

THROWING SHADE

10 SUNNY STATES BLOCKING
DISTRIBUTED SOLAR DEVELOPMENT

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EXECUTIVE SUMMARY

As the Trump administration turns back the dial on climate progress at the federal level, states play an increasingly critical role in creating and stimulating clean-energy progress in the United States. In particular, state-level policies have an enormous influence on distributed solar, such as those on existing rooftops, parking lots and along roadways. If fully developed, distributed solar could provide most of the United States' electricity with minimal negative social and environmental impacts, paving the way for important reductions on fossil fuels that are driving the climate crisis.¹

For this report, we highlight 10 states with high potential for distributed solar but poor policies to realize that potential.

Our key findings:

- Although the 10 states in this report account for more than a third of the total rooftop-solar potential in the contiguous United States, they account for just 7.5 percent of net generation for 2017.²
- Texas and Florida stand out as two of the states with the most potential but the worst distributed-solar policies.
- Among the most common barriers to the expansion of distributed solar in the 10 states are lack of community solar policies, poor compensation policies, and prohibited or unclear third-party ownership legality.

All 10 states highlighted in this report — Alabama, Florida, Georgia, Indiana, Louisiana, Oklahoma, Tennessee, Texas, Virginia and Wisconsin — are barely skimming the surface of their technical potential for rooftop solar. Only 0.01 percent to 0.99 percent of their technical potential is being met, far below that of leading states such as California and Arizona, which are at least at 3.81 and 4.51 percent, respectively.³ In many of these states, fossil fuel companies and utilities are also waging campaigns to create policy barriers and restrictions, making it harder for people to go solar.⁴

Recommendation:

State policies that prevent the expansion of the distributed-solar market threaten the swift transition from fossil fuels to a fully renewable energy system. This system is needed to stave off the worst impacts of climate change and protect the health of communities and the planet. All 50 states should make improvements to their renewable energy policies in one way or another. But the 10 states identified as the top offenders when it comes to blocking distributed solar can have a significant impact on distributed-solar progress — and therefore on environmental health, energy democracy and the climate crisis — by following the recommendations outlined in this report.

Table 1. 10 States Blocking Distributed Solar: Overall Policy Grade, Small-scale Rooftop-solar Photovoltaic Generation Potential Rank, and Net Generation from Small-scale Rooftop PV

State	Overall Policy Grade	Small Scale Rooftop PV Technical Potential: Rank of Contiguous U.S.	Net Generation from Small Scale Rooftop PV: Rank of Contiguous U.S.
Alabama	F	19	46
Florida	F	3	13
Georgia	F	10	34
Indiana	F	14	35
Louisiana	F	22	12
Oklahoma	F	20	42
Tennessee	F	15	32
Texas	F	2	6
Virginia	F	13	24
Wisconsin	F	16	31

ADDITIONAL REPORT HIGHLIGHTS

All 10 states have significant barriers in place to distributed-solar development and have earned an overall policy grade of “F” in our analysis. By contrast, the 10 states that obtained an “A” grade in our analysis account for 27 percent of the total rooftop-solar photovoltaic annual generation potential in the contiguous United States, but were responsible for about 68 percent of total generation.⁵

We based state grades on a thorough review of the presence, or absence, and strength of key distributed-solar policies, and, combined with the overall rooftop-solar photovoltaic technical potential rankings by National Renewable Energy Laboratory (NREL), identified the states that would benefit most from improvements to their distributed-solar policy landscapes.⁶

Of the 10 states highlighted in this report:

- Nine remain from the 2016 list. These states have made few notable improvements in the past two years to their distributed-solar policy landscapes. Michigan updated its Renewable Energy Standard in December 2016, so it was replaced on the list by Louisiana, which has made no notable improvements to its solar policy landscape in the past two years.
- Eight lack renewable portfolio standards (RPS), policies that are key to creating a safe market for investing in rooftop solar. The two states with mandatory RPSs in place — Texas and Wisconsin — have already met their low targets and have not taken steps to update their policies, so these RPSs are doing nothing to bolster the solar industry at this point. In fact Texas met its incredibly unambitious goal of 10,000 MW *15 years ahead of schedule*.⁷
- Five lack mandatory statewide net-metering policies, possibly the most important policy model in place in the United States that allows for solar customers to connect with the grid. Only 12 states in the country are without these standards.
- Only three allow for third-party power purchase agreements (PPAs) — a financing model that has fostered a distributed-solar boom across the United States by allowing for those who wouldn't otherwise be able to afford solar panels outright to be able to install them on their property. One allows for leasing but not PPAs.
- None have state-wide community solar programs in place, which are key to encouraging broad access to distributed-solar resources and promoting community resiliency. Virginia has a pilot program.
- Eight lack strong interconnection laws, making the process of installing solar panels harder for homeowners, business owners and third-party companies alike.
- Four don't have any solar-rights laws that protect home and business owners from local restrictions on solar-panel installations due to issues like neighborhood aesthetics.

All 10 of these states are bad actors in the distributed-solar policy game, but two in particular stand out as the worst: Florida and Texas. These two states fall in the top three for rooftop-solar photovoltaic technical potential, just after California. Both Florida and Texas could feasibly have some of the best markets in the country for distributed-solar growth; they make up more than 16 percent of the total generation potential for small building solar in the contiguous United States. Because of bad policies, however, Florida and Texas only account for about 5 percent of the total net generation. By contrast California makes up about 13 percent of total generation potential for small building solar, but generated about 49 percent of the net generation.

INTRODUCTION

In order to stave off the worst impacts of climate change, the United States needs a rapid transition to a 100 percent clean-energy system — a move supported by leading climate scientists, industry experts, religious groups, justice organizations and environmentalists alike. The technology exists to make this happen in a way that takes into account vulnerable species, habitats and communities.

Obtaining a significant portion of our energy from clean sources within the already-built environment — such as on existing rooftops, parking lots and along roadways — would allow us to address climate change and meet our energy needs. It would enable a transition without paving over the planet and could help to alleviate some of the strain our energy system has on low-income communities and communities of color. Distributed sources such as photovoltaic (PV) solar built on existing structures have the potential to meet significant electricity and heating/cooling needs with much fewer social and environmental impacts than traditional energy sources, particularly fossil fuels.*

Current federal and state policies are not sufficient to meet the high levels of diffusion of distributed PV generation we need to reach a just and wildlife-friendly energy future. At the federal level, a 30 percent investment tax credit (ITC) that has helped to spur renewable energy market growth is set to expire at the end of 2019. With new 30 percent tariffs on imported solar panels from China and Taiwan instituted by the Trump administration, solar prices will increase. This will set us further back on the path to a clean-energy future.⁸

State-level policies, which in many ways determine the success of energy markets and the affordability of solar, largely fail to support distributed-solar growth potential. State legislation determines how utilities work with home and business owners to connect their distributed-solar energy systems to the electric grid, whether solar system owners get paid for excess generation supplied to the grid, and whether there is any support for low-income homeowners or individuals who would otherwise have a hard time installing solar panels on their own.

What Is Distributed Solar?

Generally, when people talk about distributed solar, they are referring to solar panels on rooftops of homes and businesses — but the term can refer to any kind of solar electric system that is placed on or near where electricity is used. Solar arrays are often found on building rooftops, but some emerging technologies allow for solar cells to be incorporated onto other building surfaces. One example of this is thin-film cells on windows. Solar panels as shades on parking lots, community solar farms and even individual solar panels on street lamps are all forms of distributed generation.

Distributed-solar generation is an important part of a sustainable energy future for many reasons. Reducing the distance between where electricity is generated and where it is used prevents energy loss in transmission, creates ownership opportunities in the energy system for individuals and communities, and decreases the amount of land destroyed by large-scale energy operations.

*Distributed generation refers to energy that is generated at or near the point of consumption. It generally includes small-scale electricity generation, considered less than 10 megawatts (MW) in size, which is connected directly to the distribution network (grid). It can refer PV solar or any type of energy generation of this connection type and size, including wind, coal, natural gas, geothermal, etc.

Distributed generation, which plays an important role in decentralizing electricity distribution, allows for customers to buy less power from their monopoly utility provider. Because this threatens their business model, investor-owned utilities, which distribute power to about 75 percent of U.S. homes, along with fossil fuel companies and even public utilities, are blocking distributed-solar progress by pressuring state utility regulators to enact anti-solar policies.^{9,10} These actions, by slowing the clean and wildlife-friendly energy transition, pose serious threats to endangered species, sensitive habitats and communities that are often left to bear the consequences of our energy system's public health and economic losses without aid.

In many states there are few policies in place that require utilities to treat solar customers fairly. Instead there are active barriers in place to prevent utility customers from “going solar.” Furthermore, in states where policies have been successful in encouraging distributed-solar market growth, utilities and corporate interests have been fighting to remove or weaken these policies — waging a “war on rooftop solar.”^{11,12} Without strong distributed-solar policies, individuals and businesses are often left without options to fund or install solar-energy systems on their property. And in some states, enough barriers exist that property owners are essentially prohibited from installing solar panels even if they have the funds.

This report highlights 10 states that have some of the highest potential for distributed-solar market growth, and therefore the ability to mitigate the negative effects of fossil fuel use, but the worst policies in place. All states are identified by National Renewable Energy Laboratory (NREL) as being in the top 25 states for rooftop-solar photovoltaic technical potential, and all have obtained poor distributed-solar policy grades in our analysis.¹³

This report specifically considers *distributed-solar* growth and evaluates the states that are blocking progress. That serves to identify improvements that need to be made in order to prioritize distributed-solar technology diffusion in these states and demonstrate policy changes that can increase distributed solar across the country.



PV Installation, photo courtesy Ballonboy101, Wikimedia Commons.

KEY STATE-LEVEL DISTRIBUTED-SOLAR POLICIES AND BARRIERS

There is no silver bullet to overcome distributed-solar barriers at the local, state or national level. There are many expert opinions regarding individual model policies. States that have emerged as leaders in distributed-solar generation, such as California, New York and Massachusetts, have done so by creating solar-friendly policy landscapes. These leading states tend to have three categories of key solar policies, as broken down by the National Renewable Energy Laboratory:¹⁴

- Market preparation policies allow for home and business owners to install solar panels on their property by creating the regulatory structure needed to connect small solar installations to the grid. Without these policies in place, the barriers are often too great for installation, regardless of the property owner’s interest level. These policies include interconnection standards, net-metering programs and solar-rights policies.
- Market-creation policies set up the conditions needed for solar businesses to sell energy or technology to home and business owners. The main market creation policy model in the United States that influences distributed generation diffusion is a renewable-portfolio standard (RPS), also known as a renewable-electricity standard. These standards set minimum requirements for renewable-energy generation for utilities. RPSs that include specific minimum requirements for solar-energy generation, or distributed generation, are said to have a solar “carveout.”
- Market-expansion policies are those that help expand access to solar energy and technology to those who wouldn’t otherwise have access, such as renters or low-income homeowners. These include financial incentives such as grants, rebates and tax incentives; community solar laws (including virtual net metering); and third-party ownership laws.

Most states are lacking in one or more of these key policies. Even some of the leading states have barriers within their distributed-solar policies in the form of access restrictions and prohibitive fees. By putting barriers in place or lacking key policies altogether, states and utilities are preventing home and business owners from choosing to go solar, ultimately blocking climate action. Some of the more common avenues that states take to do so include: prohibiting third-party ownership financing models of solar, such as PPAs; setting unambitious renewable portfolio standards (RPS) or failing to update them as needed; including restrictions in net-metering rules, such as fees, system size limits and program caps; setting rates that don’t take into account the true value of solar and prioritize utility profit-making; and excluding certain sized solar systems from tax exemptions and other financial incentive programs.

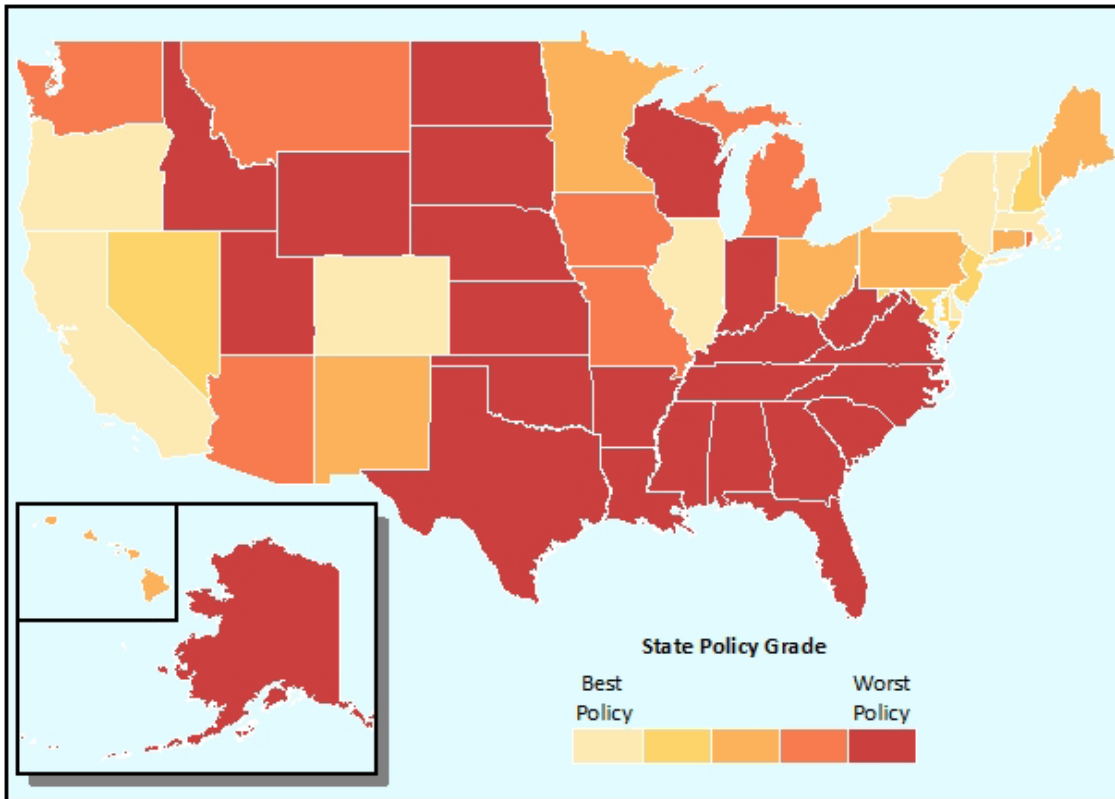


Image 1. Map of state overall distributed-solar policy grades

For the purpose of identifying states blocking access to distributed solar, and thus failing to meet their solar potential, we examined key policies within each of these categories that specifically affect the diffusion of distributed-solar generation and access: renewable-portfolio standards (RPSs), net-metering policies, community solar laws, interconnection standards, third-party ownership laws and solar-rights laws. We did not go into great detail on tax credits, rebates or other financial incentives, as many of these are contingent on federal and local policy and are not determined at the state level. Our methodology for assigning policy grades can be found in Appendix B.

Renewable Portfolio Standards and Solar Carveouts

Mandatory renewable-portfolio standards (RPS) or renewable-electricity standards exist in 29 states and Washington, D.C. In general these standards require utilities to generate electricity from renewable sources — or acquire renewable energy certificates from other generators — equal to a target percentage of their sales. Over half of the 120 GW of renewable energy capacity built since 2000 has been driven at least in part by RPS policies.¹⁵ Across the United States, new renewable-energy sources for RPS compliance resulted in a 3.6 percent reduction in total fossil fuel generation.¹⁶ Lifecycle greenhouse gas emissions were reduced by 59 million metric tons of carbon dioxide equivalent due to these new sources.¹⁷

RPS requirements differ across states, not only in the percent renewable-energy contribution required but also in the way they treat different renewable technologies. Of the 29 states with RPSs, 18 have provisions in their RPS policies that favor either solar-energy sources generally or distributed-electricity generation (which is de facto PV solar, given current technologies). Colorado and New Jersey, for example, each require that 3 percent of their electricity comes from distributed generation by 2020.^{18,19} Since the last iteration of this report, Michigan has extended its RPS with a credit multiplier for distributed energy sources, which we hope will help distributed-solar growth.

Of the 10 states highlighted in this report, eight do not have any state-wide mandatory RPS, and the two states that do — Texas and Wisconsin — passed their unambitious goal deadlines by 2015. Even so, simply the presence of an RPS does not mean that it will drive distributed-solar growth specifically. Many states have RPSs in place that do not have solar or distributed generation carveouts. A carveout specifies that a certain portion of the RPS goal be met through specific sources and ideally would include a generous distributed PV carveout. Without a specific carveout for distributed solar, a solar carveout may be met with utility-scale solar, which is often sited in remote areas that may contain sensitive habitats or imperiled species habitat. Nonetheless, it is still better for the distributed-solar market than no carveout at all.

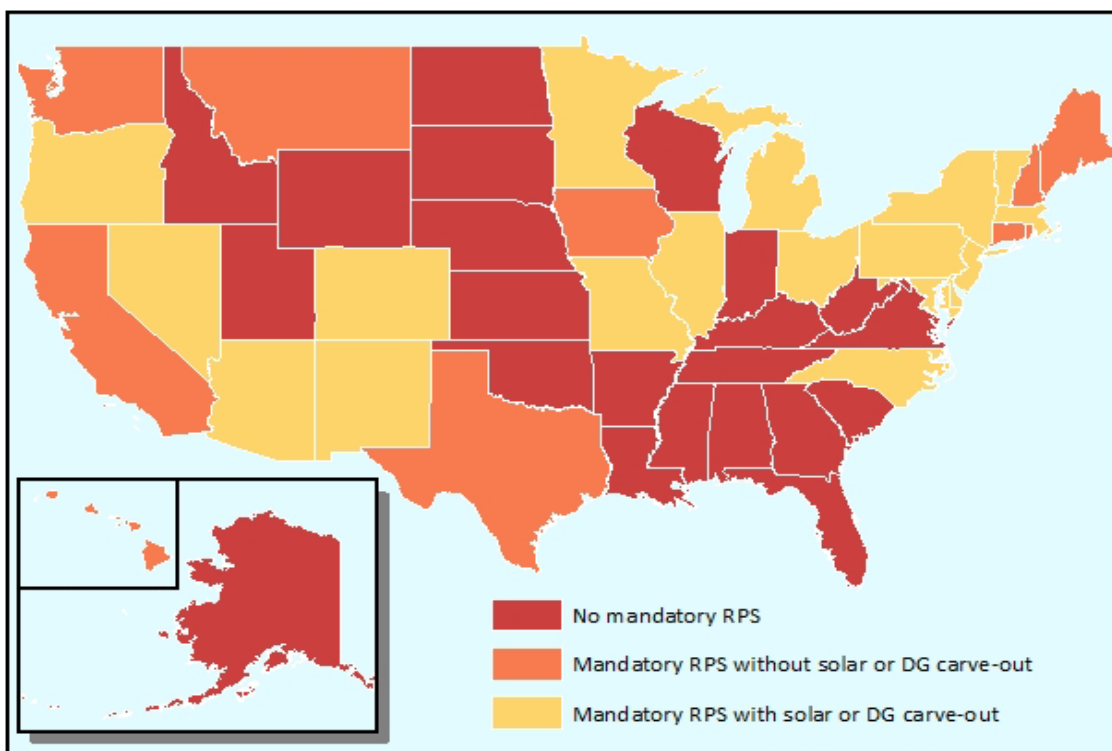


Image 2. Map of mandatory state renewable portfolio standards (RPS)

Net Metering

Net-metering policies have proven critical to the deployment of distributed solar.²⁰ Net-metering policies allow utility customers to sell excess electricity generated from their rooftop-solar panels back to the utility and receive credit on their bill. This credit helps to offset the customers' electricity consumption from the grid during other times of the day or year, reducing their total electricity purchases from the utility.^{21,22} As of the end of 2017, 38 states and Washington, D.C., had net-metering policies in place.²³ Seven states offer distributed generation compensation rules other than net metering.

As distributed PV has reached higher levels of market penetration, debates across the country have waged about whether to maintain full-retail net metering — i.e., net metering that allows for solar customers to be paid full retail rate for the excess electrical generation they send to the grid, as a pricing mechanism.^{24,25} Some argue that higher levels of rooftop-solar diffusion will challenge the traditional utility business model by altering the relationship between the customer and utility.²⁶

In response to increased levels of solar, electric utilities and pro-fossil fuel special-interest groups who do not support solar energy expansion, such as Edison Electric Institute, Americans for Prosperity and Consumer Energy Alliance, have raised concerns about “cost shifting.” They claim that the net-metering fees paid to solar customers for excess generation unfairly transfer costs both to non-solar customers and the electric utilities by reducing the number of customers contributing to grid maintenance.^{27,28,29} These groups have attacked distributed solar policies across the country by developing model legislation, funding and political cover for anti-solar campaigns.³⁰

To address “cost shift” and other solar-pricing-model concerns so that solar customers can be paid for their excess generation without impacting non-solar customers unfairly, many states and utilities have conducted cost-benefit studies of net metering. Two meta-analyses of such studies revealed that the marginal value of solar connected via net-metering programs exceeds the retail rate of electricity, and that net metering therefore provides a net benefit to all customers, not just those with solar panels.^{31,32} The savings are possible because rooftop solar provides electricity exactly when it's needed, taking pressure off the grid during peak hours and reducing the need for inefficient and expensive peak power plants. It also reduces the wear and tear to transmission infrastructure and energy loss. One meta-analysis found that utilities tend to exclude environmental and social benefits of solar and focus only on costs and savings that affect the direct costs of operating the grid. Further, this analysis found that studies conducted by non-utility analysts generally value solar higher than those that are conducted by utilities.³³ Despite the widespread success of net-metering programs, these debates have increased in recent years.

There are 12 states without mandatory net-metering programs in place.³⁴ Almost all are all falling significantly behind other states in meeting their distributed-solar capacity potential (Table 1). Five of these states, Alabama, Georgia, Indiana, Tennessee and Texas, are highlighted in this report.

Almost every state saw policy actions related to net-metering policy or rate design in 2016 and 2017, according to the NC Clean Energy Technology Center.^{35,36} In 2017 alone, 31 states saw actions related to distributed solar compensation rules and 21 saw actions related to solar valuation or net-metering studies.³⁷ In general, states are allowing utilities to decrease rates paid to customers through net-metering and other compensation programs and apply fixed and demand charges specifically for solar customers, making solar less affordable.³⁸ Although this has become less common in recent years, many states have allowed utilities to put caps on the amount of net energy generated through net-metering programs. Once a net-metering program cap is reached, no new net-metering customers are able to join, which eliminates this primary compensation mechanism for homeowners to install distributed solar.

Interconnection Standards

Interconnection standards are requirements to connect solar panels to the utility grid. They determine the ease and cost of installing solar energy systems for homes and businesses. Without interconnection standards, the installation process can be too unwieldy and often too expensive for homeowners or even third-party solar companies. Even with interconnection standards, if they are complicated or have unnecessary barriers in place, installation rates can be negatively affected. A barrier commonly found in interconnection standards is a provision for unnecessary liability insurance for all solar customers connected to the grid. This raises costs and ultimately decreases the benefits gained from installing solar panels. Another barrier is the requirement for a redundant external disconnect switch, which again increases costs and decreases solar benefits unnecessarily.⁴⁵

Vote Solar and the Interstate Renewable Energy Council (IREC) assessed states' interconnection standards and net-metering standards, assigning them grades based on their overall friendliness towards distributed-solar customers.⁴⁶ 32 states and Washington, D.C., have interconnection standards with passing grades including two of the 10 states highlighted in this report (see Appendix B).

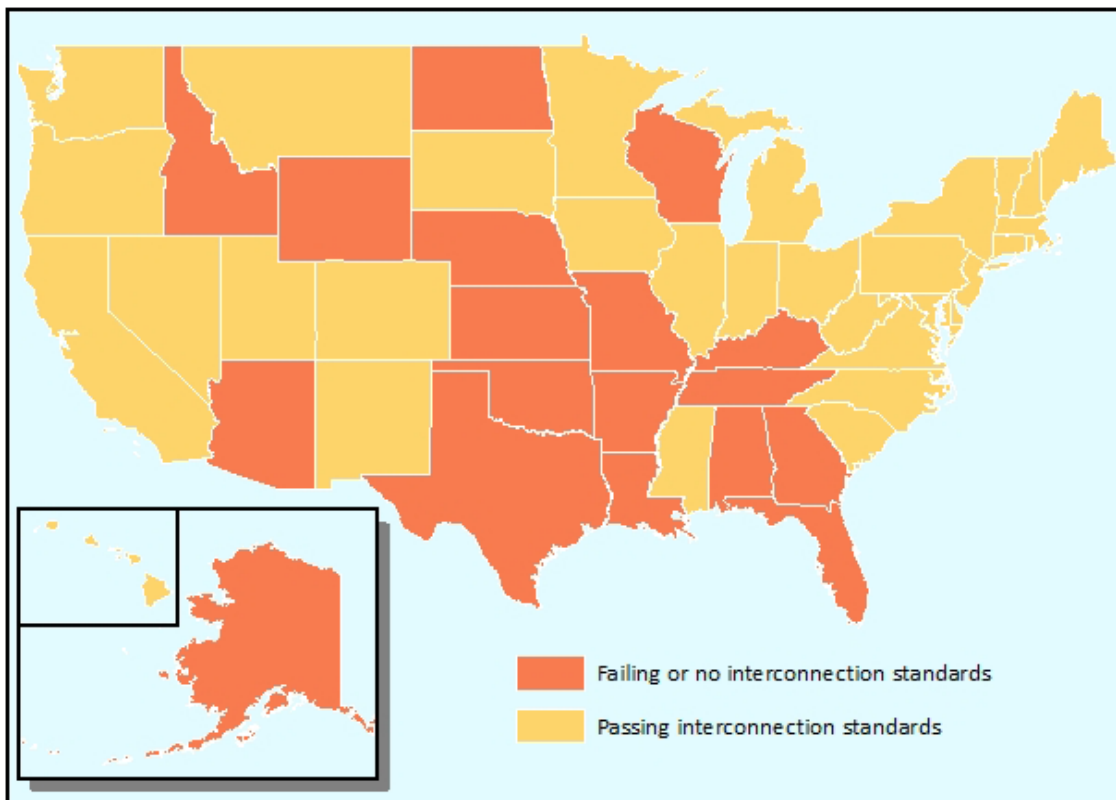


Image 5. Map of state interconnection standards

Third-party Ownership

Third-party ownership is an important driver of distributed-solar markets. Of the 1.3 GW of residential solar installed in 2014, 72 percent was third-party owned.⁴⁷ In New Jersey, a leading distributed-solar state, more than 90 percent of residential solar systems are third party owned.⁴⁸ This financing structure is common and has benefited the distributed-solar industry immensely.

Third-party ownership or third-party financing generally occurs through two models: leases and PPAs. A customer can sign a traditional lease and pay for the use of a solar system or enter into a PPA to pay a specific rate for the electricity that is generated each month.

One of the more obvious attacks on the distributed-solar market is that of third-party ownership bans. By barring these types of agreements, states restrict rooftop-solar development. The majority of the states that disallow third-party ownership have an installed residential solar capacity of 1,000 MWh or less.⁴⁹

Six states currently explicitly disallow third party ownership of solar — both leases and PPAs. Five states disallow PPAs but allow leases. The legality of third-party ownership is unclear in 20 other states, making them risky places for solar companies to operate. Without clear third-party ownership legality, this financing model cannot benefit those who don't have the money to buy solar panels and install them outright — which, at this point, is most Americans. Of the states highlighted in this report, Alabama and Oklahoma explicitly disallow both leases and PPAs, Florida and Louisiana allow leases but not PPAs, and legality is unknown or unclear in Indiana, Tennessee and Wisconsin.

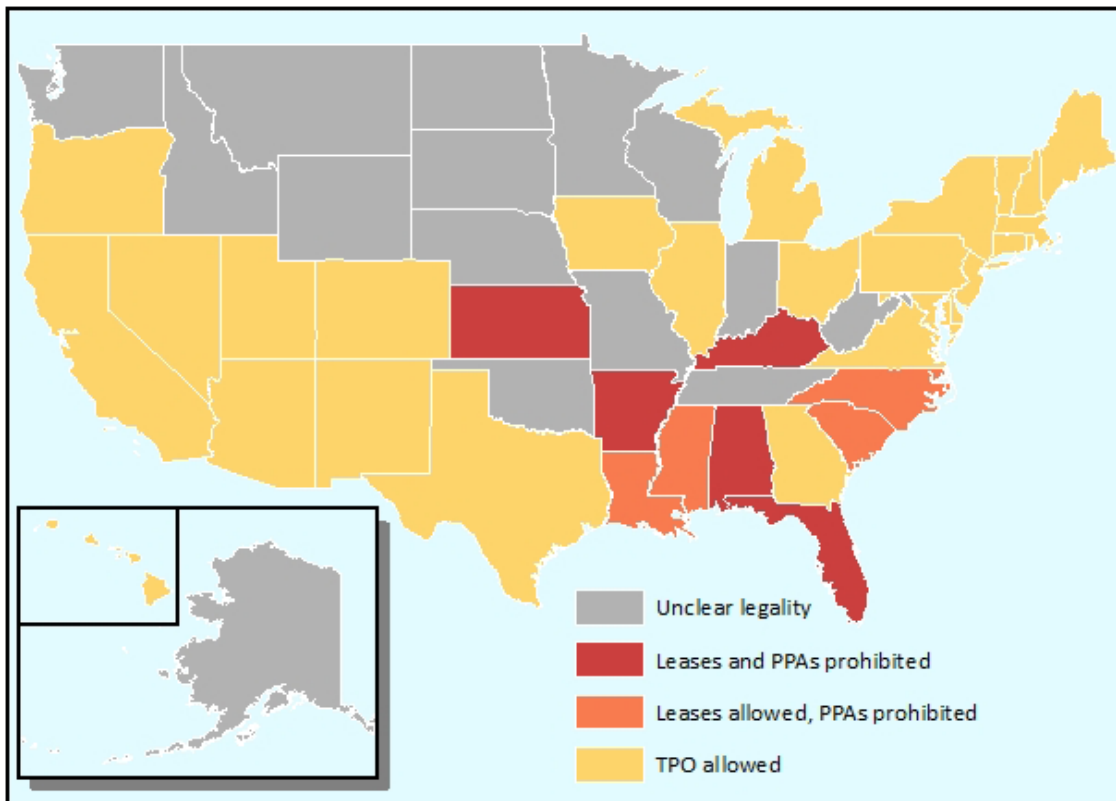


Image 6. Map of state third-party ownership laws

Solar Rights Laws

Local ordinances or private groups such as homeowners' associations are sometimes able to put barriers in place to distributed-solar development by claiming that solar panels reduce the aesthetic value of a neighborhood or by preventing shade removal around rooftops. Solar rights laws provide protections to solar customers from installation bans, unreasonable expenses and restrictions that might be imposed by these groups at the local level and thus help prevent barriers to distributed generation.

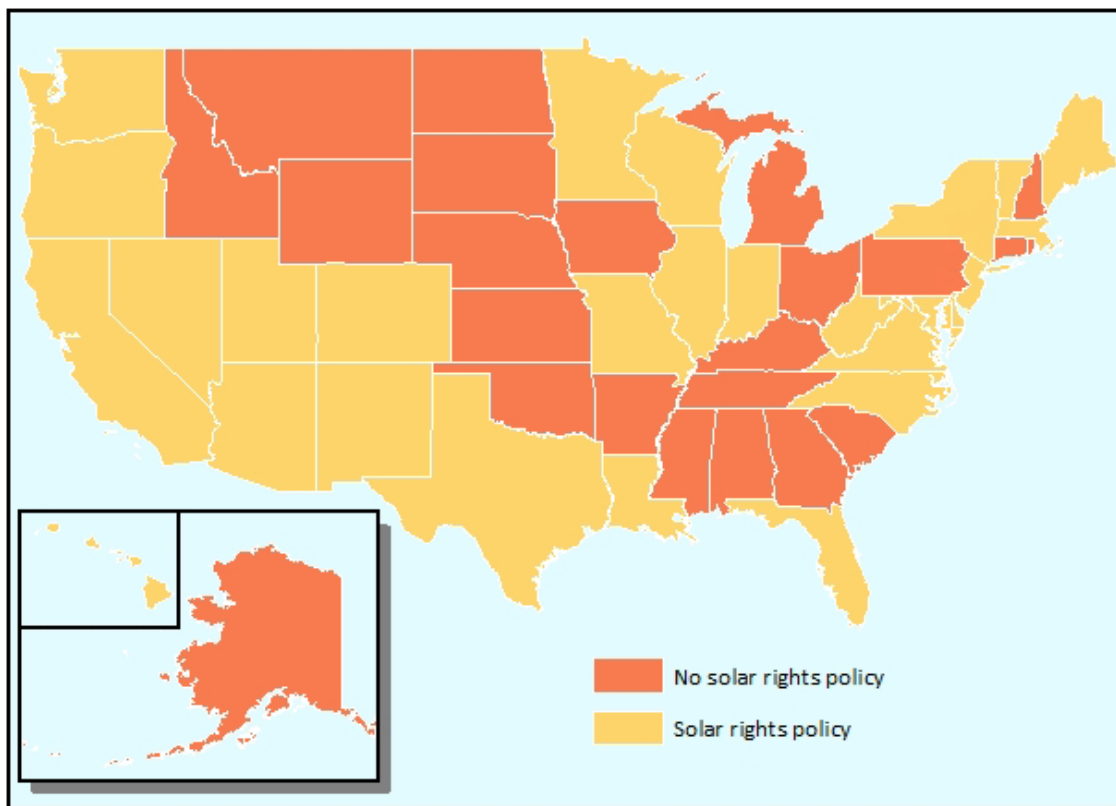


Image 7. Map of state solar-rights laws

10 SUNNY STATES BLOCKING DISTRIBUTED SOLAR

To identify the states blocking distributed-solar development through bad policy landscapes, we considered three factors:

- 1) Overall policy grades, determined primarily by the presence or absence of market-preparation, market-creation and market-expansion policies for distributed solar. Partial scores were given for weak net-metering and interconnection policies, previously analyzed by Interstate Renewable Energy Council (IREC) and Vote Solar in their 2015 “Freeing the Grid” report. Full methodology for creating policy grades is explained further in Appendix B.
- 2) Rooftop-solar photovoltaic technical potential, as determined by National Renewable Energy Laboratory (NREL).⁵⁰
- 3) Minor consideration of subjective factors — including the extent to which policymakers opted to actively block distributed solar due to utility pressure when given the opportunity to create fair market policies.

Many other states could also have been included in this report, due to active distributed-solar policy fights, bad policy scores overall, lack of policies or programs directed at increasing access for low or moderate-income communities, or the absence of any distributed-solar market. Thus the present report isn’t intended to function as an inclusive summary of all states blocking access to distributed-solar development, but rather to highlight how much weak state-policy landscapes are preventing distributed-solar growth in states with high potential. It also seeks to provide clear avenues for advocacy and policy improvements in the near term.

Table 2. 10 States Blocking Distributed Solar: Key Policies

State	Mandatory RPS - Active	RPS Solar or DG Carve-Out	Mandatory Net Metering	Third Party Ownership	Community Solar	Interconnection Standards	Solar Rights Laws
Alabama	no	NA	no	no	no	no	no
Florida	no	NA	yes	no	no	no	yes
Georgia	no	NA	no***	yes	no	no	no
Indiana	no*	no	no***	no*	no	yes	yes
Louisiana	no	NA	yes	yes**	no	no	yes
Oklahoma	no*	no	yes	no	no	no	no
Tennessee	no	NA	no	no*	no	no	no
Texas	no**	no	no**	yes***	no	no	yes
Virginia	no*	no	yes	yes***	no*	yes	yes
Wisconsin	no	no	yes	no*	no	no	yes

*voluntary by utility

**voluntary by utility

* legality is unknown or unclear

*pilot program

yes = grade of A, B, or C in IREC and Vote Solar's Freeing the Grid report

**RPS requirements already met or timeline passed

***policy like net metering in place that doesn't meet criteria set by DSIRE

**leases are legal, but PPAs are prohibited

**has virtual net metering (VNM)

no = no standards or grade of D or F

***legal but with limitations

Alabama

Although many states have made improvements over the past two years with regard to renewable-energy policy, Alabama has done virtually nothing. Still with no RPS, net-metering or community solar laws in place, and barriers to third-party solar companies operating in the state, it's no surprise that Alabama is falling far behind its solar potential. The state legislature has made no moves to support the distributed-solar industry — and in fact has blocked net metering multiple times, most recently in 2016 — despite the opportunity for reliable, clean electricity, community resilience and job creation in a state that desperately needs it.⁵¹

Not only does Alabama lack all key distributed-solar policies, it also lacks any clear avenues for public involvement in the policymaking process. With the first iteration of this report, we noted that Tennessee Valley Authority (TVA) does supply a net-metering-like option to its customers, but it only operates in a small part of northern Alabama. For the rest of the state, under utility Alabama Power, no payback or financing option exists. Further, the utility charges a punitive, fixed fee of 5 dollars per kilowatt per month to solar customers.⁵²

Thanks to a 2015 report by Institute for Energy Economics and Financial Analysis, we also know that the Alabama Public Service Commission does not allow the public to meaningfully comment on Alabama Power's integrated resource plan.⁵³ Utilities use integrated resource plans to identify affordable ways to meet the needs of the electricity market, and public input would help to create a more realistic understanding of the demand for distributed solar in the state. Public input is a key component of a fair, transparent government. Without allowing it in the IRP development process, potential solar customers have essentially no say in the types of policies that could benefit them.

Quick Facts

- #19 in technical potential (TWh) for rooftop solar
- #46 in net generation (thousand MWh of residential solar)
- Overall policy grade: F
- Renewable portfolio standard: None
- Net-metering policy: None
- Third-party ownership: None
- Community solar laws: None
- Interconnection standards: None
- Solar-access laws: None

Recommendations:

- Increase transparency by allowing public input on Alabama Power's IRP.
- Create mandatory targets by enacting a strong RPS with a distributed-solar carveout.
- Create a strong net-metering policy and an interconnection law using criteria outlined in IREC and Vote Solar's "Freeing the Grid" report.
- Allow for third-party PPAs and leasing to improve accessibility of distributed-solar resources.
- Create community solar and low-income financing programs to help diversify access to residential solar.
- Remove the \$5 per kilowatt monthly fixed charge for solar customers
- Create solar rights policy to protect individual home and business owners' rights to install solar panels on their properties.

Florida

Florida, despite being known as “the Sunshine State,” has one of the weakest distributed-solar policy landscapes in the United States. It remains one of the worst actors on our list, in spite of the clear public support for solar. With no RPS, PPAs or community solar policies, Florida has essentially blocked all potential distributed-solar development, especially for those who cannot afford to buy solar panels outright and install them on their own.

Florida is one of the fastest-growing states in the country, with ever-growing demand for solar resources and one of the highest technical potentials for rooftop solar in the United States. Even without an RPS, if Florida allowed for PPA financing of solar installations, Floridians could decide for themselves to put solar panels on their homes in order to save money over time, and many would.

As Florida’s demand for clean and affordable energy sources has grown, it’s faced some tough fights over distributed-solar policy. In 2016 Florida lawmakers introduced Amendment 1, a ballot measure that would have ensured monopoly utility control over solar power by locking out third-party competitors. The amendment, deceptively named “Rights of Electricity Consumers Regarding Solar Energy Choice,” was backed by an interest group funded by state utilities and fossil fuel companies.⁵⁴ Had it been successful, Amendment 1 would have made PPAs not only illegal, but unconstitutional in the state. It also attempted to grant utilities a constitutional basis to challenge any policy that they perceived to unfairly favor solar power. Fortunately, due to a wide-reaching public-awareness campaign by a broad coalition of solar advocates, Floridians showed their support for solar by voting the ballot measure down.⁵⁵

Despite the clear message from residents at the ballot box, Florida legislators have done little to improve the state’s policy landscape for distributed-solar development. The “Sunshine State” needs to start living up to its name and its technical potential by allowing its residents to go solar.

Quick Facts

- #3 in technical potential for rooftop solar
- #13 in net generation (thousand MWh of residential solar)
- Overall policy grade: F
- Renewable portfolio standard: None
- Net-metering policy: Weak
- Third-party ownership: Leases allowed, PPAs disallowed
- Community solar laws: None
- Interconnection standards: Weak

Recommendations:

- Create mandatory targets by enacting a strong RPS with a distributed-solar carveout.
- Strengthen net-metering policy and interconnection standards using criteria outlined in IREC and Vote Solar’s “Freeing the Grid” report.
- Explicitly allow for third-party PPAs to improve accessibility of distributed-solar resources.
- Create community solar and low-income financing programs to help diversify access to residential solar.

Georgia

Georgia, like Florida and Texas, is high on the list for rooftop PV technical potential but falling far behind in overall net generation. Because Georgia still has no RPS, net metering, community solar or solar-access policies, it remains on the worst offenders list.

Like Florida, Georgia's solar market has a lot of opportunity for growth. This is thanks in large part to a years-long and high-profile fight led by an unlikely team: environmentalists and an offshoot of Tea Party activists. This unlikely coalition led the fight against Georgia's utility commission and anti-solar Americans for Prosperity to require Georgia's primary utility, Georgia Power, to get more of its energy from solar, and successfully fought a proposed fee on solar customers.⁵⁶

Due to continued successes by solar advocates in the state, Georgia made a notable improvement in its solar policies by allowing for third-party ownership of solar panels, putting it in a position to move off the list of worst solar states in coming years. Also, Georgia Power now sells rooftop-solar systems to customers.

Quick Facts

- #10 in technical potential for rooftop solar
- #34 in net generation (thousand MWh of residential solar)
- Overall policy grade: F
- Renewable portfolio standard: None
- Net-metering policy: None
- Community solar laws: None
- Interconnection standards: Weak
- Solar-access laws: None

Recommendations:

- Enact a strong RPS with a distributed-solar carveout.
- Enact a strong net-metering policy using criteria from IREC and SEIA's "Freeing the Grid" report.
- Create community solar and low-income financing programs to help diversify access to residential solar.
- Strengthen interconnection standards using criteria outlined in IREC and Vote Solar's "Freeing the Grid" report.

Indiana

Indiana’s already dismal solar-policy landscape has been hit hard over the past few years. With the passage of S.B. 309 in 2017, Indiana opted to phase out retail rate net metering. A review by *The Indianapolis Star* showed that Indiana legislators received thousands of dollars in gifts from utility interest groups while writing this legislation. These interest groups used the false argument that net-metering compensation acts as a “subsidy” for solar to convince legislators to revoke the policy. Because of these insidious relationships, Indiana legislators have dealt an unfair hand to Hoosiers who want to have the freedom to go solar at a fair rate.⁵⁷

Between a voluntary RPS, a net-metering policy that is being phased out, no community solar and unclear third-party ownership laws, plus a pending residential monthly fixed charge increase for Indianapolis Power and Light customers, Indiana is essentially blocking any chance of substantial distributed-solar development. This is true even without the threat of additional barriers and is especially problematic for low-income communities. The anti-solar landscape is taking a toll on solar job creation in the state; according to the 2017 Solar Jobs Census by The Solar Foundation, Indiana added 93 percent fewer jobs in 2017 than 2016.⁵⁸

Quick Facts

- #14 in technical potential for rooftop solar
- #35 in net generation (thousand MWh of residential solar)
- Overall policy grade: F
- Renewable portfolio standard: Voluntary and weak
- Net-metering policy: None
- Third-party ownership: Unclear
- Community solar laws: None
- Interconnection standards: Weak

Recommendations:

- Strengthen the RPS by making it mandatory, creating a more ambitious target and including a distributed-solar carveout.
- Strengthen net-metering policy and interconnection standards by using criteria outlined in IREC and Vote Solar’s “Freeing the Grid” report.
- Allow for third-party PPAs and leasing to improve accessibility of distributed-solar resources.
- Create community solar and low-income financing programs to help diversify access to residential solar.
- Prevent further attempts to create unfair fees for distributed-solar customers.

Louisiana

Louisiana is the only new state on the list in this update. It secured its spot in part because Michigan made an improvement to its RPS, and also because it's made no notable improvements to its policy in the last two years despite a dire need.

Louisiana may seem as though it's doing something right in terms of distributed-solar policy since it's ranked #12 for net generation. The installations that account for this number seem to be due to a surprisingly generous solar tax credit that covered 50 percent of installation costs up to \$25,000 for solar customers who installed systems before mid-2015.⁵⁹ The state's overall policy landscape lacks an RPS, has no community solar laws and is weak on net-metering and interconnection standards. The legality of PPAs is also unclear in Louisiana.

As of July 2015, the solar tax credit took a steep dive due to a suite of new restrictions, including a cap of \$10,000 per PV solar system. Nothing has been done to improve the incentive since.⁶⁰ And in the summer of 2016, the state ran out of funds for the program.⁶¹ Louisiana saw about half as many residential solar installations in 2016 as in 2015 or 2014, likely due to this decline.⁶²

Now the Louisiana Public Service Commission staff has proposed to eliminate retail rate net metering and replace it with a "two channel billing" mechanism, likely at an avoided cost rate.⁶³ This would apply even to existing solar customers after a short five-year grandfathering period. That means that those Louisiana customers who went solar expecting to be paid back for their investment over the course of a certain number of years will now have to wait even longer for their investment to pay off. Additionally, calculating the costs and benefits of solar would be largely left to the utilities, and the draft proposal would potentially allow for utilities to impose discriminatory charges on solar customers.^{64,65} It's unclear when this proceeding will be resolved, but if rooftop solar is to have a fighting chance in the state, it's clear that these proposed changes need to be rejected. On the flip side, the proposal does include community net metering, so there would be a community solar policy of some kind if the proposed rules are approved.

Quick Facts

- #22 in technical potential for rooftop solar
- #12 in net generation (thousand MWh of residential solar)
- Overall policy grade: F
- Renewable portfolio standard: None
- Net-metering policy: Weak
- Third-party ownership: Leases allowed
- Community solar laws: None
- Interconnection standards: Weak

Recommendations:

- Create mandatory targets by enacting a strong RPS with a distributed-solar carveout.
- Create a strong net-metering policy and strengthen interconnection standards using criteria outlined in IREC and Vote Solar's "Freeing the Grid" report.
- Allow for third-party PPAs and leasing to improve accessibility of distributed-solar resources.
- Create community solar and low-income financing programs to help diversify access to residential solar.
- Reject the LPSC proposal to replace net metering.

Oklahoma

With no notable changes to its overall solar-policy landscape, Oklahoma once again makes the list of sunny states blocking distributed-solar progress through bad policy. It may not have as much technical potential for rooftop solar as the other states on this list, but Oklahoma is also nowhere near meeting its technical potential or providing fair access to distributed solar. There are fewer than 700 homes with solar statewide as of the end of 2017.⁶⁶ This low figure is problematic, as improved rooftop-solar access could benefit Oklahoma's low-income and rural residents significantly.

Unfortunately, with a voluntary and weak RPS with an expired goal of 15 percent renewable energy by 2015 and no solar carveout, there's no real mandate for the state to invest in solar. Voluntary RPSs in general don't provide the incentive needed to effectively promote solar power for either distributed or utility-scale sources. Oklahoma also

lacks a third-party ownership policy, has no community solar or solar-rights policies and has very weak interconnection standards. Finally, although Oklahoma does have a net-metering program, it has a fairly low system-size limit and does not require that utilities pay customers back for the net energy they generate; this significantly decreases the payback for distributed-solar owners.

Until Oklahoma's legislature decides to create policies that encourage distributed-solar development, its residents will miss out on energy choice, clean-air benefits and electricity savings that rooftop-solar markets can provide.

Quick Facts

- #20 in technical potential for rooftop solar
- #42 in net generation (thousand MWh of residential solar)
- Overall policy grade: F
- Renewable portfolio standard: Voluntary and weak
- Net-metering policy: Weak
- Third-party ownership: None
- Community solar laws: None
- Interconnection standards: Weak
- Solar-access laws: None

Recommendations:

- Strengthen the RPS by making it mandatory, create a more ambitious target and include a distributed-solar carveout.
- Strengthen net-metering policy and interconnection standards by using criteria outlined in IREC and Vote Solar's "Freeing the Grid" report.
- Allow for third-party PPAs and leasing to improve accessibility of distributed-solar resources.
- Create community solar and low-income financing programs to help diversify access to residential solar.
- Create solar-access laws to protect individual home and business owners' rights to install solar panels on their properties.

Tennessee

Tennessee’s legislature has done essentially nothing to support its distributed-solar market, despite the fact that 88 percent of Tennessee voters expressed a desire to have solar on their homes.⁶⁷ It has remained on the list of worst states, with no marked improvement since 2016. The lack of clean energy support by legislators may seem inevitable in the heart of coal country, but other coal states like West Virginia have market preparation policies in place, which provides a minimum framework to allow residents to choose to spend their own money to install solar panels.

With no RPS, net metering, third-party ownership, community solar laws, interconnection standards or solar-access laws, Tennessee has nixed any opportunity for distributed-solar development. This makes the switch to clean energy even more of a financial hurdle in Tennessee than it would be in other states with similarly poor markets. What little distributed-solar capacity there is installed in the state is due to the Tennessee Valley Authority (TVA), the power utility that services almost all of Tennessee. TVA has a voluntary net-metering-like program in place to support its distributed generation customers — a program created in response to users’ requests for a net-metering program.⁶⁸ Huge changes would have to be made in the state for this market to be a viable one. And in the meantime, TVA has recently proposed a new rate structure expressly designed to make distributed solar less attractive in its service area.⁶⁹

Quick Facts

- #15 in technical potential for rooftop solar
- #32 in net generation (thousand MWh of residential solar)
- Overall policy grade: F
- Renewable portfolio standard: None
- Net-metering policy: None
- Third-party ownership: None
- Community solar laws: None
- Interconnection standards: None
- Solar-access laws: None

Recommendations:

- Create mandatory targets by enacting a strong RPS with a distributed-solar carveout.
- Create a strong net-metering policy using criteria outlined in IREC and Vote Solar’s “Freeing the Grid” report.
- Allow for third-party PPAs and leasing to improve accessibility of distributed-solar resources.
- Strengthen interconnection standards using criteria outlined in IREC and Vote Solar’s “Freeing the Grid” report.
- Create community solar and low-income financing programs to help diversify access to residential solar.
- Create solar-access laws to protect individual home and business owners’ rights to install solar panels on their property.

Texas

As catastrophic storms like Hurricane Harvey become more frequent and intense in southern states like Texas, improving access to distributed solar becomes even more urgent. When distributed-solar systems are designed with disaster resiliency in mind, they can provide power even when the rest of the grid goes down and communities rebuild after disaster strikes. That's why improving statewide solar policy is so important in Texas. With the state's large population, continuous development, high electricity demand and incredible technical potential for rooftop solar, it's primed for a huge distributed-solar boom.

Unfortunately the state's legislature and regulators have consistently blocked progress on distributed-solar policy for the last decade and have made no moves to improve the state's policy landscape since the last iteration of this report came out. Texas met its incredibly unambitious RPS goal of 10,000 MW in 2009 — more than 15 years ahead of schedule — and no tangible improvements have been made in the eight years since. A “non-wind sources” carveout for the state's RPS was approved in 2005 only to be blocked by the utilities commission after corporate interests threatened to sue. In 2007 a bill that would have mandated statewide net metering was blocked by the public utility commission. In 2009, 2011 and 2013, efforts to circumvent the commission's authority to require that retail electricity providers offer net metering to their customers failed to pass the state legislature.⁷⁰

Although Texas' solar-rights law and allowance for third-party ownership puts it a step ahead of many other states on this list, the Lone Star State earns its spot in the top 10 ranking of states blocking solar progress due to its weak distributed-solar policy landscape overall despite the highest technical potential for rooftop solar of any state other than California. With even moderate improvements to its net-metering law and its RPS, Texas could dramatically improve accessibility to distributed-solar sources.

Quick Facts

- #2 in technical potential for rooftop solar
- #6 in net generation (thousand MWh of residential solar)
- Overall policy grade: F
- Renewable portfolio standard: Extremely weak
- Net-metering policy: Voluntary
- Community solar laws: None
- Interconnection standards: Weak

Recommendations:

- Update the RPS to include a new ambitious target and a strong distributed-solar carveout.
- Strengthen net-metering policy and interconnection standards by using criteria outlined in IREC and Vote Solar's “Freeing the Grid” report.
- Create community solar and low-income financing programs to help diversify access to residential solar.

Virginia

Virginia does have a couple of policies in place supporting its distributed-solar market, such as solar-access rights and strong interconnection standards. But it only has a voluntary RPS with no solar carveout, unclear legality for third-party ownership and no true community solar policy. Without mandatory and meaningful goals, the RPS doesn't provide any real incentive to promote distributed or utility-scale solar development. And like many other states on this list, Virginia has done little to improve its solar outlook since the last iteration of this report.

With S.B. 1393, enacted in March 2017, the state did require that the two investor-owned utilities in the state develop "community solar" pilot programs in the state. But these would not be community solar programs in their true form, as they would not allow for community ownership or administration of the solar installations.⁷¹

The state's weak net metering improved slightly when the legislature signed S.B. 1395 into law in March 2015. This legislation allowed for more mid-size installations by increasing the net-metering system size limits from 500 kW to 1,000 kW. However, it is still an overall weak program because it requires that customers create a PPA with their utility prior to connecting their PV solar system to the grid. These agreements are up to the utility's discretion. This barrier prevents potential solar customers from accessing net-metering program benefits and ultimately gives all power to the utility rather than ensuring solar customers are compensated fairly for the energy they provide.

Quick Facts

- #13 in technical potential for rooftop solar
- #24 in net generation (thousand MWh of residential solar)
- Overall policy grade: F
- Renewable portfolio standard: Voluntary and weak
- Net-metering policy: Weak
- Third-party ownership: Unclear
- Community solar laws: None

Recommendations:

- Strengthen the RPS by making it mandatory, create a more ambitious target and include a distributed-solar carveout.
- Strengthen net-metering policy by using criteria outlined in IREC and Vote Solar's "Freeing the Grid" report.
- Clearly allow for third-party PPAs and leasing to improve accessibility of distributed-solar resources.
- Create community solar and low-income financing programs to help diversify access to residential solar.

Wisconsin

No major policy improvements have been made for distributed solar in Wisconsin since the last iteration of this report. Although the state came close to an RPS success story a handful of years ago, but dropped the ball. Its target of 10 percent was actually fairly ambitious for the time, but similar to Texas, the state met its goal two years early in 2013. The Wisconsin legislature has made no moves to implement any new renewable energy goals as of yet, and therefore its existing RPS is outdated and ineffective. In addition, there is no solar carveout.

Wisconsin's net-metering program could also be strengthened by increasing or removing the system-size cap and allowing for community solar inclusion. The state's interconnection standards obtained a low grade on IREC and Vote Solar's "Freeing the Grid" report due to the fact that they require solar customers to buy extra liability insurance and install a redundant external disconnect switch, both of which create burdens for potential customers who might already find it financially challenging to install solar panels without access to third-party ownership agreements.

Quick Facts

- #16 in technical potential for rooftop solar
- #31 in net generation (thousand MWh of residential solar)
- Policy grade: F
- Renewable portfolio standard: Weak
- Net-metering policy: Weak
- Third-party ownership: Unclear
- Community solar laws: None
- Interconnection standards: Weak

Recommendations:

- Update the RPS with a more ambitious target and a distributed-solar carveout.
- Strengthen net-metering policy by using criteria outlined in Vote Solar and IREC's "Freeing the Grid" report.
- Allow for third-party PPAs and leasing.
- Create community solar and low-income financing programs to help diversify access to residential solar.
- Strengthen interconnection standards using criteria outlined in Vote Solar and IREC's "Freeing the Grid" report.

(DIS)HONORABLE MENTIONS

Although Kentucky, Michigan and South Carolina didn't make our list of the top 10 states blocking solar progress, it wasn't for lack of bad policy. Kentucky's low policy score would have guaranteed it a spot if it ranked higher in overall technical potential — it's only 26 on that list. Michigan has improved its overall ranking since the last iteration of this report by updating its RPS, but the state's solar policy landscape remains poor overall. And although South Carolina has some key policies in place, they tend to be voluntary and weak measures that don't support the solar market as well as they could.

Michigan

Michigan is known for being cold and snowy for a significant part of the year, and it's easy to underestimate the state's solar potential. However, Michigan comes in eighth for rooftop PV technical potential in the United States — above even Georgia and Virginia. With high electricity prices and such high potential for distributed solar, what's holding the state back is its bad policy. These policies don't come from lack of interest; 80 percent of Michigan voters want to see more solar, with majority support from both Democrats and Republicans.⁷²

Michigan has extended its previously-met RPS to 15 percent by 2021, part of why it was knocked off the top 10 list from the 2016 rankings to a dishonorable mention. Unfortunately its net-metering policy includes barriers in the form of low system-size limits and aggregate capacity limits, and the Public Service Commission staff recently proposed changing their net-metering policy to a “net-billing” policy to compensate solar customers at a lower rate. The state's interconnection standards are complex and include a requirement for additional and redundant insurance. Furthermore, Michigan lacks both community solar laws and solar-access laws, two policies that could directly benefit lower- and moderate-income home and business owners. Communities in Michigan, particularly low-income communities and communities of color, could benefit immensely from the opportunity to generate reliable, clean electricity while increasing community resilience and creating jobs.

Quick Facts

- #8 in technical potential for rooftop solar
- #26 in net generation (thousand MWh of residential solar)
- Overall policy grade: F
- Net-metering policy: Weak
- Community solar laws: None
- Interconnection standards: Weak
- Solar-access laws: None

Recommendations:

- Maintain the state's existing net-metering policy and strengthen it and the state's interconnection standards by using criteria outlined in IREC and Vote Solar's “Freeing the Grid” report.
- Create community solar and low-income financing programs to help diversify access to residential solar.
- Create solar-access laws to protect individual home and business owners' rights to install solar panels on their properties.

South Carolina

On the surface it may appear as though South Carolina is not doing badly in terms of solar policy — as it has an RPS and net-metering program. In truth, however, both of these policies are substantially weak, and both are voluntary. South Carolina’s RPS is one of the weakest in the country — calling for utilities in the state to produce just 2 percent of their total capacity from renewable-energy sources by 2021. Like many other states on this list, South Carolina’s RPS does not include a solar carveout. Its net-metering program also expressly prohibits meter aggregation, which would allow for multiple homes to benefit from a shared solar installation.

South Carolina also has unclear third-party ownership legality, weak interconnection standards, no community solar programs in place and no solar-access rights. In order to even come close to its distributed-solar potential, South Carolina’s legislature needs to step up its distributed-solar policy game. Since it’s made no clear moves to improve its policy in the past two years, it remains a dishonorable mention on this list.

Quick Facts

- #23 in technical potential for rooftop solar
- #18 in net generation (thousand MWh of residential solar)
- Overall policy grade: F
- Renewable portfolio standard: Voluntary and weak
- Net-metering policy: Mandatory but capped
- Third-party ownership: Leasing allowed, PPAs disallowed
- Community solar laws: None
- Interconnection standards: Weak
- Solar-access laws: None

Recommendations:

- Strengthen the RPS by making it mandatory with an ambitious distributed-solar carveout.
- Strengthen the net-metering policy by making it mandatory, allowing for meter aggregation, and using criteria outlined in IREC and Vote Solar’s “Freeing the Grid” report.
- Allow for third-party PPAs and leasing to improve accessibility of distributed-solar resources.
- Strengthen interconnection standards using criteria outlined in IREC and Vote Solar’s “Freeing the Grid” report.
- Create community solar and low-income financing programs to help diversify access to residential solar.
- Create solar-access laws to protect individual home and business owners’ rights to install solar panels on their properties.

CONCLUSION

Distributed solar is a necessary and drastically undervalued component of our clean-energy future. Rooftop-solar prices are becoming increasingly competitive with fossil fuel sources, and we know what policies work to encourage installations. While there are some federal policies that can influence distributed solar, given the anti-climate action agenda of the Trump administration and Congress, the real power lies with the states.

We do have some real success stories to look to for inspiration: Distributed-solar markets have blossomed in California, New York and other states that have adopted generally strong solar policies. Unfortunately, distributed-solar development is under attack from monopoly utilities and fossil fuel interests across the country. From net-metering fights to outright bans on third-party ownership, the number and intensity of these fights are increasing year by year.

Energy, climate, wildlife and social-justice advocates need to stand together to support policies that can maximize our solar potential and protect the rights of individuals and communities to create and benefit from clean, reliable energy where they live and work.

The states outlined in this report are far from the only states that need to improve their policies — all 50 states have room for improvement. What these states do represent is significant missed opportunity for clean energy generation. This hampers community resilience and empowerment, job creation and wildlife protection. The states on the list are missing out on avoided fossil fuel use as well as eliminated environmental costs due to poorly sited utility-scale renewable energy sources.

The lack of key solar policies and the presence of active barriers to distributed generation diffusion in these states are representative of policy issues many other states are dealing with or will likely face in the near future. The hope is that by outlining some of these issues home and business owners, solar advocates and policymakers will have an easier time identifying ways to improve distributed-solar policy in all states. Through these improvements, we can achieve the necessary transition to a just, wildlife-friendly and fully renewable energy system.

For more information on policy models that can encourage distributed-solar access, check out the recently released “Shared Renewable Energy for Low- to Moderate-Income Consumers: Policy Guidelines and Model Provisions” report by Interstate Renewable Energy Council and “Low-Income Solar Policy Guide: A road map to successful policies and programs creating access to solar technology and jobs nationwide” report by GRID Alternatives, Vote Solar and Center for Social Inclusion.

APPENDIX A: CHART OF DISTRIBUTED-SOLAR POLICIES

State	Mandatory RPS - Active	RPS Solar or DG Carve-Out	Mandatory Net Metering	Third Party Ownership	Community Solar	Interconnection Standards ¹⁰	Solar Rights Laws	State Policy Grade	Small Scale Rooftop PV Technical Potential: Rank of Contiguous U.S.	Net Generation from Small Scale Rooftop PV: Rank of Contiguous U.S. ¹¹
Alabama	no	NA	no	no	no	no	no	F	19	46
Alaska	no	NA	yes	no ⁵	no	no	no	F	NA	NA
Arizona	yes	yes	no ⁴	yes ⁷	no	no	yes	D	11	2
Arkansas	no	NA	yes	no	no	no	no	F	31	40
California	yes	no	yes	yes	yes	yes	yes	A	1	1
Colorado	yes	yes	yes	yes ⁷	yes	yes	yes	A	24	8
Connecticut	yes	no	yes	yes	no ⁸	yes	no	A	33	10
Delaware	yes	yes	yes	yes	yes ⁹	yes	yes	A	45	22
District of Columbia	yes	yes	yes	yes	yes	yes	no	A	NA	NA
Florida	no	NA	yes	no	no	no	yes	F	3	13
Georgia	no	NA	no ⁴	yes	no	no	no	F	10	34
Hawaii	yes	no	no ⁴	yes	yes	yes	yes	C	NA	NA
Idaho	no	NA	no ³	no ⁵	no	no	no	F	38	36
Illinois	yes	yes	yes	yes	yes	yes	yes	A	7	33
Indiana	no ¹	no	no ⁴	no ⁵	no	yes	yes	F	14	35
Iowa	yes	no	yes	yes	no	yes	no	D	28	25
Kansas	no*	no	yes	no	no	no	no	F	30	37
Kentucky	no	NA	yes	no	no	no	no	F	26	39
Louisiana	no	NA	yes	yes ⁶	no	no	yes	F	22	12
Maine	no ²	no	no ⁴	yes	yes	yes	yes	D	40	29
Maryland	yes	yes	yes	yes	no ⁸	yes	yes	A	27	5
Massachusetts	yes	yes	yes	yes	yes ⁹	yes	yes	A	25	7
Michigan	yes	yes	yes	yes	no	yes	no	D	8	26
Minnesota	yes	yes	yes	no ⁵	yes	yes	yes	C	21	27
Mississippi	no	NA	no ⁴	yes ⁶	no	yes	no	F	32	43

1. Voluntary by utility
2. RPS requirements already met or timeline passed
3. Voluntary by utility
4. Policy like net metering in place, but doesn't meet criteria set by DSIRE
5. Legality is unknown or unclear
6. Leases are legal, but PPAs are prohibited
7. Legal but with limitations
8. Pilot program
9. Has virtual net metering (VNM)
10. Yes = grade of A, B, or C in IREC and Vote Solar's Freeing the Grid report; no = no standards or grade of D or F
11. Data is Year-to-Date for December 2017, accessed in EIA's February 2018 Electric Power Monthly

APPENDIX A (CONTINUED)

State	Mandatory RPS - Active	RPS Solar or DG Carve-Out	Mandatory Net Metering	Third Party Ownership	Community Solar	Interconnection Standards ¹⁰	Solar Rights Laws	State Policy Grade	Small Scale Rooftop PV Technical Potential: Rank of Contiguous U.S.	Net Generation from Small Scale Rooftop PV: Rank of Contiguous U.S. ¹¹
Missouri	yes	yes	yes	no ⁵	no	no	yes	D	12	16
Montana	no ²	no	yes	no ⁵	no	yes	no	F	41	38
Nebraska	no	NA	yes	no ⁵	no	no	no	F	37	44
Nevada	yes	yes	yes	yes ⁷	no	yes	yes	B	35	9
New Hampshire	yes	no	yes	yes	yes ⁹	yes	no	B	42	23
New Jersey	yes	yes	yes	yes	no	yes	yes	B	17	4
New Mexico	yes	yes	yes	yes	no	yes	yes	C	36	15
New York	yes	yes	yes	yes	yes	yes	yes	A	4	3
North Carolina	yes	yes	yes	yes ⁷	no ⁸	yes	yes	D	9	21
North Dakota	no ¹	no	yes	no ⁵	no	no	no	F	44	48
Ohio	yes	yes	yes	yes	no	yes	no	C	5	30
Oklahoma	no ¹	no	yes	no	no	no	no	F	20	42
Oregon	yes	yes	yes	yes	yes	yes	yes	A	29	19
Pennsylvania	yes	yes	yes	yes	no	yes	no	C	6	14
Rhode Island	yes	no	yes	yes	yes	yes	no	D	46	28
South Carolina	no ¹	no	yes	yes ⁶	no	yes	no	F	23	18
South Dakota	no ¹	no	no	no ⁵	no	yes	no	F	43	47
Tennessee	no	NA	no	no ⁵	no	no	no	F	15	32
Texas	no ²	no	no ³	yes ⁷	no	no	yes	F	2	6
Utah	no ¹	no	no ⁴	yes	no	yes	yes	F	34	11
Vermont	yes	yes	yes	yes	yes ⁹	yes	yes	A	47	20
Virginia	no ¹	no	yes	yes ⁷	no ⁸	yes	yes	F	13	24
Washington	yes	no	yes	no ⁵	yes ⁹	yes	yes	D	18	17
West Virginia	no	no	yes	no ⁵	no	no	yes	F	39	41
Wisconsin	no	NA	yes	no	no	yes	yes	F	16	31
Wyoming	no	NA	yes	no ⁵	no	no	no	F	48	45

1. Voluntary by utility
2. RPS requirements already met or timeline passed
3. Voluntary by utility
4. Policy like net metering in place, but doesn't meet criteria set by DSIRE
5. Legality is unknown or unclear
6. Leases are legal, but PPAs are prohibited
7. Legal but with limitations
8. Pilot program
9. Has virtual net metering (VNM)
10. Yes = grade of A, B, or C in IREC and Vote Solar's Freeing the Grid report; no = no standards or grade of D or F
11. Data is Year-to-Date for December 2017, accessed in EIA's February 2018 Electric Power Monthly

APPENDIX B: STATE DISTRIBUTED-SOLAR POLICY GRADES: METHODOLOGY

States are credited as having the following solar energy policies if they meet these criteria:

- Renewable Portfolio Standard (or Renewable Electricity Standard): Presence of a mandatory RPS or RES included in DSIRE’s database, verified by National Conference of State Legislature (NCLS 2016).
- Distributed-solar carveout: Presence of a carveout for solar or distributed generation in mandatory RPS requirement, as described in DSIRE’s database
- Net-metering policies: Presence of statewide net-metering policies obtaining an “A” in IREC and Vote Solar’s 2015 “Freeing the Grid” report. Those obtaining a “B” or below were considered “weak”
- Interconnection standards: Presence of statewide interconnection policies obtaining an “A” in IREC and Vote Solar’s 2015 “Freeing the Grid” report were considered “strong”. Those obtaining a “B” or below were considered “weak”
- Solar rights: Presence of statewide solar rights (or solar access) policy, determined by a review of “solar/wind access policy” category in DSIRE’s database
- Community solar: Presence of a statewide community, shared or virtual net-metering solar program, determined by a review of DSIRE’s database
- Third-party Ownership: States in which third-party leases or PPAs are explicitly legal, according to DSIRE database and summary map

Distributed-solar policy scores were determined using the following scoring system:

Criteria	Points
No mandatory RPS?	-1.0
Mandatory RPS but no solar carveout?	-0.5
No mandatory net metering?	-1.0
Mandatory net metering, but policy is “weak”? (defined above)	-0.5
No third party ownership policy?	-1.0
No community solar policy?	-1.0
No interconnection standards, or interconnection standards with “D” or “F” grade?	-0.5
No solar rights policy?	-0.5
Max deductions	-5.0

*The highest policy score that could be obtained is 5.

To select the 10 states guiltiest of blocking access to distributed solar through bad policy, we used NREL’s Rooftop-solar Photovoltaic Technical Potential (GWh) rankings for small scale rooftops to narrow down the states to those in the top 25 for rooftop PV technical potential. We then ranked the states according to their distributed-solar policy scores, assigned grades based on a standard academic scale (88-100% = A, 78--87.9% = B, 68-77.9% = C, 58-67.9% = D, 0-57.9% = F) and identified 10 that had “F” grades.

Further information on these states and their solar policies, legislative history and political climate were obtained through an examination of policies on DSIRE’s website and through a review of existing literature.

REFERENCES

- 1) The United States could meet almost 40 percent of its electricity needs with rooftop solar alone, according to National Renewable Energy Laboratory's 2016 report "Rooftop Solar Photovoltaic Technical Potential in the United States: A Detailed Assessment." This projection doesn't include the potential for community solar installations on the ground, parking lots, co-located with agriculture, or emerging technologies such as solar on building facades and roadways. See Gagnon, P., Margolis, R., Melius, J., Phillips, C., and Elmore, R. 2016. Rooftop Solar Photovoltaic Technical Potential in the United States: A Detailed Assessment. (Rep. No. NREL/TP-6A20-65298). Retrieved from National Renewable Energy Laboratory website: <http://www.nrel.gov/docs/fy16osti/65298.pdf>.
- 2) Annual generation potential (TWh/year) obtained from Table 3 in NREL's 2016 report "Rooftop Solar Photovoltaic Technical Potential in the United States: A Detailed Assessment"; Comparative year-to-date net generation data for residential sector PV for 2017 obtained from Table 1.17.b in EIA's February 2018 Electric Power Monthly. For this Throwing Shade update, we used December 2017 year-to-date generation data rather than installed capacity data, because updated capacity data was unavailable for Georgia and Michigan.
- 3) Ibid.
- 4) Kim, H-J, R. Cross, and B. Fanshaw. 2017. Blocking the Sun: Utilities and Fossil Fuel Interests that are Undermining American Solar Power. Frontier Group and Environment America Research & Policy Center. Available at: <https://environmentamerica.org/sites/environment/files/reports/AME%20BlockingTheSun%20Nov17%201.2.pdf>.
- 5) Annual generation potential (TWh/year) obtained from Table 3 in NREL's 2016 report "Rooftop Solar Photovoltaic Technical Potential in the United States: A Detailed Assessment"; Comparative year-to-date net generation data for residential sector PV for 2017 obtained from Table 1.17.b in EIA's February 2018 Electric Power Monthly. For this Throwing Shade update, we used December 2017 year-to-date generation data rather than installed capacity data, because updated capacity data was unavailable for Georgia and Michigan.
- 6) Gagnon, P., Margolis, R., Melius, J., Phillips, C., and Elmore, R. 2016. Rooftop Solar Photovoltaic Technical Potential in the United States: A Detailed Assessment. (Rep. No. NREL/TP-6A20-65298). Retrieved from National Renewable Energy Laboratory website: <http://www.nrel.gov/docs/fy16osti/65298.pdf>.
- 7) North Carolina Clean Energy Technology Center. 2018. DSIRE Database: Texas page. Available at: <http://programs.dsireusa.org/system/program?fromSir=0&state=TX>.
- 8) Pyper, J. GTM Research. "New Tariffs to Curb US Solar Installations by 11% Through 2022," January 23, 2018. Available at: <https://www.greentechmedia.com/articles/read/tariffs-to-curb-solar-installations-by-11-through-2022#gs.Mqivdh8>.
- 9) Peskoe, A. 2016. Unjust, Unreasonable, and Unduly Discriminatory: Electric Utility Rates and the Campaign Against Rooftop Solar. Texas Jrl. Of Oil, Gas and Energy Law. 101.
- 10) Kim, H-J, R. Cross, and B. Fanshaw. 2017. Blocking the Sun: Utilities and Fossil Fuel Interests that are Undermining American Solar Power. Frontier Group and Environment America Research & Policy Center. Available at: <https://environmentamerica.org/sites/environment/files/reports/AME%20BlockingTheSun%20Nov17%201.2.pdf>.

- 11) Biello, D. 2014. Solar Wars. Scientific American. 311(5): 66-71. Available at: <https://www.nature.com/scientificamerican/journal/v311/n5/full/scientificamerican1114-66.html>.
- 12) Kim, H-J, R. Cross, and B. Fanshaw. 2017. Blocking the Sun: Utilities and Fossil Fuel Interests that are Undermining American Solar Power. Frontier Group and Environment America Research & Policy Center. Available at: <https://environmentamerica.org/sites/environment/files/reports/AME%20BlockingTheSun%20Nov17%201.2.pdf>.
- 13) Gagnon, P., Margolis, R., Melius, J., Phillips, C., and Elmore, R. 2016. Rooftop Solar Photovoltaic Technical Potential in the United States: A Detailed Assessment. (Rep. No. NREL/TP-6A20-65298). Retrieved from National Renewable Energy Laboratory website: <http://www.nrel.gov/docs/fy16osti/65298.pdf>.
- 14) Steward, D. et al. 2014. The Effectiveness of State-Level Policies on Solar Market Development in Different State Contexts. National Renewable Energy Laboratory. Available at: <https://www.nrel.gov/news/press/2014/8307.html>.
- 15) Barbose, G.L. 2017. U.S. Renewables Portfolio Standards: 2017 Annual Status Report. Lawrence Berkeley National Laboratory. Available at: <https://emp.lbl.gov/publications/us-renewables-portfolio-standards-0>.
- 16) Wiser, R.H. et al. 2016. A Retrospective Analysis of the Benefits and Impacts of U.S. Renewable Portfolio Standards. Lawrence Berkeley National Laboratory. Available at: <https://emp.lbl.gov/publications/retrospective-analysis-benefits-and>.
- 17) Ibid.
- 18) Rogers, J. and L. Wisland. 2014. Solar Power on the Rise: The Technologies and Policies behind a Booming Energy Sector. Union of Concerned Scientists. Available at: <https://www.ucsusa.org/sites/default/files/attach/2014/08/Solar-Power-on-the-Rise.pdf>.
- 19) Durkay, J. 2017. State Renewable Portfolio Standards and Goals. Webpage. National Conference of State Legislatures. Available at: <http://www.ncsl.org/research/energy/renewable-portfolio-standards.aspx>.
- 20) Darghouth, N.R. et al. 2015. Net Metering and Market Feedback Loops: Exploring the Impact of Retail Rate Design on Distributed PV Deployment. Lawrence Berkeley National Laboratory. Available at: http://utilityscsolar.lbl.gov/sites/all/files/lbnl-183185_0.pdf.
- 21) Rogers, J. and L. Wisland. 2014. Solar Power on the Rise: The Technologies and Policies behind a Booming Energy Sector. Union of Concerned Scientists. Available at: <https://www.ucsusa.org/sites/default/files/attach/2014/08/Solar-Power-on-the-Rise.pdf>.
- 22) National Conference of State Legislators. 2017. State Net Metering Policies: Policy Overview. Webpage. Available at: <http://www.ncsl.org/research/energy/net-metering-policy-overview-and-state-legislative-updates.aspx>.
- 23) North Carolina Clean Energy Technology Center. 2017. Database of State Incentives for Renewable Energy (DSIRE). Detailed Summary Maps: Net Metering: November 2017. Available at: http://ncsolarcen-prod.s3.amazonaws.com/wp-content/uploads/2017/11/DSIRE_Net_Metering_November2017.pdf.
- 24) Hledik, R, J. Lazar, and L. Schwartz. 2016. Distribution System Pricing with Distributed Energy Resources. Lawrence Berkeley National Laboratory. Available at: https://emp.lbl.gov/sites/all/files/feur_4_20160518_fin-links2.pdf.

- 25) Muro, M. and D. Saha. 2016. Report: Rooftop solar: Net metering is a net benefit. Brookings Institution. Available at: <https://www.brookings.edu/research/rooftop-solar-net-metering-is-a-net-benefit/>.
- 26) Peskoe, A. 2016. Unjust, Unreasonable, and Unduly Discriminatory: Electric Utility Rates and the Campaign Against Rooftop Solar. Texas Journal of Oil, Gas and Energy Law. 101.
- 27) Frontier Group and Environment America Research and Policy Center report “Shining Rewards”, Available at: <https://environmentamericacenter.org/sites/environment/files/reports/AME%20ShiningRewards%20Rpt%20Oct16%201.1.pdf>.
- 28) Muro, M. and D. Saha. 2016. Report: Rooftop solar: Net metering is a net benefit. Brookings Institution. Available at: <https://www.brookings.edu/research/rooftop-solar-net-metering-is-a-net-benefit/>.
- 29) Kim, H-J, R. Cross, and B. Fanshaw. 2017. Blocking the Sun: Utilities and Fossil Fuel Interests that are Undermining American Solar Power. Frontier Group and Environment America Research & Policy Center. Available at: <https://environmentamerica.org/sites/environment/files/reports/AME%20BlockingTheSun%20Nov17%201.2.pdf>.
- 30) Ibid.
- 31) Muro, M. and D. Saha. 2016. Report: Rooftop solar: Net metering is a net benefit. Brookings Institution. Available at: <https://www.brookings.edu/research/rooftop-solar-net-metering-is-a-net-benefit/>.
- 32) Frontier Group and Environment America Research and Policy Center report “Shining Rewards”, available at <https://environmentamericacenter.org/sites/environment/files/reports/AME%20ShiningRewards%20Rpt%20Oct16%201.1.pdf>.
- 33) Ibid.
- 34) North Carolina Clean Energy Technology Center. 2017. Database of State Incentives for Renewable Energy (DSIRE). Detailed Summary Maps: Net Metering: November 2017. Available at: http://ncsolarcen-prod.s3.amazonaws.com/wp-content/uploads/2017/11/DSIRE_Net_Metering_November2017.pdf.
- 35) Proudlove, A., B. Lips, D. Sarkisian, and A. Shrestha. 2017. 50 States of Solar: Q4 2016 Quarterly Report & 2017 Annual Review Executive Summary. North Carolina Clean Energy Technology Center. Available at: https://nccleantech.ncsu.edu/wp-content/uploads/Q42016_ExecSummary_v.3.pdf.
- 36) Proudlove, A., B. Lips, D. Sarkisian, and A. Shrestha. 2018. 50 States of Solar: Q4 2017 Quarterly Report & 2017 Annual Review Executive Summary. North Carolina Clean Energy Technology Center. Available at: https://nccleantech.ncsu.edu/wp-content/uploads/Q4-17_SolarExecSummary_Final.pdf.
- 37) Ibid.
- 38) Ibid.
- 39) Pyper, J. December, 2016. “Arizona Vote Puts an End to Net Metering for Solar Customers.” Greentech Media. Available at: <https://www.greentechmedia.com/articles/read/arizona-vote-puts-an-end-to-net-metering-for-solar-customers>.

- 40) Knox, A. August 28, 2017. "State announces solar net-metering deal," Deseret News. Available at: <https://www.deseretnews.com/article/865687684/State-announces-solar-net-metering-deal.html>.
- 41) Muro, M. and D. Saha. 2016. Report: Rooftop solar: Net metering is a net benefit. Brookings Institution. Available at: <https://www.brookings.edu/research/rooftop-solar-net-metering-is-a-net-benefit/>.
- 42) Shogren, E. June 19, 2017. "Nevada Governor Signs Law to Revive Rooftop Solar Industry." High Country News. Available at: <https://www.hcn.org/articles/nevada-governor-signs-law-to-revive-rooftop-solar-industry>.
- 43) Hughlett, M. December 17, 2017. "Minnesota's solar garden program takes off in 2017," Minnesota Star Tribune. Available at: <http://www.startribune.com/minnesota-s-solar-garden-program-takes-off-in-2017/464428133/>.
- 44) Shared Renewables HQ Website: Minnesota. Accessed April 11, 2018. Available at: <http://www.sharedrenewables.org/community-energy-projects/>.
- 45) Sheehan, M.T. 2008. Utility External Disconnect Switch: Practical, Legal, and Technical Reasons to Eliminate the Requirement. Interstate Renewable Energy Council (IREC). Pg. iii. Available at: http://www.solarabcs.org/about/publications/reports/ued/pdfs/ABCS-05_studyreport.pdf.
- 46) IREC and Vote Solar. 2017. Freeing the Grid: Best Practices in State Net Metering Policies and Interconnection Procedures. Available at: <http://freeingthegrid.org/>.
- 47) Munsell, M. July 29, 2015. "72 Percent of US Residential Solar Installed in 2014 Was Third-Party Owned," Greentech Media. Available at: https://www.greentechmedia.com/articles/read/72-of-us-residential-solar-installed-in-2014-was-third-party-owned#gs.8g_xXAU.
- 48) Solar Energy Industries Association (SEIA). 2018. Webpage: Third Party Solar Financing. Available at: <https://www.seia.org/initiatives/third-party-solar-financing>.
- 49) Installed residential solar capacity data comes from U.S. Energy Information Administration's Table 1.17.a "Net Generation from Solar Photovoltaics by State by Sector" spreadsheet for January 2018, found at <https://www.eia.gov/state/notes-sources.php#data-env-sp>.
- 50) Gagnon, P., Margolis, R., Melius, J., Phillips, C., and Elmore, R. 2016. Rooftop Solar Photovoltaic Technical Potential in the United States: A Detailed Assessment. (Rep. No. NREL/TP-6A20-65298). Retrieved from National Renewable Energy Laboratory website: <http://www.nrel.gov/docs/fy16osti/65298.pdf>.
- 51) Gilpin, L. April 6, 2017. "Why Alabama Still Lags the Rest of the Southeast on Solar," Energy News Network. Available at: <https://energynews.us/southeast/why-alabama-still-lags-the-rest-of-the-southeast-on-solar/>.
- 52) Schlissel, D. 2015. Report: "Left in the Dark: How the Alabama Public Service Commission Makes Customers Pay Billions of Dollars for Alabama Power Investments without Any Meaningful Public Review or Involvement," Institute for Energy Economics and Financial Analysis. Available at: <http://ieefa.org/how-the-alabama-power-commission-keeps-its-ratepayer-public-in-the-dark/>.
- 53) Ibid.

- 54) Kasper, M. 2016. "Florida Power Companies Continue to Spend Money Supporting Amendment 1 to Limit Solar," Energy and Policy Institute. Available at: <http://www.energyandpolicy.org/florida-amendment-1/>.
- 55) Klas, M-E. November 8, 2016. "Florida voters say no to misleading solar amendment," Miami Herald. Available at: <http://www.miamiherald.com/news/politics-government/election/article113449438.html>.
- 56) Kormann, C. February 17, 2015. "Greening the Tea Party," The New Yorker. Available at: <https://www.newyorker.com/tech/elements/green-tea-party-solar>.
- 57) Hopkins, E. and S. Bowman. November 6, 2017. "Indiana politicians got thousands in gifts while pushing solar policy," IndyStar. Available at: <https://www.indystar.com/story/news/2017/11/06/solar-panels-law-passed-lobbyists-net-metering/820792001/?from=new-cookie>.
- 58) Data from The Solar Jobs Census by Solar Foundation, as reported by: Hopkins, E. Feb. 7, 2018. "Indiana added 93 percent fewer solar jobs in 2017," IndyStar. Available at: <https://www.indystar.com/story/news/2018/02/07/report-indiana-added-93-percent-fewer-solar-jobs-2017/312862002/>.
- 59) Solar Energy Industries Association (SEIA). April 13, 2015. "Press Release: Popular State Incentive Helps to Drive Louisiana Solar Growth." Available at: <https://www.seia.org/news/popular-state-incentive-helps-drive-louisiana-solar-growth>.
- 60) NC Clean Energy Technology Center. Database of State Incentives for Renewables and Efficiency: Tax Credit for Solar Energy Systems on Residential Property (Personal). Accessed April 11, 2018. Available at: <http://programs.dsireusa.org/system/program/detail/2636>.
- 61) Ibid.
- 62) Solar Energy Industries Association. 2018. See "Louisiana Annual PV Forecast" chart at: <https://www.seia.org/state-solar-policy/louisiana-solar>.
- 63) "Avoided Cost" is the minimum amount an electric utility is required to pay an independent power producer, equal to the costs the utility calculates it avoids in not having to produce that power. It is usually substantially less than the retail price charged by the utility for electricity it sells.
- 64) Sierra Club comments, January 29, 2018. "Re: LPSC DOCKET NO. Docket No. R-33929, In Re: Review of Policies related to customer-owned solar generation and possible modification of the commission's current net metering rules," Available at: <http://lpscstar.louisiana.gov/star/ViewFile.aspx?Id=576240ce-d054-4a0d-a3fc-01c01de66c32>.
- 65) Roselund, C. January 30, 2018. "Solar advocates push back against proposal to gut net metering in Louisiana." Available at: <https://pv-magazine-usa.com/2018/01/30/solar-advocates-push-back-against-proposal-to-gut-net-metering-in-louisiana/>.
- 66) Solar Energy Industries Association. December 14, 2017. Factsheet: Solar Spotlight: Oklahoma. Available at: https://www.seia.org/sites/default/files/2017-12/Federal_2017Q3_Oklahoma.pdf.

- 67) As reported by Southern Alliance for Clean Energy. December 4, 2017. “Poll: Majority of Tennessee Voters Support Solar and Oppose Fixed Charges on Bill or Restrictions to Customer Choice. Footprints blog. Available at: <http://blog.cleanenergy.org/2017/12/04/poll-majority-of-tennessee-voters-support-solar-and-oppose-fixed-charges-on-bill-or-restrictions-to-customer-choice/>.
- 68) Tennessee Valley Authority website. Green Power Providers Frequently Asked Questions page. Accessed April 11, 2018. Available at: <https://www.tva.gov/Energy/Valley-Renewable-Energy/Green-Power-Providers/Frequently-Asked-Questions>.
- 69) Roselund, C. March 16, 2018. “TVA proposes rate structure to hobble rooftop solar,” PV-Magazine USA. Available at: <https://pv-magazine-usa.com/2018/03/16/tva-proposes-rate-structures-to-hobble-rooftop-solar/>.
- 70) Paulos, B. May 12, 2014. “Can the Texas Solar Market Live Up to Its Potential?” Available at: <http://www.greentechmedia.com/articles/read/that-mean-old-texas-sun>.
- 71) Pierobon, J. March 16, 2017. “Virginia ‘community solar’ plan leaves out the ‘community’, advocates say.” Available at: <https://energynews.us/southeast/virginia-community-solar-plan-leaves-out-the-community-advocates-say/>.
- 72) As reported by Oleksiw, Z. February 1, 2018. “Michigan Poll Shows Strong Bipartisan Support for Solar Energy Development,” Available at: <https://votesolar.org/usa/michigan/updates/michigan-poll-strong-support-solar/>.