Blocking Rooftop Solar

The companies, lobbyists and front groups undermining local clean energy

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Executive summary

Solar power is cheaper, more efficient and more abundant than ever before. Over the past decade, the amount of solar energy produced in the United States has increased 30-fold, while the average cost of a residential solar energy system has fallen by more than half.[1] The American public is increasingly supportive of solar energy. By 2020, according to Pew Research, 79% of Americans – a broad majority – believed that developing non-fossil fuel energy sources, including solar and wind power, should be the country's top energy priority.[2]

Solar power is helping move the United States toward a future of 100% renewable energy, while reducing global warming pollution, cleaning up the air in our communities, and empowering homeowners and business owners to generate their own electricity. **And increasingly, solar power can do all that at a lower cost than electricity produced from fossil fuels.**

Utilities increasingly fear that the falling prices and rising availability of clean solar power will threaten their business model, which ties profits to the amount of capital investment they make in the grid, and sometimes to the amount of electricity sold. Consequently, in states across the country, utilities are using their money and clout to push policymakers to undercut solar power and make it harder for homeowners and small business owners to produce their own clean energy. A particular utility target is the policy used (as of June 2020) in 40 states, Washington, D.C., and some U.S. territories to ensure solar panel owners receive fair compensation for the clean energy they supply to the electric grid, known as "net metering."[3]

Recent corruption scandals in Ohio and Illinois, in which utilities and other special interests allegedly used their clout to twist public policy in their favor, highlight how far anti-solar efforts have gone. **Policymakers must resist pressure from utilities and the fossil fuel industry and implement pro-solar policies that will continue America's momentum toward clean energy.**

In 2021, a national network of utility interest groups and fossil fuel-linked think tanks continues to offer funding, advice and support to utilities across the country seeking to undermine rooftop solar power. These include:

- **Edison Electric Institute**. Edison Electric Institute (EEI), the trade group that represents U.S. investor-owned electric utilities, developed the model for utilities to use in attacking solar at the state level. EEI worked with the American Legislative Exchange Council to create model legislation to attack net metering.[4] EEI has trained utility executives in how to run advocacy campaigns and has consistently been a major donor to national Congressional candidates and parties.[5]
- **Consumer Energy Alliance**. The Consumer Energy Alliance (CEA) is a Houston-based front group for the utility and fossil fuel industry, representing companies like Florida Power & Light, ExxonMobil, Chevron and Shell Oil.[6] CEA has spent resources or shipped representatives across the country to help utilities fight their battles in states like Florida, Indiana and Utah.[7]
- **The American Legislative Exchange Council (ALEC)**. ALEC is a nationwide organization funded in part by anti-solar interests including major

utilities, fossil fuel companies and affiliated lobby groups.[8] ALEC claims to be primarily a membership organization but is dominated by its corporate and other outside donors, who provide 98% of its budget.[9] It has worked for years to fight renewable energy and pro-solar policies across the country by coordinating with utilities and other local special interests and introducing legislation through policymakers who are ALEC members.[10]

- **Koch Industries**. The Koch organization has provided funding to the national fight against solar by funneling tens of millions of dollars through a network of opaque nonprofits.[11] The Koch-funded campaign organization **Americans for Prosperity (AFP)** has carried out extensive anti-solar organizing efforts.[12] Koch organizations have directly supported utility fights against solar power in a number of states.[13]

Utilities in many states have worked with these and other national anti-solar groups to undermine pro-solar policies, with varying degrees of success.

- Fossil fuel industry-tied group **the New England Ratepayers' Association** (NERA) filed a petition with the Federal Energy Regulatory Commission (FERC) in 2020 arguing that solar customer sales of electricity back to utilities should be considered wholesale sales under FERC's jurisdiction, and that states thus do not have the legal right to impose net metering policies and payment rates.[14] In the face of strong public and state government opposition to the petition, FERC dismissed it in July 2020, saying NERA did not prove any harm, but did not explicitly rule out any FERC jurisdiction over solar customer sales back to the grid.[15]

- In Ohio, utilities have frequently attacked rooftop and utility-scale solar expansion. Former state subsidiaries of mega-utility **FirstEnergy** allegedly engaged in a massive $61 million bribery and influence campaign that secured the passage of a 2019 law removing state incentives for further renewable energy development and charging ratepayers to bail out uncompetitive coal and nuclear power plants.[16] Despite criminal charges against key players, including the ex-speaker of the State House of Representatives, the anti-solar law remains on the books in 2021.[17]

- Florida's three investor-owned utilities (IOUs) – **Florida Power & Light (FPL), Duke Energy** and **Tampa Electric Company** – have engaged in aggressive anti-solar tactics that have kept solar power producing just 3% of all electricity in the Sunshine State.[18] These tactics include donating to the campaigns of state political figures and parties, employing an army of lobbyists, funding a deceptive 2016 anti-solar ballot initiative (rejected by voters) that would have inserted language imposing barriers to rooftop solar into the state constitution, and unsuccessfully pressuring the state Public Service Commission (PSC) in September 2020 to roll back net metering rules.[19]

- In Illinois, utility **Ameren** fought fiercely to replace net metering with lower payments to solar owners. A 2017 law gave rooftop solar customers full net metering benefits until solar generation reached 5% of utility peak demand.[20] In October 2020, the utility said it had reached the 5% solar threshold and would switch to smaller rebates.[21] In December 2020 the state regulator showed Ameren's calculations were wrong and ordered it to restore full net metering payments.[22] The regulator and solar advocates calculated that Illinois is unlikely to reach the 5% solar level before 2023, but the utility continues pushing to replace net metering with lower payments as soon as possible.[23]

- California's major investor-owned utilities – **Pacific Gas & Electric (PG&E), Southern California Edison (SoCal Edison)** and **San Diego Gas & Electric (SDG&E)** – are pushing for dramatic changes in the net metering policies that have helped the state become the nation's leader in rooftop solar adoption. The utilities' proposal would create the nation's highest fixed charges for solar customers while slashing net metering payments.[24] The changes would severely hamper the state's solar market at a moment when the state must accelerate clean energy deployment to meet its climate and energy goals. The California Public Utilities Commission is expected to rule on the future of net metering in the state near the end of 2021.[25]

- Kansas utilities have opposed solar power intensely for years. **Westar Energy and Kansas City Power & Light**, which merged in 2018 to form **Evergy** – plus Empire District Electric, the third IOU in the state – made campaign contributions and lobbied for elimination of state net metering in 2014.[26] The utilities failed to get the state to scrap net metering completely, but legislators did cut the policy's benefits to solar owners.[27] Evergy kept up its attacks by imposing a demand fee in 2018 on residential solar owners – sometimes over $100 monthly – which deterred new solar customers.[28] The fee was approved by the Kansas Corporation Commission (KCC), the state regulator, but the Kansas Supreme Court ruled in April 2020 that the utilities and the regulator had engaged in illegal price discrimination against solar customers and remanded the issue back to KCC.[29] Evergy kept the charge intact until the KCC unanimously ruled on February 25, 2021 against the demand fee in Evergy's central territory, as well as a backup Evergy proposal for a minimum charge for all ratepayers.[30] Evergy's solar customers in other parts of the state, however, are still paying the demand fee.[31]

- In May 2019, South Carolina enacted a new pro-solar law which lifted the state cap on net metering, ensured full compensation for solar power for two years, and created a customer bill of rights.[32] In December 2020, however, state utility **Dominion Energy South Carolina** sought to raise costs and uncertainty for solar owners, proposing new fees and charges that in total would cost the average solar owner $750 annually.[33] Solar advocates said the proposed changes would hamper the growth of solar power in the state, in conflict with the intent of the 2019 law.[34] The state Public Service Commission held a March 23 hearing where nearly all attendees opposed the Dominion proposal, and rejected Dominion's proposal in an April ruling.[35]

State decisionmakers, including legislators, utility oversight boards and others, should resist efforts by utilities and their special interest supporters to limit the spread of rooftop solar, including to marginalized communities. Decisionmakers should reject these groups' efforts to weaken pro-solar policies, including:

- Caps, restrictions on or elimination of net metering;
- Rollbacks or elimination of state renewable energy standards;
- Unfair or discriminatory charges or tariffs on solar power system owners;
- Utility rate structures that penalize or discourage solar installation; and
- Other unneeded regulatory burdens on solar energy.

States should also promote and defend policies that support the growth of rooftop solar and speed the national transition toward 100% renewable energy. These include:

- Considering the full benefits of distributed solar energy to the grid, to ratepayers and to society in solar energy ratemaking or policy decisions;
- Implementing strong net metering and interconnection standards, which enable many customers to meet their own electricity needs with solar power;
- Supporting community shared solar projects and virtual net metering, which can expand public access to solar power;
- Enacting or expanding solar carve-outs and renewable electricity standards;
- Enabling financing mechanisms to allow for greater solar access for businesses and individuals;
- Allowing companies that are not utilities to sell or lease solar power to residents and businesses; and
- Investing wisely in making the electric grid more intelligent, which will facilitate a greater role for distributed sources of energy such as solar power.

In addition, policymakers should reaffirm and strengthen U.S. national and international commitments to reduce emissions that cause global warming. Solar power will play an increasing role in reducing U.S. carbon emissions, shrinking the carbon footprint of our energy production and usage, and moving the country toward a cleaner future.

Introduction

In 1883, the same year that Roselle, N.J. became the first town in the world to be illuminated with electricity, a New York inventor, Charles Fritts, coated a layer of selenium with gold to produce a small working solar cell, though it converted only 1% to 2% of the sun's energy hitting it into power.[36] Fritts was followed by inventor Edward Weston, who registered two U.S. patents for solar cells in 1888.[37] Over ensuing decades, entrepreneurs patented various devices to transform solar light into power or heat, but it was only in the 1950s that Bell Laboratories inventors Daryl Chapin, Calvin Fuller and Gerald Pearson developed silicon-based solar cells.[38] Those first silicon solar cells eked out just 6% efficiency, but they laid the technological groundwork for the solar panels which have proliferated across the country and the world.[39]

And proliferated they have, particularly over the past ten years. The rapid growth of solar energy – from a curiosity to a mainstream source of energy – provides new hope that America can transition to a future of 100% clean energy.

But it hasn't just been scientific innovation that has fueled the solar boom. Policy innovation has been equally important. In the early 1980s, states began to adopt policies to encourage their residents to go solar – including policies known as "net metering" that enable owners of solar energy systems to receive retail credit for the extra power they supply to the grid. Arizona adopted the first such law in 1981, Massachusetts followed in 1982, and other pro-solar policies came afterward.[40]

Pro-solar policies in general, and net metering policies in particular, have driven billions of dollars of investment into the solar industry and huge growth of rooftop solar across the country in the last few decades.[41]

This process took time. After decades of slow growth, by 2010, there were just over 100,000 solar photovoltaic installations (both rooftop and utility-scale) in the U.S.[42] That number grew more and more rapidly as prices fell, however, hitting one million installations in 2016 and two million in 2019.[43] Solar power generation rose from under 0.1% of U.S. electricity generation in 2010 to 3.3% in 2020, enough to power 12.5 million homes.[44] The future of solar power looks bright.

So why, amid all this success, are electric utilities, the fossil fuel industry and their lobbying organizations attacking the key public policies that have enabled solar power's rise?

These special interests perceive solar power – especially that generated locally by ordinary residents and businesses, as opposed to in centralized, utility-owned power plants – not as an opportunity to help address climate change, clean the air, and build a more distributed and resilient energy system, but as a threat to their business models and profits. As a result, many of these powerful firms have directed their massive financial resources and political influence toward attacks against solar energy and the public policies that make it accessible and affordable to Americans.[45]

These campaigns largely have been fought at the state level, waged in obscure regulatory agencies, out of public view, where citizens – the vast majority of whom

support growth in clean energy sources like solar power – have limited impact on decision-making.[46]

This report shines sunlight on ongoing efforts by utilities, fossil fuel companies, front groups and special interest think tanks to fight solar power in America. By highlighting these groups and their tactics, citizens and decision-makers will be better equipped to promote and defend solar energy as a promising way to power the America of the future.

More than a century after the invention of the first solar cell, solar energy is finally achieving its promise as a source of abundant clean energy. Now is no time to turn back.

Solar power is on the rise, with public support and policy backing

In just the past few years, solar energy has taken hold and expanded across the U.S. due to dramatic drops in prices, supportive public policies and growing public backing for clean energy. Homeowners and small business owners are increasingly pursuing rooftop solar installations to save money and generate clean energy.

Solar power generation in the U.S. increased more than 30-fold between 2010 and 2019.[47] The U.S. Energy Information Administration (EIA) reported that the nation generated 132,631 gigawatt-hours (GWh) of solar electricity, or 3.3% of total U.S. electricity generation in 2020.[48] Small-scale (usually rooftop) photovoltaic systems accounted for 41,740 GWh of that total.[49]

Public support for solar is increasing

Public support for expanding the use of solar and other alternative energy sources has been rising for years. By 2020, according to Pew Research Center, 79% of Americans felt that developing "alternative" (non-fossil fuel) energy sources, such as solar and wind power, should be the country's top energy priority.[50] This includes a majority of voters in both parties: 91% of Democrats and Democrat-leaning independents prioritized alternative energy development, as well as 65% of Republicans and Republican-leaning independents.[51] Americans from all walks of life increasingly see benefits to adopting solar for their homes and businesses.

Strong state policies have catalyzed solar expansion

Rising public support for solar energy has been bolstered by key policies, primarily at the state level, which have facilitated solar growth:

Net metering has been particularly important in making solar economically attractive to homeowners and business owners. Net metering guarantees owners of solar power systems a return for excess electricity produced by their solar panels, crediting them with the value of such electricity.[52] Solar owners typically receive such credit on their utility bills at the retail rate.[53] In essence, net metering "rolls back" a customer's power meter at periods when the customer's solar power system generates more electricity than the home or business is using at the time.[54] Net metering saves solar owners money on their utility bills, and as of mid-2020 was allowed in 40 states, Washington D.C. and some U.S. territories[55]

Renewable electricity standards (RES, also known as renewable portfolio standards) set minimum renewable energy requirements for utilities. RESs setting a specific minimum requirement for solar or distributed renewable energy have played a major role in fostering a stable solar energy market.[56] As of January 2021, 30 U.S. states, Washington, D.C., and three U.S. territories had adopted an RES.[57]

Federal and state tax credits, tax exemptions and rebates have made solar power a more affordable option for consumers and businesses. The Consolidated Appropriations Act of 2021, which former president Donald Trump signed in December 2020, extended the current 26% federal solar tax credit (formally the Investment Tax Credit) through 2022.[58]

States with strong solar policies have tended to develop strong solar energy markets. In 2020, the 10 states with the most installed solar capacity were California, Texas, North Carolina, Florida, Arizona, Nevada, New Jersey, Massachusetts, Georgia and New York, eight of which had renewable electricity standards (RES).[59] Eight of these states also had net metering policies in place.[60] And furthermore, eight of these states also allowed power purchase agreements (PPAs) and/or solar leasing (as of 2019), both of which allow easier access to solar financing for homeowners.[61] Likewise, as of the middle of 2020, the 10 U.S. states with the most solar capacity *per resident* were Nevada, Hawaii, California, Arizona, North Carolina, Vermont, Utah, New Mexico, Massachusetts and New Jersey.[62] These states offered a range of solar tax credits and incentives – eight offered some form of net metering, five offered tax credits, seven offered sales or property tax exemptions, a few offered rebates and several offered low interest financing to improve solar affordability.[63]

Third-party ownership policies allow companies other than utilities to use financing tools like power purchase agreements or solar leasing that can reduce consumer upfront costs for installing rooftop solar.[64] Power purchase agreements, for example, allow a company to install a solar energy system on a consumer's rooftop at no upfront cost, and then sell power generated by the panels back to the customer at a fixed cost.[65]

The Property Assessed Clean Energy (PACE) program allows local and state governments to lend money to homeowners and businesses for energy improvements, including a financing option available to property owners who want to install rooftop solar.[66] A PACE loan links the debt to the property itself, rather than the owner, so the loan transfers with real estate contracts.[67] For property owners concerned about having to move before recouping their investment in home solar power, the PACE program has proven to be helpful. As of early 2021, 24 states plus Washington, D.C. offer commercial PACE loans, with California, Florida and Missouri also offering residential PACE loans.[68]

Plummeting prices are speeding solar growth

Rapidly dropping costs for solar energy installations, as well as increased efficiency and other technological improvements, have driven solar energy expansion across the U.S. and worldwide over the past decade. Between 2010 and 2019, U.S. solar power generation increased 30 times over.[69] While much of this growth has been via larger-scale facilities, residential solar is also increasing, since the average cost of a typical U.S. residential solar power system is less than half of what it was a decade ago.[70] In 2019, the U.S. installed its two millionth solar photovoltaic system, and solar power accounted for almost 40% of all new electrical generation capacity installed that year.[71] All told, solar power generated 3.3% of America's electricity in 2020, enough to power 12.5 million homes, up from under 0.1% in 2010.[72]

Solar power has the potential to continue to grow rapidly around the country. America has the technical potential to generate more than 75 times the electricity it currently uses with solar power, and every state has enough solar energy potential to meet all of its electricity needs.[73] Energy technologies like wind energy, geothermal energy, energy storage, demand-side resources and others will be important complements to solar, however, to speed America's shift to a zero-carbon future.

Utilities and the fossil fuel industry continue to fight rooftop solar power

Many electric utilities, the fossil fuel industry and their lobbying arms see distributed solar power as an existential threat to their business models and profits. As we show in the following sections, these deep-pocketed, highly influential companies have deployed huge resources toward attacking the pro-solar policies around the country that have made solar energy an attractive option for more and more Americans.

Utility policies aim to undermine solar power

Electric utilities generally make profits based on their capital investments in the electric grid.[74] In traditionally regulated states, utilities may also own the sources of generation, providing another vehicle for making money.

Distributed solar energy challenges traditional utility profit models by putting the generation of power in the hands of consumers and by reducing the need for large, centralized grid infrastructure and fossil fuel power plants. As a result, electric utilities and fossil fuel interests have long used a variety of strategies to hinder the growth of solar energy. As solar power has grown in popularity, those efforts have intensified.

Utilities and fossil fuel interests have taken aim at policies and tax credits that favor the growth of residential solar. The tools they use to fight that growth include fixed charges (either solar-specific or general), variable charges, demand charges and unfavorable rate changes.

Fixed charges. A major utility tactic has been to impose high fixed charges on solar panel owners. Utilities have levied or sought to levy either higher flat monthly fees for all customers or solar-specific fees, imposed only on customers with rooftop solar systems.[75] Utilities justify these fees by arguing that they are needed to ensure grid reliability, subsidize net metering programs, and maintain infrastructure.

Variable charges. Many utilities offer variable rate plans to consumers, under which monthly rates vary depending on changes in energy markets.[76] These plans can provide consumers savings when market prices drop, but also may hit consumers with price spikes when temperatures hit extreme highs or lows, thus making it difficult for both solar and non-solar consumers to budget consistently for their electricity costs.[77]

Demand charges. Utilities sometimes impose demand charges, which can vary monthly and affect consumers' economic calculus on going solar. These charges are based not on electricity use, but on peak electricity demand for a short (typically 15 to 60 minute) period over the course of a month.[78] As a result, the savings solar owners may gain from low grid electricity use over the course of a month can be offset by short periods of heavy electricity use, for example at night or on a cloudy day.

Rate changes. Utilities across the country have fought to cut rates for net metering payments to solar owners, which reduces the incentive for homeowners to install panels and extends the payback period of solar generation systems.[79]

A national lobbying network is active against solar

Utility efforts against solar in states around the country have been coordinated and supported by a national network of deep-pocketed, pro-fossil fuel lobbying groups that has been active for years. These groups have worked closely together, supporting each other financially and coordinating strategies, tactics and funding for anti-solar campaigns.

Edison Electric Institute: Utility trade group lobbying against solar power

The Edison Electric Institute (EEI) is the primary trade group representing U.S. investor-owned electric utilities. The Institute's website notes that its members deliver electricity to about 220 million Americans and are active in all 50 states as well as Washington, D.C.[80] Besides including most major U.S. utilities, EEI's membership also includes international electric companies, as well as many associate members from across the spectrum of U.S. business, including from technology, law, consulting, construction and other sectors.[81]

EEI developed what has become the utility industry's national campaign to impede the expansion of rooftop solar and has played a prominent role funding and actively participating in both national and state-level anti-solar campaigns. EEI fully launched this campaign with a 2013 report, "Disruptive Challenges," that warned of photovoltaic solar power's potential to directly threaten the utility business model and net metering's significant potential to adversely impact utility investors.[82] The report stressed that "the long-term threat of [solar customers] fully exiting from the grid… raises the potential for irreparable damages to [utility] revenues and growth prospects."[83]

After developing the utility case against distributed solar power, EEI helped advance utility state-level legislative attacks. EEI worked in 2014 with the American Legislative Exchange Council (ALEC) to prepare and distribute to state legislatures sample bill language attacking net metering and creating solar surcharges, arguing this was needed to improve "fairness" of ratepayer cost distribution.[84]

At a January 2016 board meeting, EEI President Thomas Kuhn warned utility executives in attendance against complacency regarding the solar threat, saying the group was working in two dozen states and would be happy to come to any others to campaign on behalf of members.[85] EEI has continued to push this message at major meetings and events. In December 2019, for example, the Institute held a weeklong political "boot-camp" for utility executives and government affairs representatives, where EEI used case studies of its successful anti-clean energy campaigns to train attendees on running campaigns, and made presentations highlighting how net metering, renewable energy standards and other pro-solar policies represent ongoing threats.[86]

EEI has a Political Action Committee (PAC) which has spent over $700,000 in each national election cycle since 2010 to advance organizational issue priorities.[87] In the 2020 electoral cycle, for example, the EEI PAC

spent $793,180, $519,000 of which went to individual federal candidates (57% to Republicans and 43% to Democrats).[88] EEI has also funded groups that oppose net metering.[89] Some utilities have even charged ratepayers for their annual payments to EEI, in effect forcing ratepayers to pay for political activities and advocacy with which they may not agree.[90]

EEI parlayed its donations and access to legislators and the federal government into significant influence during the Trump administration. As an example, Brian McCormack, who was EEI's Vice President for External Affairs from 2011 to 2017, served as Chief of Staff to Trump Energy Secretary Rick Perry.[91]

Consumer Energy Alliance (CEA): Utility and fossil fuel front group

Houston-based Consumer Energy Alliance (CEA) is a major front group for some of the largest utilities and fossil fuel companies in the United States, and has pioneered anti-solar tactics used by other utility and fossil fuel-linked groups.[92] CEA purports to be the "leading voice for sensible energy and environmental policies for consumers," but has no nationally-respected consumer organizations among its members.[93] While CEA claims 550,000 individual members, as of early 2021 the organization's membership roster lists utility and fossil fuel companies and associations including Ameren Missouri, the American Gas Association, Dominion Energy, the Edison Electric Institute, Florida Power & Light Company, Georgia Power, the Indiana Energy Association, British Petroleum (BP), Cheniere (the largest producer of liquefied natural gas in the U.S.), Chevron, ExxonMobil, Shell Oil, Marathon Petroleum, the Texas Oil & Gas Association, Phillips 66, and many others.[94] Members also include many state and local Chambers of Commerce and other business groups.[95]

CEA claims to be "pro-solar," but its policy aims are often hidden. CEA released a September 2016 report that attacked solar tax credits and net metering while overlooking studies showing the value of solar power to consumers.[96] CEA also was a leading supporter of the deceptive Amendment 1 in Florida, which would have created a range of economic barriers to rooftop solar in the Sunshine State and appeared on the state's 2016 ballot (see page 14).[97]

In February 2018, Rhode Island Senator Sheldon Whitehouse stated on the Senate floor that CEA was a "fake consumer group" created by fossil fuel lobbyists, citing CEA's efforts to pass legislation weakening net metering in Kentucky.[98] CEA has been called out for misrepresenting petition signatures it has collected and for generating template emails supposedly from citizens pressing for specific legislative initiatives.[99] CEA continues to fight for utility companies across the country, sending its advocates from state to state to make their case.[100]

The American Legislative Exchange Council (ALEC): Selling state legislative access and influence

The American Legislative Exchange Council, or ALEC, is a nationwide organization that gives fossil fuel and utility industry lobbyists direct access to state lawmakers. ALEC's website describes the group, founded in 1973, as "America's largest nonpartisan, voluntary membership organization of state legislators dedicated to the principles of limited government, free markets and federalism."[101] Almost a quarter of U.S. state legislators – a group that represents an electorate of over 60 million Americans – are ALEC members.[102]

ALEC is more than just a front group or lobbying organization – it has been described as a "corporate bill mill" that has been influential in advancing anti-consumer and anti-environmental causes in states across the country.[103] ALEC has worked for years against renewable energy and pro-solar policies by coordinating with utilities, corporations and legislators and then providing template legislation to its many members in state legisla-

tures.[104] These members then introduce bills based on ALEC's templates in state houses across the country.[105]

ALEC has engaged in repeated attacks against solar power over the past decade. The group's Energy, Environment and Agriculture task force, which has extensive representation from fossil fuel companies, has produced model bills to kill net metering and repeal renewable electricity standards.[106] State legislators have introduced a number of these bills into state legislatures around the country, then work with fossil fuel interests to use biased studies to justify their stances against solar policies.[107]

Though ALEC calls itself an organization of legislators, it is really a pay-to-play lobbying powerhouse – 98% of its budget is from outside donors, corporations and corporate foundations.[108] ALEC's website acknowledges that it currently has nearly 300 corporate and foundation members but does not list them.[109] The Center for Media and Democracy's Sourcewatch project, however, lists hundreds of companies and organizations that are or have been involved with ALEC and its work.[110] Fossil-fuel, utility and anti-solar members of ALEC have included foundations linked to Koch Industries and corporations including American Electric Power, Atlantic Richfield Company (ARCO), Cheniere Energy, Chevron, Duke Energy, Exelon, Illinois Power Company, Mississippi Power, Peabody Energy, San Diego Gas & Electric, Tampa Electric Company and many others.[111]

ALEC's donors have provided the organization with substantial resources to advance its agenda – in its 2018 annual report, ALEC listed annual income of $9.7 million, but did not list specific donors.[112]

It is notable that many of ALEC's highest-profile corporate members, including Amazon, Microsoft, Facebook, Google, Coca-Cola, ExxonMobil, Walmart, BP and others have cut their ties to ALEC in recent years, with a number of the companies ascribing this to ALEC's opposition to efforts to fight climate change.[113]

Koch Industries: Using fossil fuel wealth to fight solar and other renewables

The Koch brothers – Charles and the late David Koch – have used their enormous wealth, accrued from a business that began as an oil extraction and refining company, to advance right-wing goals across the country for many years.[114] Both Koch brothers (until David Koch's passing in 2019) consistently sought to advance their libertarian views, including pushing for drastic cuts in environmental and other regulation on industry, through a large, well-funded network of think tanks, foundations and politically active groups.[115]

Among the most important and influential Koch groups is Americans for Prosperity (AFP), an organization which claims a grassroots focus but that is in reality a dark money group through which the brothers have funneled hundreds of millions of dollars to advance their deregulatory agenda, fight efforts to address climate change, attack solar power, and promote their other priorities.[116] AFP claims to be active in 38 states, and the organization reported revenues of about $54.5 million in 2019.[117]

The Koch brothers have used their funding and political influence to support fights against solar power all over the country, including in Arizona, New Hampshire, Florida, Ohio, South Carolina and Washington state.[118] They have been particularly active in Florida, where they have fought solar energy side-by-side with state utilities. In 2016, the Koch-funded group 60 Plus donated at least $1 million to the utility-backed Amendment 1 ballot initiative, which would have prohibited net metering and created new barriers to rooftop solar ownership.[119] (See page 14.)

The Koch brothers have also advanced their agenda by funding and supporting university research that supports their issue stances. The Koch brothers have supported hundreds of programs at more than 250 schools and universities.[120] As an example, George Mason University in Virginia has been a long-time recipient of Koch foundation funding, receiving an estimated $50 million by 2018.[121] The donations bought the Koch brothers' influence over academic appointments at the school.[122]

Koch-funded groups also had strong links to the Trump administration, with the Trump transition heads of the Department of Energy, Department of the Interior and the EPA all having been current or former leadership of industry groups working against pro-rooftop solar policies with Koch support.[123]

Utilities are working to block residential solar around the country

Utilities around the country have followed similar playbooks in attacking net metering and other pro-solar policies, sometimes in concert with the large national associations, or within various state-level coalitions comprised of utility, fossil fuel and business interests. Utility tactics in these fights have included aggressive lobbying of statehouses or public service commissions, large donations to legislators, and even alleged bribery, among others.

New England Ratepayers' Association attacks states' right to offer net metering

The **New England Ratepayers' Association (NERA)** has a history of opposing solar policies.[124] NERA presents itself as pro-consumer, and its website claims the group is "a non-profit advocacy group focused on promoting sound public policy that protects utility customers, both families and businesses, and lowers the cost of regulated services."[125] In reality, the organization, incorporated as a non-profit in Massachusetts in 2013, has extensive ties to utilities and natural gas firms.[126] For example, NERA has engaged in anti-net metering advocacy in New Hampshire as part of a coalition including utilities such as Eversource and Liberty Utilities, as well as with the Consumer Energy Alliance (see page 10).[127] NERA's membership, which the organization does not disclose, may consist of only a small number of companies, according to clean energy advocates.[128] Marc Brown, who served as NERA's Executive Director, is a registered corporate lobbyist who has been involved with a number of anti-renewable energy organizations, and now serves as the Northeast Regional Director for the Consumer Energy Alliance.[129]

A 2015 NERA policy brief outlines the organization's opposition to clean energy policies, including retail net metering, renewable energy standards, and energy efficiency programs.[130] NERA has supported federal legislation to facilitate permitting of natural gas pipelines, alongside such groups as the Edison Electric Institute, the American Gas Association, and Koch-affiliated groups.[131]

NERA has a lengthy record of opposition to net metering policies in New Hampshire and Maine, but its attack in 2020 was particularly audacious.[132] In April 2020, NERA filed a petition with the Federal Energy Regulatory Commission (FERC), which had only four members for its five seats, all nominated by then-president Trump.[133] NERA argued in the petition that solar customer sales of electricity back to utilities should be considered wholesale sales under FERC's jurisdiction, and that states thus do not have the legal right to impose net metering policies and payment rates.[134] NERA argued that small solar installations be regulated under the federal Public Utilities Regulatory Policy Act, which would reduce utility payments to solar owners by more than half.[135]

NERA's petition generated opposition from a wide range of energy trade organizations, state utility regulators, free market proponents, environmental groups and solar power system owners.[136] State utility regulators told FERC

they considered the petition a direct attack on states' regulatory authority, while solar advocacy groups argued it could heavily damage the residential solar industry and upend rooftop solar contracts across the country.[137]

FERC commissioners unanimously dismissed the petition in July 2020, saying NERA did not prove any harms or controversies that the commission should address, but did not explicitly rule out FERC jurisdiction over solar customer sales back to the grid.[138] One commissioner wrote that the petition had raised "substantive issues" FERC could take up later, and another wrote that the "the proper place for considering the issues [raised by the petition] is [FERC]."[139]

Ohio: Utility opposition to solar at heart of massive bribery scandal

Ohio has emerged as a disturbing example of how aggressive utility anti-solar campaigns and spending have resulted in policy changes that undermine rooftop solar power. Despite having respectable solar potential, as of late 2020, Ohio hosted only 361 MW of installed solar capacity, which generated less than 0.5% of the state's electricity.[140] This puts Ohio in 28th place nationally in solar energy generation.[141]

Anti-solar efforts by Ohio utilities are largely responsible for the state's slow adoption of solar power. While the state allows net metering and other solar benefits, state utilities have repeatedly attacked these and other policies that support rooftop solar.

First, the utilities succeeded in convincing Ohio lawmakers to weaken the state renewable energy standard, a rare occurrence nationally. Ohio passed a Renewable Electricity Standard (RES) law (called a Renewable Portfolio Standard – RPS – in Ohio) in 2008 requiring utilities to obtain 12.5% of their energy from renewable power sources by 2025 and to implement energy use reduction and energy efficiency programs.[142] In 2014, however, a collection of utilities and business groups – which included the Industrial Energy Users of Ohio, a lobby group for energy-intensive state manufacturers – convinced the legislature to pass S.B. 310, which froze RES implementation for two years and pushed the deadline to 2026.[143] The law was further weakened in 2019.

The utilities also have battled net metering for years. The Ohio affiliates of giant utilities FirstEnergy and American Electric Power (AEP), plus Dayton Power & Light and Duke Energy, fought a 2014 ruling by the Public Utilities Commission of Ohio (PUCO) affirming retail rates for net metering for six years.[144] In October 2019, PUCO issued updated state net metering rules that removed uncertainty by preserving most net metering benefits for rooftop solar owners, and a year later the Ohio Supreme Court dismissed the utilities' appeal of net metering legislation in Ohio.[145]

The saga of Ohio House Bill 6 (H.B. 6), however, is a particularly egregious case of utility efforts to block solar energy in the state. FirstEnergy was the principal backer of this bill, passed by the state legislature in July 2019, which clean energy expert David Roberts called "the worst piece of energy legislation in the 21st century" and "the most counterproductive and corrupt piece of state energy legislation" he had seen.[146] H.B. 6, which took effect in October 2019, cut the renewable energy standard target to 8.5% by 2026 and eliminated the standard altogether after 2026.[147] The law also cut utilities' required savings from energy efficiency from 22% below 2008 levels by 2027 to 17.5% (which most utilities had already achieved), and then allowed them to end their efficiency programs.[148]

Finally, H.B. 6 imposed surcharges on ratepayers to bail out two nuclear power plants, which FirstEnergy claimed were losing money, and two old, dirty coal plants, one in Ohio and one in Indiana, owned by a utility-controlled collective.[149] The effect of the new law was to remove incentives for further renewable energy development and energy efficiency increases in the state while providing over $1 billion to subsidize four uncompetitive power plants.[150]

H.B. 6 was opposed by ratepayers, environmentalists, and even some business groups. So how did the bill pass? Details emerged in July 2020, when U.S. prosecutors announced that the push to pass the law was the central element of a $60+ million alleged bribery scheme, the largest in Ohio history.[151] Federal prosecutors arrested Republican Speaker of the Ohio House Larry Householder, aide Jeff Longstreth, lobbyist and

former Ohio state Republican Party chair Matt Borges, lobbyist Neil Clark, and FirstEnergy Solutions (a then-subsidiary of FirstEnergy now known as Energy Harbor) lobbyist Juan Cespedes, on charges of alleged racketeering.[152] U.S. attorneys also charged officials of a dark money group, Generation Now, for being a central part of the scheme.[153]

FirstEnergy was unsuccessful in convincing the state legislature and governor to approve a nuclear bailout plan in 2017 and early 2018.[154] The FirstEnergy subsidiary controlling its two Ohio nuclear plants, FirstEnergy Solutions, then declared bankruptcy in 2018.[155]

The federal complaint describes how Householder's associates established Generation Now in 2017 and funneled money through the entity, away from public scrutiny, to candidates in the 2018 Republican primary elections who would back Householder's effort to become Ohio House Speaker and vote in favor of the nuclear and coal bailout.[156] The complaint states that FirstEnergy (referred to in the complaint as "Company A") was the principal funder of this effort.[157] At least nine candidates backed by Householder won seats.[158]

After the 2018 election, Householder still lacked enough Republican support to gain the speakership, so he made a deal with some Ohio House Democrats to support his bid in return for not introducing legislation to curb unions, plus other concessions.[159] He then won the speakership and helped engineer the passage of H.B. 6. The bill passed and was signed into law by Governor Mike DeWine in 2019.[160] The federal complaint alleges that Householder and his associates then worked "corruptly," using money funneled from FirstEnergy-controlled accounts through Generation Now, to stop a ballot initiative that would have blocked H.B. 6 from taking effect.[161] In all, the complaint charges, FirstEnergy and its subsidiaries paid Householder's group about $60 million between March 2017 and March 2020.[162]

After the arrests, Householder was swiftly replaced as speaker, and a number of legislators signed onto bills to repeal H.B. 6. Two defendants pleaded guilty to racketeering charges.[163] Despite the scandal, however, Householder won reelection in November 2020, and legislators wavered on repeal of the bill. The Ohio House and Senate met in lame duck sessions to consider repeal, but the legislative session ended in late December 2020 with the law still in place.[164]

On March 31, 2021, Governor Mike DeWine signed a bill passed unanimously by the state Senate which revoked H.B. 6's nuclear subsidies, as well as another provision benefiting FirstEnergy, while keeping subsidies for the coal plants and maintaining the renewable energy and energy efficiency rollbacks.[165]

Florida: Florida Power & Light, Duke Energy and Tampa Electric Company fight pro-solar policies

Florida, the Sunshine State, has the third largest rooftop solar power potential in the country, behind only California and Texas.[166] Google's Project Sunroof estimates that 92% of the roughly 4.8 million roofs in Florida could generate solar power, producing up to 158,000 gigawatt-hours (GWh) of electricity from solar annually, enough to power 14.8 million homes.[167] Project Sunroof calculates that if all potential rooftop solar installations were built, the state would prevent 84.8 million metric tons of CO_2 emissions each year, equivalent to removing 17.9 million passenger cars from the roads.[168]

Despite Florida's vast solar potential, the state languished for years with few rooftop solar energy installations. By 2019, just 60,000 homes and businesses – just over 0.5% of Florida's electricity customers – had installed rooftop solar.[169] This left the state 26th nationwide in rooftop solar as a percentage of all generation, behind much less sunny states such as Vermont, Delaware and Maine.[170] Florida's overall solar generation did grow 44-fold from 105 GWh in 2010 to 4,595 GWh in 2019, but solar nevertheless still accounts for just around 3% of total state electricity generation.[171]

Why has Florida lagged so badly in rooftop solar development? This is primarily because of fierce opposition to its expansion from the state's three investor-owned utilities (IOUs) – Florida Power & Light (FPL), Duke

Photo by Dennis Schroeder via National Renewable Energy Laboratory, CC BY-NC-ND 2.0.

Energy and Tampa Electric Company. (Note: FPL parent company NextEra acquired Florida's prior fourth IOU, Gulf Power, which is currently being incorporated into FPL.)[172] The utilities' ongoing anti-rooftop solar campaigns, backed by huge spending, have produced policies that have served as roadblocks to faster rooftop solar growth.

Florida lacks a renewable portfolio standard, does not allow solar power purchase agreements (PPAs), which facilitate solar power financing in other states, and requires homeowners to purchase expensive insurance for solar power systems.[173] While the state offers net metering, property tax exemptions for renewable energy equipment, and special residential loans for renewable energy property upgrades, the overall policy framework is not conducive to rooftop solar growth.[174]

The major utilities have wielded their political spending to great effect in the state. A 2018 report by government watchdog Integrity Florida documented that the IOUs directed over $43 million to state-level political parties, candidates and committees, including to the governor, over the 2014 and 2016 election cycles.[175] FPL, the largest state utility, was the biggest contributor, alone giving almost $23 million in the 2014 and 2016 elections.[176] The companies also paid for an army of lobbyists: between 2014 and 2017, the companies employed a total of between 90-100 lobbyists annually, more than one for every two state legislators.[177] In 2020, although there were no major solar-related initiatives on the ballot, the IOUs again made heavy campaign donations in Florida, contributing over $9.2 million, most of it to political committees.[178]

The utilities try to influence how they are regulated by the Florida Public Service Commission (PSC) by contributing to leading legislators who select members of the council which nominates PSC board members, as well as to legislators directly serving on the council.[179] The council makes PSC commissioner recommenda-

tions to the governor, who makes the ultimate selections. The utilities consequently contributed over $1.8 million in the 2014 and 2016 election cycles to then-governor Rick Scott's campaign committee and his Let's Get to Work PAC.[180] Finally, the utilities also made contributions to politically influential business organizations, including the Florida Chamber of Commerce, to help advance their interests.[181]

Florida utilities have a long history of campaigning against policies benefiting rooftop solar. In 2016, the state's major utilities, plus business groups including the Florida Chamber of Commerce, spent over $26 million on a front group, "Consumers for Smart Solar," which promoted passage of Amendment 1, a deceptive, anti-solar ballot initiative which would have inserted into the state constitution language imposing barriers to rooftop solar.[182] Despite the utilities' huge financial backing for the initiative, voters rejected it in November 2016.[183]

Undaunted, utilities have continued to make it difficult for homeowners trying to install rooftop solar systems: recent anecdotal reports showcase how utilities have delayed connecting new residential systems to the grid for months, causing new owners to lose money.[184]

State utilities also have repeatedly targeted net metering. The Florida Municipal Power Agency, a wholesale power agency which is owned by the state's smaller municipal utilities, has worked against net metering for some time.[185] Most recently, the PSC held a September 17, 2020 workshop to consider changes to net metering rules.[186] The PSC scheduled the workshop after a utility front group, "Energy Fairness," released a report claiming net metering is unfair to consumers.[187] Energy Fairness, formerly the Partnership for Clean and Affordable Energy, lobbies for utility and fossil fuel interests, and has had ties with Southern Company, a major Georgia-based utility holding company, and with the Consumer Energy Alliance, a fossil fuel-backed advocacy group.[188] The PSC sought public comment and received over 16,000 emails urging the preservation of Florida's net metering program, which includes incentives for solar panel installation as well as credit for excess power production.[189]

At the workshop, the IOUs pushed to roll back net metering.[190] Advocacy groups, including the Florida Solar Energy Industries Association, Vote Solar and the Southern Alliance for Clean Energy (SACE), countered with data showing that net metering saves money, promotes economic development and does not harm lower income ratepayers.[191] The PSC subsequently reaffirmed its support for net metering. SACE ascribed the positive outcome to the advocacy coalition's rapid mobilization of a "very strong show of support" from the public but noted "we must continue to remain vigilant" against new attacks against rooftop solar in the legislature or at the PSC.[192]

Illinois: Ameren inflated solar numbers in effort to stop paying net metering rates

In 2017, the Illinois Legislature passed the Future Energy Jobs Act, designed to support the state's growing solar industry. The act ensured rooftop solar customers would receive full net metering credits for the power they send back to the grid. Once customer generation reached 5% of the utility's peak demand, the credits would be partially replaced with payments based on the value of solar to the grid.[193] Regulators were to investigate how that value would be calculated once residential solar reached 3% of peak demand.[194]

Ameren, a Fortune 500 that runs the distribution system for all electricity customers in about three-fourths of Illinois, and also owns multiple generation companies and generating facilities, announced in April 2020 that it had reached the 3% threshold.[195] Solar advocates challenged the utility's calculations in determining the thresholds, concerned that Ameren was inappropriately accelerating the end of net metering.[196] Although the language of the Future Energy Jobs Act doesn't specify a formula, advocates argued that its clear intent was to support the steady growth of distributed solar, not to quickly reduce its incentives.[197]

The Illinois Commerce Commission, which regulates utilities and other industries in the state, began to examine Ameren's claim. In July 2020, an Illinois Commerce Commission Administrative Law Judge ruled that Ameren had calculated the percentage of

rooftop solar power inaccurately.[198] The ICC asked Ameren to continue full net metering until the ICC could complete its audit of the utility's calculations and proposed rebate, but Ameren rejected the ICC request.[199] In October 2020, Ameren announced it had reached the 5% threshold, and said new solar customers would no longer receive full retail net metering, and instead receive rebates at some point in the future once the utility had calculated the value of those rebates.[200] The utility and other parties estimated that these rebates – as proposed by Ameren – would be worth about half the value of full net metering credits.[201] Ameren argued that it could not abide by the ICC request because the utility had determined that the threshold had been reached and, therefore, by law the utility was compelled to end retail net metering.[202] In response to this claim, the ICC quickly reviewed Ameren's arguments and calculations.[203]

In the meantime, the pricing uncertainty caused by Ameren's claims slowed residential solar growth. Installers and buyers suddenly worried they would have to redo their calculations to lower the apparent value of solar and increase the payback period of the systems. "We had to go back and tell clients, 'Hey, you may not get the net metering we sold you,'" AES Solar sales manager Shariff Shakir told Energy News Network.[204]

In December 2020, the ICC released a final order finding that Ameren had miscalculated residential solar levels, inflating the apparent reach of distributed energy.[205] Ameren based its calculation of peak demand on the second, smaller figure, not the first, more relevant, one. The ICC rejected what advocates labeled an "apples to oranges" calculation.[206] In a 4-1 vote, it ordered Ameren to restore full net metering credits and to "make whole" any customers who had signed up after 2 October 2020 and had not received full net metering credits.[207]

Although net metering has been restored to southern Illinois, the cost uncertainty resulting from Ameren's inaccurate calculations remains. In October 2020, the company claimed distributed solar made up 5.3% of its total load.[208] But solar advocates calculated, and the ICC agreed, that, including peak demand from all customers Ameren served, the true value was 1.4% – well below the threshold to begin planning for the transition from net metering to value-based rebates.[209]

The regulator now estimates that Illinois will reach a true net metering threshold of 5% in about two years.[210] However, Ameren is pushing the ICC to issue a final order by mid-2021 approving its methodology for calculating rebate values after the final threshold is reached.[211] Advocates say that given the new timeframe there is no rush, and accuse Ameren of pushing an "overly complex and opaque" formula that leaves solar owners unsure if they're getting fair value for their power, instead of developing a fair, transparent and comprehensive methodology for calculating the value of solar.[212]

California: PG&E, SoCal Edison and SDG&E push drastic net metering rollback, high fixed solar charges

California is the nation's leader in the adoption of solar power.[213] As of the 4th quarter of 2020, the state had 31,288 MW of installed solar capacity, more than any other state, generating 22.7% of California's electricity.[214] California rooftops host almost 10.5 gigawatts of solar energy capacity.[215]

Strong public policies – such as the state's renewable electricity standard and Million Solar Roofs program – have helped spur the growth of solar energy in California.[216] Those policies have included utility rate structures that make rooftop solar power a financially viable option for millions of Californians. California will need to ensure that public policy continues to support the growth of the rooftop solar market if it intends to reach its goal of a 100% carbon-free electricity system by 2045.[217]

California residents increasingly recognize the value of solar power to themselves and their state. A February 2021 poll sponsored by the solar industry showed that 71% of state voters want the state to encourage more use of solar power, and another 14% want to at least maintain the status quo.[218] The poll showed that 80% of state voters support net metering, and 64% oppose proposals to reduce net metering benefits for state solar owners.[219]

Despite the importance of rooftop solar, California's three investor-owned utilities (IOUs) – Pacific Gas and Electric (PG&E), Southern California Edison (SoCal Edison) and San Diego Gas & Electric (SDG&E) – recently proposed dramatic changes to the state's net metering program that would impose mandatory fees on solar customers and slash net metering payments.[220] The drastic changes pushed by the utilities would eliminate the economic viability of solar power for many Californians, especially those with low to moderate incomes.[221]

California's strong net metering rules have historically been a key factor in the state's success in expanding solar adoption. The state put net metering in place in 1995 with Senate Bill 656, which was designed to encourage private investment in renewable energy but included a size limit on systems and a tight cap on total net metering payments.[222] Subsequent legislation in 2001, 2002, 2006 and 2010 raised the net metering cap successively to 5% of peak load, but in 2013, a new bill directed the California Public Utility Commission (CPUC) to develop a successor program to full net metering, which would end in mid-2017.[223]

In 2016, the CPUC issued updated net metering rules (NEM 2.0), which kept the overall system in place but cut credits to solar owners for power they sent to the grid by about 2-3 cents/kWh, in theory to make sure solar owners paid fairly for utility costs related to energy efficiency and low-income assistance programs.[224] The update also required new solar owners to sign up for time of use billing (TOU), which allowed utilities to charge higher rates for power at certain times of the day.[225]

The CPUC committed to review and update net metering rules again in 2019 (NEM 3.0), but this process was delayed by the bankruptcy of PG&E, and then by the COVID-19 pandemic.[226] The CPUC's decision to undertake a new review was timed in part to coincide with the reduction of the federal solar tax credit from 30% to 26% at the end of 2019 – the CPUC sought to examine whether rooftop solar would need fewer incentives to continue flourishing.[227] The CPUC finally began the NEM 3.0 update process in late 2020 and laid out a timeline to complete the new rules around the end of 2021.[228]

On March 15, 2021, PG&E, SoCal Edison and SDG&E issued their proposal for the next version of net metering. The utilities proposed to impose high solar fixed charges and severe cutbacks to net metering payments, which, combined, would make solar power prohibitively expensive for many Californians.[229] The utilities have proposed the highest fixed charges for solar in the country – SDG&E seeks a charge of almost $91/month on average for residential solar owners, while PG&E seeks $86/month on average and SoCal Edison $56/month on average.[230] The utilities also seek higher monthly fees for government and commercial solar installations. Schools installing solar would need to pay an estimated $3,400/month in SDG&E territory, with SoCal Edison charging $1,100/month and PG&E charging $950/month, under their proposals.[231] In addition, the utilities seek to block solar power owners from rolling unused credits over from month to month, substantially cutting the value of solar power for owners.[232]

Utilities argue that these dramatic changes in solar compensation are justified because net metering shifts some of the cost of maintaining the grid from solar customers to those without solar power. However, utilities typically back up this assertion with calculations that omit or undervalue the numerous benefits that rooftop solar delivers for electricity customers generally, and for society at large.

By producing electricity locally, for example, rooftop solar reduces the need for expensive investments in long-distance transmission capacity. In 2018, California's independent grid operator, CAISO, canceled $2.6 billion in planned transmission expenditures from its long-term investment plan, citing reduced forecasts of electricity demand "strongly influenced by energy efficiency programs and increasing levels of residential, rooftop solar generation."[233] Yet, it was not until 2020 that the CPUC moved to ensure that avoided transmission costs are factored into utilities' calculations of the value provided by distributed solar power.[234]

Rooftop solar delivers an array of other benefits as well. It contributes to the development of a more flexible and resilient power system better able to withstand threats like wildfire – an important benefit

in California, which has recently endured widespread power outages to reduce wildfire risks.[235] In addition, a recent national study found that enhanced use of distributed energy technologies such as rooftop solar and energy storage is the most cost-effective route to a clean energy system, generating hundreds of billions of dollars of cost savings by 2050 compared with systems that are more reliant on delivering power long distances over the grid.[236] Indeed, when these and other benefits are factored in, the value provided by distributed solar often exceeds the compensation provided to its owners under net metering.[237]

Under its NEM 3.0 process timeline, the CPUC plans to collect testimony and hold hearings over the next few months as it weighs those proposals, and then plans to issue a final decision on new rates and charges – which could be its own plan, one of the proposals submitted by utilities or other stakeholders, or a combination of plans – near the end of 2021.[238]

Kansas: Evergy pushes to price solar out of the state

Despite the fact that Kansas is one of the ten sunniest states in the country, there were fewer than 1,300 residential solar energy systems in the state at the end of 2019, and just 0.23% of the state's power came from solar energy.[239]

This is likely due in part to the state's utility rate design, which has allowed Evergy – Kansas' largest utility – to charge solar customers large extra fees, reducing the benefits for those who already have solar panels and discouraging other Kansans from adding solar power to their homes.[240]

Kansas utilities, along with the American Legislative Exchange Council (ALEC) and the Koch brothers' political affiliate, Americans for Prosperity, pushed an initial attack on solar in 2014.[241] Both Westar Energy and Kansas City Power & Light – the two utilities that in 2018 merged to form Evergy – as well as Empire District Electric, the third IOU in the state – lobbied for bills introduced in the Kansas House and Senate to eliminate the state's net metering policy, which allowed customers with solar panels to be fairly compensated for extra power they supply to the utility's grid.[242]

In 2014, Kansas utilities spent $116,500 on campaign contributions to state legislators.[243] Kansas City Power & Light gave $1,000 to the 2014 campaign of Representative Dennis Hedke, the chairman of the Kansas House Standing Committee on Energy and the Environment, and $500 to the 2012 campaign of Senator Forrest Knox, the chairman of the Kansas Senate Committee on Utilities, while Westar Energy gave $500 to each.[244] These two committees discussed the net metering bills.[245]

The legislature did not end up repealing net metering outright but passed an amended bill that reduced the value of the power solar owners sell back to the grid and reduced the size of solar installations that qualify for net metering.[246] These reductions in compensation occurred despite the fact that only 201 utility customers were actively using net metering for rooftop solar or small wind installations.[247]

But Evergy's attacks on solar didn't end at this point. In October and December 2018 (in different geographical areas), Evergy instituted a demand fee – a monthly charge based on peak electricity use – for customers with residential solar installations.[248] Evergy charged customers $3 in colder months and $9 in warmer months per kilowatt of peak demand each billing period, regardless of the total amount of energy used.[249] This led to extra charges that were sometimes more than $100 per month, and caused a huge drop in the number of Kansans hooking solar panels to the grid.[250]

The demand fee was approved by the Kansas Corporation Commission (KCC), the utility regulatory body in Kansas.[251] Both Westar Energy and Kansas City Power & Light contributed to the 2010 and 2014 campaigns of Governor Sam Brownback and his Lieutenant Governor Jeff Colyer – a combined $8,363 in 2010 and $12,107 in 2014.[252] Governor Brownback appointed two of the KCC Commissioners who approved the demand fee, and Jeff Colyer, who briefly became Governor when Sam Brownback secured a Trump administration posting, appointed the third.[253]

Photo: Elena Elisseeva via Shutterstock.com.

In April 2020, the Kansas Supreme Court ruled that the utilities and the KCC had engaged in illegal price discrimination against customers with solar installations – charging only customers who generate their own power an extra fee unconnected from possible extra services they require – and remanded the issue back to KCC.[254] Kansans with solar panels, however, continued to pay the illegal fee, because Evergy claimed it could not change prices without approval from the KCC.[255]

Even after engaging in illegal price discrimination and being soundly defeated in the Kansas Supreme Court, Evergy is still trying to stop the growth of solar power in Kansas. In November 2020, prior to KCC hearings for Evergy's rate design update in response to the Kansas Supreme Court Ruling, Evergy offered two new proposals.[256] Evergy's preferred option is to reinstate the demand fee, repackaged as a $3-per-kilowatt monthly "grid access fee" charged to all customers based on the size of any distributed generation capacity they own.[257] The grid access fee would only charge customers with generating capacity – everyone else would pay $0 – but Evergy's proposal suggests that the utility believes the slight change will allow the proposal to pass legal muster.[258]

In case that new fee was rejected by the KCC, Evergy had a back-up proposal: a $35 per month minimum service charge for all of its customers.[259] This would represent a 240% increase from the current $14.50 service fee Evergy charges, and increase monthly bills for over 140,000 low-income Kansans and many senior citizens – who already struggle to afford energy costs – as well as for those who need separate meters to power detached barns or garages.[260]

The KCC received nearly 1,100 calls, emails and letters from Kansans who almost uniformly opposed Evergy's

proposed rate increases.[261] On February 25, 2021, the KCC ruled unanimously against both Evergy's demand fee and minimum charge proposals in its Central territory (former Westar service area).[262] While this was a win for solar owners in this part of Kansas, solar owners in other parts of the state are still paying the demand fee.[263]

South Carolina: Dominion Power seeking to hike solar fees

In May 2019, South Carolina governor Henry McMaster signed into law the Energy Freedom Act, which had passed the legislature with unanimous support.[264] The law was designed to bolster the state's strong and growing demand for solar power and was supported by utilities and solar developers alike. It lifted the cap on net metering, ensured full compensation for solar power for at least two years, and created a customer bill of rights.[265]

A major incumbent utility in the state, South Carolina Electric & Gas Company, was renamed Dominion Energy South Carolina in 2019 after Virginia-based Dominion acquired the South Carolina utility's parent company.[266] Dominion operates electric and natural gas service across a large portion of south and central South Carolina. In 2020, Dominion proposed a suite of new fees, fixed charges and changes that undermine the Energy Freedom Act and directly threaten the growth of solar power in South Carolina.[267]

Dominion targeted a new charge specifically at solar customers that would more than double their monthly service charge, from $9 to $19.50.[268] Dominion also proposed a new monthly "solar subscription fee" that would charge customers $5.40 for every kW of solar power they install – $43 a month for an 8 kW system (a large residential system of this size takes up to 600 square feet of space and can generate 500-1400 kWh/per month of power, often enough to meet a home's full power consumption needs).[269] Combined with the newly doubled monthly service charge, these additional fees would cost the average solar owner $750 every year.[270]

Frank Knapp, President and CEO of the South Carolina Small Business Chamber of Commerce, expressed an understanding that some utility fees might be necessary but also concern that Dominion's proposals were unreasonable and counterproductive, saying "if it's so draconian, the new tariffs that Dominion is offering, that no one will want to do it, well we've basically said goodbye to the solar industry in South Carolina."[271]

Dominion is also attempting to reduce the compensation solar customers of all types receive for supplying power back to the grid. While the current net metering system compensates solar owners for the full value of the electricity their panels generate, Dominion is trying to slash this compensation, known as the solar export credit.[272] The South Carolina Public Service Commission (PSC) held a hearing on March 23 in which only five of over 250 attendees supported Dominion's proposals targeting solar customers.[273] In late April, the PSC ruled unanimously against Dominion's proposals, instead adopting a proposal put forward by solar advocates to use Dominion's time-of-use retail rates in determining compensation for Dominion's solar customers.[274] The ruling re-affirmed that solar energy has real value to South Carolinians, and that utilities have to take that value into account when setting solar policies.[275]

Beyond discouraging rooftop solar, Dominion also substantially undervalued the rate it offered to pay large, independent solar providers and has resisted pressure from stakeholders and the PSC to expand its community solar offering.[276] The PSC overturned the utility's earlier proposal to pay about $21 per megawatt-hour (MWh) of solar, which would have been among the lowest rates in the country.[277] Dominion will now pay between $27.51 and $32.52 per MWh over 10-year contracts.[278]

Recommendations

State decisionmakers, including governors, legislators, utility oversight boards and others, should resist efforts by utilities and other special interests to limit the spread of rooftop solar. Decisionmakers should reject these groups' efforts to weaken pro-solar policies, including:

- Caps, restrictions on or elimination of net metering;
- Rollbacks or elimination of state renewable energy standards;
- Unfair or discriminatory charges or tariffs on solar power system owners;
- Utility rate structures that penalize or discourage solar installation; and
- Broader, unneeded regulatory burdens on solar energy.

States should also promote and defend policies that support the growth of rooftop solar and speed the national transition toward 100% renewable energy. These include:

- Considering the full benefits of distributed solar energy to the grid, to ratepayers and to society in solar energy ratemaking or policy decisions;
- Implementing strong net metering and interconnection standards, which enable many customers to meet their own electricity needs with solar power;
- Supporting community shared solar projects and virtual net metering, which can expand public access to solar power;
- Enacting or expanding solar carve-outs and renewable electricity standards;
- Enabling financing mechanisms to allow for greater solar access for businesses and residents;
- Allowing companies that are not utilities to sell or lease solar to residents and businesses; and
- Investing wisely in making the electric grid more intelligent, which will facilitate a greater role for distributed sources of energy such as solar power.

In addition, policymakers should reaffirm and strengthen U.S. national and international commitments to reduce emissions that cause global warming. Solar power will play an increasing role in reducing U.S. carbon emissions, shrinking the carbon footprint of our energy production and usage, and moving the country toward a cleaner future.

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