Blocking the Sun

12 Utilities and Fossil Fuel Interests That Are Undermining American Solar Power

ENVIRONMENT NEW MEXICO
RESEARCH & POLICY CENTER

FRONTIER GROUP

Blocking the Sun

12 Utilities and Fossil Fuel Interests That Are Undermining American Solar Power

Written by:

Gideon Weissman, Frontier Group

Bret Fanshaw, Environment America Research & Policy Center

October 2015

Acknowledgments

Environment New Mexico Research & Policy Center thanks Rosalind Jackson of VoteSolar and Gabe Elsner of the Energy and Policy Institute for their review of drafts of this document, as well as their insights and suggestions. Thanks also to Tony Dutzik and Ally Fields of Frontier Group for editorial support.

Environment New Mexico Research & Policy Center thanks the Tilia Fund, the John Merck Fund, the Scherman Foundation, the Arntz Foundation, and the Fred and Alice Stanback Foundation for making this report possible.

The authors bear responsibility for any factual errors. The recommendations are those of Environment New Mexico Research & Policy Center. The views expressed in this report are those of the authors and do not necessarily reflect the views of our funders or those who provided review.

©2015 Environment New Mexico Research & Policy Center

The Environment New Mexico Research & Policy Center is a 501(c)(3) organization. We are dedicated to protecting New Mexico's air, water and open spaces. We investigate problems, craft solutions, educate the public and decision-makers, and help New Mexicans make their voices heard in local, state and national debates over the quality of our environment and our lives.For more information about Environment New Mexico Research & Policy Center or for additional copies of this report, please visit www.environmentnewmexicocenter.org.

Frontier Group provides information and ideas to help citizens build a cleaner, healthier, fairer and more democratic America. Our experts and writers deliver timely research and analysis that is accessible to the public, applying insights gleaned from a variety of disciplines to arrive at new ideas for solving pressing problems. For more information about Frontier Group, please visit www.frontiergroup.org.

Layout: To the Point Publications, tothepoint@imagina.com

Cover photo: Becca Humann

Table of Contents

Executive Summary 4

Introduction 7

Strong Public Policies Have Fueled the Rise of Solar Energy 8

Utilities and the Fossil Fuel Industry Are Fighting to Stop the Growth of Solar Energy 9

Blocking the Sun: 12 Utilities and Fossil Fuel Groups Undermining Solar Energy 11

Laying the Groundwork: The National Support Network for Anti-Solar Campaigns 12

Setting the Policy: Edison Electric Institute 12

Providing the Funding and Running Ground Campaigns: The Koch Brothers and Americans for Prosperity 13

Drafting Anti-Solar Legislation: Heartland Institute 14

Selling Legislative Influence: American Legislative Exchange Council 15

Deceptive Front Group: Consumer Energy Alliance 16

Battling Solar in the States: Electric Utilities 17

Arizona Public Service 17

Duke Energy 18

American Electric Power 18

Berkshire Hathaway Energy 19

Salt River Project 20

FirstEnergy 20

We Energies 21

Conclusion 22

Notes 23

Executive Summary

Solar power is clean, affordable and popular with the American people. Since 2010, America's solar energy capacity has grown more than four-fold, generating increasing amounts of clean energy at increasingly affordable prices.

America's solar progress is largely the result of bold, forward-thinking public policies that have created a strong solar industry while putting solar energy within the financial reach of millions more Americans.

Behind the scenes, however, electric utilities, fossil fuel interests and powerful industry front groups have begun chipping away at the key policies that have put solar energy on the map in the United States – often in the face of strong objections from a supportive public.

This report documents 12 fossil fuel backed groups and electric utilities that are running some of the most aggressive campaigns to slow the growth of solar energy in the United States. Citizens and policymakers must be aware of the tools self-interested parties are using to undermine solar energy across America – and redouble their commitment to strong policies that move the nation toward a clean energy future.

A national network of utility interest groups and fossil fuel industry-funded think tanks is providing funding, model legislation and political cover for anti-solar campaigns across the country.

The **Edison Electric Institute (EEI)**, the trade group that represents U.S. investor-owned electric utilities, launched the current wave of anti-solar advocacy with a 2012 conference warning utilities of the challenges solar energy posed to their traditional profit centers. Since then, EEI has worked with the American Legislative Exchange Council (ALEC) on model legislation to repeal state renewable electricity standards and ran an anti-solar public relations campaign in Arizona.

The **American Legislative Exchange Council (ALEC)** provides utility and fossil fuel interests with access to state legislatures, and its anti-net metering policy resolution has inspired legislation in states like Washington and Utah.

The **Koch brothers** have provided funding to the national fight against solar by funneling tens of millions of dollars through a network of opaque nonprofits. One Koch front group, 60 Plus, ran a TV and internet anti-net metering campaign in Arizona.

The Koch-funded campaign organization **Americans for Prosperity** (AFP) carries out anti-solar energy organizing efforts. In Florida and Georgia, AFP has run misinformation campaigns against net metering and other solar policies.

The Consumer Energy Alliance is a Houston-based front group for the fossil fuel industry, representing fossil fuel companies like ExxonMobil, Chevron and

Shell Oil. In Wisconsin in 2013, CEA submitted 2,500 dubious signatures in support of a utility rate case to increase costs for solar customers.

At the state level, electric utilities have used the support provided by national anti-solar interests, as well as their own ample resources, to attack key solar energy policies.

As part of its campaign to discourage rooftop solar power, **Arizona Public Service**, the biggest utility in Arizona, has funneled money through nonprofit groups in order to fund anti-net metering advertisements and has been accused of improperly cultivating influence with the state commission that regulates utilities.

Duke Energy, the largest utility in the U.S., has positioned itself through investments in utility-scale solar plants to be seen as a champion of solar energy – all while spending millions on campaign contributions to keep anti-solar politicians in office in Florida and lobbying against third party solar agreements in North Carolina.

American Electric Power (AEP) has backed anti-solar campaigns in states including Ohio and West Virginia. In West Virginia, AEP successfully lobbied for a bill to limit the net metering cap to 3 percent of utility peak demand.

In Utah and Nevada, subsidiaries of Warren Buffet's **Berkshire Hathaway Energy** are running active campaigns to halt the growth of solar power. In Nevada, subsidiary NV Energy has lobbied to prevent the raising of Nevada's net metering cap.

The **Salt River Project**, a public utility in Arizona, passed perhaps the most damaging anti-solar provision in the country: a demand charge for solar customers that will increase utility bills by an average of $50 per month, which has all but killed the growth of rooftop solar in the utility's territory. The passage of the fee was based in part on an internal SRP analysis that was criticized for failing to account for solar energy's value to the grid and to the environment.

In Ohio, **FirstEnergy** led the fight to make Ohio the first state in the country to freeze its renewable energy standard – resulting in annual private investment in Ohio solar energy dropping by more than $100 million. FirstEnergy has also sustained a series of regulatory attacks against Ohio net metering policy.

We Energies, Wisconsin's largest utility, has submitted a nearly continuous stream of proposals to the Wisconsin Public Services Commission (PSC) to halt the growth of solar, including proposals to limit net metering and to impose surcharges on solar owners.

In mid-2015, at least 21 states had either ongoing or recently resolved proceedings around policies to slow the growth of solar energy, primarily in the form of new limitations to net metering or new charges to make rooftop solar power less economically viable. State decision-makers should resist utility and fossil fuel industry influence, and reject policies like:

- Restrictions or unfair caps on net metering;
- Discriminatory surcharges or tariffs for solar customers;
- Unnecessary regulatory burdens on solar energy; and
- Rollbacks of renewable electricity standards.

In addition, state leaders can do more to encourage solar energy's growth. They should embrace ambitious goals for solar energy and adopt policies that will help meet them, including:

- Considering the benefits to the grid, all ratepayers and society of distributed solar power in any ratemaking or policy decisions about solar;

- Implementing strong net metering and interconnection standards, which enable many customers to meet their own electricity needs with solar power;
- Encouraging community shared solar projects and virtual net metering, which can expand solar access to more customers;
- Enacting or expanding solar or distributed renewable carve-outs and renewable electricity standards;
- Allowing companies other than utilities to sell or lease solar to residents and businesses;
- Making smart investments to move toward a more intelligent electric grid that will enable distributed sources of energy such as solar power play a larger role; and
- Utilizing solar energy wherever possible on government buildings and properties.

Solar power should also play a significant role in states' plans to meet or exceed the requirements of the Clean Power Plan.

Introduction

Solar energy is booming across the United States. Today, more than 600,000 American homes and businesses have on-site solar energy.[1] Since 2010, America's solar energy capacity has grown more than four-fold, generating increasing amounts of clean energy at increasingly affordable prices.[2] And as installation prices have fallen – 73 percent since 2006 – the pace of rooftop solar installations has only grown.[3]

In 2014, solar generation averted approximately 14 million metric tons of carbon dioxide pollution.[4] Meanwhile, solar energy is creating jobs, most of which cannot be outsourced. By the end of 2014, there were more than 173,000 solar industry workers in the United States, a 20 percent increase from the year before.[5] It's not a surprise, then, that the vast majority of Americans support solar energy: A recent Gallup poll showed that 79 percent of Americans think the U.S. should put "more emphasis" on producing solar power.[6]

But many electric utilities and the fossil fuel industry disagree. They perceive solar power – especially solar power generated locally by ordinary residents and businesses, as opposed to in centralized, utility-owned power plants – not as an opportunity to clean our air but as a threat to established ways of doing business. As a result, many of these companies – among the most powerful in the world – are throwing their power and resources behind a growing campaign of attacks on solar energy and key public policies that make it accessible and affordable to Americans.

There were more than 20 ongoing net metering or rate structure proceedings that could inhibit the growth of customer-generated solar energy as of the end of 2014.[7]

Unsurprisingly, many of these battles are being waged in the shadows – in regulatory agencies largely removed from public view, where the public's support for solar energy and solar power's contribution to a cleaner environment have little impact on decision-making.

This report attempts to pull back the veil on 12 of the utilities, fossil fuel companies, front groups and special interest think tanks that are fighting solar power in America. By shining a light on the companies and entities attacking solar energy – and the tactics they use – citizens and decision-makers will be better equipped to respond when the nationwide assault on solar energy arrives at their doorsteps.

Strong Public Policies Have Fueled the Rise of Solar Energy

The rise of American solar energy, which has grown more than four-fold in terms of capacity since 2010, is no accident. Rather, it has been driven by forward-looking policies that cut red tape and make solar power more affordable for consumers.

A number of policies have been particularly important:

- *Net metering policies* guarantee owners of solar power systems a fair return for the excess electricity they supply to the grid by crediting them with the value of such electricity at the retail rate. Net metering essentially allows the customer's power meter to "spin backwards" at times when solar power production exceeds on-site needs.
- *Renewable electricity standards* (RESs, also known as renewable portfolio standards) set minimum renewable energy requirements for utilities. RESs with a specific minimum requirement for solar or distributed renewable energy have played a big role in fostering a stable solar energy market.
- *Third-party ownership policies* allow companies other than utilities to use financing tools like power purchase agreements or solar leasing that can relieve consumers' up-front costs for installing rooftop solar. Power purchase agreements, for example, let an installer build a customer rooftop solar at no upfront cost, and then sell power generated by the panels back to the customer at a fixed cost. At the end of the contract, the customer may purchase the panels from the developer.

The presence of strong solar policies has been consistently linked with the emergence of strong solar energy markets. Of the 10 states with the most solar capacity per person, nine have strong net metering policies; nine have strong interconnection policies; nine have policies that allow creative financing options like power purchase agreements; and all have renewable electricity standards.[8] A recent study by the U.S. Department of Energy's National Renewable Energy Laboratory confirmed that strong solar policies are important indicators of state solar capacity.[9]

Utilities and the Fossil Fuel Industry Are Fighting to Stop the Growth of Solar Energy

Solar energy is a boon to the environment, popular with the American people, and supports the creation of jobs and economic activity in our communities. But to many utilities, along with the fossil fuel industry, the growth of solar energy is something to be lamented, not celebrated.

To companies that sell coal, oil and natural gas, solar energy represents an obvious long-term threat to the viability of their businesses. To electric utilities, solar energy – especially the solar energy systems installed by individuals and businesses – represents a different type of threat, one with much more immediate consequences. Some electric utilities claim that, as more individuals and businesses "go solar," the cost of providing access to the grid will be divided among fewer paying customers. And as the price of energy storage technology declines, more customers will have the ability and the incentive to abandon the grid altogether, triggering a "utility death spiral."

Recent research from Lawrence Berkeley Lab suggests that concerns about the death spiral are probably overblown.[10] And some utilities have responded to the challenge posed by solar energy by working constructively with regulators and other decision-makers to develop new business models that maintain consumers' access to an affordable, reliable electric grid. Others have invested resources in utility-owned solar power plants – while simultaneously fighting to limit consumers' ability to generate their own solar power. Still others have attempted to slow the growth of solar energy by fighting to eliminate policies that support the transition to a clean energy economy. Those fights – against distributed, local solar power and all forms of clean energy – are happening with increasing frequency across the United States. In mid-2015, at least 21 states had either ongoing or recently resolved proceedings around policies to slow the growth of solar energy, primarily in the form of new limitations to net metering or new charges to make rooftop solar power less economically viable.[11]

The campaigns to slow the rise of solar energy have often been conducted as if money were little object. Electric utilities and the oil and gas industry are the third and fourth biggest spenders on federal lobbying in the United States, respectively.[12]

But, to date, anti-solar interests have failed far more often than they have succeeded in their attacks on solar energy. With widespread public support for solar energy from across the political spectrum, anti-solar interests have increasingly sought to pick battles in regulatory agencies, which receive less public scrutiny.

Who are the interests behind these attacks on solar energy? And how have they waged their campaigns? The following section provides a list of key players and a glimpse at the fossil fuel industry's anti-solar playbook.

Solar Power Is Popular across the Political Spectrum

Solar energy's immense popularity isn't limited to any one segment of the population. According to a recent Gallup poll, 79 percent of Americans – including 70 percent of Republicans – think that the U.S. should place "more emphasis" on solar power.[13]

Among the most passionate champions of solar energy in some states are conservatives affiliated with the Tea Party movement, who see rooftop solar energy as a means to greater autonomy for individuals. According to Debbie Dooley, the cofounder of the Atlanta Tea Party, as quoted in the *New Yorker*: "I thought that the regulated monopoly in Georgia had far too much power… The average person cannot build a power plant, but they can install solar panels on their rooftop, and they should be able to sell that energy to friends and neighbors if they wish."[14]

In states like Florida and Georgia, members of the Tea Party have butted heads with industry-backed groups like Americans for Prosperity and ALEC. In Florida, one conservative citizens group accused Americans for Prosperity of launching a "campaign of deception" against net metering.[15] And despite the attempts of industry public relations campaigns to polarize the solar energy debate on traditional conservative-liberal lines,[16] solar power is only increasing in popularity with the American public.[17]

Blocking the Sun: 12 Utilities and Fossil Fuel Groups Undermining Solar Energy

Solar power is clean, affordable, and popular with the American people. It is also being undermined by efforts to slow its growth. The following 12 electric utilities and fossil fuel-backed groups are running some of the country's most aggressive campaigns against solar power.

Laying the Groundwork: The National Support Network for Anti-Solar Campaigns

A national network of utility interest groups and fossil fuel industry-funded think tanks is providing funding, model legislation and political cover for anti-solar campaigns across the country.

Setting the Policy: Edison Electric Institute

In 2012, the Edison Electric Institute (EEI) brought together top utility executives to describe the threat posed to the utility business model by distributed generation, the most popular form of which is rooftop solar.[18] As the trade group that represents all U.S. investor-owned electric companies, EEI's call to action put in motion what has become the utility industry's national campaign to slow the growth of solar energy.

Since its 2012 meeting, EEI has conducted a multi-year campaign to weaken solar policies across the country.[19]

- In its 2012 chief executives meeting, EEI warned that distributed generation would bring the "prospect of declining retail sales and earnings; financing of major investments in the T&D [transmission and distribution]…; potential obsolescence of existing business and regulatory models."[20] Since then, EEI has continued to lay out the framework for utility opposition to solar energy. In its 2013 report "Disruptive Challenges," EEI discusses net metering's "significant potential adverse impact to utility investors."[21]
- After creating the utility case against solar power, EEI put in motion the utility industry's legislative attacks. In 2013, EEI worked with the American Legislative Exchange Council (ALEC), which receives funding from EEI,[22] to craft and distribute to state legislatures sample bill language (written with help from the Heartland Institute) to attack net metering and create solar surcharges.[23]

EEI backs its positions with public relations and lobbying campaigns. From 2008 to 2013, EEI paid $74 million to public relations and consultant firms to assist with publicity campaigns, some of which was spent to influence solar policy.24 And in Arizona, EEI funded television and radio ads attacking rooftop solar.25 After the Arizona utility Arizona Public Service admitted that it funneled ratepayer money through nonprofits in order to fund ads of its own, EEI was asked whether or not it had used similar dark money tactics but refused to answer. [26]

Providing the Funding and Running Ground Campaigns: The Koch Brothers and Americans for Prosperity

Charles and David Koch, the Koch brothers, are important funders for the fossil fuel and utility industry effort against solar power. Through their campaign organization Americans for Prosperity (AFP), and by funding anti-solar efforts by other groups including ALEC, the Koch brothers have funded or participated in fights against solar in states including Georgia, Kansas, North Carolina, Arizona, Ohio, South Carolina, and Washington state.[27]

The Koch brothers have an enormous financial stake in the fossil fuel industry through their company Koch Industries and its many subsidiaries. Koch Industries operates around 4,000 miles of pipeline, along with oil refineries in Alaska, Minnesota, and Texas.[28] Its subsidiaries include Koch Carbon, which specializes "in the global sourcing, supply, handling and transportation of bulk commodities" – including coal.[29]

The Koch brothers spend heavily to influence American politics. Koch Industries spent $13.8 million on federal lobbying in 2014, more than any other company in the oil and gas industry, including global leader ExxonMobil.[30] And during the 2014 election cycle, a leaked memo revealed Koch-funded Americans for Prosperity's intention to spend upwards of $125 million on election work, including advertisements and a ground campaign.[31]

Because the Kochs use a difficult-to-trace web of nonprofit organizations to fund their various political causes, there are only clues to the full the extent of their funding connection to anti-solar work. The Center for Public Integrity uncovered Koch links to the nonprofit organization 60 Plus, which ran TV ads and created the anti-net metering web site AZSolarFacts.com during Arizona Public Service's campaign to impose surcharges on its solar customers. Between 2008 and 2013, 60 Plus received more than $40 million from five different Koch-connected nonprofit groups.[32]

The Koch brothers also fund and support university research utilized by anti-solar campaigners. For example, the Koch brothers have extensive connections with Utah State University's Political Economy Institute, which was founded by professor Randy Simmons and has published research that has been disseminated by the Heartland Institute. According to analyses by the American Wind Energy Association, many of the studies produced under Simmons suffer from extensive problems, including in one case blaming renewable energy for effects of the economic downturn of the Great Recession.[33] The Koch brothers have a tight-knit relationship with Simmons and Utah State University (USU). Simmons runs an education program called the "Koch Scholars," which depends on a Koch foundation grant, and he is also a senior fellow at the Koch-funded Property and Environment Research Center. Between 2008 and 2013, Simmons served as the Charles G. Koch Professor of Political Economy at USU. The Koch Foundation also provides funding to USU, including $170,000 in 2012 alone.[34]

Americans for Prosperity, founded and funded by the Koch brothers, is a first-hand participant in state anti-solar campaigns. In Georgia in 2013, when the state utility board was readying for a vote requiring

Georgia Power to obtain 525 MW of solar PV capacity, AFP tried to stop the move by activating its members and utilizing its social media to promote erroneous claims about the cost of the effort and its impact on the economy.[35] Ultimately, a coalition of conservative lawmakers and environmental groups convinced the Georgia utility board to resist AFP and to pass the requirement.[36]

In Florida, AFP activated its members against a ballot initiative to allow third-party solar power sales (an effort referred to by Conservatives for Energy Freedom as a "campaign of deception"), organized coalition partners, held press conferences to attack net metering, and spread misinformation about a proposal to enact a state renewable electricity standard.[37]

And in Kansas in 2014, an AFP advertisement called for the repeal of the state's renewable electricity standard.[38] The ad included a clear attempt to polarize the debate over solar energy on traditional conservative-liberal lines, ending with the line, "Like Obamacare, it's another government mandate we can't afford."[39]

Drafting Anti-Solar Legislation: Heartland Institute

As a think tank with financial backing from the fossil fuel industry, the Heartland Institute plays an important role in battling solar energy, drafting anti-solar legislation and releasing misinformation about solar energy's economic impact.

The Heartland Institute has a long history of colorful and sometimes tasteless advocacy for the tobacco industry and against action on global warming and other environmental threats. In 2012, the Institute ran a billboard campaign that featured a picture of Ted Kaczynski, the "Unabomber," and the words, "I still believe in global warming. Do you?" The Heartland Institute has also published a report finding a "net benefit" to carbon pollution and global warming.[40]

While its funding sources are diverse, between 1998 and 2006, the Heartland Institute received $736,500 from ExxonMobil, and in 2011 it received $25,000 from the Koch brothers.[41] A leaked strategy document stated that Heartland's fundraising strategy was to pursue contributions "especially from corporations whose interests are threatened by climate policies."[42]

The Heartland Institute has played an important role in the national anti-solar campaign:

- The Heartland Institute helped draft the language for ALEC's "Electricity Freedom Act," the template bill that repeals RES policies.[43]
- The Heartland Institute conducts research and creates policy documents for use in anti-solar power campaigns. The institute's "Policy Tip Sheet" on North Carolina's renewable electricity standard including messaging points for opponents of the standard.[44]
- The Heartland Institute spreads misleading information about solar energy. For example, at a Kansas conference co-hosted with Americans for Prosperity in 2013, Heartland staff claimed that the state renewable electricity standard had caused electricity prices to rise by nearly 20 percent, despite a report by the Kansas Corporation Commission that the RES had affected electricity rates by less than 2 percent.[45]

Selling Legislative Influence: American Legislative Exchange Council

The American Legislative Exchange Council, or ALEC, gives the fossil fuel and utility industry direct access to lawmakers. By distributing model legislation to its more than 2,000 state legislator members, who then introduce the bills, ALEC has enabled its industry funders to push the introduction of anti-solar legislation in statehouses across the country.[46] ALEC's work to attack solar is wide-reaching, and includes efforts to kill net metering and to repeal renewable portfolio standards.

ALEC's funding sources include the Koch brothers, ExxonMobil, Chevron, Peabody Energy, American Electric Power and Duke Energy.[47] While it describes itself as a helpful policy aid for state legislators, ALEC has been described by the New York Times as a "stealth business lobbyist," and runs legislative campaigns across the country to prevent or repeal pro-solar policies. In the past, they have boasted that their high success rate at passing legislation makes ALEC a "good investment."[48]

ALEC has seen the introduction of its model "Electricity Freedom Act," legislation to repeal RES standards, in at least 19 states.[49] However, because of the popularity of RES legislation, these attempts fail the vast majority of the time.[50] In North Carolina, for example, ALEC saw its Electricity Freedom Act defeated by a bipartisan group of legislators.[51] ALEC also pushed for solar power surcharges in Oklahoma, Kansas and Washington state.[52] And ALEC's "Updating Net Metering" resolution has inspired legislation to hamper net metering in Washington state and Utah.[53]

ALEC legislative members were also involved in the Ohio clean energy freeze, which stalled the ramp-up of Ohio's renewable energy standard while also rolling back energy efficiency provisions and creating a committee to decide whether to dismantle even more of the law.[54] Ohio state Sen. Bill Seitz sits on ALEC's national board, and during debate over the original freeze legislation compared his opponents' policy positions to Joseph Stalin's "5-year plan."[55] Seitz's advocacy on behalf of ALEC's position came despite ample evidence of the Clean Energy Law's benefits for Ohio's economy, including a 1.5 percent reduction in electric bills and a 2 percent carbon dioxide emission reduction in just the first four years of the law.[56] Today, two ALEC members are on the state's six-person committee to decide the future of the state's frozen Clean Energy Law.[57]

ALEC's influence extends beyond state legislatures to state utility commissions. When the Arizona Corporation Commission voted to let the Arizona Public Service utility increase costs for its solar customers, four of the five ACC commissioners were or had been ALEC members.[58]

Language from ALEC's *Electricity Freedom Act*[59]

> ***Summary:*** *The Electricity Freedom Act repeals the State of* ***{insert state}****'s requirement that electric distribution utilities and electric services companies provide _____ percent of their electricity supplies from renewable energy sources by ____.*

Deceptive Front Group: Consumer Energy Alliance

As utilities and the fossil fuel industry expand their efforts to slow solar power's growth, they are turning to new and more extreme tactics. A prime example took place in Wisconsin in 2014, when an industry front group called Consumer Energy Alliance (CEA) submitted questionable petition signatures to the Wisconsin utility board in favor of a utility's proposal to impose new costs on Wisconsin solar owners.

The Consumer Energy Alliance (CEA) calls itself the "voice of the energy consumer."[60] In reality, CEA is a Houston-based front group for the fossil fuel industry, representing fossil fuel companies like ExxonMobil, Chevron and Shell Oil.[61] The group was created by oil industry lobbyist Michael Whatley and has been active in fossil fuel industry public relations campaigns across the country.[62] In 2009, CEA ran radio and TV ads in Tennessee, Montana, and the Dakotas, arguing that legislation to reduce vehicle carbon pollution "would be disastrous for American consumers."[63] Later, CEA launched a similar ad campaign in Michigan, Ohio, Indiana and Minnesota, which cost $1 million.[64]

In Wisconsin, as the state's Public Service Commission (PSC) considered a proposal by the utility We Energies to change its rate structure in a way that would reduce the incentive for installing rooftop solar, it received a 2,500-name petition from CEA, ostensibly signed by We Energies customers, in support of the new fees.[65] A *Capital Times* reporter was suspicious that so many people would side with their utility's argument for a rate hike.[66] When he tracked down signers of the petition, he found that CEA had either tricked them into signing its petition or simply made up their support.[67] Following his investigation, the PSC threw out the petition.[68] (Although the petition was submitted in We Energies' rate case, the utility denied any involvement.)[69]

While CEA's suspicious petition filing in the Wisconsin rate case appears to be the first move of its kind among state anti-solar campaigns, the tactic hints at what may be to come in industry efforts to keep solar power at bay.

Battling Solar in the States: Electric Utilities

While national trade groups, funders, and think tanks provide the backbone of the national fight against local solar energy, electric utilities are leading the fight in state legislative offices and regulatory agencies.

Arizona Public Service

Arizona Public Service (APS), the biggest utility in the sunniest state in the country, has waged an extensive battle against distributed solar energy in Arizona. Arizona is one of the top states in the country in terms of total solar capacity, solar capacity per capita, and number of solar jobs.[70] And while APS's large utility-scale solar plants have helped Arizona become one of the highest-capacity solar states in the country, the utility has been a determined opponent of rooftop solar power.

APS has undertaken extensive efforts impose high costs on its solar customers, most directly through rate proposals to the Arizona Corporation Commission (ACC), which regulates Arizona utilities. Some of its efforts have been behind closed doors: APS has been accused of funding dark money political campaigns to elect members of the ACC, and of having improperly close relationships with current and former ACC commissioners.[71]

One allegation focused on APS's relationship with former ACC chairman Gary Pierce, who repeatedly sided with APS in its fight to impose a surcharge on solar customers.[72] At one point, an ACC whistleblower accused Pierce of having unauthorized meetings with top APS executives.[73] Pierce's relationship with APS was further called into question by accusations that APS funneled money through independent-expenditure groups to fund the Secretary of State campaign of Justin Pierce, Gary Pierce's son.[74]

In addition, the Arizona Attorney General's office recently launched an investigation into the relationship between APS and ACC commissioner Bob Stump.[75] In the weeks prior to a recent ACC election, Stump was found to have exchanged text messages with an APS executive, and with the head of an Arizona dark money group rumored to receive APS funding.[76]

APS's efforts to keep its support for ACC candidates a secret may have also included funneling money through the fundraising arm of Arizona State University. According to IRS records uncovered by the *Arizona Republic* newspaper, APS gave $181,100 to the ASU Foundation in 2013, while the ASU Foundation in turn gave $100,000 to

the group Save Our Future Now, which then spent heavily on the ACC election.[77]

Finally, in a separate incident, APS funded anti-net metering TV and radio advertising campaigns through the nonprofit organizations 60 Plus and Prosper.[78]

In November 2013, the ACC gave APS the right to charge customers 70 cents per kilowatt of installed solar capacity (much less than APS had initially requested).[79] That charge was the first of its kind in the nation, and resulted in an average charge for solar customers of about $5 per month.[80] As of September 2015, APS has a pending request with the ACC to raise its monthly solar charge to $3 per kilowatt, which would cost the average new solar customer about $21 per month.[81]

Duke Energy

Duke Energy, the largest electric power holding company in the U.S., has positioned itself to be seen as a champion of solar energy.[82] The utility has made heavily publicized investments in solar energy, including a $500 million investment in utility-scale solar, and touts its 21 U.S. solar farms.[83]

But Duke's support of solar energy only extends so far – specifically, to solar panels the utility owns and that deliver profits to its balance sheet. When it comes to the rights of individuals and businesses to generate their own electricity from the sun, however, Duke has been a tenacious opponent of solar energy.

In Florida, Duke has taken part in a coordinated campaign by state utilities to keep anti-solar officials in office.[84] In the last Florida gubernatorial election, in which gubernatorial candidate Charlie Crist pledged to institute a renewable energy standard, Duke gave at least $2.75 million to the Republican Governors Association, which then spent heavily to re-elect Governor Rick Scott.[85] Today, Florida is one of just five states that does not allow third-party power purchase agreements, a popular financing option for home solar panel installations, and is also in the minority of states that have not passed a renewable portfolio standard.[86] As a result, Florida's solar capacity lags well behind states with similar solar potential.[87]

In North Carolina, where it operates as a monopoly in much of the state, Duke has publicized its $500 million investment in utility-scale solar.[88] Meanwhile, Duke is working against the growth of customer-generated solar energy: The utility has lobbied against legislation to allow renewable energy developers to sell power directly to customers and has also repeatedly threatened to push for reductions in net metering payouts, which has introduced uncertainty into the solar market.[89]

If Duke Energy chooses to pursue weakening net metering in North Carolina, it may find its deep connections with North Carolina lawmakers helpful – particularly its relationship with North Carolina Governor Pat McCrory, who was a 28-year employee of Duke Energy.[90] In 2013, the North Carolina AARP asked Gov. McCrory to recuse himself from appointing commissioners to the North Carolina Utilities Commission, but to no avail: McCrory's appointments included one longtime utility lawyer as a public advocate in cases over rate hikes and another commissioner who was a member of ALEC.[91]

American Electric Power

American Electric Power (AEP), one of the biggest utilities in the country, is also one of the most aggressive backers of anti-solar legislation.

A huge utility, with more than 5 million customers in 11 states, AEP has used its money and influence to back anti-solar campaigns in states including Ohio and West Virginia.[92] In Ohio, AEP mounted a campaign of legal and regulatory challenges to limit the value of net metering for its customers. In 2014, the Public Utilities Commission of Ohio (PUCO) ruled that electric customers are entitled to the full value of electricity that they feed back into the grid from rooftop solar and other distributed generations, which could raise net metering compensation by about 15 percent.[93] In response, AEP appealed the decision to the Ohio Supreme Court (the case is under review as of September 2015).[94] AEP also joined FirstEnergy and other state utilities in successfully pushing for the freeze of Ohio's renewable portfolio standard, which has already resulted in a significant decrease in state solar investment.[95]

In West Virginia, AEP lobbied for a bill that caps net metering at 3 percent of utility peak demand, while requiring the Public Service Commission to study net metering policies and potentially pass more onerous restrictions in the future.[96] The bill was signed into law in March.[97] AEP has made nearly $400,000 in contributions to legislators and political groups in West Virginia since 2008.[98]

Berkshire Hathaway Energy

Berkshire Hathaway Energy (BHE), Warren Buffet's energy holding company, has waged fights against distributed solar through its subsidiaries NV Energy in Nevada and Rocky Mountain Power in Utah, seeking to win new solar surcharges and restrictions on net metering.[99]

BHE is a major player in the electric utility industry. It controls three major U.S. utilities, serving about 4.6 million customers.[100] While the company leaves solar fights up to its subsidiaries, BHE's internal position is that distributed generation customers should be charged higher rates than other customers.[101]

In Nevada, BHE subsidiary NV Energy has pushed to make rooftop solar costly at every turn. Nevada is a key battleground for the future of solar energy: In 2013, Nevada had the fastest growth of solar jobs and the largest number of solar jobs per capita in the country.[102] NV Energy's opposition to solar has taken many forms. NV Energy has pushed for new fees for solar customers and has proposed putting solar customers into a new, more expensive rate class.[103] NV Energy worked to keep in place Nevada's net metering cap – and solar companies have claimed that NV Energy misled them about the speed in which the cap would be reached.[104] Most recently, NV Energy proposed cutting in half the net metering credit received by its solar customers.[105] The utility's actions have earned it the ire of state solar proponents: In May 2015, hundreds of people gathered outside NV Energy headquarters to protest the utility's role in fighting solar power.[106]

In Utah, BHE subsidiary Rocky Mountain Power (RMP) has tried to impose new costs on its solar customers, which would slow the growth of Utah's small but burgeoning solar industry that currently employs 1,500 people across the state.[107] In 2014, RMP lobbied for state legislation designed to make it easier to impose fees on solar customers.[108] State Sen. Curt Bramble, a national board member of ALEC and recipient of numerous RMP campaign contributions, introduced the legislation to require the Utah Public Service Commission to impose a fee on net metering customers if it found that those customers imposed costs on state utilities.[109] Through his time in the Utah Senate, Sen. Bramble received at least $3,900 in campaign contributions from Rocky Mountain Power and Pacificorp. (Rocky Mountain Power is a division of Pacificorp, which is itself a subsidiary of BHE.)[110] Following protests

from solar advocates, that legislation was ultimately amended to require a full cost-benefit analysis before fees could be imposed.[111]

In 2014, RMP asked the Utah Public Services Commission for permission to charge solar customers $4.65 per month.[112] A variety of groups came together to protest the surcharge, including the Utah Citizens Advocating Renewable Energy and the Mormon Environmental Stewardship Alliance.[113] According to Mark Walton of Creative Energies, a Utah solar PV company, as quoted in *The Salt Lake Tribune*, the solar surcharge "could be the horse out of the barn. Once enacted it could go up."[114] This was RMP's second regulatory push for a solar surcharge after the Utah Public Services Commission rejected its original proposal and included a brief filed with the PSC arguing that environmental benefits should not be taken into consideration when it comes to allowing a solar surcharge.[115] The charge request was ultimately denied.[116]

Salt River Project

The Salt River Project, which serves the Phoenix metropolitan area, devastated the growth of distributed solar power in its territory by imposing a discriminatory rate hike that costs the average new residential solar customer $50 per month.[117] The fee amounts to nearly 30 percent of the typical SRP customer's electric bill.[118]

Unlike Arizona Public Service (Arizona's biggest utility, which also supports surcharges) SRP is a public utility, and the rate was passed by SRP's publicly elected board – although the votes in SRP elections are acreage-based, meaning that SRP customers are not all equally represented by board members.[119] The vote to create the new solar rate came after a series of packed hearings, in which SRP customers voiced their opposition.[120]

SRP's solar charge was based in part on an internal SRP analysis that was criticized for failing to account for solar energy's full value to the grid system.[121] That analysis' estimate of solar energy's value to the grid was far below what similar studies conducted elsewhere have found.[122]

According to SolarCity, America's largest rooftop solar company, SRP's solar rate plan resulted in SolarCity solar installations in SRP territory falling by 96 percent.[123] And in the six months following the new charge, SRP received only 86 applications for new solar installations, after receiving hundreds per month before the charge.[124] In March 2015, SolarCity filed a federal antitrust lawsuit against SRP to overturn the discriminatory rate, arguing that "SRP has sabotaged the ability of Arizona consumers to make this choice if they happen to live in SRP territory."[125]

In the latest SRP election, Arizona Public Service made campaign contributions to SRP candidates. In elections in which candidates typically spend no more than $500 over the course of entire campaigns, in 2014 an Arizona Public Service political action committee made a contribution of $5,000 to an unsuccessful candidate.[126] APS and SRP work closely together on projects ranging from power plant development to energy contracts, and following SRP's solar charge, APS proposed a similarly high charge of its own.[127]

FirstEnergy

With 10 electric distribution companies stretching from New Jersey to Ohio, and more than 6 million customers, FirstEnergy is one of the biggest

utilities in the country.[128] FirstEnergy has directed its substantial influence to slowing the growth of solar, particularly through its support of weakening net metering and freezing the Clean Energy Law in Ohio.

In 2014, Ohio became the first state to freeze its renewable electricity standard. And while other Ohio utilities eventually supported the freeze, FirstEnergy created and led the freeze campaign.

FirstEnergy first began lobbying lawmakers to freeze Ohio's 2008 Clean Energy Law in 2012, after the utility poorly complied with the law's renewable electricity standard.[129] FirstEnergy lobbied heavily for the freeze.[130] While the utility does not disclose its state lobbying expenses despite being the target of a shareholder campaign urging it to do so, FirstEnergy spent $2.2 million lobbying in 2013, the year before the freeze was passed.[131] One lobbying firm used by FirstEnergy is Hunton & Williams, whose other clients include solar opponents Koch Industries and Berkshire Hathaway Energy.[132]

In May 2014, by then with the support of other utilities, the clean energy freeze was signed into law – just six years after the original RPS was passed with broad bipartisan support.[133] Signs already point to the freeze hurting the Ohio solar energy sector: In the first year of FirstEnergy's push for the freeze, uncertainty over future policy led to annual private investment in Ohio solar energy dropping by more than $100 million.[134]

FirstEnergy's opposition to solar energy goes beyond the freeze. The Public Utilities Commission of Ohio (PUCO) has had to deny at least three appeals from FirstEnergy asking PUCO to reduce the value of electricity fed back into the grid through net metering.[135] In October 2014, FirstEnergy joined with fellow utility American Electric Power in opposing a provision allowing net metering for customers that receive electricity from competitive retail suppliers.[136] And today, FirstEnergy is asking PUCO for permission to make its ratepayers cover the full costs of electricity from its coal and nuclear plants, which would effectively force FirstEnergy customers to subsidize dirty coal power.[137]

We Energies

We Energies, Wisconsin's largest utility, has submitted a nearly continuous stream of proposals to the Wisconsin Public Services Commission (PSC) to halt the growth of solar, including proposals to limit net metering and to impose surcharges on solar owners.[138] While We Energies is not alone among Wisconsin utilities in its efforts to put a chill on solar power, its efforts have been the most aggressive.

Since 2010, We Energies employees have contributed more than $120,000 to Wisconsin Gov. Scott Walker, who appoints commissioners to the Public Service Commission.[139] In 2014, We Energies filed a rate case with the PSC that included provisions amounting to an assault on solar power, including: the prohibition of third-party financing of solar energy systems; a new charge on distributed generation systems to reduce their return by 30 percent; and a change to net metering calculations that would in many cases lower the return on electricity exported to the grid.[140] In December 2014, We Energies won their rate case, after a public hearing in which more than 200 members of the public showed up to oppose the decision.[141] The decision is currently being appealed by The Alliance for Solar Choice and RENEW Wisconsin.[142]

Conclusion

Solar power has been almost universally embraced by the American public and is delivering benefits to the environment and economy. Thus far, widespread popular support for solar energy, combined with an understanding of solar energy's obvious benefits, has limited the success of fossil fuel interests' anti-solar lobbying campaigns.

Fossil fuel industry and utility opposition to solar energy has made an impact on the course of solar energy. In parts of Arizona residential solar energy is being installed at a slower pace; and in Florida, the Sunshine State, rooftop solar has barely gotten a foothold. Well-funded attacks on key solar policies are forcing the fledgling rooftop solar industry to spend resources fighting to survive rather than unleashing the next wave of clean energy innovation and deployment.

Recommendations:

Today, there are more than 20 ongoing net metering or rate structure proceedings that could inhibit solar power's growth. State decision-makers should resist utility and fossil fuel industry influence, and reject policies like:

- Restrictions or unfair caps on net metering;
- Surcharges on solar energy systems;
- Unnecessary regulatory burdens on solar energy; and
- Rollbacks of renewable electricity standards.

In addition, state leaders can do more to encourage solar energy's growth. They should embrace ambitious goals for solar energy and adopt policies that will help meet them, including:

- Considering the benefits to the grid, all ratepayers and society of distributed solar power in any ratemaking or policy decisions about solar;
- Implementing strong net metering and interconnection standards, which enable many customers to meet their own electricity needs with solar power;
- Encouraging community shared solar projects and virtual net metering, which can expand solar access to more customers;
- Enacting or expanding solar or distributed renewable carve-outs and renewable electricity standards;
- Allowing companies other than utilities to sell or lease solar energy to residents and businesses;
- Making smart investments to move toward a more intelligent electric grid that will enable distributed sources of energy such as solar power to play a larger role; and
- Utilizing solar energy wherever possible on government buildings and properties.

Solar power should also play a significant role in states' plans to meet or exceed the requirements of the Clean Power Plan, the Environmental Protection Agency's rule requiring states to reduce carbon dioxide pollution from power plants.

Notes

1. Shayle Kann et al., GTM Research and SEIA, *U.S. Solar market insight report - 2014 year in review*, 10 March 2015.

2. Energy Information Administration, *April 2014 Electricity Monthly Update*, available at http://www.eia.gov/electricity/monthly/update/, April 2014.

3. See note 1.

4. SEIA, *Cutting Carbon Emissions Under §111(d)*, 27 May 2014.

5. The Solar Foundation, *National Solar Jobs Census 2014*, available at www.thesolarfoundation.org/national-solar-jobs-census-2014/, January 2015.

6. Rebecca Riffkin, Gallup, *U.S. Support for Nuclear Energy at 51%*, available at www.gallup.com/poll/182180/support-nuclear-energy.aspx, 30 March 2015.

7. See note 1.

8. Gideon Weissman and Rob Sargent, Frontier Group and Environment America, *Lighting the Way*, September 2015.

9. D. Steward and E. Doris, National Renewable Energy Laboratory, *The Effect of State Policy Suites on the Development of Solar Markets*, November 2014.

10. Naïm R. Darghouth et al., Lawrence Berkeley National Laboratory, *Net Metering and Market Feedback Loops: Exploring the Impact of Retail Rate Design on Distributed PV Deployment*, July 2015.

11. States are included if they were home in Q2 2015 to ongoing or recently resolved proceedings designed to slow solar energy's growth, through net metering changes, fixed charges, solar or distributed generation charges, and solar valuation studies that threaten to result in new solar charges (Louisiana and Nevada); states where there were fights over whether to pass policies helpful to solar energy growth are not included: Benjamin Inskeep et al., NC Clean Energy Technology Study and Meister Consultants Group, *The 50 States of Solar – Q2 2015*, available at nccleantech.ncsu.edu/wp-content/uploads/50-States-of-Solar-Issue2-Q2-2015-FINAL3.pdf, Q2 2015.

12. OpenSecrets, *Top Industries for 2015*, accessed at http://www.opensecrets.org/lobby/top.php?indexType=i&showYear=2015, 19 May 2015.

13. Rebecca Riffkin, "U.S. Support for Nuclear Energy at 51%," *Gallup*, available at gallup.com/poll/182180/support-nuclear-energy.aspx, 30 March 2015.

14. Caroly Kormann, "Greening the Tea Party," *The New Yorker*, 17 February 2015.

15. Ivan Penn, "Conservative solar proponents decry attack on ballot initiative as 'campaign of deception'," *Tampa Bay Times*, available at www.tampabay.com/news/business/energy/conservative-solar-proponents-decry-attack-on-ballot-initiative-as/2220465, 7 March 2015.

16. One example: Americans for Prosperity – Kansas, *Repeal RPS in Kansas*, available at www.youtube.com/watch?v=RoN4v-TvQlY, 28 January 2014.

17. See note 13.

18. Joby Warrick, "Utilities wage campaign against rooftop solar," *Washington Post*, 7 March 2015.

19. Gabe Eisner, "Utilities' Anti-Solar Campaign and Misinformation Debunked," *The Huffington Post,* available at www.huffingtonpost.com/gabe-elsner/utilities-antisolar-campa_b_6901482.html, 19 March 2015.

20. See note 18.

21. Peter Kind, Energy Infrastructure Advocates, prepared for EEI, *Disruptive Challenges: Financial Implications and Strategic Responses to a Changing Retail Electric Business*, available at http://www.eei.org/ourissues/finance/documents/disruptivechallenges.pdf, January 2013.

22. Gabe Elsner, "Edison Electric Institute's Anti-Solar, PR Spending Revealed," *The Huffington* Post, available at www.huffingtonpost.com/gabe-elsner/edison-electric-institute_b_6519230.html, 22 January 2015.

23. Gabe Elsner, Energy and Policy Institute, *The Campaign Against Net Metering: ALEC and Utility Interests' Next Attack on Clean Energy Surfaces in Arizona* (blog post), available at http://www.energyandpolicy.org/the_campaign_against_net_metering_alec_and_utility_interests_next_attack_on_clean_energy_surfaces_in_arizona, 18 November 2013.

24. See note 22.

25. Roy Hales, "Are Arizona Ratepayers Paying +9 Million for Attack Ads?," *East County Magazine*, available at web.archive.org/web/20150529151747/http://greenlining.org/issues/energy/2013/arizona-ratepayers-paying-9-million-attack-ads/, 3 December 2013.

26. John Parnell, "US utility trade body told to confess or condemn in 'dark money' row," *PVTech,* available at www.pv-tech.org/news/us_utility_trade_body_told_to_confess_or_condemn_in_dark_money_row, 8 November 2013.

27. ALEC funding connection: Lisa Graves, "ALEC Exposed: The Koch Connection," *The Nation*, available at http://www.thenation.com/article/161973/alec-exposed-koch-connection, 12 July 2011; Koch state campaigns: Evan Halper, "Koch brothers, big utilities attack solar, green energy policies," *LA* Times, available at www.latimes.com/nation/la-na-solar-kochs-20140420-story.html, 19 April 2014.

28. Jane Mayer, "Covert Operations," *The New Yorker,* 30 August 2010.

29. Koch Carbon, *Koch Carbon homepage*, accessed at kochcarbon.com on 19 May 2015.

30. OpenSecrets, *Oil & Gas: Lobbying, 2014*, accessed at opensecrets.org/industries/lobbying.php?cycle=2014&ind=E01 on 8 June 2015.

31. Kenneth Vogel, "Koch brothers' Americans for Prosperity plans $125 million spending spree," *Politico*, available at politico.com/story/2014/05/koch-brothers-americans-for-prosperity-2014-elections-106520.html, 9 May 2014.

32. Michael Beckel, The Center for Public Integrity, *Koch-backed seniors group low-balling election spending?*, available at www.publicintegrity.org/2014/07/30/15163/koch-backed-seniors-group-low-balling-election-spending, 30 July 2014.

33. Michael Goggin, AWEA, *Cookie-cutter Koch study in North Carolina still suffers from same errors, plus some new ones*, available at www.aweablog.org/cookie-cutter-koch-study-in-north-carolina-still-suffers-from-same-errors-plus-some-new-ones/, 23 March 2015.

34. Koch connections with Randy Simmons: Erik Wemple, "Newsweek adds disclosure about Koch ties of professor who wrote anti-wind power piece," *The Washington Post*, 21 April 2015; Koch funding to Utah State University: David Levinthal, Center for Public Integrity, *Inside the Koch brothers' campus crusade*, available at publicintegrity.org/2014/03/27/14497/inside-koch-brothers-campus-crusade, 27 March 2014.

35. Stephen Lacey, "Top 3 False Claims About Clean Energy Made by Americans for Prosperity," *Greentech Media,* available at www.greentechmedia.com/articles/read/the-3-most-inaccurate-clean-energy-claims-made-by-americans-for-prosperity, 1 August 2013.

36. Michael Kanellos, "Behind The Tea Party Push For Solar In Georgia," *Forbes*, available at www.forbes.com/sites/michaelkanellos/2013/07/16/behind-the-tea-party-push-for-solar-in-georgia/, 16 July 2013.

37. "Campaign of deception": Kate Sheppard, "Conservative Groups Battle Over Solar In Florida," *Huffington Post*, available at huffingtonpost.com/2015/03/09/florida-solar-conservatives_n_6834792.html, 9 March 2015; anti-net metering press conference: AFP Florida, *Americans For Prosperity: Proposed Solar Policies Are Not Free Market (press release)*, archived at web.archive.org/web/20150616150856/http://americansforprosperity.org/florida/article/americans-for-prosperity-proposed-solar-policies-are-not-free-market/, 11 March 2015; AFP spread misleading claims about the cost impacts of renewable electricity standards: AFP Florida, *Charlie Crist Wants You To Have Higher Electricity Bills (press release),* archived at web.archive.org/web/20150616151318/http://americansforprosperity.org/florida/article/charlie-crist-wants-you-to-have-higher-utility-bills/, 17 April 2014.

38. Americans for Prosperity – Kansas, *Repeal RPS in Kansas*, available at www.youtube.com/watch?v=RoN4v-TvQlY, 28 January 2014.

39. Ibid.

40. Craig Idso et al., Nongovernmental International Panel on Climate Change (with the Heartland Institute), *Climate Change Reconsidered II: Biological Impacts*, available at https://www.heartland.org/media-library/pdfs/CCR-IIb/Summary-for-Policymakers.pdf, 2014.

41. Juliet Eilperin, "Climate skeptic group works to reverse renewable energy mandates," *The Washington Post,* available at www.washingtonpost.com/national/health-science/climate-skeptic-group-works-to-reverse-renewable-energy-mandates/2012/11/24/124faaa0-3517-11e2-9cfa-e41bac906cc9_story.html, 24 November 2012.

42. The Heartland Institute, *Confidential Memo: 2012 Heartland Climate Strategy*, available at http://www.desmogblog.com/sites/beta.desmogblog.com/files/2012%20Climate%20Strategy.pdf, January 2012.

43. See note 41.

44. Heartland Institute, *Policy Tip Sheet: North Carolina Renewable Energy Mandate*, available at www.heartland.org/policy-documents/policy-tip-sheet-north-carolina-renewable-energy-mandate, 11 February 2013.

45. Gabe Elsner, "Utility-Backed Anti-Solar Bill On The Move in Kansas Statehouse," *Huffington Post*, available at www.huffingtonpost.com/gabe-elsner/utilitybacked-antisolar-bill-kansas_b_4854964.html, 27 April 2014.

46. More than 2,000 members: ALEC, *Membership*, accessed at https://web.archive.org/web/20150514213738/http://www.alec.org/membership/ on 14 May 2015.

47. Matt Kasper, "How A Powerful Group Of Corporations Quietly Tried To Roll Back Clean Energy Standards, And Failed Miserably," *Climate Progress*, available at http://thinkprogress.org/climate/2013/08/08/2399121/corporations-clean-energy-standards/, 8 August 2013; also Connor Gibson, Greenpeace, *Coal And Oil Polluters Dominate Alec Conference*, available at greenpeaceblogs.org/2014/07/31/coal-oil-polluters-dominate-alec-conference/?_ga=1.176132134.501859317.143207512931 July 2014.

48. People for the American Way, *ALEC: The Voice of Corporate Special Interests In State Legislatures*, archived at http://web.archive.org/web/20150617172016/http://www.pfaw.org/rww-in-focus/alec-the-voice-of-corporate-special-interests-state-legislatures.

49. See note 47.

50. Ibid.

51. Brendan Fischer, PRWatch, *Big Defeat for ALEC's Effort to Repeal Renewable Energy Standards in North Carolina* (blog), available at www.prwatch.org/news/2013/04/12075/big-defeat-alecs-effort-repeal-renewable-energy-standards-north-carolina#sthash.9etX0SF6.dpuf, 24 April 2013.

52. The New York Times Editorial Board, "The Koch Attack on Solar Energy," *The New York Times*, 26 April 2014; Washington state: Lucy Woods, "Washington State rejects

net metering fee and solar leasing 'monopoly' legislation," *PVTech*, available at www.pv-tech.org/news/washington_state_rejects_net_metering_fee_and_solar_leasing_monopoly_legisl, 17 March 2014.

53. Washington state: Lucy Woods, "Washington State rejects net metering fee and solar leasing 'monopoly' legislation," *PVTech*, available at pv-tech.org/news/washington_state_rejects_net_metering_fee_and_solar_leasing_monopoly_legisl, 17 March 2014; Curt Bramble, who introduced anti-net metering legislation in Utah, was on ALEC national board: ALEC, *ALEC Board of Directors*, archived at http://web.archive.org/web/20120412014622/http://www.alec.org/about-alec/board-of-directors; information on bill SB208: Brian Maffly, "Utah bill to impose fees on solar power users advances," *The Salt Lake Tribune*, 24 February 2014.

54. The New York Times Editorial Board, "The Koch Attack on Solar Energy," *The New York Times*, 26 April 2014.

55. State Sen. Bill Seitz on ALEC national board: ALEC, *National Board*, archived at http://web.archive.org/web/20150603144423/http://www.alec.org/about-alec/board-of-directors/; State Sen. Bill Seitz "Stalin" remarks: Julie Carr Smyth, "Foes of Ohio clean energy bill criticize senator," *Akron Beacon Journal*, available at http://web.archive.org/web/20150603144229/http://www.ohio.com/news/foes-of-ohio-clean-energy-bill-criticize-senator-1.482609, 22 April 2014.

56. The Center for Resilience at Ohio State University, *Economic Analysis of Ohio's' Renewable and Energy Efficiency Standards*, available at web.archive.org/web/20150609135151/http://www.ohiomfg.com/wp-content/uploads/2013-10-04_lb_energy_deeps_sept25_2013_model_results.pdf, 25 September 2013.

57. Anastasia Pantsios, "How ALEC Stacks Deck Against Renewables in Ohio," *EcoWatch*, available at http://web.archive.org/web/20150603144125/http://ecowatch.com/2014/10/08/alec-renewable-energy-ohio/,8 October 2014.

58. Kiley Kroh, "In Heated Arizona Solar Battle, Top Regulators Tied To ALEC," *ThinkProgress*, available at http://web.archive.org/web/20150602223308/http://thinkprogress.org/climate/2013/11/01/2873071/arizona-solar-battle/, 1 November 2013.

59. ALEC, *Electricity Freedom Act*, archived at http://web.archive.org/web/20150515170825/http://www.alec.org/model-legislation/electricity-freedom-act/, 15 May 2015.

60. Consumer Energy Alliance, *About Consumer Energy Alliance*, archived at http://web.archive.org/web/20150608134720/http://consumerenergyalliance.org/about-consumer-energy-alliance/.

61. Consumer Energy Alliance, *Members*, archived at http://web.archive.org/web/20150605214611/http://consumerenergyalliance.org/about-consumer-energy-alliance/members/.

62. Geoff Dembicki, "Big Oil and Canada thwarted U.S. carbon standards," *Salon*, available at salon.com/2011/12/15/big_oil_and_canada_thwarted_u_s_carbon_standards/, 15 December 2011.

63. Ibid.

64. Ibid.

65. Mike Ivey, "Did Houston energy group dupe MGE customers to back rate changes?," *The Capital Times*, available at host.madison.com/news/local/writers/mike_ivey/did-houston-energy-group-dupe-mge-customers-to-back-rate/article_2eea8630-589c-11e4-b320-4f43315671a6.html, 21 October 2014.

66. Ibid.

67. Ibid.

Isaac Orr, "Net Metering Gives Big Advantage to the Wealthy," *Somewhat Reasonable – The Policy and Commentary Blog of the Heartland Institute*, ava

68. Mike Ivey, "PSC tosses out petition supporting MGE rate hike," *The Capital Times*, available at host.madison.com/news/local/writers/mike_ivey/psc-tosses-out-petition-supporting-mge-rate-hike/article_04e6e576-605e-11e4-a6e7-1353b30bf982.html#ixzz3bwfFGTGS, 2 June 2015.

69. Ibid.

70. Solar Energy Industries Association, *2014 Top 10 Solar States*, available at www.seia.org/research-resources/2014-top-10-solar-states, 2015.

71. Laurie Roberts, "AG's Office widens Arizona Corporation Commission investigation," *The Arizona Republic,* 23 July 2015.

72. Ryan Randazzo, "Utility regulator's meetings with APS scrutinized," *The Arizona Republic*, 2 May 2015.

73. Ibid.

74. Ibid.

75. See note 71.

76. Ibid.

77. Laurie Roberts, "APS to ASU charity to dark-money campaign?," *The Arizona Republic,* available at http://www.azcentral.com/story/laurieroberts/2015/03/10/save-our-future-now-dark-money-campaign/24717217/, 10 March 2015.

78. Herman Trabish, "Arizona Utility Funds Solar Smear Campaign, Saying It Is 'Obligated to Fight'," *Greentech Media,* available at http://www.greentechmedia.com/articles/read/arizona-utility-admits-funding-anti-solar-ad-campaign, 22 October 2013.

79. Matthew Philips, "Arizona's New Fee Puts a Dent in Rooftop Solar Economics," *Bloomberg Business*, available at www.bloomberg.com/bw/articles/2013-11-22/arizonas-new-fee-puts-a-dent-in-rooftop-solar-economics, 22 November 2013.

80. Ibid.

81. Arizona Corporation Commission, *Docket E-01345A-13-0248*, available at edocket.azcc.gov/Docket/RSSDocket?docketId=18039, accessexd on 19 September 2015.

82. Duke Energy, *About* Us, accessed at www.duke-energy.com/about-us/ on 20 May 2015.

83. Duke Energy, *Solar Power Projects,* available at https://archive.org/details/DukeSolarPowerProjectsFactSheet, April 2014.

84. Eric Barton, Florida Center for Investigative Reporting, *In Sunshine State, Big Energy Blocks Solar Power* (blog), available at http://fcir.org/2015/04/03/in-sunshine-state-big-energy-blocks-solar-power/, 3 April 2015.

85. Crist's call for a RES: Florida Municipal Electric Association, *Crist pushes for solar in re-election campaign*, available at web.archive.org/web/20150604144743/http://publicpower.com/2014/crist-pushes-solar-re-election-campaign/,11 April 2014; Duke gubernatorial race contributions: Alex Kotch, Institute for Southern Studies, *Duke Energy's donations pay off in Florida governor's race*, available at southernstudies.org/2015/01/duke-energys-donations-pay-off-in-florida-governor.html, 7 January 2015.

86. Third party sales: Amy Sherman, "Florida is one of five states that ban certain solar sales, petition group says," *Politifact Florida*, available at www.politifact.com/florida/statements/2015/jan/16/floridians-solar-choice/florida-one-five-states-ban-certain-solar-sales-pe/, 16 January 2015; renewable electricity standard: NRDC, *Renewable Energy for America – Florida*, accessed at www.nrdc.org/energy/renewables/florida.asp on 22 May 2015.

87. Special interest impact: Eric Barton, Florida Center for Investigative Reporting, *In Sunshine State, Big Energy Blocks Solar Power* (blog), available at http://fcir.org/2015/04/03/in-sunshine-state-big-energy-blocks-solar-power/, 3 April 2015; solar lagging: SEIA, *Florida Solar*, accessed at http://web.archive.org/web/20150521140517/http://www.seia.org/state-solar-policy/florida on 21 May 2015..

88. Duke Energy, *Duke Energy commits $500 million to North Carolina solar power expansion (press release)*, available at http://www.duke-energy.com/news/releases/2014091501.asp, 15 September 2014.

89. Lobbying against third party sales: John Downey, "Duke Energy, ElectriCities oppose N.C. bill to let independents sell power to their customers," *Charlotte*

Business Journal, available at http://www.bizjournals.com/charlotte/blog/energy/2015/03/duke-energy-electricities-oppose-n-c-bill-to-let.html, 19 March 2015; Duke holds a near-monopoly in North Carolina: Sue Sturgis, The Institute for Southern Studies, *Monopoly concerns hinder Duke-Progress merger plans*, available at http://www.southernstudies.org/2011/12/monopoly-concerns-hinder-duke-progress-merger-plans.html, 15 December 2011; net metering threats: Matt Evans, "Duke Energy still considering making request to pay less for solar power," *Triad Business Journal,* available at http://www.bizjournals.com/triad/blog/2014/07/duke-energy-still-considering-makingrequest-to-pay.html, 1 July 2014.

90. Former utility lawyer turned public advocate: Billy Ball, "Ties to Duke Energy abound in N.C. Utilities Commission appointees," *Indy Week*, available at http://www.indyweek.com/indyweek/ties-to-duke-energy-abound-in-nc-utilities-commission-appointees/Content?oid=3662711, 26 June 2013; Commissioner Jerry Dockham was ALEC member: ALEC, *ALEC 2011 Annual Meeting - Commerce, Insurance And Economic Development Task Force memo* (published by Common Cause), available at web.archive.org/web/20150604152849/http://www.commoncause.org/issues/more-democracy-reforms/alec/whistleblower-complaint/original-complaint/National_ALEC_Exhibit_4_CIED_2011_Annual_Meeting_New_Orleans.pdf, 30 June 2011.

91. Former utility lawyer turned public advocate: Billy Ball, "Ties to Duke Energy abound in N.C. Utilities Commission appointees," *Indy Week*, available at http://www.indyweek.com/indyweek/ties-to-duke-energy-abound-in-nc-utilities-commission-appointees/Content?oid=3662711, 26 June 2013; Commissioner Jerry Dockham was ALEC member: ALEC, *ALEC 2011 Annual Meeting - Commerce, Insurance And Economic Development Task Force memo* (published by Common Cause), available at web.archive.org/web/20150604152849/http://www.commoncause.org/issues/more-democracy-reforms/alec/whistleblower-complaint/original-complaint/National_ALEC_Exhibit_4_CIED_2011_Annual_Meeting_New_Orleans.pdf, 30 June 2011.

92. AEP number of customers: American Electric Power, *About Us*, accessed at https://www.aep.com/about/ on 22 May 2015.

93. Kathiann Kowalski, "Ohio utilities take net metering fight to state Supreme Court," *Midwest Energy News*, 4 August 2014.

94. Ibid.

95. AEP lobbied for freeze: Steven Mufson and Tom Hamburger, "Ohio governor signs bill freezing renewable-energy standards," *The Washington Post*, 13 June 2014.

96. Herman Trabish, "West Virginia bill to study, cap net metering signed into law," *Utility Dive*, 17 March 2015.

97. Ibid.

98. According to data from: National Institute on Money in State Politics, Follow the Money, accessed at www.followthemoney.org/show-me?s=WV&y=2015,2014,2013,2012,2011,2010,2009,2008&d-eid=130#[{1|gro=f-eid on 4 June 2015.

99. Stephen Lacey, "Warren Buffett's Energy Company Says Net Metering Should Be 'Eliminated'," Greentech Media, available at www.greentechmedia.com/articles/read/berkshire-hathaway-skeptical-about-distributed-energy, 22 August 2014.

100. Berkshire Hathaway Energy, *2015 Corporate Brochure*, available at www.berkshirehathawayenergyco.com/assets/pdf/corporate_brochure.pdf, 2015.

101. Brent Gale, Berkshire Hathaway Energy, *slide from Law Seminars International Energy in the S.W. Santa Fe, New Mexico*, 22 July 2014.

102. The Solar Foundation, *Nevada Solar Industry Jobs Grow 146%: Now Ranks 1st in the Country in Solar Jobs Per Capita* (Press release), available at www.thesolarfoundation.org/press-release-nv-census-2014/, 12 February 2015.

103. Sean Whaley, "Rooftop-solar official: NV Energy proposal spells death of industry," *Las Vegas Review-Journal*, 3 August 2015.

104. Kyle Roerink, "Solar companies say NV Energy misled them on cap limit," *Las Vegas Sun*, 8 July 2015.

105. Jason Hidalgo, "Net metering battle heats up as NV Energy proposes reduction in credits," *Reno-Gazette Journal*, 4 August 2015.

106. Kyle Roerink, "Compromise between NV Energy, solar in works as lawmakers vet bill," *Las Vegas Sun*, 20 May 2015.

107. SEIA, *Utah Solar*, archived at http://web.archive.org/web/20150609144755/http://www.seia.org/state-solar-policy/utah-solar.

108. RMP "went to the legislature with [the] bill" (SB 208) according to Sarah Wright, Executive Director of Utah Clean Energy: Kiley Kroh, "Push To Impose Extra Fees On Customers Who Install Solar Panels Sparks Outrage In Utah," *ClimateProgress*, 11 June 2014

109. Curt Bramble was on ALEC national board: ALEC, *ALEC Board of Directors*, archived at http://web.archive.org/web/20120412014622/http://www.alec.org/about-alec/board-of-directors; information on bill SB208: Brian Maffly, "Utah bill to impose fees on solar power users advances," *The Salt Lake Tribune*, 24 February 2014.

110. Contribution data is from Follow The Money, search for *Electric Utilities PACIFICORP contributions to BRAMBLE, CURT*, accessed at http://www.followthemoney.org/show-me?c-t-eid=6647149&d-cci=36&d-eid=8368#[{1|gro=d-id on 3 June 2015.

111. Kiley Kroh, "Push To Impose Extra Fees On Customers Who Install Solar Panels Sparks Outrage In Utah," *ClimateProgress*, 11 June 2014.

112. Brian Maffly, "Is a fee for solar energy users a 'sun tax' or fair play?," *The Salt Lake Tribune,* available at www.sltrib.com/sltrib/news/58211096-78/solar-power-energy-net.html.csp, 27 July 2014.

113. "Regular guys": Brian Maffly, "Utah's solar power homeowners fight proposed utility fee," *The Salt Lake Tribune*, 23 May 2014; religious support: Brian Maffly, Faith, "Business groups blast proposed fee on solar-equipped homes," *The Salt Lake Tribune*, 25 July 2014.

114. Brian Maffly, Faith, "Business groups blast proposed fee on solar-equipped homes," *The Salt Lake Tribune*, 25 July 2014.

115. UPSC rejection: Lucy Woods, "Utah rejects net metering charge," *PVTech*, available at http://www.pv-tech.org/news/utah_suspends_net_metering_dispute, 4 September 2014; argument against consideration of environmental benefits: Brian Maffly, "Proposed surcharge on Utahns with solar panels is back for Rocky Mountain Power customers," *The Salt Lake Tribune*, 12 May 2015.

116. Benjamin Inskeep and Kathryn Wright, NC Clean Energy Technology Study and Meister Consultants Group, *The 50 States of Solar – Q1 2015*, available at nccleantech.ncsu.edu/wp-content/uploads/50-States-of-Solar-Issue2-Q2-2015-FINAL3.pdf, Spring 2015.

117. Ryan Randazzo, "SRP board OKs rate hike, new fees for solar customers," *The Arizona Republic*, available at www.azcentral.com/story/money/business/2015/02/26/srp-board-oks-rate-hike-new-fees-solar-customers/24086473/, 27 February 2015.

118. Typical bill is $170: Herman Trabish, "Why SRP's controversial demand charge unlocks a huge opportunity for solar-plus-storage," *Utility Dive*, available at utilitydive.com/news/why-srps-controversial-demand-charge-unlocks-a-huge-opportunity-for-solar-/372548/, 12 March 2015.

119. Ryan Randazzo, "SRP leaders squabble over elections," *The Arizona Republic*, available at archive.azcentral.com/business/articles/20110703srp-leaders-squabble-over-elections.html, 3 July 2011.

120. Ryan Randazzo, "SRP board OKs rate hike, new fees for solar customers," *The Arizona Republic*, 27 February 2015.

121. See note 118.

122. Rosalind Jackson, VoteSolar, *Shady math puts rooftop solar at risk in Arizona (blog post)*, available at votesolar.org/2013/04/30/shady-math-puts-rooftop-solar-at-risk-in-arizona/, 30 April 2013.

123. SolarCity, *Our response to anti-competitive behavior in Arizona* (blog post), available at web.archive.org/web/20150520154446/http://blog.solarcity.com/our-response-to-anti-competitive-behavior-in-arizona, 3 March 2015.

124. Mark Holohan, Arizona Solar Energy Industries Association, Letter to Arizona Corporation Commission, available at web.archive.org/web/20150917144518/http://images.edocket.azcc.gov/docketpdf/0000163657.pdf, 9 July 2015.

125. Julia Pyper, "SolarCity Files Lawsuit Against Salt River Project for Antitrust Violations," *Greentech Media*, 3 March 2015.

126. Ryan Randazzo, "Newcomers fail to upset rivals on Salt River Project board," *The Arizona Republic*, available at www.azcentral.com/story/money/business/2014/04/02/newcomers-fail-upseat-rivals-salt-river-project-board/7228091/, 2 April 2014.

127. APS involvement with SRP race: Ryan Randazzo, "Candidates suspect APS influencing Corp. Comm. Race," *The Arizona Republic*, available at azcentral.com/story/money/business/2014/06/19/candidates-suspect-aps-influencing-corp-comm-race/10886483/, 19 June 2014; APS proposal of new rate hike: Julia Pyper, "Inside the Minds of Regulators: How Different States Are Dealing With Distributed Energy," *GreenTech Media,* available at greentechmedia.com/articles/read/what-are-the-most-pressing-issues-facing-public-utility-commissioners, 29 May 2015.

128. FirstEnergy, *About Us*, accessed at www.firstenergycorp.com/about.html on 20 May 2015.

129. First Energy lobbying: Dan Haugen, "FirstEnergy wants to put the brakes on Ohio's efficiency mandate," *Midwest Energy News*, available at www.midwestenergynews.com/2012/11/19/firstenergy-wants-to-put-the-brakes-on-ohios-efficiency-mandate/, 19 November 2012; poor compliance with Clean Energy Law: Rob Kerth and Julian Boggs, Frontier Group and Environment Ohio Research and Policy Center, *Ohio's Clean Energy Report Card - Year 2*, March 2012.

130. Dan Haugen, "FirstEnergy wants to put the brakes on Ohio's efficiency mandate." *Midwest Energy News*, available at www.midwestenergynews.com/2012/11/19/firstenergy-wants-to-put-the-brakes-on-ohios-efficiency-mandate/, 19 November 2012.

131. Shareholder campaign for lobbying disclosure: Green Century Funds, *Shareholders Push Back Against FirstEnergy's Refusal to Disclose Lobbying Sums* (Press release), available at greencentury.com/shareholders-push-back-against-firstenergys-refusal-to-disclose-lobbying-sums/, 19 May 2015; FirstEnergy lobbying expenditures: OpenSecrets, *FirstEnergy Corp – 2013,* accessed at www.opensecrets.org/lobby/clientsum.php?id=D000000531&year=2013, 9 June 2015.

132. OpenSecrets, *Hunton & Williams*, accessed at www.opensecrets.org on 1 June 2015.

133. ALEC support: Anastasia Pantsios, "How ALEC Stacks Deck Against Renewables in Ohio," *EcoWatch*, available at ecowatch.com/2014/10/08/alec-renewable-energy-ohio/, 8 October 2014.

134. The Pew Charitable Trusts, *Clean Energy Spurs Investment in Ohio: Policy uncertainty clouds industry's future*, available at www.pewtrusts.org/en/about/news-room/news/2015/01/13/clean-energy-spurs-investment-in-ohio, 13 January 2015.

135. Kathiann Kowalski, "Ohio utilities take net metering fight to state Supreme Court," *Midwest Energy News*, 4 August 2014.

136. Ellen Gilmer, "Utility challenges net metering plan in Ohio Supreme Court," *Midwest Energy News*, 15 October 2014.

137. John Funk, “FirstEnergy wants Ohio to end deregulation, return to state-controlled rates,” *The Plain Dealer*, 29 July 2015.

138. We Energies is Wisconsin’s largest utility: Rick Rornell et al., “We Energies’ parent company buying WPS parent for $9.1 billion,” *Milwaukee-Wisconsin Journal-Sentinel*, 23 June 2014.

139. Wisconsin Democracy Campaign, *Campaign Finance Database* (contributions to Walker between 1 January 2010 and 2 June 2015), accessed at http://www.wisdc.org/index.php?from=2010-01-01&to=2015-06-02&filter=+Search+&name=walker&employer=WE+Energies&module=wisdc.websiteforms&cmd=searchadvanced on 2 June 2015.

140. RENEW Wisconsin, *The We Energies Rate Case*, archived at web.archive.org/web/20150609183738/http://www.renewwisconsin.org/action/WEratecase.html.

141. Kari Lydersen, “In Milwaukee, critics blast We Energies rate proposal,” Midwest Energy News, available at http://www.midwestenergynews.com/2014/10/09/in-milwaukee-critics-blast-we-energies-rate-proposal-wisconsin-solar/, 9 October 2014

142. Renew Wisconsin, *RENEW Wisconsin and The Alliance for Solar Choice ask courts to rule on the legality of We Energies rate case decision* (press release), available at www.renewwisconsin-blog.org/2015/05/renew-wisconsin-and-alliance-for-solar.html, 21 May 2015.