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Solar Information for Consumers

A Guide for States

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SUSTAINABLE SOLAR EDUCATION PROJECT



 Powered by
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ABOUT THIS GUIDE AND THE SUSTAINABLE SOLAR EDUCATION PROJECT

Solar Information for Consumers: A Guide for States is one of six program guides being produced by the Clean Energy States Alliance (CESA) as part of its Sustainable Solar Education Project. The project aims to provide information and educational resources to help states and municipalities ensure that distributed solar electricity remains consumer friendly and its benefits are accessible to low- and moderate-income households. In addition to publishing program guides, the Sustainable Solar Education Project will produce webinars, an online course, a monthly newsletter, and in-person training on topics related to strengthening solar accessibility and affordability, improving consumer information, and implementing consumer protection measures regarding solar photovoltaic (PV) systems. More information about the project, including a link to sign up to receive notices about the project's activities, can be found at www.cesa.org/projects/sustainable-solar.



ABOUT THE U.S. DEPARTMENT OF ENERGY SUNSHOT INITIATIVE

The U.S. Department of Energy SunShot Initiative is a collaborative national effort that aggressively drives innovation to make solar energy fully cost-competitive with traditional energy sources before the end of the decade. Through SunShot, the Energy Department supports efforts by private companies, universities, and national laboratories to drive down the cost of solar electricity to \$0.06 per kilowatt-hour. Learn more at www.energy.gov/sunshot.

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SECTION 1

Why States Should Focus on Consumer Information

States have an increasingly important opportunity to present the public with sound, unbiased, user-friendly information on solar energy. This guide, prepared by the Clean Energy States Alliance (CESA), explains why states should provide consumer information on solar, describes the types of information that can be useful, and points out existing educational efforts by states and other entities that provide models and useful resource information. Although the focus of the guide is on educational efforts by states, its messages and approaches can apply to municipalities, counties, and municipal utilities that want to provide consumers with information on solar.

This year, hundreds of thousands of solar photovoltaic (PV) systems will be installed at homes, businesses, and institutions. No matter if the consumer acquires the system through a purchase, a lease, or a power purchase agreement (PPA), it represents a major financial decision. Very few consumers are energy experts, and most have no direct experience installing PV systems. To ensure that they make appropriate decisions, they need sound information.

Just as consumers need good information when making other large purchases, such as buying a car or renovating a home, solar consumers need information they can trust. With traditional products, there are familiar well-established brands and easily accessible product review websites, which include ratings by experts and feedback from large numbers of consumers for those products. Moreover, states and the federal governments have developed many specific consumer protection measures. In the case of automobiles, for example, most states have “lemon laws” that cover new cars and some states have laws that apply to used cars. For financial products, such as automobile leases, there are often standardized disclosure forms that make it easy to make comparisons between the offerings from different lenders.

In the absence of such consumer protection mechanisms for solar, solid information is essential. There are also other reasons why states should consider providing information for consumers on solar:

- Many states have policies and incentive programs to encourage solar development. States can support those policies and programs by offering unbiased information that facilitates good decision making by consumers.

- If states do not provide information for solar consumers proactively, they may expend more resources responding to individual inquiries about solar technology providers, questions about solar financing options, or redressing problems concerning solar purchases.
- While the advent of leases and PPAs in many states helped fuel the rapid growth in the number of solar installations, it also made consumers' decisions more complex. Consumers can have difficulty understanding and evaluating all the provisions in the contracts they are offered. They may not know about contract provisions that would be beneficial to them or how to make sure they are included. A state energy agency or consumer protection agency can provide unbiased information and serve as a trusted resource to help consumers understand and evaluate the different financing options.
- Although most solar installation companies seek to deal with prospective customers professionally and appropriately, there have been instances of overly aggressive or misleading marketing and sales tactics, which can negatively impact the public's perception and acceptance of solar technologies.
- Solar PV equipment and installation quality can vary, especially because of the technical complexities of the systems. Better education can help customers know about the choices in terms of equipment quality and function, encourage them to obtain multiple quotes when shopping for a system, enable them to ask better questions of their installers, and better prepare them for maintenance and use of their system after installation.
- It can be difficult to quantify with precision the costs and benefits of a solar installation. It is therefore extremely important for consumers to understand the economic assumptions made by installers providing an estimate for a system. Providing guidance about questions to ask and the factors to consider, such as possible future changes to electricity rates and net metering policies, can help customers better understand the risks and financial consequences of their decisions.
- States have an interest in maintaining a robust, competitive, and fair marketplace for solar businesses.

Accurate, unbiased information from the state can give consumers much greater confidence in their PV purchasing decisions.

Relatively few people who have invested in solar PV have been unhappy with their purchase. But as the industry grows and new players enter the market, it is important that all are held to a high standard so that solar energy does not lose public support. If consumers feel that the equipment they purchased does not perform as advertised, or if they feel misled by unreliable vendors and service providers, that will negatively impact solar's market transformation potential. Sound, user-friendly information can limit the number of dissatisfied customers. State government agencies are in an especially good position to provide such information, because they can be impartial and do not have a vested interest in having a consumer make one type of solar-related choice over another. Accurate, unbiased information from the state can give consumers much greater confidence in their decisions.

SECTION 2

Six Recommendations for Producing Effective Consumer Information on Solar

1. PRESENT SOLAR IN AN EVEN-HANDED MANNER

Currently, there is considerable information available on the internet that is highly favorable to solar and encourages consumers to adopt it. Much of the information comes from solar companies that are trying to make sales or from environmental advocacy groups with a strong commitment to solar development. Solar does indeed have many benefits: it has fewer environmental impacts than most other sources of electricity and consumers may be able to save money—either in the short-run or the long-run—by installing it. For these reasons and more, solar is highly popular with the public.¹

A potential solar consumer is therefore likely to come to a state's consumer information web page with the assumption that it would be desirable to install or invest in a solar energy system. States should not shy away from enumerating the reasons why it may make sense to go solar. But they should also explain why solar might not be a sound choice in some cases. There are specific reasons why solar might not be appropriate, based on the location or surroundings of an individual's home, financial status, energy usage, or future plans to relocate.

Even if solar is the right choice, a consumer or business should proceed only after careful consideration of available options, including different installation companies, ownership models, and financing. States can help consumers understand the need for caution and the range of questions to ask before making a final decision.

States should aim to help consumers make the best choices. In that way, there will continue to be high public support for solar development in the United States.

2. MAKE SOLAR CONSUMER INFORMATION EASY TO UNDERSTAND, VISUALLY APPEALING, AND EASY TO USE

Most consumers are used to finding product information on commercial websites where the headlines are large, the content is divided into easily digestible portions, and there are many

¹ Many public opinion studies have found solar to have strong support from the American public. For example, a survey conducted by the Pew Research Center in mid-2016 found that 89 percent of Americans support expanding the number of "solar panel farms," while only 9 percent oppose doing so. See Cary Funk and Brian Kennedy, *The Politics of Climate* (Washington, Pew Research Center, 2016), p. 53, www.pewinternet.org/2016/10/04/the-politics-of-climate/

pictures and graphics. In contrast, many state government websites can seem dull, dense, and hard to navigate. In some cases, information is presented in an impenetrable bureaucratic style.

To increase the likelihood that consumers will read and use solar consumer information, states should emulate the format and appearance of the best websites. Even if the solar information must fit into an unalterable state website design that doesn't have the flexibility to vary headline sizes, photo placement, or overall appearance, there are ways to ensure that readers find the information accessible and user friendly:

- Separate the information for consumers on its own web page. Don't mix it in with more technical specifications for installers, program descriptions for grant applicants, or other material that is not relevant to a consumer audience.
- Speak directly to consumers in a clear, direct manner that assumes the reader has no prior knowledge of solar installations.
- Where appropriate, include short lists of key points so that readers focus on the most important information.
- Divide the material into short topics and have links or anchors to each section so that consumers do not need to scroll through a long document to find the specific information they are looking for. This approach also has the virtue of highlighting for consumers the range of topics they may want to learn about.
- On the other hand, it can also be useful to compile the information into a single, well-organized document for those consumers who prefer that format or want to print a document to keep as a reference.

3. DEVOTE AS MUCH EFFORT TO DISSEMINATION AS TO MATERIALS DEVELOPMENT

The best information does little good if potential solar customers don't know about it. For that reason, it is important to develop and implement a strategy for ensuring that the public is aware of and can find the information that they are looking for.

A few states have been successful in creating and marketing a stand-alone solar website like California has done with *Go Solar California* (www.gosolarcalifornia.org) and the Connecticut Green Bank has done with *GoSolarCT* (www.gosolarct.com). Stand-alone websites not only provide flexibility in terms of website design and keep the focus solely on solar, but they create an easy-to-remember brand that can be marketed widely.

If that approach is not practical, there are still ways to draw solar customers to the solar consumer information that is embedded in a larger state agency website:

- Implement a media outreach strategy to let the press know about the availability of high-quality, unbiased solar information on the state website.
- Encourage utilities, municipalities, solar installers, solar advocates, energy organizations, and consumer groups to link to and promote the state's solar consumer information.

- Implement search engine optimization (SEO) techniques.
- Provide links to the solar consumer information web pages or documents on materials that describe state solar rebates, tax credits, or other incentives.
- Include a prominent link to the solar consumer information section from the agency home page.

4. DESCRIBE THE STATE'S DIRECT INVOLVEMENT IN SOLAR

Most consumers will expect a state to provide clear information about state policies related to solar, and how those policies could affect potential solar customers. It is best to put all this information in one location, including any relevant state laws, tax credits, incentives, and programs. This is especially important now when the regulatory landscape for solar is changing in many states; consumers could become confused if they cannot easily find the latest rules and regulations.

If different agencies have responsibilities for different solar and/or consumer protection policies, try to make things easy for consumers by cross-referencing links and creating a single comprehensive repository of information.

Even though permitting may be a local responsibility and interconnection may involve utilities rather than the state, it is still important to cover these topics, because consumers may not realize where the responsibility lies and may look to the state for information.

Federal tax credits also fall outside a state's purview, but it is good to provide information about them, because consumers may not understand the relevance of the tax credits and because it is useful to give a full picture of relevant government solar policies.

5. GIVE HIGH PRIORITY TO SOLAR FINANCING

The emergence of solar leases and PPAs has played a big role in fueling the rapid growth of solar installations. In many states, more than half of the homeowners who recently installed solar have used one of these financing mechanisms, both of which involve third-party ownership of the system. But it is not easy for consumers to choose the best lease or PPA. They can have difficulty understanding and evaluating all the provisions in the contracts they are offered. Some contracts may lack transparency and have hidden costs.

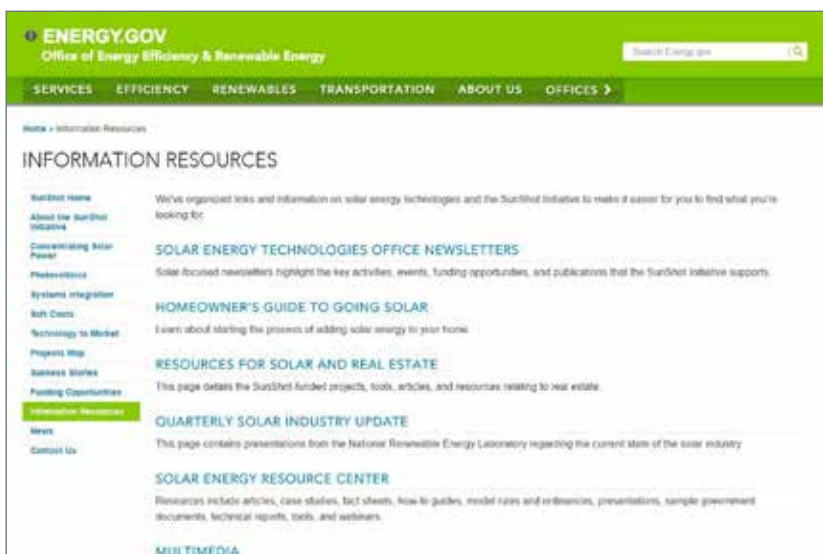
Because leases and PPAs do not require a large amount of money upfront, some consumers do not realize how significant a financial decision they are making and do not weigh their options carefully. They may sign whichever agreement is first offered to them, so long as it promises immediate reduction in their electricity bills.

Consumers also benefit from knowing about the availability of solar loans, which are becoming an increasingly common financing option. Such loans have their own set of advantages and disadvantages.

States can provide information for consumers about the types of finance options available, guide them to the best options for their financial circumstances, and help them know which questions to ask lenders or installers before making a final decision.

6. DRAW ON PRE-EXISTING RESOURCES

A state that wants to expand its solar consumer information offerings does not need to start from scratch. Other states, the U.S. Department of Energy (DOE), the National Renewable Energy Laboratory (NREL), utilities, the Solar Energy Industries Association, universities, nonprofit organizations, and commercial websites have all produced useful resources. In most cases, these organizations will allow the state agency to link to their materials on their websites. They sometimes are willing to have a state agency adapt or duplicate the materials. The latter sections of this report describe many relevant resources that are available at this time, but new information emerges frequently.



SECTION 3

Topics for Solar Consumer Information

There are many solar topics that states can address in their consumer information. Different topics are relevant in different situations, and few states will want to or need to produce materials on all possible topics. Here is a relatively comprehensive list for states to choose from:

WHAT IS A SOLAR PV SYSTEM?

- How the technology works
- Components of a typical system
- Different types of PV systems
- Solar+storage—the advantages and disadvantages of including battery storage with a PV system
- The advantages and disadvantages of different modules, inverters, mounting, and battery systems
- How/if the PV system will function during a grid power outage
- Safety issues, including fire safety
- System maintenance

IS SOLAR RIGHT FOR YOU?

- Reasons why people go solar
- Deciding whether to invest in a PV system, including reasons why it may not make sense to proceed with solar
- The relationship between energy efficiency and solar

- Whether a building is right for solar
- Information and tools for estimating appropriate PV system size
- Information and tools for quantifying the potential environmental and financial benefits of a PV system
- Community solar—questions consumers should ask when considering community solar rather than onsite installation

FINANCING A PV SYSTEM

- The differences between solar leases, loans, and PPAs, with the advantages and disadvantages of each
- Questions to ask before entering into a solar financing agreement

THE SOLAR MARKET IN THE STATE AND MARKET TRENDS

- Statistics and other information on solar capacity and specific solar installations in the state
- Solarize and other solar purchase aggregation programs
- Materials on specific market segments, such as condominium owners, renters, and low-income households

SOLAR INCENTIVES AND REGULATIONS

- The federal investment tax credit and how to determine eligibility
- State tax credits, rebate programs, and other solar incentives
- State and federal laws that impact solar installations

SOLAR RIGHTS AND ZONING REGULATIONS

- Permitting and interconnection—what they are and how to arrange for them
- Renewable energy certificates (RECs) and who owns the environmental attributes from a PV system
- Net metering and how solar PV impacts a consumer's utility bill



HOW TO CHOOSE A SOLAR CONTRACTOR

- A list of solar installation companies in the state
- Reviews/ratings of installation companies, if available
- What to look for in a solar installation contract
- Warranties and insurance
- A PV project checklist

KNOW YOUR RIGHTS

- State and federal consumer protection measures
- How to report problematic solar marketing or problems with an installation

OTHER USEFUL RESOURCES

- (list other resources specific to a region or state)

SECTION 4

Models to Consider

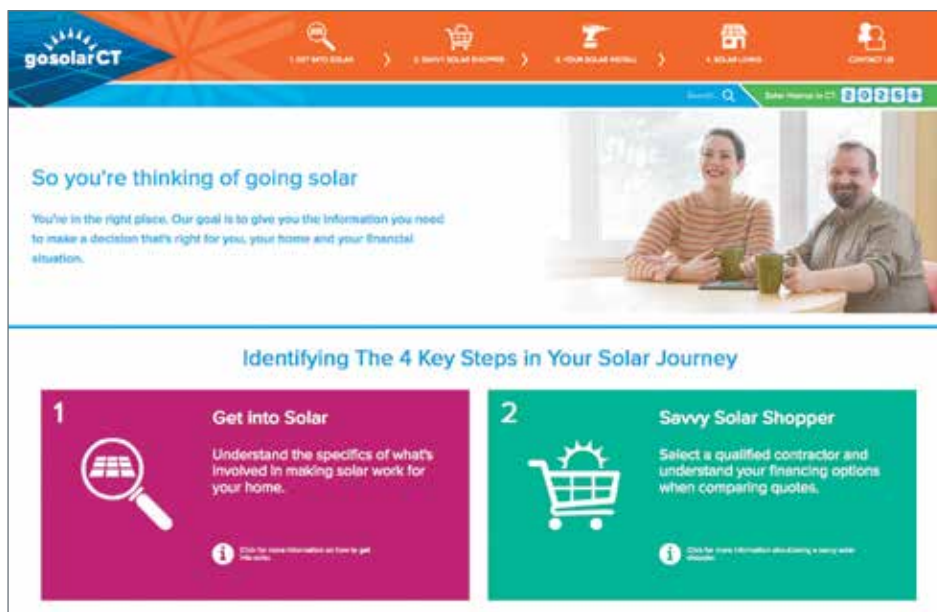
In this section, we highlight a few state websites and documents that provide models to consider emulating. These are not the only high-quality materials that states have produced, but they represent good examples of key types of websites and materials. Relevant resources from DOE, NREL, universities, and the private sector are included in the following section.

1. A DEDICATED SOLAR CONSUMER INFORMATION WEBSITE

www.gosolarct.com

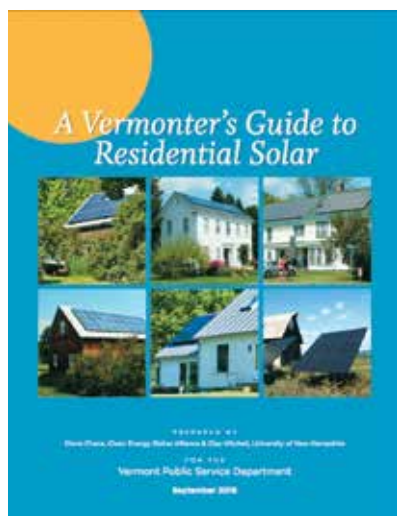
This is the ideal approach, but it is not practical in all cases. It requires a state agency with the authority to set up a stand-alone website and the resources to put into major website development, marketing, and maintenance. States with limited resources may be able to partner with other entities that have an impartial presence in the solar market.

The best example of a state solar information website is the Connecticut Green Bank's *GoSolarCT*. It is well-organized, inviting, and non-intimidating. By dividing the entire site into four big topics (Get into Solar, Savvy Solar Shopper, Your Solar Installation, and Solar Living), direct access to needed information makes it easier to decide whether to go solar.



The site also features a six-minute video that walks through the steps in the installation process (https://www.youtube.com/embed/_2zwVc_pQgg), as well as a list of all Connecticut solar contractors that have met the minimum eligibility requirements of the Green Bank's Residential Solar Investment Program. The list includes profile information and links to the companies' websites. The Green Bank launched the current version of the site in July 2016. The commercial solar marketing firm EnergySage (see below) is a partner in the website.

GoSolarCT gives users an option to "Compare Solar Quotes," which takes consumers to the EnergySage marketplace and links to the contractors that participate in that marketplace. Ideally, a state should allow all licensed solar contractors to be included. The site would also benefit from greater emphasis on the circumstances in which it does not make sense to install solar. The Connecticut Green Bank has indicated that it will continue to add to and improve the website.



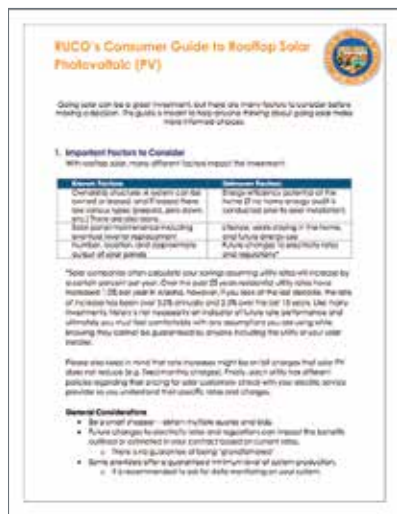
2. A COMPREHENSIVE GUIDE

http://publicservice.vermont.gov/sites/dps/files/documents/Renewable_Energy/Vt%20Guide%20to%20Residential%20Solar%202016.pdf

The Vermont Public Service Department recently published *A Vermonter's Guide to Residential Solar*, which is an effort to put all the information Vermonters need about solar into a single 50-page publication. It starts with "10 key things to remember if you're thinking about solar." A strong effort was made to be even-handed and to present information in a way that assumes the reader has no prior knowledge of solar.

The guide advises readers that they may want to use it as a reference work and to read relevant sections as appropriate, rather than trying to read it from cover to cover. However, it would be better if, in addition to having this thorough document, the same information was also placed on a website in bite-sized pieces with links to each piece.

CESA was involved in preparing the Vermont guide and is willing to work with state agencies that want to create a version tailored to their state.



3. A BRIEF, LOW-BUDGET GUIDE

https://ruco.az.gov/sites/default/files/Consumer%20Guide%201%201_1.pdf

A state doesn't need to cover all topics or spend a lot of money on materials development to produce a useful document for consumers. However, it is important not to skimp on marketing the document or the target audience won't learn of its existence.

Arizona's Residential Utility Consumer Office (RUCO), produced the three-page *RUCO's Consumer Guide to Rooftop Solar Photovoltaic (PV)*. Although brief, it covers a lot of ground, including factors a consumer should consider before purchasing a system, how having a system affects a homeowner's relationship to the electricity grid, and guidance on choosing an installer. It includes bulleted lists of key points for consumers to consider.

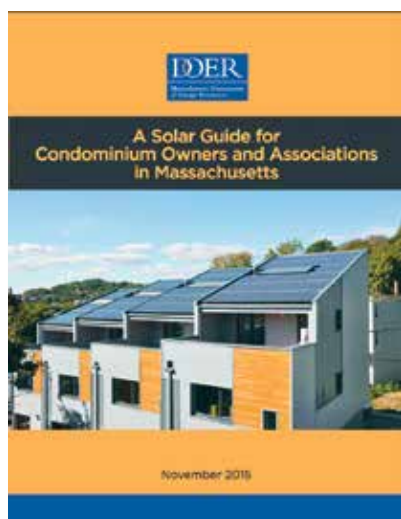
4. A FOCUS ON SOLAR FINANCING

www.emnrd.state.nm.us/ECMD/RenewableEnergy/documents/NMGuidetoSolarFinancing.pdf

In 2015, the New Mexico Energy, Minerals and Natural Resources Department published *A New Mexico Homeowner's Guide to Solar Leases, Loans, and Power Purchase Agreements*. The guide explains what each of the financing options is, defines common terms, and identifies some of the advantages and disadvantages of each option. It is a state-specific version of a guide that CESA published, *A Homeowner's Guide to Solar Financing* (see, www.cesa.org/resource-library/resource/a-homeowners-guide-to-solar-financing-leases-loans-and-ppas). A Spanish language version of the CESA guide is also available (see, www.cesa.org/resource-library/resource/una-guia-practica-de-financiacion-solar-para-duenos-de-casa).

Like New Mexico, the Massachusetts Department of Energy Resources and the New York State Energy Research & Development Authority have created state-specific versions of the guide. CESA is willing to work with other states to help them produce their own modified version; contact Warren Leon for more information.





5. MATERIALS ON SPECIAL TOPICS

States may find it useful to produce more specialized solar consumer information materials.

Condominium Owners and Associations

www.mass.gov/eea/docs/doer/doer-condo-guide-final.pdf

The Massachusetts Department of Energy Resources published *A Solar Guide for Condominium Owners and Associations in Massachusetts*. It covers many of the same topics as the comprehensive guides described above, but with a focus on the specific legal and financial issues related to siting solar systems at condominiums.

Community Solar

<https://mn.gov/commerce/consumers/your-home/energy-info/solar/tips-about-community-solar.jsp>

When consumers participate in a community solar project, they need to consider a different set of questions than if they were installing solar at their home. Comprehensive consumer-friendly information on this topic is only starting to become available. The Minnesota Department of Commerce website features *Tips About Community Solar* with ten questions consumers should ask before deciding to participate in a community solar project. For readers wanting additional information, it includes a link to the “Community Solar Gardens” page (www.cleanenergyresourceteams.org/solargardens) of the Clean Energy Resource Teams, a statewide partnership.



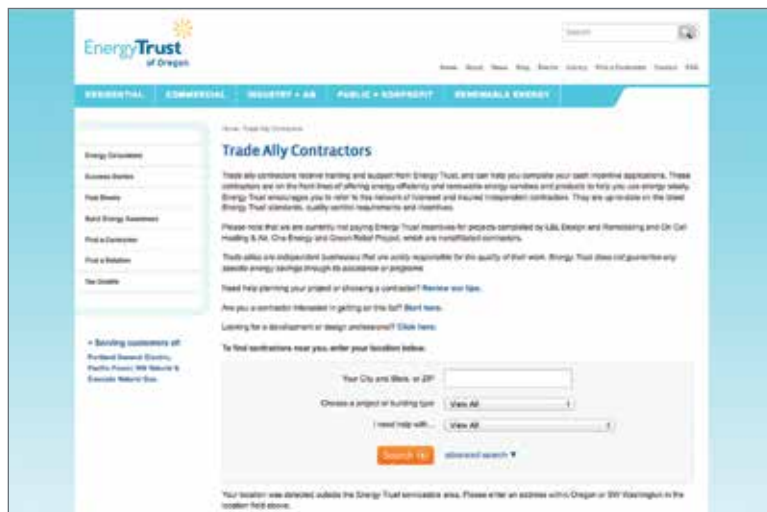
6. LIST OF SOLAR INSTALLERS

<https://energytrust.org/library/find-a-contractor>

Consumers can find it useful to see a list of the solar installation companies that operate in their location. Some states may decide to provide such a list.

Energy Trust of Oregon takes an especially helpful approach by designating *Trade Ally Contractors*. To be listed as a Trade Ally and receive referrals via Energy Trust's website, a solar contractor must participate in webinar training, meet minimum insurance requirements by submitting certificates of insurance to Energy Trust, have an active Oregon Construction Contractors Board license, and have no unresolved complaints from Energy Trust customers. Energy Trust actively promotes its Trade Ally program to consumers to give contractors a strong incentive to apply to participate. Energy Trust also plans to develop a rating system of these contractors.

Even if a state does not do the type of vetting of contractors that Energy Trust does, it can still include a list on a state agency website. However, it is important to be very clear to consumers about the nature of the list. Unless told otherwise, consumers may assume that the state is endorsing and recommending the firms that are listed.²



² States may want to consider establishing standards and/or certification for solar equipment and installers. A program guide being produced for CESA's Sustainable Energy Education Project will cover that topic. Visit www.cesa.org/projects/sustainable-solar/ for information.

7. TOOLS: SOLAR RESOURCE MAPS AND CALCULATORS

www.mapdwell.com/en/solar/dc

Solar maps can help consumers who are in the early stages of thinking about installing solar. Simple maps can show the location of existing solar installations so that consumers can get a sense of how prevalent the technology is in their locale. More sophisticated maps can help consumers estimate the solar electricity generating potential of their rooftop and compare it to that of other buildings in the community.

The District Department of Energy & Environment's *DC Solar Map* used Mapdwell Solar System, the most advanced, commercially available solar mapping system. The photographic map produced with satellite images shows every property in the District of Columbia (DC). The mapping system takes into consideration climate data, the shape of buildings, existing infrastructure, trees, electricity rates, and solar incentives to estimate how large a solar installation could be supported on the property and what the payback would be. While this information can be suggestive and useful, the *DC Solar Map* website emphasizes to users that the software-generated information represents an initial estimate and should not be a substitute for a careful on-site assessment by a solar professional. Because this sort of solar map can be expensive to develop, it is generally more feasible to produce at a city or county level than for an entire state.

A map like DC's is, in part, a sophisticated solar calculator, which allows a consumer to estimate potential savings from installing solar. States may want to recommend or incorporate into their websites a simpler calculator that allows a consumer to enter the location of a proposed PV system and the building's average monthly electricity use, and the calculator prepares an estimate of costs and financial benefits of going solar. States should proceed with caution, however, because different calculators can produce significantly different results, and some require the user to reveal their address to solar installation companies. A good calculator will be transparent by revealing its assumptions related to future utility electricity rates, installation costs, and discount rate. (See more information on NREL's *PVWatts* calculator in Section 5.)



8. SOLAR STATISTICS

www.californiasolarstatistics.ca.gov

States can let residents know about the solar capacity in the state—or in particular localities—and specific projects that have been completed. Data can reveal the extent of solar market penetration, participation in various state programs, which installers have been most active, and the size of typical projects.

A state can also provide cost information related to individual solar projects or to groups of projects in specified time periods, although some states will likely be hesitant to release such information. NREL points out reasons to do so: “Making data on installed costs publicly available can serve two purposes. First, doing so can protect solar customers who are unfamiliar with solar costs from extortive pricing. Second, making the data publicly available can help provide downward price pressure on the installer community, which should improve the likelihood of greater market penetration of solar in the future.”³

California’s ambitious and extensive website, *California Solar Statistics* is the official re-reporting site of the California Solar Initiative. It includes a wealth of information, including megawatts installed broken down by utility, county, and month. There is also information on average cost per watt, by quarter. A consumer can enter a zip code and desired radius to see a list of all projects that have been approved for interconnection in that area since mid-2015, including not only project size and cost per watt, but also the name of the contractor and the contractor’s phone number.

Most states will not have the resources to do anything as elaborate as California and some consumers may find the detailed information on *California Solar Statistics* to be overwhelming and hard to navigate, but the site illustrates the range of information that states can share with the public.



3 Lori Bird et al., *Distributed Solar Incentive Programs: Recent Experience and Best Practices for Design and Implementation* (Golden: National Renewable Energy Laboratory, December 2012), p. 38, www.nrel.gov/docs/fy13osti/56308.pdf.

SECTION 5

Other Resources

Many organizations other than states have produced materials and websites that can provide states with ideas for what they might produce and can serve as valuable resources. Here are a few examples, in alphabetical order:

**CONSUMER REPORTS**

www.consumerreports.com

Consumer Reports and its policy arm, Consumers Union, have expressed a strong interest in solar consumer protection issues. For example, a June 2016 article in *Consumer Reports* on “The Real Cost of Leasing vs. Buying Solar Panels” focused on the advantages of buying panels and the drawbacks of leasing.

**DATABASE OF STATE INCENTIVES FOR RENEWABLES & EFFICIENCY (DSIRE)**

www.dsireusa.org

This comprehensive national database is managed and maintained by the North Carolina Clean Energy Technology Center. Consumers can find information about the solar incentives and policies in their state. Because this website is used widely, state agencies should monitor it regularly to make sure that it includes the most accurate, up-to-date information on their state.



ENERGYSAGE

www.energysage.com

This commercial website is primarily an online marketplace where consumers can get solar quotes from participating installers, but it also includes informative materials that may be of interest to states. Among the interesting features is a web page that lists community solar projects that are available for subscription on a state-by-state basis.



GOOGLE PROJECT SUNROOF

www.google.com/get/sunroof

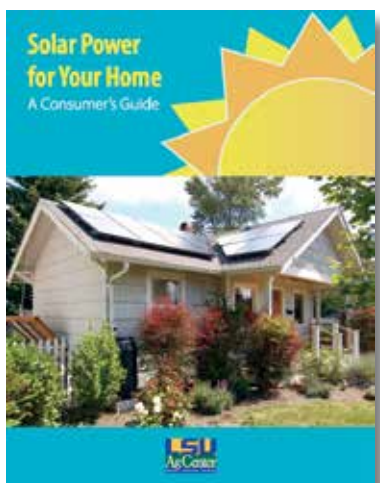
This website combines Google Earth's mapping capabilities with weather information and solar cost information to calculate a home's potential savings from solar. It is like the *DC Solar Map* described on page 18, but not quite as accurate or precise. Project Sunroof seeks to link consumers to the solar installers who are participating in this Google initiative. It is currently not available in all locations, but Google is gradually expanding its reach.



LET'S GO SOLAR

www.letsgosolar.com

This relatively new website is lively, engaging, and filled with helpful infographics. It is wide-ranging, with various solar experts having written different sections. Each section divides information into useful, easily digestible pieces. The *Let's Go Solar* editors are willing in some cases to grant states permission to use the site's graphics and information in other websites and materials. The site is an offshoot of a for-profit media group, but this is an educational site that does not seek to bring in revenue to the company directly.



LOUISIANA STATE UNIVERSITY AG CENTER SOLAR GUIDE

www.lsuagcenter.com/portals/communications/publications/publications_catalog/home%20improvement/energy/solar-power-for-your-home--a-consumers-guide

In 2015, the Louisiana State University AgCenter published *Solar Power for Your Home: A Consumer's Guide*. This comprehensive guide does not have a geographic focus and was designed to be used nationwide. An interesting feature, which highlights the important role of state incentives, is a comparison of hypothetical consumers in two different states, only one of which provides state tax credits. The Edison Electric Institute (EEI) recruited the Louisiana State University AgCenter to write the guide, with partial funding.



OPEN PV PROJECT

<https://openpv.nrel.gov>

This website managed by NREL encourages and enables the sharing of data on PV installations in the United States. Lawrence Berkeley National Laboratory provides the core dataset, which is also used in producing the annual *Tracking the Sun* report. The Open PV Project database currently comprises more than one million installations. Users can search it to identify trends in solar costs, system size, and other variables.



PVWATTS

<http://pvwatts.nrel.gov>

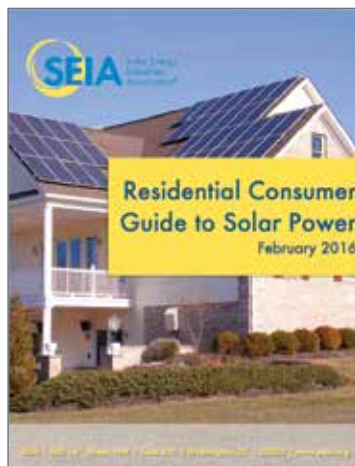
This solar calculator developed and managed by NREL estimates the electricity that could be produced by a solar installation in any location. As the site notes, users can modify the assumptions about the system's size and retail electric rates. *PVWatts* calculates the proposed system's monthly and annual electricity production, as well as the monetary value of the electricity. The default values in *PVWatts* may not adequately account for site specifics such as shading. As with all other online calculators, consumers should still have a solar installer conduct a physical site assessment and should obtain quotes and savings estimates from multiple installers.



SOLARREVIEWS

www.solarreviews.com

This website collects consumer reviews of solar installation companies and solar panels. While the number of reviews is still limited, the site is growing in popularity. The website has all the strengths and problems of other consumer review websites. Other solar company reviews are available at www.bestcompany.com/solar.



SEIA RESIDENTIAL CONSUMER GUIDE

www.seia.org/research-resources/residential-consumer-guide-solar-power

The Solar Energy Industries Association (SEIA) wrote and plans to update regularly a *Residential Consumer Guide to Solar Power*. This six-page publication covers the available financing options, contracting terms to be aware of, and related topics. Although it was not produced by a state, it is an example of the type of brief, low-cost, consumer-oriented publication that a state can produce.



SEIA STATE SOLAR POLICY PAGES

www.seia.org/policy/state-solar-policy

SEIA has developed a web page on each state, with information about the industry, solar installers, maps with notable installations, and other topics relevant to each state.



U.S. DEPARTMENT OF ENERGY HOMEOWNER'S GUIDE TO GOING SOLAR

<http://energy.gov/eere/sunshot/homeowner-s-guide-going-solar>

This web page gives concise answers to 13 questions, including: how does solar work, how do I start the process of going solar, and how will solar impact the resale value of my house? Links within each answer direct readers to additional resources.



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Clean Energy States Alliance (CESA) is a national, nonprofit coalition of public agencies and organizations working together to advance clean energy. CESA members—mostly state agencies—include many of the most innovative, successful, and influential public funders of clean energy initiatives in the country.

CESA works with state leaders, federal agencies, industry representatives, and other stakeholders to develop and promote clean energy technologies and markets. It supports effective state and local policies, programs, and innovation in the clean energy sector, with an emphasis on renewable energy, power generation, financing strategies, and economic development. CESA facilitates information sharing, provides technical assistance, coordinates multi-state collaborative projects, and communicates the views and achievements of its members.

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