

Regulatory Capture Thwarts Feedback

Utilities Undermine Arizona's Net Metering Policy and Clean Energy Targets

Opponents that want to undermine policy may try to capture regulators to increase their political influence. Regulatory capture can allow opponents to undermine policies, even after strong policy feedback. In Arizona, we see an example of this in the symbiotic relationship between a private utility, Arizona Public Service (APS) and its elected regulator, the Arizona Corporation Commission (ACC). Over several years, this utility managed to retrench clean energy policy in Arizona using indirect strategies. APS drove partisan polarization and brought the public into the debate through outside spending in their regulator's elections. Out of state clean energy advocates, spurred by feedback elsewhere, tried to resist. Yet they were outspent six to one. In part, utilities had more resources to invest in these policy fights because they are a monopoly with guaranteed profits. This raises a major democratic concern with the institutional structure for Arizona's electricity policy. If a regulator is elected and regulated entities can make campaign contributions in those races—whether directly or indirectly—regulatory capture is likely.

Regulatory capture can also be seen in Arizona's long history of enacting ambitious renewable energy policies but not implementing or expanding them. Beginning in the 1980s, the commission passed five successive clean energy policies. In this period, there was little polarization on renewables and many Republicans championed these policies. However, most of these policies were never implemented. Consequently, solar was slow to develop in Arizona.

Why didn't the regulator implement the state's clean energy laws? Utilities resisted rules that would require them to change their behavior and cut into their profits. Even when the targets were binding, utilities behaved as if they were not.

They knew they had a direct line to the regulator and could resist policy implementation and face little consequences. We can understand this implementation gap as stemming from opponents' long-standing ability to capture their regulator.

When a net metering policy was finally passed in 2008, clean energy began to grow in Arizona. This new law allowed citizens and companies to build solar energy and be paid a decent rate for excess energy that they produced. During the middle of the first decade of the 2000s, Arizona had the largest distributed generation requirements in the country—a boon for solar companies and the public. Initially, the utilities supported this policy. They did not yet see that their customers had pent-up demand to install solar, that solar costs would dramatically decline, or that companies would combine federal and state policy to create a profitable business model. In short, they were caught in the fog of enactment.

It was only when other states saw dramatic growth in solar projects, after solar leasing companies developed, that utilities began to resist net metering. Policies in states like California spurred these companies. Through policy feedback spillovers, solar companies found their way into the Arizona market. In response, the main private utility, APS, began to perceive a bigger threat from the net metering policy. And they were not alone. By 2011, utilities across the country began to perceive that net metering ran contrary to their interest in owning and profiting from the electricity system's assets. In short order, APS and other utilities began attacking Arizona's clean energy laws.

Without changing its official company policy, APS started intervening in elections for its regulator. Across several elections, the utility would spend at least \$55 million. Working through primaries, the opponents were able to select politicians who were the most likely to be lenient regulators. This strategy drove polarization in clean energy policy along partisan lines. In 2012, APS successfully worked to unseat two commissioners and increase its influence. Soon thereafter, the utility gained exceptional, and possibly illegal, access to the chair of the commission. While solar energy advocates mounted a resistance, they had far fewer resources likely spending about half as much as the utility over the same time period.¹

With its influence secured, APS requested large monthly charges on solar energy users in early 2013.² If approved, these charges would have wiped out the industry overnight. Solar companies resisted and were somewhat successful in this first battle. Both sides expanded the scope of conflict, waging public relations campaigns with ads and protests. APS, in particular, poured millions of dollars into campaigns that aimed to link solar to Obama and Solyndra. The advocates responded with their own public campaigns. Given the heightened public's awareness, the commission only approved modest charges for net

metering customers. Hence, the opponents got some—but not all—of what they wanted. The advocates had held back full retrenchment.

But the opponents did not just target monthly charges—they also successfully cut incentives for solar. After this policy change, many companies no longer had a viable business model. In response, the advocates fractured into numerous associations rather than unifying. Here we can see policy feedback begin to unravel. As opponents successfully rollback laws, revenue losses can shrink advocates. This scarcity can fragment the industry as those left standing fight among themselves for what little resources are left.

In Arizona, some of the advocates drew on their networks, bringing in out-of-state solar companies and associations. Spurred on by policy feedback in other states, primarily California, these advocates had crossed over into Arizona to try to defend the net metering law. Here, we see an example of a policy feedback spillover. But even these groups were not powerful enough to contest the utility opponents, who could rely on regulator-guaranteed profits. These advocates were less organized, with fewer resources to devote to the conflict. The solar companies also had to contest the issue in every relevant utility proceeding at the commission and even at the board of an independent utility. Their resources were spread thin across several venues. While the clean energy advocates attempted to use the power of ideas to counter the utilities' rhetoric by framing it as a right-wing issue of public choice and freedom, they were ultimately unsuccessful. The solar advocates had far less political influence over the commission. In Arizona, clean energy opponents were able to capture their regulator and eliminate key policies supporting the state's clean energy industry.

When a renewed effort was made to increase the state's clean energy targets through a 2018 ballot initiative (Proposition 127), this measure failed by a wide margin, with 31% in favor to 69% opposed. Partially, advocates were outspent: opposition political action committees spent around \$40 million, while advocates spent \$26 million, around two-thirds as much. In addition, the opponents likely influenced a politician they had funded—Attorney General Mark Brnovich—to change the ballot initiative's language to highlight the program's costs for voters.³ The language was very similar to the language that APS used in its advertisements against the measure.⁴ Hence, the opponents used campaign contributions, relationships and ideas to undermine the clean energy ballot initiative.

As a result of the opponents' longstanding stranglehold over Arizonan clean energy policy, the state has consistently fallen behind on its own targets. Although the state had 39% clean electricity in 2018, most came from nuclear and hydropower—a mere 5% came from wind or solar power, putting it way below average nationally.⁵ The state lacks any plan to supply 100% clean electricity by 2050. Instead, the electric utilities continue to propose building

more fossil fuel infrastructure through new natural gas plants. In Arizona, the opponents have maintained a tight grip over the political system and have used their influence to hold back progress on clean energy to the detriment of our collective ability to address climate change.

After Continuous Failure to Implement Early Clean Energy Targets, Arizona Enacts an Ambitious Policy

Unlike the other cases in this book, understanding renewable energy policy in Arizona requires a primary focus on the state regulator.⁶ This is because Arizona is one of only 13 states that elects its public utility commission (PUC). The ACC was established through the state's constitution in 1912 at the height of the Progressive Era (Leshy 1988). In Article 15, the commissioners were described as elected officials who would oversee "public service corporations."⁷ In this way, electricity was framed as a public service, with monopolies requiring strong oversight. Correspondingly, the ACC was centered on popular control of private monopoly utilities through elected commissioners. The fact that the ACC is embedded in the state's constitution and its commissioners are elected makes the commission largely independent, rather than an agent of the governor or the legislature. Some even consider the ACC to be the "fourth branch of [Arizona] government."⁸ As a result, the commission has not relied heavily on other branches for policy direction. Unfortunately—and quite contrary to the framers' intentions—Arizona's PUC has developed into an institution suffering from significant regulatory capture from interest groups.

Initially, the commission did little to push the utilities to clean up their energy supply. Instead, Arizona has had a long history of dependence on fossil fuels. In 2018, 61% of the state's electricity was still generated from fossil fuels.⁹ Arizona's three large utilities—APS, Salt River Project (SRP), and Tucson Electric Power (TEP)—pushed for this polluting energy supply. Arizona Public Service, the largest private utility in the state, is headquartered in Phoenix. Tucson Electric Power is the second largest private utility in the state and operates in Tucson. Both of these private utilities have built their businesses on the back of coal, their primary fuel source.

Salt River Project is the largest public utility in the state, operating in the half of Phoenix that APS does not control. As one of the biggest public utilities in the United States, SRP serves around one-third of the state's generation. Although this public utility was first established for farming purposes, it evolved into an electricity provider through hydropower dams. In recent years, though, the utility

has relied on natural gas as its primary fuel.¹⁰ The commission does not regulate SRP because it was established in 1903, prior to the Arizona Constitution. Consequently, it operates independently, with its own board. The SRP board election process resembles a feudal institution: many current board members descended from the founders, and only landowners can vote, in proportion to the number of acres they own.¹¹

Given its abundant sun, Arizonan politicians believed early on that the state could be a leader in solar. In 1975, Democratic Governor Raul Castro created the Solar Energy Commission that financed research and development for the technology. The state also benefited from federal tax credits, which lasted from 1978 until 1985. In the 1980s, Arizona was a pioneer nationally in clean energy policy when it enacted a small proto-renewable portfolio standard (RPS). This policy required that all the utilities obtain a small amount of their power from renewable energy sources.¹² But only TEP met this requirement, by building a landfill gas project. Thus, this state's first RPS policy was not successfully implemented.

In 1994, Arizona made a second attempt at requiring more clean energy through a policy called "Renewable Resource Goals for Affected Utilities." Enacted through the ACC, these were non-binding directives for utilities to procure more renewables. At the time, APS invested in some solar projects, mostly for demonstration purposes. But, again, this policy was ineffective. Without a binding target, utilities made it clear they would not change their investments.

In 1996, the commission tried a third time to increase clean energy in the state. The ACC passed a binding solar-specific portfolio standard as part of electricity restructuring. This was the first time a portfolio standard was successfully linked with restructuring in the United States. Bureaucrats within the PUC played an important role, convincing a Democrat, Commissioner Renz Jennings, to champion the idea.¹³ At the time, solar was still a niche technology, and the issue was not yet salient with the utilities or the public. Consequently, bureaucrats had greater autonomy and ability to influence policy (Rabe 2004).

The policy aimed to have solar supply 0.5% of electricity by 1999 and 1% by 2001. While these were small numbers on paper, they were ambitious in practice. Installed solar projects were almost nonexistent at the time. Given the technology's immaturity, the policy costs would also be significant. Commission staff estimated the program would raise the state's generation costs around 4.5% (Berry & Williamson 1997). Unfortunately, implementation once again proved the stumbling block for progress. In 1999, the policy was ended before it was ever implemented when deregulation was frozen due to ongoing conflict between the commission, APS, and TEP over stranded cost settlements.¹⁴ Thus, while some research lists Arizona's RPS enactment as 1996, this is perhaps unwarranted since the policy never led to a single solar project being built.

In 2000, the commission expanded from three to five elected commissioners. Shortly thereafter, Arizona tried a fourth time to enact an RPS in 2001.¹⁵ At the time, the renewable energy leaders on the commission were both Republicans—Chairman Carl J. Kunasek and Commissioner William A. Mundell. In this version of the RPS, eligible technologies were expanded beyond solar to include wind, landfill gas, and biomass. Still, solar was to supply half the target. The policy had annual benchmarks, with a goal of 1% by 2005 and flat lining from 2007 onwards at 1.1%. These were more modest targets than the bureaucrats' earlier proposal. The policy also included "multipliers" for specific project characteristics: early projects, in-state projects, and in-state manufacturing.¹⁶ It also included a distributed generation credit multiplier, another idea from a bureaucrat at the ACC.¹⁷ All of these provisions had the perhaps unintended consequence of weakening the policy's overall ambition. But if the policy were actually implemented, it would have the potential to grow new advocates within the state.

However, the commission struggled to implement even this unambitious policy. The utilities for their part did not respond as if the policy were binding. They clearly did not see the regulator as capable of directing their behavior. Arizona also lacked a broader policy framework to encourage uptake of residential solar, including a net metering policy that applied to all the utilities. This made it difficult for individuals to install solar. At the time, the utilities did not encourage any residential or small-scale projects. Instead, they built a few of their own large, utility-scale solar plants. Consequently, few renewables were built in these early years, and Arizona consistently missed its RPS targets from 2002 to 2007.

By 2004, the commission was aware of the implementation failure and took up the issue again. This time, it spent several years redesigning the policy to increase its effectiveness. In its fifth iteration, Arizona's clean energy target was renamed the "renewable energy standard and tariff" (REST). The commission proposed a more ambitious goal of 15% clean energy by 2025. The policy took almost 2 years to finalize, with the final rules adopted at the end of 2006.¹⁸ At the time, all five commissioners were Republicans, and only one member opposed the plan.¹⁹ This broad support from Republicans shows that polarization had not occurred. With hindsight, it is surprising that the utilities did not try to block the policy more forcefully. This latest iteration included a provision that would ultimately undermine utilities' interests: a distributed generation carve-out, requiring smaller-scale systems that the utility was unlikely to finance or own.

Instead, it was advocates who had a stronger grasp of the policy proposal. The Arizona Solar Energy Industries Association (AriSEIA) championed the idea. This network of interest groups convinced one of the commissioners that a distributed generation requirement would allow the public to participate.²⁰

They crafted a narrative that the policy would be more “fair” if the ratepayers could also take part, since they were paying for the program through electricity bills. Through working with the commissioners and using a compelling narrative, advocates were able to get the carve-out passed. The distributed generation target started out small, at 5% of the 2007 REST target. But it grew rapidly to 30% of the target by 2011, making it a sizable portion of the overall clean energy mix in the state. In fact, Arizona had the highest distributed generation target in the country at the time.²¹ The advocates may have been looking to the future when they pushed this policy. Allowing the public to benefit from the policy might help advocates lock in the program through policy feedback. Perhaps they knew that citizens who participated in and profited from clean energy would want to keep the policy in place.

However, after implementation, APS became opposed to this ambitious distributed generation plan. Before this policy was enacted, the utility had been financially supporting AriSEIA. Given the solar industry was small at that time, these utility contributions were significant to the network. Initially, the trade association primarily had solar hot water heating companies—a technology that displaces natural gas—and therefore it posed little threat to an electric utility. But when the association lobbied for the distributed generation requirement that would spur solar PV, this angered APS. At this point, the relationship between the clean energy industry and the utility turned hostile. As an individual involved with the association put it, “Things kind of changed. We never had the same perspective as the utilities.”²² This policy marked a turning point for the utilities. As more groups and individuals got involved in renewable energy, they would have to increase their resistance. Still: it was not the last clean energy policy that the utilities would regret letting pass at the commission.

Utilities Agree to a Policy They Later Regret: Net Metering and the Fog of Enactment

Beginning in 2007, the commission aimed to improve its latest clean energy target’s lagging implementation. Once again, the utilities were failing to comply. They were missing their goals and were doing particularly poorly at meeting the distributed generation requirements. To improve the policy’s implementation, the commission began developing a comprehensive net energy metering (NEM) and interconnection policy.²³ This would allow homeowners and companies to invest in solar more easily. The commission also took up the idea because the federal Energy Policy Act of 2005 compelled states to consider net metering and interconnection standards.

Previously, Arizona's utilities had the option of voluntarily setting up net metering. Given the asymmetry in bargaining power between a ratepayer and a utility, this approach yielded poor outcomes for early solar adopters. For example, during the 1990s, SRP was hostile to homeowners installing solar panels on their roofs (Johnstone 2011). The utility only paid solar customers 2.4 cents per kilowatt hour (¢/kWh), even though it sold power for almost four times that price. The accounting system was also poor. Many customers had conflicts with the utility over whether they were being paid for *all* the power they had provided. This was not unique to SRP. Overall, Arizona utilities paid low rates to the few customers who had installed solar. They were not "net" metering policies: customers were not paid the same, retail rate for the electricity that they bought and sold. And they likely weren't getting paid for all their extra energy. Unsurprisingly, this arrangement led to little participation from customers. By the end of 2005, only 350 APS customers and 160 SRP customers had ever installed solar PV.²⁴

The net metering policy was less controversial than the state's latest renewable energy target, according to a commission employee involved in both proceedings.²⁵ Several advocates working through associations intervened in the rulemaking, including AriSEIA, Americans for Solar Power, the Distributed Energy Association of Arizona, and the California-based Vote Solar. These groups argued for generous terms that would enable the solar industry: large systems should be eligible, there should not be a cap on participation, and fixed fees should not be used. Together, these rules would amplify the policy's ability to shift the political landscape by growing the advocates faster.

Surprisingly, the utilities did not have major objections to the policy.²⁶ In the NEM proceeding, APS said it supported the policy, provided only renewable energy and not combined heat and power projects could participate. APS went so far as to point out that NEM customers may actually provide *benefits* to the grid, including "voltage support, reliability, lower losses, power quality improvements, and in selective instances, the possible deferral or even avoidance of distribution investment."²⁷ Indeed, in January 2009, APS would publish a report that valued distributed generation solar between 7 and 14 ¢/kWh in 2025; at that time, electricity in Arizona cost less than 11 ¢/kWh.²⁸ That said, APS also requested additional charges to cover grid costs. The ACC responded that other states had not approved such charges. As the commission pointed out, the goal was to encourage uptake of distributed generation, and utility charges for solar power would undermine adoption.²⁹ Consequently, the commission did not approve additional charges in 2008. The utility also wanted projects to have a maximum size of 100% of the connected facility's peak load. In a compromise, the rule passed with a maximum of 125%. But overall, the policy's most likely opponents requested only minor changes.

Without opposition from the utilities, there was broad support for the net metering policy. By this point, the only commissioner to oppose the state's latest RPS, Republican Commissioner Mike Gleason, had become Chairman. He also voted against the net metering rule, but the other four Republican commissioners supported it. As then commissioner Kris Mayes described it in October 2008, "Arizona's net metering rules are already being viewed as ground breaking by other states around the country. For the first time, Arizonans are going to receive the full, fair value of the electricity they produce from their solar panels and sell back to the state's utilities."³⁰ The narrative of fairness that advocates were advancing had stuck. They had managed to influence the regulator. When the final net metering rule was issued in October 2008, many believed that Arizona would lead the country in solar energy.

Given the controversy that would follow, how can we understand this absence of conflict during enactment? This issue is all the more puzzling given the regulatory capture shown in Arizona before and after this time. In part, opponents did not show up for the fight because they were unable to predict the future. Utilities could not forecast how solar technology's costs would decline over the coming decade. Nor could they foresee how federal and state policies would interact. Companies were only just learning to combine federal tax credits with state net metering policies through an innovative business model called "solar leasing."³¹ This approach was not yet widely in use, particularly not outside of California, where SolarCity was founded in 2006 and Sunrun in 2007.

In short, we see the fog of enactment operating here, in this case quelling opposition from utilities. If utilities had been acting in their best interest from the start, we would have expected them to weaken net metering in Arizona. But the utilities did not believe there was pent-up demand for citizens to own solar, given their ability to suppress the sector's growth up to that point. Cost declines would also prove important. California was in the process of bringing down solar's costs through policies driving deployment. Thus, the consequences of clean energy policy were spilling across states through technological innovation. The opponents could not foresee the trends that were aligning to boost solar's prospects.

Further underscoring the utilities' inability to predict net metering's consequences, SRP followed the commission's lead, independently expanding its policy. Before it adopted this new net metering policy, customers interested in installing solar and selling excess electricity to SRP had to sign complex bilateral agreements.³² Few customers did this. Beginning in 2004, SRP created the "Earthwise" program that allowed small solar projects, up to 10 kW, to participate. Under this program, customers could carry forward bill credits for excess electricity. They would be paid "an average market price" for excess energy at the end of the year. This policy was not true retail net metering since the utility was paying customers less than the price that the customers paid for electricity,

and the payout would only happen once a year. It was not a good incentive for homeowners to invest in solar technology. In 2008, SRP changed this value to “an average *annual* market price” bringing the policy closer to net metering, and increased the maximum project size to 20 kW. It’s clear that utilities could not anticipate net metering’s consequences—why would a utility choose autonomously to adopt the policy if it knew in advance how it would affect profits? And why would it continuously expand the program if it did not believe that solar development was in its interest? Clearly, the fog of enactment was at work, blocking utilities’ ability to understand policies’ consequences.

Together, these changes at both the commission and SRP, along with rapid cost declines from other states’ policies, led to strong growth in residential solar adoption in Arizona. Both net metering and the RPS distributed generation carve-out led to a boom in small-scale solar. In response, solar companies grew in the state. Initially, they organized through their existing industry network, AriSEIA. But by 2008, out-of-state companies had crossed into Arizona. California-based companies, including Sunrun, SolarCity, Clean Power Finance, Sungevity, SunEdison, and SunPower, began installing more of the state’s solar power. As a result of Californian policy, these solar leasing companies had developed and implemented a successful third-party ownership model. In 2010, solar leasing became even more accessible when customers could sign leases with SolarCity without any upfront capital and without having to maintain the systems themselves.³³ Many residential and commercial customers were taking advantage of significant solar incentives from their utilities, further reducing their costs.

It took six policies and three decades to kick-start the solar revolution in Arizona. But the net metering program and distributed generation target finally began propelling small-scale solar. In January 2009, APS had just 900 net metering customers. By 2012, growth was approaching 500 systems a month.³⁴ By the end of 2012, SRP had 3,500 customers with net metering, TEP had 2,600, and APS was approaching 16,000.³⁵ But by 2012, this rapid uptick in residential solar energy adoption created a significant backlash from Arizona’s utilities, particularly APS. The opponents had learned through implementation. They now understood what the stakes were. And they were ready to fight back.

Opponent Interest Groups Use an Election to Capture Their Regulator

After the net metering policy was implemented in Arizona, the utilities learned more about its consequences. Across the country, individuals started using state and federal incentives in greater numbers to install small-scale solar on

their homes. As a result, utility revenues started slipping. Customers with solar reduced their payments to the utilities. With high fixed costs, utilities became concerned that they would need to increase their rates to cover these lost revenues. High rates, in turn, would incent more customers to turn to solar. And the cycle would continue, ending with utilities stuck with expensive assets and inadequate revenues to cover their operating costs given their dwindling customer base. This dynamic, termed “the death spiral,” became a major issue at utility conferences (Blackburn et al. 2014; Kassakian & Schmalensee 2011). As a result, by 2011 many utilities across the country had become hostile toward net metering policies and distributed generation customers. The same was true in Arizona, particularly in the case of the private utility APS. Opponents were beginning to organize to attack these laws.

In Arizona, opponents moved to try to weaken the net metering policy by influencing their regulator. They aimed to change *who* was in charge of making decisions by intervening in the 2012 elections for the ACC. Given that the commission’s main job is to regulate monopoly utilities, APS had a policy at the time not to participate in its regulator’s elections. The company claimed it abstained from making campaign contributions. Since the commission race has low turnout and poor visibility among the public, if utilities did intervene in the electoral process, they would likely have an outsized influence (Anzia 2011).

In the fall election, two Democratic incumbents on the commission, Paul Newman and Sandra Kennedy, narrowly lost re-election. Instead, three Republican commissioners were elected: Bob Stump, Robert Burns, and Susan Bitter Smith. As a result, all five commissioners were Republican in 2013. In principle, this might not have been a problem for renewable energy. Arizonan Republicans had often championed renewable energy broadly and solar energy specifically. But the kind of Republican being elected had changed—utilities were driving partisan polarization on the issue. This election would mark a turning point for the ACC’s position on clean energy.

Afterward, journalists from *The Arizona Republic* uncovered that APS *had* intervened in the 2012 election, against the company’s official policy and against good governance norms. Two of the three Republican candidates that year—Bob Stump and Bob Burns—were affiliated with the American Legislative Exchange Council (ALEC), with one holding a senior position in the conservative network.³⁶ As we will see in the Ohio case, ALEC began promoting an anti-renewables agenda in 2011. Similarly, APS’s holding company—Pinnacle West—was at that time a member of ALEC. Given its shared links to this interest group network,³⁷ APS likely believed that these ALEC affiliated candidates would support its objectives, including rolling back clean energy policy.³⁸

During the election, APS funded mailers in support of these Republican candidates, despite the company’s official position not to participate.³⁹ In the

aftermath, and only after being contacted by journalists, utility officials said that these mailers were not sent under their direction, claiming that the nonprofit that sent the mailers did not consult with them. They blamed the Arizona Chamber of Commerce and Industry's president, Glenn Hamer, for acting unilaterally. However, APS had donated money to Hamer's nonprofit the Arizona Business Coalition, after which \$7,500 was funneled to the Taxpayers' Voice Fund, which supported the Republican candidates.⁴⁰ While both APS and Hamer maintained that he acted unilaterally and sidestepped the rest of the coalition, the fact that the \$7,500 was one of the group's largest expenditures in 2012 and that an APS official was on the board of this group casts doubt on this claim. It is conceivable that in a low-turnout election where candidates run on modest public funds, these independent expenditures may have proven decisive. Compared to higher-profile races, influencing a low-profile race is easier—it costs less money.⁴¹

With these newly elected commissioners, changes began to take place at the ACC. The incoming cohort of regulators started out the New Year by firing their executive director and replacing him with a Republican political staffer and former chief of staff to a Speaker of the Arizona House of Representatives.⁴² Typically, executive directors at a commission are closer to bureaucrats than political operatives. In short, this was a starkly divergent choice for the agency's chief administrator.

Next, the commission accepted the utilities' proposal to eliminate long-standing incentives for solar. The two private utilities, APS and TEP, had run programs to fund commercial and residential solar using revenue from a \$4 monthly charge on customers' bills. In early 2013, APS proposed to quickly reduce and then eliminate this incentive. There was tension at the commission between the elected officials and their staff on the best response to the utility's proposal.⁴³ The ACC staff opposed these sudden changes, arguing that the programs should be phased out to maintain the state's solar industry.⁴⁴ But the commissioners disagreed—rather than phasing out the commercial incentives, the commission *eliminated them entirely*, with APS and Commissioner Gary Pierce proposing these changes. The utilities also reduced their residential incentives by more than 50%.⁴⁵ Overall, the commission allowed the utilities to immediately cut \$40 million in annual funding for solar energy.⁴⁶ The opponents were breaking the feedback cycle by cutting off advocates' resources.

These unanticipated cuts had a dramatic effect on Arizona's solar industry. Large, commercial projects were canceled overnight. Solar companies closed shop. The solar association's membership shrank, dramatically reducing the network's effectiveness. As resources dried up, the solar advocates fragmented. Rather than cooperating, the few remaining companies reacted to this scarcity by splintering into ever more associations: a solar hot water association, a distributed solar association, and what was left of the original group. This lack of

unity undermined the industry's ability to influence policy. They were no longer pooling resources for lobbying or coordinating on messaging or strategy. The utilities had managed to repeal a policy and through it quell its rival by cutting off crucial revenues from the advocates. As renewable energy advocates weakened, it would be easier for the opponents to make further changes to policy. Here we see dramatic changes in the political clout of advocates as a result of swift policy changes—the kind of dynamics we would expect to see with undermining policy feedback.

After these incentives were removed, Commissioner Gary Pierce floated a proposal to reduce the clean energy target for APS to 13.35% rather than 15% by 2025.⁴⁷ This proposal was made despite the fact that APS was *ahead* of schedule in meeting its target. It is unusual to propose a reduction in an RPS for just one utility. But the chair had a particularly close relationship with APS. It would later become clear that Pierce was holding regular *ex parte* meetings with APS's chief executive officer (CEO), Don Brandt, at that time—perhaps seven meetings on this topic specifically. Meeting privately with regulated entities during public rate cases violates the commission's rules. It is clear that APS had the ear of at least one commissioner.

Pierce justified his proposal on the grounds that the RPS could be eliminated for large industrial users, a group that accounted for around 10% of APS's electricity sales. This would allow industrial entities to free-ride and not pay for addressing the energy system's negative externalities. It is a common initial strategy to weaken clean energy laws—this same approach was passed in Texas and Ohio. However, such a clientelistic retrenchment attempt proved unpalatable with the other commissioners and the public. Advocates organized a large protest and a letter-writing campaign, with more than 7,000 signatures on a petition and a flurry of calls and emails sent to the commission.⁴⁸ Consequently, Pierce withdrew his proposal and instead turned to less overt retrenchment tactics.

In January 2013, APS requested that the commission consider additional charges for net metering customers due to a supposed “cost shift” between solar and non-solar customers. This was not an argument unique to Arizona. By 2013, private utilities across the country were trying to retrench net metering policies. They were working together, through their networks, to understand the issue, protect their interests, and develop effective strategies. That same month, the Edison Electric Institute (EEI)—the national private utility association—published a widely read and critical study on net metering.⁴⁹ In Arizona, APS also prepared a report to justify its position, hiring Navigant Consulting. It strategically released this report just after the commission election, in December 2012.⁵⁰ In this way, the public would not be privy to its plans until it was too late.

This report set the framework for the utility's attack on the policy. It argued that non-solar customers increasingly had to pay for grid costs that solar customers were forgoing. As a result, APS alleged it would need to raise rates unfairly on non-solar customers. It framed the issue around "neighbor-to-neighbor fairness," arguing that non-solar customers were subsidizing solar customers. Promoting the idea that net metering was an unfair policy was key to the opponents' campaign.

Of course, such a notion of a cost shift between industrial and residential customers was never raised when APS tried to exempt industrial customers from paying for the clean energy policy entirely or proposed building unnecessary natural gas plants.⁵¹ And the Navigant report did not consider the way that APS was imposing costs on the public through air pollution and climate change, in its failure to transition away from fossil fuels. The utility's report did not include these costs, stating it "excludes other societal benefits not directly reflected in utility rates, such as environmental or health impacts."⁵² The utility was advancing a narrow, self-serving view that focused on its own interests more than the public interest.

Unfortunately, the regulators were increasingly reluctant to serve in their role as independent and evidence-based decision makers who push utilities to serve the public interest. Instead, the commission directed APS to gather further information on the question before it would open a regulatory proceeding on the topic.⁵³ This was an unusual decision. Typically, the ACC would run a process to gather evidence at the commission, in some cases holding a formal evidentiary hearing.⁵⁴ Instead, the commission delegated its regulatory responsibilities to an interest group, directing APS to hold a series of technical workshops on the value of distributed generation solar. This was a sign of growing regulatory capture in Arizona.

With these workshops proceeding, it was clear to both the advocates and opponents that a serious conflict would occur in 2013. They were gearing up for a fight, with a likely decision on net metering at the commission later that year. Both sets of interest groups had a lot to lose if the decision did not go their way. But the private utility was much better prepared for this conflict. It had significant influence over the regulator. It held the power to set the agenda since it was holding the technical meetings in its own offices. And these meetings were crucial—they would decide what to count and what not to count when adjudicating the question of a cost shift. The utility also had a large staff working on the issue—a staff, it should be noted, that was paid for from utility revenues from monopoly customer rates.

By contrast, the advocates were in disarray. The inability of the commission to implement the first four renewable energy policies meant that the solar industry was slow to develop. Once the final RPS was successfully implemented,

advocates lost a few important policy battles, eroding their resources. This policy retrenchment cut the solar industry's major funding sources. With funding drying up, the advocates' industry associations began to fracture. At the time, Arizona had the second most solar installed of any state; yet its solar industry was underfunded, and most of the advocacy groups were semiprofessionalized, with only one staff member. Given implementation resistance and retrenchment from opponents, the industry was never able to gather momentum, build coalitions, or organize.⁵⁵ When opponents put net metering retrenchment on the agenda in 2013, the advocates were not mobilizing the public. They were not planning their strategy for intervening and blocking the policy at the commission. They were not even updating their websites. The advocates were ill prepared for the coming policy fight.

Expanding the Scope of Conflict: Interest Groups Bring in the Public and Wield Competing Ideas

As the Arizonan advocates splintered, California-based clean energy advocates stepped in to counter the opposition. By 2013, the solar leasing companies had organized through The Alliance for Solar Choice (TASC), a coalition of six companies that together installed the majority of the country's rooftop solar.⁵⁶ TASC began its Arizona campaign by hiring a local lawyer to represent the industry at the commission proceedings. Next, it hired an Arizonan public relations firm to design an advertising and public outreach campaign. The firm created a public-facing organization: Tell Utilities Solar Won't Be Killed (TUSK). They recruited Barry Goldwater, Jr., a longtime solar supporter and well-known Arizonan conservative, to be the face of the campaign. The goal was to market solar to Republicans. The out-of-state advocates, enabled by policy feedback elsewhere, had crossed into Arizona. They had more resources and were trying to bring the public into the conflict, in an attempt to influence the regulator.

In response, APS funneled millions of dollars into two conservative groups—Prosper Inc. and 60 Plus—to run a counter campaign. The 60 Plus Association is a national group founded in 1992 that has operated across state lines, representing conservative seniors, with more than 167,000 supporters in Arizona.⁵⁷ Prosper Inc. was a new organization, founded by a former Speaker of Arizona's House of Representatives. As "dark money" organizations, these groups took funds from APS and Koch affiliates, masking their attempts to rollback clean energy laws.⁵⁸ They quickly got to work launching a website criticizing "corporate welfare" for solar energy in 2013. They also funded several television ads that aimed to convince people that solar customers ought to pay fixed charges because it

was “unfair” if solar customers did not pay for grid costs. Initially, APS lied and denied that it was behind this advertising. However, investigative journalists uncovered the utility had supported these organizations, and APS eventually admitted to its role.⁵⁹ The opponents spent far more than the advocates on these public campaigns. One estimate put APS’s spending at \$3.7 million compared to TASC’s \$436,000.⁶⁰ Opponents also drew on their networks for support—the national private utility association, EEI, spent an additional \$520,000 on 10 days of television ads in support of APS.⁶¹ While the advocates tried to counter their opponents, they did not have the benefit of guaranteed profits to underwrite their campaigns.

The groups did not just use the public to try to influence the regulators—they also wielded ideas. Both sides invested in studies that estimated the costs and benefits of distributed solar energy for Arizona’s electricity system. These reports were not aimed at the public but at influencing the commissioners. In early May 2013, the solar industry issued its report, written by a consulting firm, Crossborder Energy. This report argued that for every \$1 APS invested in solar, it would save its customers \$1.54. These results framed the technology as a net positive for the state. Two days later, APS released its own report, an update of its earlier study.⁶² Rather than arguing that solar was worth the 7–14 ¢/kWh as it had estimated in 2009, this new report said it was only worth 4 ¢/kWh. That estimate put solar well below the 12 ¢/kWh retail rate for residential customers, undercutting the justification for net metering.

Of course, the studies used different assumptions to estimate the costs and benefits of solar for the grid, making them apples to oranges comparisons. The APS report looked at the issue in a given year, with varying levels of solar penetration. It also did not include the environmental and societal benefits of solar beyond briefly considering CO₂ emissions. In contrast, the Crossborder study considered the benefits and costs of solar over the potential lifetime of installations. It included far more benefits, estimating the avoided cost of air pollution. This study also considered the combined effect of solar with demand-side energy efficiency programs at reducing the need for supply-side investments. Thus, these reports were more a function of organized combat between interest groups than reflections of facts per se. As one former commissioner put it,

Here’s the problem with the way we do analyses of the costs and benefits of distributed solar: all we end up with is dueling studies. And you don’t really have an independent entity that both sides trust doing the analysis—because at the end of the day somebody is paying for each one of those studies. If the commission had commissioned that study and paid for it, then you could have come up with something that both

sides would have agreed with. But, with budget cuts at PUCs, then each side is docketing their own study.⁶³

It is not surprising that interest groups would advocate their interests in studies that they funded—it is a common pattern across the country.⁶⁴ Instead, the fault lies with the commission, which abdicated its responsibility to investigate the issue independently and never held an evidentiary hearing for the case. Many observers suggested that the lack of an evidentiary hearing showed that the ACC's eventual decision was more political than technical.

Instead of the commission holding a hearing, in late May, the Residential Utility Consumer Office (RUCO)—the state's ratepayer-funded advocate—intervened to hold its own workshop. Both advocates and opponents were invited to present their views, with time for public comments. Solar advocates argued for greater customer choice; opponents focused on costs being shifted onto nonparticipants. After this meeting, RUCO concluded that a cost shift was occurring and recommended the ACC open a docket to address the issue.⁶⁵ The opponents were succeeding in making their voices heard.⁶⁶

Regulatory Capture Leads to Further Policy Retrenchment

APS put forward its net metering proposal in July 2013 after holding its own workshops to investigate the issue. In response, the ACC opened a docket to make a decision on the issue of whether cost shifting was occurring between solar and non-solar customers.⁶⁷ It was quite unusual for a utility to request that the commission approve new charges outside of a rate case—the normal way that new charges are levied. Given this unorthodox approach, bureaucrats at the commission intervened, arguing against proceeding. They stated that these changes should be dealt with in a rate case. Indeed, APS had finished a rate case the year before, in May 2012, when two Democrats were still on the commission. They did not bring up net metering or solar incentives at that time. After APS intervened in the 2012 elections, however, it had managed to elect a slate of commissioners that it could more easily influence. Clearly, APS saw an opportunity with the current commission and did not want to wait until its next rate case in 2015 since the commission's composition would change in the 2014 election.

APS's filing was nearly 400 pages. The utility requested changes to how new net metering customers would be compensated. Rather than being paid the retail rate, APS proposed that net metering customers be paid a rate equal to the cost of producing electricity from the Palo Verde nuclear plant: 4¢/kWh.

This was the same value that the consulting report it had funded had estimated solar was worth. This change would amount to \$50–\$100 a month of additional charges for solar net metering customers. Using this number, APS was using a negotiation tactic called “anchoring”—starting at an extreme and unrealistic point to stretch the window of what was considered reasonable. The utility no doubt knew it would not get a charge this large when its average customer’s bills were \$120–\$150 a month.⁶⁸

APS also requested that these changes go into effect almost immediately, starting in October 2013. However, its proposal would grandfather existing customers. This strategy was likely chosen to push through a speedy decision while quelling opposition from the easiest citizens to mobilize: existing net metering customers.⁶⁹ If in the future individuals wanted to transfer the ownership of their solar installation, were they to sell their house, then these additional charges would not apply for the new owner. The policy thus protected existing customers’ assets. In short, APS’s proposal was politically savvy—it aimed to keep the scope of conflict narrow.

At the end of September 2013, the commission staff responded to the APS proposal, arguing that the matter should wait until APS’s next rate case because the question of a cost shift was fundamentally an issue of electricity rate design. If the commissioners decided to proceed nevertheless, the staff presented two alternative options: either a small flat fee for new NEM customers of around \$2/month; or a cap on APS’s payments.⁷⁰ If a fixed fee was imposed, the staff proposed an amount that was a mere 2% of APS’s top number. Of course, neither of these solutions was in the utility’s interests. Ideally, the utility wanted to stop citizens from owning solar installations. It had realized that it wanted to maintain its monopoly over owning and profiting from the electricity system’s assets.

The interest group opponents proved more influential than the bureaucrats. The commissioners largely ignored the staff recommendations, siding with the utility. This suggests that bureaucratic autonomy on clean energy policy in Arizona had weakened as the issue became more salient with interest groups. Opponents maintained a near monopoly over the policymaking agenda. That said, Commissioner Pierce asked that parties respond to the staff recommendations on which scenarios would be most appropriate.

Advocates rejected the premise of the proposal, however, and argued that the utility had violated procedure by seeking this change outside of a rate case. They called on the commission to ignore APS’s plan and conduct another rate case if new charges were going to be imposed. They argued that a cost shift was not yet happening and, as such, stated a monthly fee was unnecessary. They also claimed that existing policy was sufficient to address any alleged issues.⁷¹ Taken together, these were attempts to resist APS’s plan and keep the commission from implementing an unfavorable policy.

Eventually, a third party intervened. Purporting to be neutral, the state's ratepayer advocate once again tried to mediate. In October 2013, RUCO created a model to analyze the question, coming up with a \$1/kW proposal. This would amount to around \$7 a month per customer, depending on the size of the homeowner's solar panels. Notably, the number fell between APS's plan and the commission staff's proposal. Since the commission did not conduct its own evidentiary hearing or commission its own report on the issue, the RUCO estimates were the only source of information that was independent from the interest groups.⁷² Momentum began to grow around this compromise. *The Arizona Republic*, the newspaper of record in the state, argued that while the decision should ultimately be taken through a rate case, this was a fair interim step.⁷³

The final decision was scheduled to take place after 2 days of hearings on November 13 and 14, 2013. Advocates, including the solar industry through TASC and environmental groups like the Sierra Club and Vote Solar, organized a public demonstration at the commission for these days. On the first day of the hearings, around 500 people turned up outside the commission to protest APS's proposal. This was by far the largest protest in the regulator's 100-year history.⁷⁴ The advocates were using the public in their conflict, attempting to raise an obscure regulatory body's salience and visibility. In this way, they were also trying to influence the elected body through outside lobbying. One of the advocates involved in the protest described its importance this way,

It set the tone for the day. There were hundreds of people. And around 100 people gave public comments inside the building. It was a large enough event that TV crews came out to cover it and it became a prime time news story. It elevated the decision so that the commissioners knew that whatever they decided, it would be very well publicized.⁷⁵

The advocates believed that increasing the commissioners' sense that the public was watching would reduce the costs opponents would be able to impose on clean energy. The strategy likely worked, particularly because Arizona's PUC is an elected body. One of the commissioners at the time confirmed that the public protest was notable: "We were all cognizant that lots of people were interested and watching what we were doing. It had to be defensible for the docket. People are always worried about the next election."⁷⁶ That said, the commissioner went on to state that they were unconvinced that the public was united in its opposition or understood the ultimate decision: "But the communication I was getting was about 50/50. It was such confusion. I had talked to 50 groups since that decision—nobody knows what we did." In this way, the elected commissioner was discounting the public, claiming it was ignorant. It is difficult to hold a

regulatory body accountable when its elected members do not even believe that the public *can* understand its decisions.

On the second day of the hearings, TASC and RUCO came to a compromise position of \$0.70/kW, somewhat lower than RUCO's initial proposal of \$1/kW. This would amount to a charge of around \$5 a month on most solar customers' bills. As is similarly seen in the Kansas case, after relentless attacks, eventually the advocates decided to compromise and accept some weakening of the policy. The advocates were less politically influential than the incumbent opponents who had captured their regulator. The earlier policy retrenchments had also left the industry weakened, with far fewer resources than the utilities, who had millions in guaranteed profits they could use to fund their lobbying and campaigns every year.

At the end of the last day of the public hearings, the commissioners made their decision. They largely conformed to the compromise RUCO and TASC had brokered. The commissioners voted 3 to 2 to charge future APS customers on a monthly basis for installing rooftop solar, with the two dissenters arguing that the charge was not large enough. The charge would apply to customers installing new solar on or after January 1, 2014, on an interim basis, until the next APS rate case. Importantly, the ACC decided that the current net metering policy *did* create a cost shift that caused non-solar customers to pay higher rates. This finding created a precedent across the country that would prove more important than the specific costs imposed that day. This policy would spillover to other states, establishing the grounds necessary for other utilities to ask for higher charges on solar in the future. On the one hand, advocates heralded the 2013 decision as a success—it was a charge of \$5 rather than \$50–\$100. On the other hand, it set a clear precedent, not only for Arizona but for other states. The consequences for this policy feedback were not confined to Arizona.

As a further indication of APS's interests, after these charges were imposed on citizens owning solar, in July 2014, APS proposed its own solar leasing program. They planned to start by building 20 MW—a large amount for residential solar. Since the utility would fund, install, own, and maintain these systems, APS could profit off of them, just as they did with other assets. APS could leverage their monopoly status keep out competition from third-party rooftop installers. They planned to compensate customers who put APS-owned panels on their property with a \$30 monthly bill credit for 20 years. Customers themselves could not control their electricity bills, and in essence, the program and compensation functioned as APS renting out customers' real estate.⁷⁷ This was much lower than compensation under solar leasing from independent companies. After collaborating with the commission on this proposal, the utility moved forward with the program, with an estimated participation of around 1,500 customers.⁷⁸ The solar leasing companies responded, arguing this was anticompetitive

behavior on the part of a monopoly utility. But the commission wouldn't hear these arguments. The utility's program proceeded, with little resistance from the commissioners.

Opponents Work the Primaries to Drive Polarization

Following this policy decision, two seats on the commission were up for election in 2014. The advocates and opponents geared up for another big fight. Gary Pierce, who had proven himself APS's closest ally, had termed out and would no longer be eligible for re-election. Given this turnover in a key utility ally, both APS and the solar companies through TASC organized for a significant election year. The utility was interested in maintaining its influence over the regulator, while the solar companies sought to undermine this tight relationship.

APS began its intervention early, working first in the Republican primary. The utility knew that if its candidates were elected, they would not be like past Republicans who had championed solar. The utility financially supported two candidates who would go on to win seats on the commission: Tom Forese and Doug Little. Both of these candidates were sympathetic to APS's views. Their two primary opponents, Vernon Parker and Lucy Mason, were both pro-solar and backed by TUSK, the front group for the solar leasing industry. TUSK ran email campaigns attempting to raise grassroots funds for Parker and Mason.⁷⁹ However, both of the utility-backed candidates won the primary in August, with likely more than \$1 million spent supporting them.⁸⁰ Although Arizona law does not require disclosure and APS refused to admit to spending the money on Forese and Little via third-party groups, journalists believed that the majority of these funds came from APS, a fact which APS would only confirm years later.⁸¹ By contrast, the solar industry spent less than a quarter of the amount, around \$240,000, supporting candidates during the Republican primary.

Opponents also outspent advocates during the general election. APS contributed to independent groups that supported the Republican candidates, Forese and Little.⁸² Through dark money groups, such as Save Our Future Now, journalists estimated at the time that APS likely spent about \$1.4 million in negative ads against Democrat Sandra Kennedy and others, spending more than \$3 million total over the course of the race. However, years later, after several commissioners called for more disclosure, APS would admit that it spent about \$11 million on the 2014 ACC elections.⁸³ Estimating solar companies' contributions is also challenging, but they likely spent much less. TUSK likely spent a total of \$556,000, with only \$315,000 spent in the general election.⁸⁴

Thus, the utility likely outspent the solar companies by about 20 times. The 2014 race for the Corporation Commission was then the second most expensive race in the state's history, only behind the 2014 Arizona governor's race.⁸⁵ For such a typically low-profile election, this spending was remarkable. It points to the utility's need to maintain its near monopoly on influence at its regulator. The advocates could not match this heft.

The utility's spending during these elections likely translated into significant influence over policymaking.⁸⁶ After the 2014 race, a whistleblower at the commission released information that showed that APS had interfered with its regulatory body.⁸⁷ According to this former commission employee, Commissioner Gary Pierce had held at least 14 ex parte meetings with APS's CEO between 2007 and 2015. Eventually, both the FBI and the Arizona attorney general's office would investigate these issues. The FBI has taken a particular interest in the way the 2014 ACC election was funded. Apart from the fact that APS spent \$11 million on the race under other organizations' names, there were other abnormalities in that election. For example, the Sunlight Foundation uncovered that APS may have funneled money to the commission race via a university foundation, at Arizona State University (ASU).⁸⁸ Adding to the controversy, Bill Post—the former chair and CEO of APS's corporate parent Pinnacle West and a then board member, who had worked at APS for 38 years—chaired the ASU Foundation board at the time.⁸⁹ APS and the ASU Foundation officials deny any direct link. But given APS's past behavior in denying election spending until journalists or federal investigators uncover the truth, it would be understandable to believe they are lying.

Opponents Continue to Attack Solar, Causing the Industry to Shrink and Undermining Policy Feedback

The commission's 2013 decision only applied to one utility, APS. On the heels of the 2014 election, Arizona's two other utilities acted in early 2015 to impose fees on *their* net metering customers. Salt River Project, which is not regulated through the ACC, proposed a new monthly charge for solar customers in December 2014. Their board of directors scheduled a vote on February 26, 2015, to decide the issue. Like APS's first proposal, SRP suggested very large charges—raising rates by an average of \$50 for new net metering customers.⁹⁰ Following a series of contentious public hearings, the charges were approved on February 26, with 12 of the 14 directors voting in favor. Although SRP made other changes, these costs were primarily imposed on new customers installing

solar after December 8, 2014. In this way, SRP backdated the changes to solar customers who acted after they announced their plan to shift the policy. The rate changes would take effect almost immediately, starting in April 2015.

The advocates tried to resist this policy change using the courts. SolarCity, one of the members of TASC and the then largest solar leasing company in the country, filed an antitrust lawsuit for anticompetitive behavior in Arizona's federal court on March 3, 2015. This was a bread-and-butter issue for the company—SolarCity had around 46% of the customers with solar installed in SRP's service territory.⁹¹ Salt River Project argued before a district court to dismiss the suit on the basis of the state action immunity doctrine—in other words, suggesting that antitrust lawsuits do not apply because SRP is a state-regulated agency. The motion was dismissed, with the decision appealed to a federal court. The Supreme Court announced in December 2017 that it would hear the case. Weeks before oral arguments, SRP and SolarCity settled. Here, we see advocates strategically using an indirect route through the courts to gain advantage in policy combat, when other more direct strategies were either not feasible or not likely to lead to success.

One month after the SRP decision, on March 25, 2015, TEP applied to the ACC for a rate change for new net metering customers. It used the same playbook APS had pioneered in 2013: proposing paying new solar customers the same price for electricity as it would pay to buy power from a commercial solar power plant. The change would amount to around a \$22/month charge for new solar customers. TEP argued that solar customers would still save an average of \$80 a month relative to the typical customer.⁹² The next week, on April 2, 2015, APS mirrored TEP's proposal, similarly requesting a charge of around \$21/month, through an increased grid charge. This would amount to multiplying the charge approved just 18 months prior by a factor of four.⁹³ Once again, to limit solar companies' ability to organize the public in opposition to these proposed rate hikes, existing solar customers would be grandfathered in and could keep their current rates. APS requested that the ACC move forward and increase the charge, with an aggressive timeline of August 2015 to approve and implement the proposal. Initially, TEP's proposition was dismissed. However, at the end of 2018, the ACC approved a new monthly fee for new TEP solar customers.⁹⁴

The advocates organized through their networks to block these proposals. But with so many utilities targeting net metering, solar companies struggled to resist retrenchment. With each new proposal moving in parallel, in a different venue or proceeding, the advocates were fighting a battle on multiple fronts. Further, these changes were not just happening in Arizona: they were happening across the country. Since these solar companies operated across state lines, they were facing attacks in many other PUCs. The utilities, by contrast, were well funded and they only had to work in one state. As monopolies with guaranteed

revenues, they had millions to spend on these policy conflicts. Winning these conflicts paid them back: when new charges were approved, it increased their profits. By contrast, for each new charge the solar companies failed to resist, their profits and thereby their ability to influence policy decreased. This is policy feedback in a nutshell. But in this case, policy changes were strengthening the opponents and weakening the advocates.

The consequences of these monthly charges were quickly reflected in solar installation rates. Since APS's first charge was approved in late 2013, installations in its service territory reduced dramatically. As Figure 7.1 shows, in 2014 solar installations in APS's service territory fell 5% compared to 2013. The decline in growth is particularly dramatic compared to SRP's trajectory, where installations grew more than 800% over the same period. Since the utilities both operate in Phoenix, in very close geographic proximity, the reductions in APS's service territory are likely causally attributable to the \$5/month average grid charge implemented at the end of 2013.

Once SRP imposed monthly fees in 2015, installations in their area dropped precipitously—an abrupt quarter-over-quarter reduction of over 75%. Immediately after the policy was implemented, SolarCity saw a sharp 96% decline in installations.⁹⁵ These results show the material consequences of the

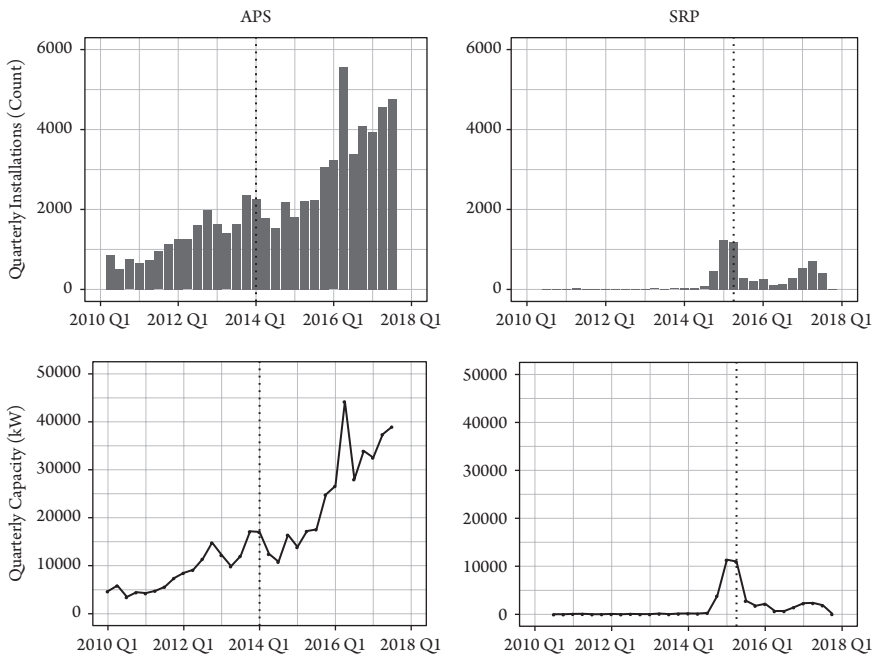


Figure 7.1 Quarterly Growth in Net Metering Capacity in Arizona Public Service (APS) versus Salt River Project (SRP). Dashed line shows policy retrenchment. (Source: <http://arizonagoessolar.org/>.)

policy change. Through these fees, utilities managed to cut off resources from clean energy advocates, shrinking the solar industry in Arizona and quelling the main dissenters to their proposals. With each victory, it was easier for opponents to win the next battle.

Regulatory Capture Is Uncovered, but Arizona's Net Metering Policy Is Repealed

While opponents were able to retrench clean energy policy in Arizona, it was not costless. Through taking their conflict public, APS exposed the extent to which it had captured its regulator. This did not go unnoticed by journalists, the public, nor even the commission itself. Beginning in 2015, Commissioner Bob Burns began to ask APS questions about its election expenditures. Burns was a Republican who received campaign contributions from APS when he was running for election in 2012. He also served as an ALEC state chair when he was president of the Arizona Senate in 2011 and had even been a member of ALEC's board. Initially, Burns supported APS in its attacks on net metering. He was an unlikely person to take on the solar opponents.

But something changed in 2015, and Burns became a dogged regulator. He asked the Arizona Attorney General Mark Brnovich whether it would be within his abilities as a regulator to subpoena APS. In May 2016, Brnovich responded that he could; and in August 2016, Commissioner Robert Burns filed subpoenas seeking information on APS and its parent company's expenditures on commission races from 2011 to 2016.⁹⁶ In response, APS sued Burns. The judge ruled that Burns had the right to subpoena the utility; however, because the other regulators did not agree with him, he could not force APS to comply.⁹⁷ With the re-election of Sandra Kennedy in 2018 and subsequent backing from other commissioners, APS eventually disclosed its election contributions, though questions remain. The fact that APS resisted disclosing its campaign spending in elections for its own regulator for years is problematic.⁹⁸ And the fact that the utility has gone to such lengths, including suing a regulator, shows clear efforts to undermine its regulator's independence.

In 2016, three positions on the commission were up for re-election, including Burns's seat. The Republican primary was contested, with five people running for the three open slots. Burns made it through the Republican primary, in part with \$700,000 in spending from solar groups, who supported his campaign with mailers and phone calls. APS also spent heavily on the commission race in 2016, with a total sum of at least \$4.2 million.⁹⁹ During the election, the CEO of APS, Don Brandt, sent an email to his employees, urging them to vote for

the Republican candidates, including Burns. Clearly, APS would rather have a known Republican adversary than any Democrats on the commission.

Burns is not the only person to raise concerns about corruption and regulatory capture at the commission.¹⁰⁰ Pinnacle West, the holding company for APS, received two grand-jury subpoenas from the US attorney's office in Arizona in June 2016 for election spending related to the commission. In addition, the FBI investigated whether Gary Pierce leveraged his position to support his son Justin's bid for Arizona Secretary of State; the Arizona Free Enterprise Club, one of the groups that APS has used as an intermediary, contributed \$733,000 to Justin Pierce's campaign.¹⁰¹ Eventually, Gary Pierce was charged federally with bribery and conspiracy, with evidence unearthed as part of the larger probe into the ACC elections. Although the bribe was unrelated to the electricity case, it may simply have been the easier way to charge Pierce, given the evidence.¹⁰² Eventually, federal prosecutors dropped the bribery case and called it a mistrial. Given all these developments, the public began to view the ACC as a captured regulator. For example, a September 2017 poll found that two-thirds of Arizonans believed the commission is corrupt.¹⁰³ Notably, similar levels of Republicans, Democrats, and Independents shared this view.

Given the ongoing investigations and controversy, in March 2017, APS said it would disclose its campaign contributions. It maintained that intervening in the election of its own regulator was legal and ethical given that the First Amendment allows freedom of speech and citing the Supreme Court decision on *Citizens United*.¹⁰⁴ APS claimed that only profits were used to fund its election spending and that it did not charge customers for these costs. This is a rather weak argument given that private utilities make profits through regulatory decisions at the commission. Further, APS is a monopoly, so its customers cannot leave. Ultimately, the money that APS or Pinnacle West uses in campaigns is derived from its customers, who cannot choose to buy from another company, if, for example, they disagree with its political stances.

After these stinging losses, the advocates tried a new, public tactic in 2016, when they fielded a ballot initiative: the Arizona Solar Energy Freedom Act. They even had a credible former ACC Republican commissioner, Kris Mayes, lead the proposal. However, the utilities' dominance was not easily challenged. A counterinitiative was soon filed. The same thing occurred in Florida that year, when utilities and the public applied for dueling ballot initiatives. In that state, the utilities successfully fended off the solar advocates' initiative.¹⁰⁵ In Florida, the solar coalition realized it would not have enough political influence to beat a counterinitiative, which if adopted could further undermine its weak position. In this way the opponents reshaped the negotiation landscape, getting the advocates to retreat.

In Arizona, APS asked for a full rate case in mid-2016, before the election was concluded. Their request included numerous strategies to retrench solar energy. As occurred in Kansas (Chapter 6), the advocates sat down to negotiate with their opponents after years of endless attacks. APS and SolarCity came together to work out the compromise, with the solar companies conceding ground, given their lack of influence at the commission.¹⁰⁶ In the August 2017 decision, the commission eliminated net metering. The decision was only a modest 8% reduction in the price solar customers would be paid for each unit of energy supplied. However, the bigger decision was that the rate could be recalculated in the future. In other words, this change allowed APS to continuously reduce how much it paid for solar energy. In such an asymmetric bargaining situation—wherein the utilities have all the information—solar customers' payments will likely continue to decrease, barring electoral shifts at the commission. Unsurprisingly, the changes applied almost immediately, giving the solar industry little time to adapt. By this point, solar leasing companies had already begun pulling out of the state—in 2015, SolarCity relocated 10% of its workers out of Arizona.¹⁰⁷

But repealing net metering was only one way that APS targeted solar in its rate case. The utility also requested other under-the-radar changes, including dramatic increases in *all* customers' fixed monthly fees. This change made solar less profitable. It was a new strategy utilities were using to reduce solar energy across the country. Once again, APS asked for very high charges, starting the negotiation at \$24/month—almost three times as large as the existing fixed charges. Eventually, the commission approved a charge of \$15/month, representing an increase of almost 75%. In addition, APS requested changes to the definition of peak times, shifting them away from the hours where the sun is shining toward the evening when the sun has gone down. The commission also approved this change. In these subtle ways, APS further undermined solar in the state. Meanwhile, the utility engaged in greenwashing, claiming it was pro-solar and focused on equity by promising to expand its own solar program to low-income households. In truth, such a program allowed APS to make greater profits while giving these low-income households minimal breaks on their electricity bills.

Throughout this case, we have seen how a utility's ability to capture its regulator has undermined citizens' ability to invest in clean energy. While some individuals and even a commissioner have contested these rate changes, without big shifts in Arizona's politics and the extent of APS's power, it is unlikely they will be reversed. After many years, the opponents succeeded in cutting off resources from their advocates. From 2016 to 2019, installations plummeted, and job losses in the solar industry were dramatic, falling 10% in 2018. With no substantial solar energy policies left in Arizona, some solar companies left the state entirely.

Conclusion

Arizona's clean energy laws are a clear case of regulatory capture undermining policy feedback. By 2017, Arizona had retrenched its solar energy policies: it had eliminated net metering, cut incentives, and raised fixed fees on customers. Retrenchment occurred in Arizona because interest group opponents held greater influence over the regulator than advocates. The state was leading a trend that has since played out nationally, with steady increases in the number of fixed monthly charges since 2015.¹⁰⁸ In many cases, opponents only apply policy changes to future adopters of solar energy, quelling opposition from the easiest citizens to mobilize: current solar owners. For example, in both Indiana and Nevada, opponents reduced compensation rates. However, Nevada did not initially grandfather existing customers into the prior rate structure. This difference likely explained the extensive backlash that forced the return to net metering in 2017.¹⁰⁹ In other states utilities were smart to grandfather existing customers and keep the scope of conflict smaller.

In Arizona, policy retrenchment weakened solar growth, which saw a 57% drop in installations from 2013 to 2014 and similarly low numbers in 2015. While APS numbers increased after 2016, this was likely because the utility's customers wanted to act before the net metering program ended for new projects in 2017.¹¹⁰ After that point, APS installations again plummeted.¹¹¹ The market in SRP's territory took even longer to recover. At SRP, rate changes caused steep declines in the number of applications. In response to the rate hikes, advocates launched protests and ran candidates for the SRP board in 2016.¹¹² Advocates successfully elected two pro-solar board members in both 2016 and 2018, building their influence on that board. Still, with 14 seats, the advocates were outnumbered. At both utilities, solar adoption has been successfully weakened.

Given their long-term struggle to rollback these policies and the extent of their influence with their regulator and boards, it is puzzling why APS and SRP did not block net metering policies from passing in the first place. This is where the fog of enactment is key. In some cases, potential opponents may not initially know what their interests are vis-à-vis a policy. In those cases, even when regulatory capture is operating, policies that are counter to an influential opponent's interests can be enacted and implemented. When these opponents update their beliefs about the policy, in part learning through interest group networks that cross state lines, they will begin to attack the policy. With sufficient power, reversals will begin to occur.

In Arizona, solar's success began to threaten the incumbent utilities' ability to build and profit from new infrastructure. In 2012, APS forecasted that it would add 3.7 gigawatts (GW) of natural gas in the next 15 years—and only 0.7 GW

of renewables. In 2014, they *increased* their forecast for natural gas. Likewise, in 2017, they called for 5.4 GW of natural gas additions by 2032 yet kept their renewable target a mere 0.7 GW—never raising that goal in 5 years.¹¹³ These plans show that the utility does not want to build clean energy—it wants to build and profit off of fossil fuels in the coming decades.

In sharp contrast with the utilities' plans, 100% of new-generation capacity in Arizona in 2014 came from solar energy. It is clear that this growth in clean energy threatened the incumbents since the three big utilities in the state attacked the net metering policies beginning around that time. These opponents were successful, even though new advocates had emerged that vigorously defended the policy. These advocates, who in part were enabled through policy feedback in earlier acting jurisdictions, simply had not developed sufficient political influence to overcome the opponents' attacks and convince politicians to hold the policy in place.

This case also provides an interesting example of how campaign contributions can lead to regulatory capture at low-visibility and low-salience elected institutions. With few members of the public paying attention, regulated entities battle for which individuals will make it through the primary and eventually win the election. This can lead to partisan polarization, if interest groups back candidates that agree with their interests. The same dynamic has occurred in Michigan, where the private utility Consumers Energy spent \$43 million on political donations in recent years.¹¹⁴ Similarly to APS, this utility was able to unseat a vocal critic by spending heavily in a primary race.

In Arizona, the commission became increasingly captured over time, as a result of interest groups intervening in elections. When interest groups play a central role in getting a politician elected, that person may feel a debt. Many commissioners were interested in implementing the utility's vision. For example, the chair of the commission violated rules, meeting one-on-one with APS's CEO in periods when major decisions were being made on clean energy. Overall, the ACC largely abdicated its responsibility to investigate the proposed policy changes, outsourcing the workshops to the utility and to ratepayer advocates and never undertaking an evidentiary hearing on the issue themselves. Overall, the regulator did not fulfill its constitutional role.

Although solar companies attempted to counteract the utilities' influence, they were outmatched in money spent on elections, on advertising, and on campaigns. The in-state solar groups were fractured and poorly organized, in part because their main sources of revenue—solar incentives—were eliminated in 2013. APS would drive further wedges into the solar advocates' coalition by casting California billionaires and out-of-state solar companies as trying to impose their policies on Arizona.¹¹⁵

The case also shows how policy feedback can spillover into other jurisdictions. Out-of-state solar groups, bolstered through laws in early acting states like California, had resources to spend in Arizona to defend solar policy. They were able to hire experienced lawyers and public relations firms to craft a public and regulatory campaign to resist net metering fees. They attempted to expand the scope of conflict, bringing the public into a debate before and after key elections. Still: they were outspent by the utilities, perhaps as much as 20 times in the 2014 election. After this pivotal year, the advocates had lost the war.

Since this time, utilities' resistance to clean energy has continued. In 2018, Californian billionaire Tom Steyer saw an opportunity to push for increased renewable energy in the state.¹¹⁶ Steyer's group, NextGen Climate Action, led a ballot initiative to fast-track both the amount of renewables and the timeline for the state's RPS. Proposition 127 would have required utilities to generate 50% of their electricity from renewable sources by 2030. Raising more than \$26 million to pass the measure, NextGen Climate attempted to marshal support in Arizona. As usual, the advocates were outspent. Pinnacle West, APS's parent corporation, contributed nearly \$40 million to the opposition campaign. Yet funding was not the only challenge that advocates faced. The Arizona Attorney General's office added language to the measure that highlighted the proposal's costs. These actions "raised eyebrows" among officials with the Secretary of State's office.¹¹⁷ Here, again, we could reasonably believe that APS had influenced this decision. As advocates noted, in 2014 APS had spent millions in ads against Attorney General Brnovich's opponent.¹¹⁸ With this language and with the greater spending by opponents, the measure failed by a wide margin of nearly 70% to 30%.¹¹⁹ In addition to having more financial resources, APS continues to have influential allies across the Arizona government.

In the future, Arizona will likely continue to build solar capacity because the costs have now declined to the point that it is economically competitive with other energy sources. However, the utilities are more likely to build this technology at grid scale or take over from solar leasing companies as residential customers' solar brokers. As Chapter 3 demonstrated, utilities are very slow to change and are poor innovators. Empowering these opponents to lead the development of solar energy is unlikely to create significant innovation, speedy deployment, or dispersed assets. It is notable that APS has millions of dollars to run ads against solar but not enough money to pay for the costs of solar. Instead, the utilities will continue to concentrate wealth as monopolistic rent-seekers and will likely deploy far less capacity than solar leasing companies would. Further, given all the ways APS has attempted to influence its regulator to cut renewable energy requirements, it would be naive to suppose that the utility would prove the best pathway to Arizona's clean energy future.