



SOLAR OUTREACH PARTNERSHIP

MAKING THE CASE FOR SOLAR TOOLKIT

DECEMBER 2015



TOOLKIT SUMMARY

Distributed solar energy has benefits for residents and business owners, municipal governments, and the electric grid. For local governments, solar energy can create jobs and opportunities for local economic development while also providing environmental benefits and contributing to a changing power sector. This toolkit provides general resources on solar, focusing on myths and misconceptions and the costs and benefits of solar.

To find out more about this subject or receive complimentary technical assistance, contact the SunShot Solar Outreach Partnership by visiting <http://solaroutreach.org/ta> or emailing solar-usa@iclei.org with your request for assistance.

DISCLAIMER

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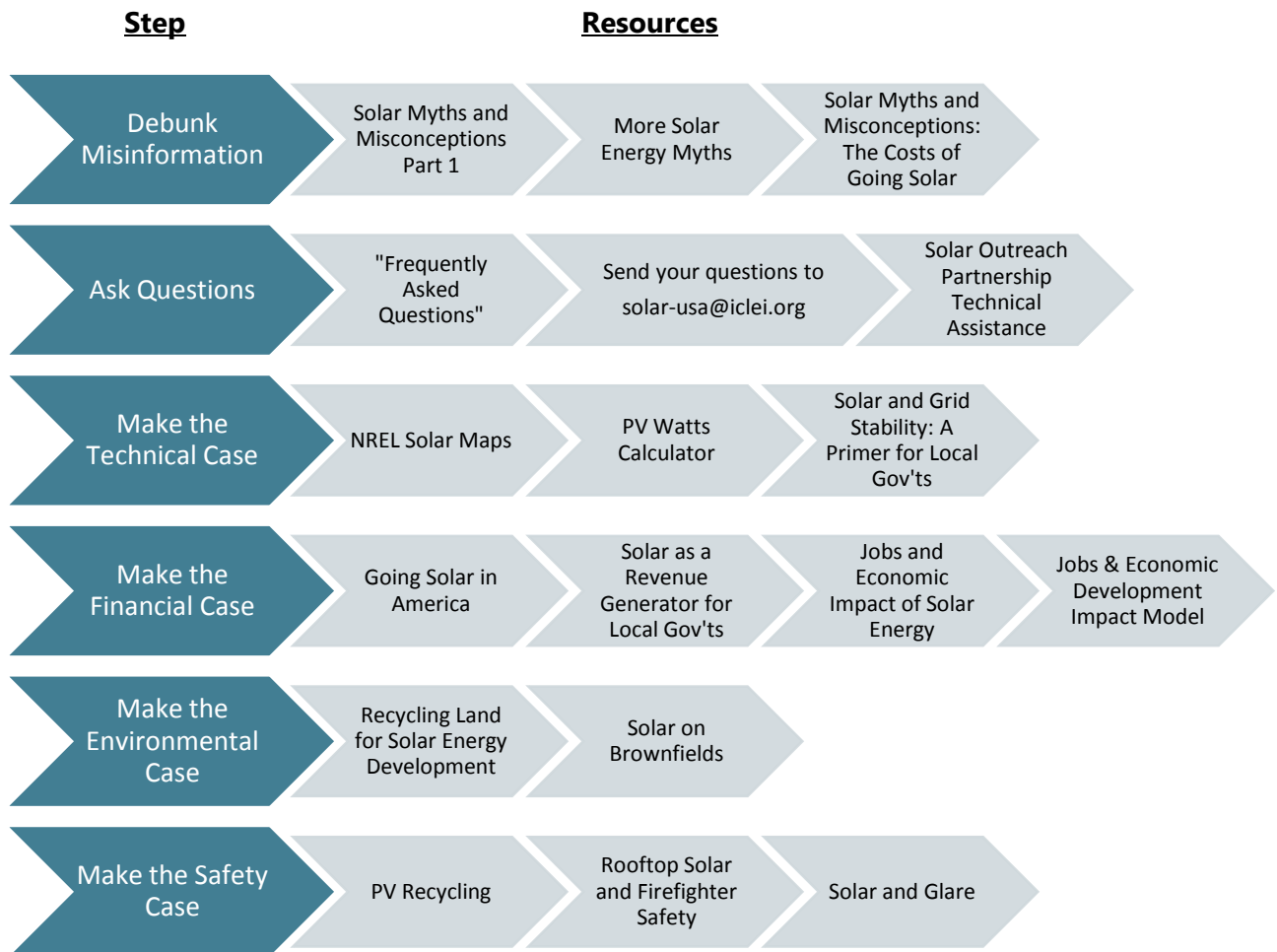
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COVER IMAGE CREDIT

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OVERVIEW OF PROCESS AND AVAILABLE RESOURCES

The general steps to making the case for solar are highlighted in the figure below, with relevant resources (described in greater detail below). Debunking the plethora of misinformation about solar is a first critical step and lays the groundwork for understanding the various benefits of solar energy.

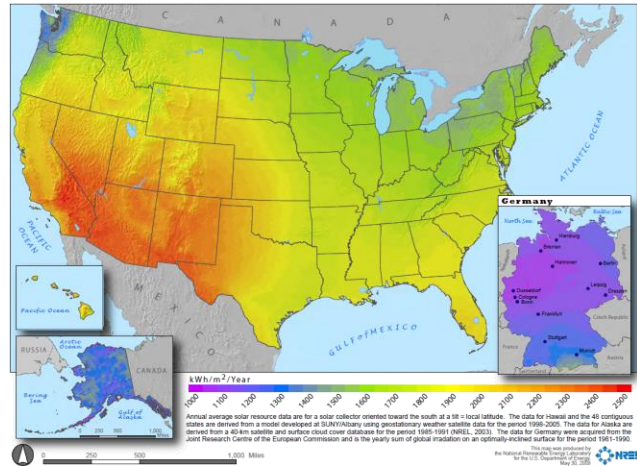


For more free solar resources, visit solaroutreach.org

MAKING THE CASE FOR SOLAR

Does solar work in my region?

As seen in the map to the right, most locations in the U.S. are well-suited for solar energy. Germany (see map inset) is a world leader in solar energy, yet has less solar resource than Alaska. Shading and roof suitability, however, will impact how much as solar system will produce in a specific location.



Key Resources

- **Solar Myths and Misconceptions: Part 1** (Meister Consultants Group). Available at: <http://solaroutreach.org/wp-content/uploads/2014/01/Solar-Myths-Misconceptions-Part-I.pdf>
- **Solar Maps** (National Renewable Energy Laboratory). Available at: <http://www.nrel.gov/gis/solar.html>
- **PV Watts Calculator** (National Renewable Energy Laboratory). Available at: <http://pvwatts.nrel.gov/>

How much does solar cost and how much could I save with solar?

The upfront cost of solar tends to vary by system size and region. Smaller, residential systems have a higher per-watt cost than larger commercial or utility-scale systems. The amount of money that one can potentially save by installing a solar PV system depends heavily upon several factors, including:

- **Utility Rates:** The cost of grid electricity in your area, as well as fixed charge amounts and potential solar fees
- **Solar Resource:** The amount of sunshine a location receives and the suitability of individual sites
- **Policy and Incentives:** Policies, such as net metering, and available incentives can greatly impact the value a customer receives from a solar energy system
- **Upfront Cost:** The upfront cost of a solar energy system can vary across locations and installers

Key Resources

- **Going Solar in America: Local Government Rankings and Report** (NC Clean Energy Technology Center). Available at: http://nccleantech.ncsu.edu/wp-content/uploads/Going-Solar-in-America-Ranking-Solars-Value-to-Customers_FINAL.pdf
- **Going Solar in America: Residential Customer Guide** (NC Clean Energy Technology Center). Available at: http://nccleantech.ncsu.edu/wp-content/uploads/Going-Solar-in-America-A-Customer-Guide-FINAL_V2.pdf
- **Solar Myths and Misconceptions: The Costs of Going Solar** (The Solar Foundation). Available at: <http://www.thesolarfoundation.org/fact-sheet-solar-myths-misconceptions-the-costs-of-going-solar/>
- **Database of State Incentives for Renewables and Efficiency** (NC Clean Energy Technology Center). Available at: <http://www.dsireusa.org>

Is solar only viable due to government subsidies?

All energy sources receive federal government subsidies. However, those available to solar energy systems tend to be temporary incentives, while those available to fossil fuels and nuclear tend to be permanent fixtures. Cumulatively through 2010, federal subsidies for all renewable energy sources totaled approximately \$6 billion, while those for fossil fuels and nuclear totaled approximately \$630 billion.

Key Resources

- **Solar Myths and Misconceptions: Part 1** (Meister Consultants Group). Available at: <http://solaroutreach.org/wp-content/uploads/2014/01/Solar-Myths-Misconceptions-Part-I.pdf>
- **What Would Jefferson Do? The Historical Role of Federal Subsidies in Shaping America's Energy Future** (DBL Investors). Available at: <http://www.dblpartners.vc/resource/what-would-jefferson-do/>
- **Direct Federal Financial Interventions and Subsidies in Energy in Fiscal Year 2013** (U.S. Energy Information Administration). Available at: <https://www.eia.gov/analysis/requests/subsidy/pdf/subsidy.pdf>

Will the addition of too much solar create electric reliability problems?

A number of protections are in place to protect grid stability, including state and federal interconnection standards. Technical standards help to mitigate concerns over reliability issues, such as unintentional islanding, intermittency, and voltage fluctuations. Solar may also provide increased reliability, particularly during emergency situations, when paired with technologies such as battery storage and microgrids.

Key Resource

- **Solar and Grid Stability: A Primer for Local Governments** (The Solar Foundation)
Available at: <http://www.thesolarfoundation.org/solar-grid-stability-a-primer-for-local-governments/>

Does solar require too much land?

Solar can make excellent use of land whose primary purpose is not energy generation, such as rooftops and parking lots. Large-scale solar farms may also make use of land with limited uses, such as landfill and brownfield sites. Large-scale solar farms are also often located on agricultural land, which is a decision to be made by the property owner.

Key Resources

- **Recycling Land for Solar Energy Development** (American Planning Association).
Available at:
http://icma.org/en/icma/knowledge_network/documents/kn/Document/304681/Recycling_Land_f_or_Solar_Energy_Development
- **Solar on Brownfields** (Solar Outreach Partnership). Available at:
http://icma.org/en/icma/knowledge_network/documents/kn/Document/306793/Solar_Powering_Your_Community_Solar_on_Brownfields

Do solar panels pose a risk to health and safety?

Most solar PV panels use a crystalline silicon PV cell consisting of non-toxic materials. There is some use of cadmium telluride (CdTE) panels in the U.S., which contain very small amounts of the hazardous element cadmium, but there is no concern of cadmium release from these panels during their life. The majority of all panels (including both silicon and CdTE) are considered non-hazardous due to successfully passing the required Environmental Protection Agency Toxicity Characteristic Leaching Procedure. This procedure involves crushing the PV Panel and putting it in simulated landfill conditions, where its emissions to leaching water are measured.

Other common safety concerns about solar PV involve glare from solar panels and firefighter safety. Meister Consultants Group addresses these concerns in two factsheets below, which describe efforts taken to minimize these risks.

Key Resources

- **More Solar Energy Myths** (Meister Consultants Group). Available at:
<http://solaroutreach.org/wp-content/uploads/2013/10/Solar-Myth-II--Final.pdf>
- **PV Recycling** (Solar Energy Industries Association). Available at:
<http://www.seia.org/policy/environment/pv-recycling>

- **Emissions and Encapsulation of Cadmium and CdTE PV Modules During Fires** (Brookhaven National Laboratory). Available at: https://www.bnl.gov/pv/files/pdf/abs_179.pdf
- **Solar and Glare** (Meister Consultants Group). Available at: <http://solaroutreach.org/wp-content/uploads/2014/06/Solar-PV-and-Glare-Final.pdf>
- **Rooftop Solar PV & Firefighter Safety** (Meister Consultants Group). Available at: <http://solaroutreach.org/wp-content/uploads/2014/09/Rooftop-Solar-PV-Firefighter-Safety-Final.pdf>

Does solar offer any economic development opportunities?

Solar can often be an excellent revenue generator for local governments, and rural communities in particular. Unless property or sales tax exemptions for solar energy systems are in place, solar can generate revenue through these mechanisms. Leasing local government land and facilities to solar developers is another opportunity to promote local economic development.

Key Resources

- **Jobs and Economic Impact of Solar Energy** (The Solar Foundation). Webinar available at: https://www.youtube.com/watch?v=n5aq8c_KgCo&feature=youtu.be. Presentation slides available at: <http://solaroutreach.org/wp-content/uploads/2014/04/NSJC-Webinar-Slides-04.16.2014-v1.pdf>
- **Solar as a Revenue Generator for Local Governments** (The Solar Foundation). Available at: <http://www.thesolarfoundation.org/solar-as-a-revenue-generator-for-local-governments/>
- **Solar Jobs Census** (The Solar Foundation). Available at: <http://www.thesolarfoundation.org/solar-jobs-census/>
- **Jobs and Economic Development Impact Model** (National Renewable Energy Laboratory). Available at: http://www.nrel.gov/analysis/jedi/about_jedi_pv.html

Can small communities also benefit from solar energy?

Large cities often receive a great deal of attention for their solar energy efforts, but small communities can also take advantage of solar energy.

Key Resources

- **Solar in Small Communities** (The Solar Foundation). Available at: <http://www.thesolarfoundation.org/solar-in-small-communities-challenges-opportunities/>
- **Renewable Cities Case Studies** (NC Clean Energy Technology Center). Available at: <http://solaroutreach.org/wp-content/uploads/2015/10/Renewable-Cities-case-studies-10.14.2015.pdf>