of communicating the stakes in climate policy battles. But this book also rests on the dedicated work of dozens of journalists who have uncovered electric utilities and fossil fuel companies' lies and political strategies. I will leave it to other scholars to investigate the role the media plays in organized combat more fully.

In this book, I have made a case for focusing on organized combat between interest groups to understand policy. How does putting interest group conflict at the center of a theory of policy change alter our expectations about policy feedback, path dependence, and lock-in? When we remember that opponents retain significant power after enactment, policy feedback appears much less likely than the preponderance of the literature suggests. From the empirical cases examined in this book, we can see a number of reasons why path dependence can fail.

Time is an important variable in any policy study (Pierson 2004). For policy feedback to work, laws must be in place long enough to grow advocates' political power. It is notable that most of the clean energy policies that opponents have aggressively targeted were passed quite late—in 2008 or later. In these cases, there was insufficient time for clean energy advocates to establish themselves as a counterbalancing force to their opponents.

Reassessing the Evidence for Interest Group Influence in American Politics

While I have laid out a theory that places interest groups at the center of policy change, it is notable that this runs counter to important scholarship in American politics. Interest groups' role in influencing public policy is controversial.²⁰ A substantial amount of research argues that campaign contributions and lobbying largely do not influence policy outcomes (Ansolabehere et al. 2003; Gerber 2004; Huber & Arceneaux 2007). For example, Frank Baumgartner and colleagues looked at a range of different policies at the federal level, examining the relationship between lobbying and policy. They concluded that lobbying resources are not strongly correlated with policy change, finding instead that defenders of the status quo typically win policymaking conflicts (Baumgartner et al. 2009). Using correlations between roll-call votes and campaign contributions, scholars have argued that money in politics is mere consumption (Ansolabehere et al. 2003).

However, my qualitative research at the state level shows that examining the details of policy fights unfolding over decades may reveal a different story. In this book, I have built a model of policy change that places networked interest groups at the center, bridging both mass and elite feedback theories. Using this more complex model of how policy can reshape politics allows for a better understanding of the conditions under which policy retrenchment is likely. Such a model, which by its nature is endogenous and reliant on feedback, does not lend itself easily to quantitative testing. It instead requires qualitative evidence of interest groups' and politicians' political behavior over time.

One reason that studies that put campaign contributions into a regression are unlikely to find effects is because of the complex ways that corporations cover their tracks. For example, Koch Industries supported the Kansas Republican Party and its members in numerous ways—directly with donations to specific candidates; and indirectly via the Republican House Campaign Committee, through its platinum membership with the Kansas Chamber of Commerce, and by its participation in ALEC.²¹ When individual Republican politicians receive

campaign funds, the money need not come directly from Koch Industries; it can be funneled through diverse channels, often several steps removed (Leonard 2019). In other states, such as Arizona, tracing these contributions is even more difficult because groups that are not formally affiliated with campaigns are not required to disclose their funding. This fact allowed the private utility APS to significantly influence its regulator's primary and general elections without having to disclose its involvement. Similarly, it is difficult to track lobbying's influence in contexts where groups refuse to publicly testify, instead holding secret meetings. We see this happening across all the cases. We should be asking: how much lobbying is happening in public, and how much is happening out of view?

Money and lobbying are not the only vehicles for interest groups' influence. Interest groups can also shape policy by wielding ideas (Layzer 2012). This strategy further complicates the process of identifying interest group influence as it can be subtle, accomplished via agenda-setting and framing. For instance, corporations have reframed RPS policies as "mandates" and net metering as a "subsidy" or a "cost shift." Conservative think tanks and utilities drove this change in language in all the states where they pushed for retrenchment. Examining the ways that interest groups shape ideas, and through it the sense of what is possible, is a challenging task (Layzer 2012).

Despite these identification challenges, a growing literature illustrates the complex and indirect levers interest groups pull to shape policy. As Alexander Hertel-Fernandez (2018) has shown, corporations can mobilize their employees into politics and, through it, shape policy. In a brilliant experiment, Joshua Kalla and David Broockman (2016) demonstrate that campaign contributions can facilitate access to congressional representatives' offices. Building on this work, I have shown with Matto Mildenberger and Alexander Hertel-Fernandez that these contributors can then shape policy. We asked congressional chiefs of staff and legislative directors whether they had ever changed their mind about a policy after meeting with a campaign contributor. Using a list experiment, a technique that can estimate sensitive issues, 45% of senior staff admitted donors had influenced them (Hertel-Fernandez et al. 2019).

In addition to finding a substantial role for interest group influence in policy change, the findings from this book call into question a prevalent view that positive feedback and path dependence are the norm. Instead, I show that small changes at the margin may not cascade into dramatic transformations in policy. As Kathy Thelen puts it, "The losers do not necessarily disappear, and their adaptation can mean something very different from embracing and reproducing the institution" (1999, 385). Path dependence in policy change is far from guaranteed.

Clean Energy Trajectories Across the United States

The theory developed in this book was built by examining clean energy laws across the American states over the past several decades. Renewable energy began as a niche policy area. In the 1980s and 1990s, advocates and bureaucrats dreamed up new policy instruments with esoteric terms like “renewable portfolio standard” and “net metering.” Groups of like-minded advocates met through cross-state networks to debate policy ideas and political strategies. When an energy crisis occurred or when electricity restructuring was put on the agenda, these groups seized the opportunity to get their ideas onto the agenda—and they were often successful. At the time, private utilities were distracted—restructuring represented an existential threat to their organizations and business model. They believed renewables were unworkable at scale and therefore posed little threat to their survival. Limited by their own paradigm and distracted by restructuring, they could not see through the fog of enactment. They failed to predict the changes that renewable energy policies would bring. It was these conditions that allowed the first clean energy laws to pass across a majority of the states. However, once these laws were implemented and renewable energy technologies grew, utilities and other fossil fuel companies learned. The energy transition has morphed into a political battle over who will profit off of the electricity system. The era of quiet politics in climate policy has ended.

Over the decades, a gulf has opened up across the states on policy and the amount of clean energy in each state’s grid (Table 9.1). This variation is a function of interest group political power. In many states, fossil fuel energy incumbents have retained power and used their influence to drive policy retrenchment or block policy enactment. A dozen states have failed to enact any clean energy goal—even a voluntary one—and seven states have never passed net metering. For example, in 2018 Florida lacked any clean energy target, given fierce opposition from electric utilities, who spent tens of millions on politics to block progress.²² As a result, this sunny state had only 15% clean energy in 2018. In other states, clean energy laws were passed but remained very weak. This has resulted in policy drift, where some states no longer have any clean energy laws driving progress. In states like Utah, stringent cost caps mean that utilities may not have to comply. Other states have defined clean energy in ways that weaken the policy. Under Pennsylvania’s clean energy law, even fossil fuels are eligible.²³ Other states, like Ohio and Texas, have exempted their industrial energy consumers from having to comply with the RPS. Hence, retrenchment is unfolding in a number of under-the-radar ways.

These battles are not just taking place at the state level. Federally, a number of decisions have unfolded that imperil clean energy’s progress. In Congress,

Table 9.1 Cases of RPS Policy Change in US States

| Retrenchment and Inaction | | Positive Feedback | | |
|---------------------------|-----------------------|--------------------------------|-----------------------------|----------------------------|
| Policy Inaction | Policy Drift | Successful Policy Retrenchment | Successful Policy Expansion | Failed Policy Retrenchment |
| Alabama (RPS, NEM) | Iowa (RPS) | Arizona (NEM) | Texas (RPS wind) | Colorado (NEM, RPS) |
| Alaska (RPS) | North Dakota (VRPS) | Kansas (RPS) | Arizona (RPS) | Connecticut (NEM) |
| Arkansas (RPS) | Oklahoma (VRPS) | Ohio (RPS) | California (RPS) | Iowa (NEM) |
| Florida (RPS) | South Carolina (VRPS) | Texas (RPS solar) | Colorado (RPS) | Maine (RPS, NEM) |
| Georgia (RPS, NEM) | South Dakota (VRPS) | Hawaii (NEM) | Connecticut (RPS) | Minnesota (RPS) |
| Idaho (RPS, NEM) | Wisconsin (RPS) | Indiana (NEM) | Delaware (RPS, NEM) | New Hampshire (RPS) |
| Kentucky (RPS) | | Kentucky (NEM) | Hawaii (RPS) | North Carolina (RPS) |
| Louisiana (RPS) | | Maine (NEM) | Illinois (RPS) | Florida (NEM) |
| Mississippi (RPS, NEM) | | Michigan (NEM) | Maine (RPS) | Pennsylvania (RPS) |
| Nebraska (RPS) | | Minnesota (NEM) | Maryland (RPS) | Washington (RPS, NEM) |
| South Dakota (NEM) | | New York (NEM) | Massachusetts (RPS) | Wisconsin (RPS) |
| Tennessee (RPS, NEM) | | Nevada (NEM) | Michigan (RPS) | |
| Texas (NEM) | | Oklahoma (NEM) Utah (NEM) | Minnesota (RPS) | |
| Wyoming (RPS) | | West Virginia (RPS) | Nevada (RPS, NEM) | |
| | | Wisconsin (NEM) | New Jersey (RPS) | |
| | | | New Mexico (RPS) | |
| | | | New York (RPS) | |
| | | | Oregon (RPS) | |
| | | | Rhode Island (RPS) | |
| | | | Vermont (RPS) | |
| | | | Wisconsin (RPS) | |
| | | | Washington (RPS) | |

VRPS, voluntary RPS.

Republicans have been trying to cut research and development funding for clean energy, while increasing funding for fossil fuels.²⁴ In addition, Congress has decided to phase out key deployment support for renewables: the production tax credit (PTC) expires on January 1, 2021, and the investment tax credit (ITC) will begin phasing out in 2020. Notably, the ITC will be phased out entirely for residential customers in 2022—creating significant challenges for rooftop solar companies and altering citizens' ability to participate in solar production. The Trump administration has also levied hefty import taxes on solar panels from China, harming the US domestic industry that installs this technology.²⁵ Taken together, these actions are raising clean energy's costs in the United States.

Despite these problematic developments federally, clean energy companies are challenging utilities' dominance in state legislatures and public utility commissions. These advocates are using a number of strategies to try to expand clean energy policies: increasing the target or bringing the timetable forward; reducing taxes on projects; expanding the entities required to meet the target; financing supportive infrastructure; and modifying laws to make them less vulnerable to legal challenges. These strategies will all make it easier to address climate change.

In many states, successful policy expansion has occurred and advocates have thwarted efforts to weaken clean energy laws. For example, in California, clean energy advocates—including clean energy companies, consumer advocates, and environmental groups—exerted greater political influence than their opponents. They were able to expand the state's policies over time—in 2018, the state set a goal of 100% clean energy by 2045. And these bold targets are not just happening at the state level. As of July 2019, 130 cities had set goals for 100% of their electricity to come from clean energy sources, in part through the America's Pledge Initiative.²⁶

What happens to a clean energy law in one state or city does not just matter for that jurisdiction. Innovation spills across state lines—and even international borders. When one place decides to invest heavily in clean technology, it brings down costs for others. As technology costs decline, the camel's proverbial nose is under the tent. As one advocate argued,

The biggest mistake of the Koch brothers' networks was the belief that renewables would be a niche market. Had they started 5 years ago [in 2010] with these attacks, we would be screwed. Because utility opponents are everywhere—but they are just one constituency with more than one interest amongst them. . . . There was no serious non-utility opposition to renewables and now there is. But now renewables are cheap enough. All the initial RPS policies were in jurisdictions where there was restructuring and they thought if they could get rid of

the environmentalists [in the negotiations by giving them an] RPS or this system benefits charge thing, that would make it easier.²⁷

That said, even while innovation drives cost reductions in clean energy, cost competitiveness does not make the clean energy transition inevitable. Navigating the retirement of existing fossil fuel infrastructure and ensuring that no new plants are built will remain central challenges. Over the past decade, many utilities sunk billions into retrofits to keep old coal plants operating. These debts make these plants difficult to retire. Even today utilities are still proposing vast amounts of new natural gas plants,²⁸ which research demonstrates is not compatible with climate stability (Tong et al. 2019). Both these new and retrofitted plants will become “stranded costs” as they face early retirement—and someone must pick up the tab. Who will pay for these costs: the public, through increased electricity rates, or private utilities and their shareholders?

Currently, many utilities are being paid to retire their coal plants through accelerated depreciation or securitization payments. These policies allow utilities to retire their plants but still receive payments from ratepayers for their stranded costs. For example, in 2019, New Mexico passed a clean energy law that included payments to the private utility PNM to shut down the final units at its coal plant. These payments were 50% higher than past payments for retiring coal assets.²⁹ In this case, ratepayers will pay these costs.

Stranded cost payments represent a kind of bailout for utilities that acted negligently. Since the 1980s, utilities knew that climate change would make further investments in fossil fuel infrastructure untenable (Anderson et al. 2017). Yet, they continued to finance dirty technologies and retrofit plants they should have retired. One way of interpreting stranded cost payments is as a reward for corporations who continued to invest in polluting plants long after they knew these projects were making the climate unstable. Stranded cost payments may therefore create a moral hazard. If electric utilities know they will be paid for continuing to invest in fossil fuels, why should they change their corporate strategy and stop proposing new natural gas plants? On the other hand, utilities may be particularly interested in being partners in the transition if they can both secure funds for their existing assets and make profits off of new clean energy infrastructure.³⁰ Hence, securitization may buy laggard utilities’ cooperation. These thorny questions will only get more challenging in the coming years.

Ultimately, we should not be naive that slow progress in a handful of states will get us where we need to go. If anything, the challenge has only become harder as the hour grows short. Two-thirds of the American electricity system is still fueled by dirty power. Vast amounts of new infrastructure must be built in a very short window of time. And fossil fuel companies and electric utilities have grown wiser. Clean energy policy has exited a period of ambiguity and entered

a stage when opponents understand the stakes. These opponents have expanded the scope of conflict over clean energy, bringing the fight to politicians, regulators, the parties, the public, and the courts.

If anything, fossil fuel companies and electric utilities' tactics have become more extreme as the climate movement has gained momentum. South Dakota, Louisiana, Oklahoma, Texas, and other states have outlawed protests against energy infrastructure, like pipelines. While advocates are successfully challenging these laws in court, at least 18 states have considered bills that ban anti-pipeline activism.³¹ Like other anti-environment strategies documented in this book, opponents have passed this idea through their networks. After the first anti-protest bill passed in Oklahoma in 2017, ALEC developed a model bill that many other states have taken up.³² The goal with this legislation is to further delay the energy transition. Fossil fuel companies have also begun attacking electric vehicles (EVs), in an attempt to delay their growth. For example, there is evidence that Koch Industries is spending millions to attack EVs, launching new organizations for this purpose.³³ If anything, the opponents have broadened their attacks on the energy transition.

Given the dire situation we find ourselves in, what is the path forward? There are a number of options to make rapid progress on clean energy in the United States, helping the world avert catastrophic climate change. Federal legislation is particularly important, given the growing gulf between leader and laggard states. The federal government could pass a national clean electricity standard. Such a policy would prevent state level rollbacks by setting a minimum standard for progress. The federal government could also put hundreds of billions annually into deploying clean energy and rebooting America's research and development ecosystem. This spending could be packaged in an omnibus energy bill—like the Energy Policy Acts of 1992 and 2005—or a big climate bill, like the failed Waxman-Markey.

Taxing polluters to ensure that they pay the full costs of the harms they create is an often favored approach. This can be done through carbon pricing: either a carbon tax or a cap-and-trade system. But given that fossil fuel subsidies are still prevalent (Ross et al. 2017), and carbon taxes have continuously failed to pass, the polluter-pays principle has to date proven challenging to implement. Many fossil fuel companies and electric utilities do not pay any federal taxes and instead receive federal tax rates that are, in effect, negative.³⁴ Further, carbon pricing has shown serious limitations in terms of changing corporate and consumer behavior (Mildenberger 2020).

Linking climate policy with social and economic policy through a package like a Green New Deal may be one promising way to build public support climate action. Research I have conducted with Parrish Bergquist and Matto Mildenberger shows that a climate policy bill that includes social and economic

policy is more popular than a standalone carbon pricing bill (Bergquist et al. 2019). If carbon pricing is used, addressing income inequality is likely essential to ensuring policy durability since raising the costs of fossil fuels will make it harder for everyday Americans to pay their bills.

Moving away from dangerous fossil fuels will require a strategy to reduce political opponents' power and stranglehold over energy policy. Hence, these bills must contain provisions that pay companies, unions, and the parts of the public that will bear the costs of the transition to clean energy. Dealing with utilities' and fossil fuel companies' stranded assets is likely to be a difficult sticking point. Should these negligent corporations be paid to write down fossil fuel infrastructure and reserves? It may be necessary to get powerful opponents to stand down. Yet, paying off large corporations that committed fraud and harm through decades of climate denial and delay may sit poorly with many. The federal government could also pursue legal action against fossil fuel companies and electric utilities through the Department of Justice, as occurred with tobacco companies under the Clinton administration.

It is difficult to predict how clean energy will develop in the United States over the next decade. Policies could remain stable or even expand, helping to accelerate the deployment of carbon-free technologies. This outcome would help the world address climate change, particularly since the US is the engine of global innovation. Alternatively, opponents could continue to drive climate delay: weakening and rolling back laws or preventing their passage. If these attacks are successful, they will slow down the pace of renewable energy deployment, as happened in the 1980s and 1990s. The shift away from polluting energy sources is far from inevitable. Regardless of the approach taken, it is clear that state actions will prove insufficient to drive climate action at the speed we need. The federal government must step up.

Some Practical Advice for Clean Energy Advocates

Given that the fog of enactment is no longer operating for the clean energy laws I focus on in this book, advocates must find a new strategy to succeed in expanding climate action and thwarting retrenchment. Here I provide some practical ideas for how to design policies to be more durable to withstand attacks from organized, opponent interest groups aiming to short-circuit progress. Advocates must borrow from their opponents' playbook. Key strategies include: reforming institutions; focusing less on ownership; strengthening advocates' networks while concentrating opponents; and, expanding the scope of conflict through the parties, the public, and the courts. Expanding the scope of conflict includes bolstering clean energy advocates' links to the parties, emphasizing the benefits

of clean energy for the public, addressing income inequality, and pursuing legal challenges against electric utilities and other fossil fuel companies. Ultimately, the goal is to increase advocates' political influence to drive climate action.

Reform Institutions

Clean energy advocates must take on the difficult task of reforming institutions, most prominently public utility commissions (PUCs). The electricity system, both before and after restructuring, was not built for renewable energy technologies. Its rate structure, rules, and technologies were developed to serve centralized plants, primarily fossil fuels but also nuclear and hydropower. Consequently, when renewable energy technologies interface with this system, problems arise.

Given that the institutional arrangements set up in the early 1900s are still largely in place today, reforming electricity regulation is no small challenge. For one, private utilities retain significant power in shaping the electricity policy agenda. They are seen as the "experts" on the topic, leading many regulators to defer to them. Utilities also receive government-guaranteed profits, giving them lots of funds to spend on lobbying regulators. We know that low-salience institutions, that the public pays little attention to, combined with weak advocates makes regulatory capture far more likely (Mullin 2009). Hence, PUC reforms must bolster advocates' power and raise the salience of the institution with the public.

There are a number of institutional reforms that would bolster advocates' influence. First, many more states could adopt an Intervenor Compensation Program. First enacted in California in 1981, this program pays public interest advocates who intervene in PUC proceedings for the costs of their participation if they meet specific criteria.³⁵ The fee awards are paid by the investor-owned utilities and collected in customer rates. The California program was evaluated in 2013 by an independent audit, which found it was well managed and effective. It cost an average of \$6.25 million annually—equivalent to about 17 cents per resident.³⁶ This is a very small price for a program that has built a robust group of advocates in California—including The Utility Reform Network (TURN)—who have acted as effective advocates for consumers and the environment. From a cost-benefit perspective, this program saves California customers hundreds of millions annually by providing a check on utilities' dominance.³⁷ A few other states, including Wisconsin and Oregon, compensate public interest intervenors. While Hawaii's legislature tried to enact a program in 2017, the bill failed to pass the legislature. Overall, many other states would be wise to adopt this program as it would drive a policy feedback process: enabling advocates who could shift policy and undermine utilities' stranglehold over PUCs.

In addition to informal intervenors, offices of ratepayer advocates—which exist in many states—could play an important role in advocating for clean energy. In the early 1980s, as utilities were coming under increasing criticism for rising rates, many states established ratepayer advocates. These offices intervene in PUC proceedings, theoretically in the public interest. However, unlike an Intervenor Compensation Program, these advocates are often selected for political reasons and can be removed from their positions at any time. For example, in many states the governor or the legislature appoints the head of these offices. This can lead to ratepayer advocates who are ineffective or even counterproductive to clean energy. For example, Kansas's ratepayer advocate opposed the initial clean energy standard and later stood by silently when opponents attacked the law.³⁸ In Arizona, the ratepayer advocate brokered a deal to put fixed charges onto net metering customers for the first time. Hence, in some states, ratepayer advocates tend to focus on protecting the public interest in a narrow sense—keeping electricity bills low—without considering costs from environmental harms, including air pollution and climate change. Broadening ratepayer advocates' mandates to include environmental issues is essential to increasing their ability to support a transition to clean energy.

Providing more resources to PUCs may also help with accountability, oversight and stakeholder engagement. Given that research suggests that professionalized state legislatures and bureaucracies are less likely to suffer from interest group capture, we might expect the same is true for professionalized PUCs (Hertel-Fernandez 2019; McCarty 2014). With greater resources, PUCs should be able to conduct evidentiary hearings when there are issues in question, such as estimating the value of distributed generation. If the regulators do not have in-house expertise, they will tend to defer to the utilities, who have their own interests. Greater funding can help thwart regulatory capture.

The PUC planning process also needs to reform to make it more transparent. Currently, most states use proprietary models project into the future how much electricity will be used and which technologies can meet this demand. These models were designed for a centralized, fossil fuel–dominated electricity system. In many states, these models consistently overforecast the amount of electricity needed (Carvalho et al. 2018) and favor fossil fuel sources, most notably natural gas.³⁹ While in some cases advocates can buy licenses to use these models, the cost is prohibitive for many groups. In addition, many of the inputs into these models—such as the assumed cost of renewable energy power—are redacted. To scrutinize the assumptions that utilities are making typically requires advocates to sign nondisclosure agreements. This arrangement makes it difficult to understand or criticize utilities' unrealistic assumptions when they deliver plans that dramatically favor natural gas over clean energy alternatives.

Some states, like Hawaii and California, have started to require more public oversight of electricity planning models.⁴⁰ In these cases, advocates can open up the black box and question the assumptions that utilities are making. Another way to bring greater independence into the planning process is to use ratepayer funds to hire third-party consultants to determine key assumptions, such as the load forecast and the future technology mix. Ensuring that advocates can shape the evidence brought to bear in utility proceedings is essential. The alternative is the dynamic we saw in Arizona, where the private utility was asked to hold research meetings at its own offices. PUCs have a responsibility to make the evidence they use in decision-making transparent—reforms that require this would greatly bolster clean energy advocates.

More broadly, shifting the incentives for utilities in PUC rate cases is essential to driving clean energy adoption. Performance-based regulation is one solution that several states have adopted, including New York. Under this approach, PUCs set goals for utilities to achieve, establish measures for how to reach those goals, and then tie utility revenue, executive compensation, and investor returns to meeting these goals. This kind of regulation can be particularly useful for areas that traditional utility regulation has struggled to address: driving reductions in greenhouse gas emissions; increasing distributed generation including solar; and increasing electric vehicle charging infrastructure (Littel et al. 2017). Of course, like any other regulation, it must be designed and implemented effectively to achieve the desired outcomes. Solutions that ignore political power and focus only on technical fixes may run into problems.

In addition to regulatory reforms that bolster clean energy advocates, increasing these institutions' salience is important. The Energy and Policy Institute, a utility watchdog group, is particularly adept at investigating utilities and holding them accountable through the media, bringing crucial attention to an obscure policy area. While it may seem that electing commissioners would be one way to ensure that PUCs represent the public interest, in practice the opposite is often true (Besley & Coate 2003). As the Arizona case shows, electing regulators does not prevent the problem of regulatory capture—it may instead exacerbate it. In a low-salience area like energy policy, electing commissioners may allow well-financed interest groups to sway elections, potentially amplifying regulatory capture. Utilities and industrial consumers are far more likely to be well organized and able to support specific candidates. Campaigns to drive public attention to PUC elections may result in these institutions being more accountable to the public, as was seen recently in New Mexico and Mississippi. In cases when the PUC becomes a captured and broken institution, the salience of the institution will likely rise. This gives advocates the opportunity to elect stronger, public-minded commissioners. However, most of the time, PUCs

remain obscure institutions. Hence, it is likely unwise to push for elections at more utility commissions.

Ethics changes may help nibble at the edges of regulatory capture. In 2017, Governor Jerry Brown of California signed legislation to reform the CPUC. The law banned utility executives from serving on the PUC if they had just left a utility, created an ethics officer, and codified the role of auditors.⁴¹ In Arizona, responding to public backlash against APS's interference in commissioner elections, the ACC has changed its code of ethics. Some observers, including the utility watchdog the Energy and Policy Institute, note that these ethics rules are unlikely to prove effective, particularly given APS's vast amount of spending on ACC elections.⁴² Of course, enforcing these ethics rules also requires dogged journalists to drive up the salience of the institution for the public. Ethics changes alone are insufficient.

There is also a need to improve rules around corporate donations in the states. Given their monopoly status, utilities are fundamentally different from other groups in terms of their "right" to spend money on politics—including their regulators' elections. It is particularly nefarious when utilities use profits from their monopoly businesses to influence commission elections because ratepayers cannot choose to exit. There is a need to address corporate contributions to politicians and elected regulators, as the campaign to undo the *Citizens United* case is attempting to do.

Changing interest groups' ability to directly influence PUC elections is crucial, albeit difficult. Regulators may have the ability to ban entities that contribute to campaigns from participating in proceedings. However, many utilities—like APS—have parent companies, and it is these groups that spend money on campaigns. Could these companies that use profits to capture their regulators, leading to higher rates, be held accountable in rate cases? It is possible that commissioners could audit spending and disallow these expenditures. Commissions could also try to levy fines against utilities that spend funds on elections. Election spending by monopoly utilities could also be banned outright by commissions or state legislatures—although such decisions would likely face court challenges. Even if changes to rules and laws prove unsuccessful after legal challenges, advocates can also take their fight to the public, eroding utilities' social license. Campaigns could focus on pressuring politicians and Commissioners to pledge not to take money from electric utilities and fossil fuel companies. For example in Virginia, activists have successfully pressured Democrats to not take money from the utility Dominion Energy.⁴³

Campaigners could also focus on public disclosure of money in politics. Absent limitations on corporate campaign contributions, sunlight laws would ensure that donations to legislators and regulators are at least traceable, shedding light on the extent of regulated utilities' influence. For example, Colorado

requires extensive disclosure from PUC members.⁴⁴ In Illinois, institutions such as the Sunshine Project have attempted to build a culture of disclosure across government agencies.⁴⁵ Taken together, these reforms would provide important checks and balances on utilities' ability to capture their regulators. Ideally, they would help accelerate the clean energy transition.

Focus Less on Ownership

Many states now have grassroots campaigns in progressive cities that aim to convert private monopoly utilities into public utilities, or secure greater customer choice programs. The campaigns are laudable for many reasons: they raise awareness about harms from the electricity system; aim to hold accountable unethical private utilities; and mobilize citizens to take action on the climate crisis. However, these campaigns may struggle to generate their desired outcomes for several reasons. First, it is not clear that ownership structure is the critical variable for clean energy. Second, fragmenting the electricity system into smaller energy providers may have unintended consequences. And third, advocates may find it difficult to win.

It is not clear that a utility's ownership structure is the key variable to making progress on clean energy. If it was, we should expect that publicly owned utilities (POUs) and rural electric cooperatives would have a cleaner electricity mix than investor-owned utilities (IOUs). Unfortunately, this is not the case. For one thing, rural electric cooperatives have built a dirtier electricity mix. Both their generation assets and their retail electricity mix have a higher fraction of fossil fuels than the national average.⁴⁶ In 2016, coops' assets were 92% fossil fuels, while IOUs' assets were 78% fossil fuels.⁴⁷ While it is more difficult to estimate POUs' mix, it does not appear it is cleaner than IOUs. In part, these utilities may have struggled to decarbonize because it is harder for POUs and cooperatives to access federal tax credits for wind and solar. And RPS policies often do not apply to them, since they are not under PUC jurisdiction.

While IOUs are likely the worst offenders in terms of spending on climate denial and delay, unfortunately POUs and cooperatives have often taken a similar approach. The national associations for the POUs and the cooperatives have both funded climate denial.⁴⁸ For example, the National Rural Electric Cooperative Association was a member the Global Climate Coalition, a climate denial organization that operated throughout the 1990s. In 2018, a group of rural electric cooperatives in Colorado spent almost \$500,000 supporting Republicans to avoid having regulatory oversight that would push them to adopt more clean energy.⁴⁹ The same thing has occurred with rural electric cooperatives in Alabama.⁵⁰ Generally, cooperatives have little public participation, making

them far from democratic organizations (Spinak 2014). In three out of four races, turnout in elections for these boards is less than 10%.⁵¹ Although some cooperatives may be climate champions, many are not. Even in this book, which does not focus on rural electric cooperatives, I have documented these organizations seeking permits to expand their coal plant (Sunflower Electric in Kansas), supporting coal plant bailouts (Ohio Electric Cooperatives), and supporting climate denial (National Rural Electric Cooperatives Association).

In many states, POUs resist clean energy targets. In California, for example, advocates were not able to impose an RPS policy on the POUs until years after the IOUs had one in place. Even in 2018 and 2019, there were POUs in California aiming to weaken the state's RPS law. These municipal utilities worked to delay closing gas plants and proposed that existing hydropower should count under the RPS—a change that would have gutted the targets.⁵² Similarly, the Florida Municipal Power Agency proposed large monthly fees on customers in 2019 to squash residential solar energy growth. As the CEO put it, this would make solar customers “go away.”⁵³ Municipal utilities and rural electric cooperatives have proven successful at avoiding clean energy targets and net metering laws. In more than one-third of states with a binding RPS, POUs or cooperatives are exempt from complying with the law. Two-thirds of states with net metering laws similarly exempt these utilities from complying.⁵⁴ These facts raise questions about public ownership as a solution to speed up clean energy adoption. At the federal level, the Tennessee Valley Authority (TVA) has enacted policies that block renewable energy development. It has put limits on customer owned clean energy assets and pressured utilities that work with the TVA to sign long-term contracts that would lock them into buying dirty power.⁵⁵ Utilities of all types act in their fiduciary interest to protect their existing assets against newer, low carbon projects. Regardless of the utility ownership structure, most are working to keep their fossil fuel infrastructure online. It is not just the profit motive that causes utilities to fight renewables.

In general, these public power campaigns are playing out in progressive cities, where activists are trying to pressure municipal governments to take over a part of an existing private utility or to create customer choice programs. Unfortunately, fragmenting the electricity system may have unintended consequences. Small community choice energy programs across the country have struggled to sign long-term power purchase agreements to drive new investments in renewables. Instead, these programs often buy renewable energy certificates (RECs), which are largely ineffective at driving additional clean energy projects.⁵⁶ The clean energy transition will require an enormous amount of investment in big projects, such as offshore wind, battery storage, pumped-storage hydroelectricity and transmission lines. These projects will require significant capital and coordination. Breaking the electricity system up into smaller and smaller utilities will

likely make these projects harder to build, not easier. It could also make it harder for advocates to win, as they will have to organize to hold utilities accountable across more venues.

Finally, advocates for public power may find it very hard for their campaigns to succeed. As Chapter 3 showed, economists worked over many decades to try to restructure the electricity system. While they won in some states, their reform project proved a mixed success, and many of their desired outcomes were not achieved. Public power campaigns represent existential threats to private utilities. Unsurprisingly, these companies have fiercely resisted municipalization and community choice aggregation campaigns. Between 2006 and 2016, only 13 places converted from an IOU to a POU—and they were primarily small towns of less than 10,000 people.⁵⁷ For more than a decade, citizens in Boulder have tried to take over a part of Xcel's territory. Yet they still have not won. And while many parts of California are aiming to set up consumer choice programs, many are struggling to get off the ground given the costs of exiting the existing system. In 2019, there was an offer for San Francisco to buy a piece of the private utility PG&E's territory—a move that was opposed by the unions within that utility.⁵⁸ The costs of municipalization are also quite high. Overall, these campaigns are very long and difficult to win.

All this said, there are some benefits to public power campaigns. Even when reformers fail, they may shift utilities' incentives to act. Xcel has become far more willing to transition its assets to clean energy in the wake of the Boulder campaign. Were similar campaigns to play out in blue cities within red laggard states, such as a campaign in Atlanta, we might expect similar outcomes. Unfortunately, most of these campaigns are in blue cities in blue states. To my knowledge, there are no campaigns to turn some of the worst IOUs into POUs, such as APS, AEP, FirstEnergy Solutions (now Energy Harbor) or Southern Company. That said, it may be true that in progressive states it is easier to hold a public utility accountable than a private utility. Perhaps if we were starting from a blank slate, that institutional structure would be preferable. And there may be ways to create or adapt existing public institutions to rapidly deploy renewables, whether at the local, state or federal level.

The question is: are these campaigns the best use of environmental advocates' time? Advocates can choose to focus attention on improving the existing regulatory structure and on passing new clean energy laws. Or they can fight life-or-death battles with private utilities. With the hour running short and with limited resources, my own view is that advocates should focus more on reforming existing institutions. Private monopoly utilities are already a kind of public-private partnership. These corporations are accountable to the government through PUCs, which approve spending, rates, and resource plans. While PUC proceedings are rather dry and technical, they are available for advocates to participate

in, to hold utilities' accountable. Were advocates to focus on passing Intervenor Compensation Programs, they could even find themselves with funding to work to reform these institutions. As my book has shown, these processes can be captured by utilities. But the oversight institutions for POUs and cooperatives—city councils and boards—can similarly be weak and captured.

The fundamental issues in the clean energy transition are contesting utilities' entrenched power, creating incentives for renewables, and dealing with stranded assets. While “regulatory reform,” “new laws,” and “better PUC oversight” may sound boring, they could prove the shortest path to victory. For example, were Arizonans able to elect just two commissioners that supported renewables, they would have the mandate to impose a 100% clean energy target on the state's private utilities *overnight*. They could also block new natural gas plants and negotiate deals to shut down existing fossil fuel assets. We know that this is the case because it is what is happening in Michigan. Since taking office in 2019, Governor Gretchen Whitmer has appointed two environmental advocates to that state's PUC. Already, there are signs that the state will begin moving faster to transition its electricity grid to clean power. The fact is that private utilities are not unregulated corporations. By using and strengthening our existing state regulatory bodies, we can make serious progress on decarbonization.

Strengthen Advocates' Networks

Across policy domains, the right has proven far more successful at building and maintaining robust cross-state networks than the left (Hertel-Fernandez 2019). The same is true for climate and energy policy. Clean energy opponents working through ALEC, the Edison Electric Institute (EEI), AFP, and other networks have become capable of blocking new laws, stalling progress, and even rolling back policies. These opponents have succeeded despite widespread public support and the urgency of the climate threat. When advocates lack similarly strong networks, they struggle to contest their opponents' dominance. Hence, advocates must work to strengthen coalitions, avoid fragmentation, and concentrate their opponents in laggard jurisdictions to make federal action easier.

It is much easier for the opponents to organize. Electric utilities receive guaranteed profits from their regulators, which they can use to invest in political action. They have dozens of full-time staff working on regulatory proceedings. With this asymmetry in resources, utilities can attend and contribute to multiple dockets at the PUC without an issue. By contrast, advocates often fracture when scarcity hits, struggling to intervene across multiple cases. Given this structural disadvantage for advocates, coordination and cohesion are crucial. Foundations should continue the work started by the Energy Foundation in the early 1990s

and invest in cross-state networks. These networks need to have a blend of insider groups, which can build relationships with legislators and negotiate over bill provisions; and outsider groups, which can push policy ambition through grassroots activism and organizing. The US Climate Action Network is one example of an important cross-state network that works to organize the climate movement.

Avoiding coalition fragmentation is particularly crucial. Given that the term “renewable energy” is a big tent, it is easy for groups to fracture when resources become scarce. This fracturing renders groups less politically influential, as was seen in Arizona. As one funder of clean energy advocacy put it,

At the beginning there were few groups. Now there are a lot of groups and debate and disagreement about the right approach. And the industry has gotten more complex—SEIA and AWEA and the factions. They’re all powerful. And the factions, they hurt themselves by not thinking more broadly about the industry good. All they think about is paragraph 3, section 2, and how that will affect their industry.⁵⁹

When advocates lose policy battles, the consequences are swift. As policy resources are cut off, companies may close up business altogether. For NGO advocates, losses require resilience and a commitment to continue the work, as locking in a policy often takes a decade or more.

In these moments, the clean energy coalition may need to seek outside or unexpected partners. It is important to remember that interest groups’ relationships are not bounded and static but open and in flux. Over time, some utilities may even become allies, if they are able to pioneer business models that allow them to profit more readily from clean energy. We are seeing the beginnings of this dynamic with a few utilities that are leading on clean energy, including Xcel Energy (Colorado, Minnesota), Consumers Energy (Michigan), and NIPSCO (Indiana). In Minnesota, Xcel Energy agreed to retire existing coal plants and invest heavily in clean energy after working with labor and environmental groups, including the Sierra Club.⁶⁰ In Colorado, Xcel has committed to reduce carbon emissions 80% by 2030—a target now codified in state law. Consumers Energy has shut down seven of its 12 coal plants, reducing carbon emissions by 38%, and has committed to phasing out all coal energy by 2040.⁶¹ In Indiana, the utility NIPSCO took on a big fight with the coal industry to shut down its uneconomic coal plants—a far cry from the Ohio utilities seeking coal plant bailouts.⁶² While these utilities are currently rare birds, we can hope that others in the industry will begin to follow their lead. Over time, more utilities may become advocates for climate policy as their clean energy holdings grow (Kim et al. 2015).

In addition to building their advocacy coalition, groups can work to isolate their opponents. California now boasts a 100% clean energy target. Why did positive feedback occur in that case? In part, a strong alliance between consumer advocates, labor and environmental groups drove this policy expansion. But the decline in opponents was also crucial. Between the first RPS policy in 2002 and the most recent expansion 16 years later, California's economy deindustrialized. Several fossil fuel companies—including the petrochemical company Occidental Petroleum (Oxy) and the natural gas generator Calpine—moved their headquarters from California to Texas. Over this time period, many of the early opponents to California's ambitious clean energy laws—manufacturers, industrial energy users, and fossil fuel companies—waned in political influence in Sacramento. Apart from the utilities and the shrinking oil industry, the opponents have largely left town.

Of course, this makes policy expansion more difficult in Texas—and retrenchment more likely. However, if California continues to invest in clean energy, it will create positive spillovers for other states for two reasons. First, as technology is deployed the costs tend to fall—a relationship called a “learning curve” (Arrow 1962). When these leading states build technology, they bring down the costs for laggard states. Second, by creating new industries, California has helped birth new advocates for clean energy that move into other states to defend against retrenchment. These actors crossing state lines are an example of a policy feedback spillover. While we often think of a state's policy experimentation as happening within its borders, this is not strictly true. Political and policy changes in one state affect other states.

Concentrating opponents in one area also makes the passage of federal climate policy more likely if it increases the number of senators and representatives who would support a bill in Congress. Were such a law enacted, this would also weaken the importance of policy retrenchment in any given state. Unfortunately, under the Trump administration, we are seeing federal environmental policy being rolled back. Clean energy and environmental policy are being weakened, opening up a gulf between Democratic- and Republican-controlled states. But there are still reasons to hope that laws passed in a given state will eventually unlock progress across the country and, ultimately, the world.

Expand the Scope of Conflict

To date, opponents have successfully expanded the scope of conflict on clean energy and climate policy, driving polarization in the parties, the public and, in some cases, contesting policy through the courts. Advocates must use these same levers to drive progress. Working through the parties, clean energy

advocates must attempt to undermine polarization by backing candidates—including Republicans—who support climate action. Advocates must also take the public seriously, which means ensuring support for clean energy at the local level and reducing income inequality so that ratepayers can afford rising energy costs. Finally, advocates should pursue cases through the courts to hold electric utilities and fossil fuel companies accountable for climate denial and delay.

First, advocates must engage with the parties to support and elect sympathetic politicians. In an age of policy retrenchment, clean energy advocates must become more politically savvy and invest more money in politics, including PACs. Engaging in primaries and general elections puts pressure on politicians to support climate policy. In addition, it provides politicians an alternative source of campaign finance if opponents target them for breaking rank. For example, the Tom Steyer-backed group NextGen America has developed an extensive political strategy to advance climate action. It has organized clean energy ballot initiatives in three states,⁶³ tied climate with other issues like immigration to bolster a progressive coalition, and registered thousands of voters in toss-up states like Arizona.⁶⁴ The group also built a significant super PAC that backs pro-climate candidates, spending \$96 million and \$16 million in the 2016 and 2018 elections, respectively.⁶⁵ This kind of political action is a crucial counterweight to incumbent fossil fuel interest groups that back politicians who favor further delay on climate policy.

Employees are another important lever that opponents, including electric utilities, have used in policy conflicts (Hertel-Fernandez 2018). Renewable energy companies should mobilize their own employees, as their closest public allies, to support renewable energy policies. In both Kansas and Texas, many conservatives saw that the wind industries brought new jobs and economic development to rural parts of the states. There are already some examples of wind and solar companies mobilizing their workers to support federal tax credits (Hertel-Fernandez 2018). Increasing unionization rates in the clean energy industry may be particularly important to mobilizing workers effectively. At present the fossil fuel industry maintains much higher unionization rates.

More broadly, advocates must work with the public. Interest group capture is more likely when policy is obscure (Lowi 1972; Wilson 1989). As Andrea Campbell (2010) argues, if interest groups explain citizens' interests, make policy easier to understand, and raise a policy's salience, the public may be able to act as a counterweight to business influence. One way to do this is to create drama around the policy, as late-night television host John Oliver did for "net neutrality"—a term that is just as obscure as "net metering." We can similarly see this play out in immigration policy. When lawmakers attempted to retrench immigration laws in Arizona and Texas, public outcry followed. Immigration is a complex issue without obvious impacts on many people's daily lives. Why did the

public pay attention? Activists successfully mobilized people, called for boycotts on visits to these states, and persuaded celebrities to join the movement.

Clean energy advocates must learn to make climate policy more interesting to the average American. As it stands, most people know very little about energy policy (Ansolabehere & Konisky 2014). These issues can feel abstract and distant from everyday experience. As Rebecca Solnit has eloquently put it, “Addressing climate means fixing the way we produce energy. But maybe it also means addressing the problems with the way we produce stories. And so we should seek out new kinds of stories—stories that make us more alarmed about our conventional energy sources than the alternatives, that provide context, that show us the future as well as the past.”⁶⁶ The narrative around climate change has finally begun to shift in this direction. With the election of Representative Alexandria Ocasio-Cortez in 2018, and activism from groups like the Sunrise Movement and Greta Thunberg’s Fridays for Future strikes, climate change is in the public discourse again for the first time in a decade. Clearly, politicians are beginning to feel pressure to act—all the major candidates in the Democratic Presidential primary developed climate plans in 2019, and even a few Republicans in Congress began floating climate bills. Advocates must build on this momentum, finding new ways to increase media coverage of energy and climate issues, bringing in more prominent advocates, and getting the public involved.

Climate policy will also need to address inequality. In the United States, income inequality has been rising since the 1970s.⁶⁷ Already, one in three Americans struggle to pay their energy bills.⁶⁸ We should expect energy prices to rise in the coming years for a number of reasons. If a price is put on carbon pollution, Americans’ energy costs will go up. Renewable energy is also slightly more expensive than conventional sources. In addition, the entire electricity system must expand while it goes through critical upgrades that have been deferred for decades. As coal plants retire, regulators may push stranded costs onto ratepayers. Many Americans will struggle to pay for the additional costs of decarbonizing, upgrading, and expanding the electricity system. Rising electricity costs will be a particularly hard burden for low-income Americans.

However, there are a number of ways to solve this challenge. First, the federal government can reduce the costs of renewables by investing in energy innovation. Important areas for research, development and deployment include low-carbon flexible electricity sources and storage technologies—both of which are needed for high levels of renewable energy penetration. Second, more progressive electricity payment structures could be enacted so that corporations bear more of the electricity system’s costs. This is the opposite of the current electricity rate structure, which requires individuals to pay higher rates than industrial or commercial customers. The electricity system has never fully aligned costs with customer classes, and recent decisions have only worsened this

dynamic. Policies that allow large, polluting industrial companies to *opt out* of paying for renewables—passed in both Ohio and Texas—are highly problematic. *The polluters are paying less.* Of course, ensuring that fossil fuel corporations and other industrial energy users pay their fair share will be very difficult politically since corporations suffer from far fewer collective action challenges than individuals (Olson 1965). But consumer advocates bolstered through Intervenor Compensation Programs, alongside clean energy companies, may be well placed to overcome these challenges.

Raising the minimum wage and ensuring basic a social safety net would also aid the energy transition. If people were paid a living wage, they would have more money to pay for electricity that does not pollute or impose costs on future generations. Reducing income inequality can help more progressive environmental and energy policies be passed, implemented, and expanded. This theory has gained traction with the Green New Deal, which packages climate and social policy together (Bergquist et al. 2019). Rather than just raising the cost of energy, the federal government can spend money to help low income Americans manage the transition, for example by paying them to trade their cars in for electric vehicles. Inequality is tightly linked to climate policy—if we do not understand this, we are likely to find policies are rolled back when people struggle to pay for increasing energy costs.

Ensuring that the public is willing to bear the costs of infrastructure in their communities is also critical to transforming the electricity system. In some cases, very fast build-outs of wind energy have led to public backlash, stopping policy in its tracks (Stokes 2016). We cannot afford to have communities block large numbers of wind projects or transmission lines—we simply do not have enough time for further delay. How can we ensure local acceptance of clean energy? Bringing communities into local decision-making and using community benefits agreements may be particularly important to ensuring local acceptance (Schenk & Stokes 2013). If all community members see financial benefits—not just the ones whose property hosts the project—onshore wind may find greater local acceptance.

Equity should also be at the center of energy transition policy. To date, public participation in energy generation has largely happened through wealthy citizens adopting residential solar (Sunter et al. 2019). But this dynamic is shifting with community solar and policies designed to target low-income customers. Ultimately, we must ensure that a diverse cross section of the public is able to participate in and benefit from the energy transition—not just monopoly corporations.⁶⁹ Across income and racial lines, the public must be a partner and must see benefits.

In addition to working through the parties and the public, clean energy and climate advocates would be wise to use the courts to advance their cause. In

the last several years, the courts have become a key battleground for climate policy (Adler 2019; Burger & Wentz 2018). In 2015 and 2016, in response to investigative journalism, the attorney generals in New York and Massachusetts launched investigations of ExxonMobil.⁷⁰ Although the oil giant attempted to thwart these probes, both states pursued cases. In late 2018, the New York attorney general sued the company for a fraud against investors, naming former CEO Rex Tillerson as a knowing participant in the scheme. In late 2019, the trial took place and ExxonMobil prevailed. But this is only the first case and it was pursued on relatively narrow grounds. The Massachusetts case, which likely will take a different approach, has yet to begin. Under a future federal administration, the Department of Justice could also pursue further claims in this area. We could expect the government to pursue cases similar to the lawsuits launched against the tobacco industry in the late 1990s, potentially resulting in large settlements. A second legal strategy involves cities making public nuisance claims against fossil fuel companies. Cities in California, Colorado, and Washington State, alongside Rhode Island, Baltimore, and New York City, have all alleged that these corporations knew about climate science for decades. Yet, instead of reducing the harms their products caused, fossil fuel companies promoted climate denial and worked to stall government action. These cities and states seek billions in damages to pay for adaptation costs, such as building sea walls. A third set of legal cases involves children suing the federal government for inaction on climate change.

To date, these lawsuits have targeted oil and gas companies rather than electric utilities. One exception is an earlier lawsuit, *Connecticut v. American Electric Power (AEP)*, which several states and New York City brought against electric utilities in an attempt to require them to reduce their greenhouse gas emissions (Burger & Wentz 2018). In 2011, the Supreme Court dismissed this case on the grounds that the emissions were already regulated under the Clean Air Act. Given the growing evidence that private utilities were active in climate denial—including Southern Company, AEP, as well as the EEI and the Electric Power Research Institute—we might expect these corporations to be face legal action in the future. Electric utilities could be challenged under state common law, to avoid some of the federal preemption issues that came up in *Connecticut v. AEP*.

Whether or not any given court case is successful, advocates would be wise to pursue legal challenges against electric utilities and other fossil fuel companies. At a minimum, these cases could undermine corporate-funded denial campaigns, which have continued to the present day. More optimistically, legal action may shape corporate and government behavior, driving clean energy adoption and other climate action (Setzer & Byrnes 2019). If these companies continue to promote climate denial and delay, they must be challenged directly. Given the billions of dollars that electric utilities and other fossil fuel companies

make annually in profits and the very small sums that they spend on clean energy, lawsuits may be one critical tool to speed up the energy transition. We must erode polluters' social license to operate.

Final Thoughts

Optimistically, there are 30 years remaining to transition the economy away from carbon-pollution towards 100% low-carbon energy technologies to avoid warming the planet by more than 1.5° C (Intergovernmental Panel on Climate Change 2018; Trancik et al. 2014). Thomas Edison had a vision for this transition over 100 years ago. But the utility executives who inherited his project betrayed their industry's roots in radical innovation. The idea that fossil fuels are somehow the endpoint of energy innovation is ahistorical: humans have gone through several energy transitions over the past several hundred years: from wood to coal, from coal to oil, from oil to electricity. These transitions typically take many decades to a century and are never fully complete (Smil 2010). But a dramatic change in the energy sources we rely on is both possible and necessary. We have done this before, and we must do it again. Whether the clean energy transition occurs fast enough to address climate change remains an open question. Smart companies should realize the massive economic opportunity available in this transition. With electrification of the transportation sector and other parts of the economy, electric utilities have the biggest chance in more than 50 years to expand their market. Instead of seizing this opportunity, most electric utilities and other fossil fuel companies are continuing to delay.

Still: there are reasons to feel hopeful. Over the past several decades, some states have made significant progress on clean energy. California has followed a promising path, with its expanding targets and significant investments in energy storage and grid expansion. So have New Mexico, Washington state, New York, Hawaii, and Iowa. In these cases, policies have empowered new actors who have pushed to expand laws and defend them from attack. The key to success may lie in growing clean energy advocates, their networks, and their coalitions, to ensure there is sufficient support to counter opposition along the difficult road to decarbonizing our economy. Scaling these policies up to the federal level will be particularly important to ensure that action does not remain uneven across the states.

For too long, a small set of interest groups have captured legislative and regulatory processes around the world. They have used their power to imperil the health and well-being of all people on the planet. These organized interest groups

have knowingly filled our air with pollution, have knowingly poisoned people, have knowingly denied climate science and delayed action (Oreskes & Conway 2010). Fossil fuel companies and electric utilities did all this while lining their investors' pockets with guaranteed profits. We must change the ending of this story and hold polluters accountable. The fossil fuel era must end.