SOLAR OUTREACH PARTNERSHIP

SOLAR POLICY TOOLKIT

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SunShot U.S. Department of Energy

TOOLKIT SUMMARY

Despite dramatic declines in recent years, upfront costs remain a significant barrier to increased deployment of solar technologies. The solar market is a policy-driven market, strongly influenced by policies meant to reduce upfront costs and increase the value of solar production. This toolkit provides clear and comprehensive information on major solar policies in the United States. While it targets local government personnel, the toolkit should be useful to a diverse audience including solar installers, customers, and advocates. The toolkit is intended to provide readers with many of the key resources necessary to understand both the basics of major policy types and some of the important nuances that should be considered when promoting or implementing such policies.

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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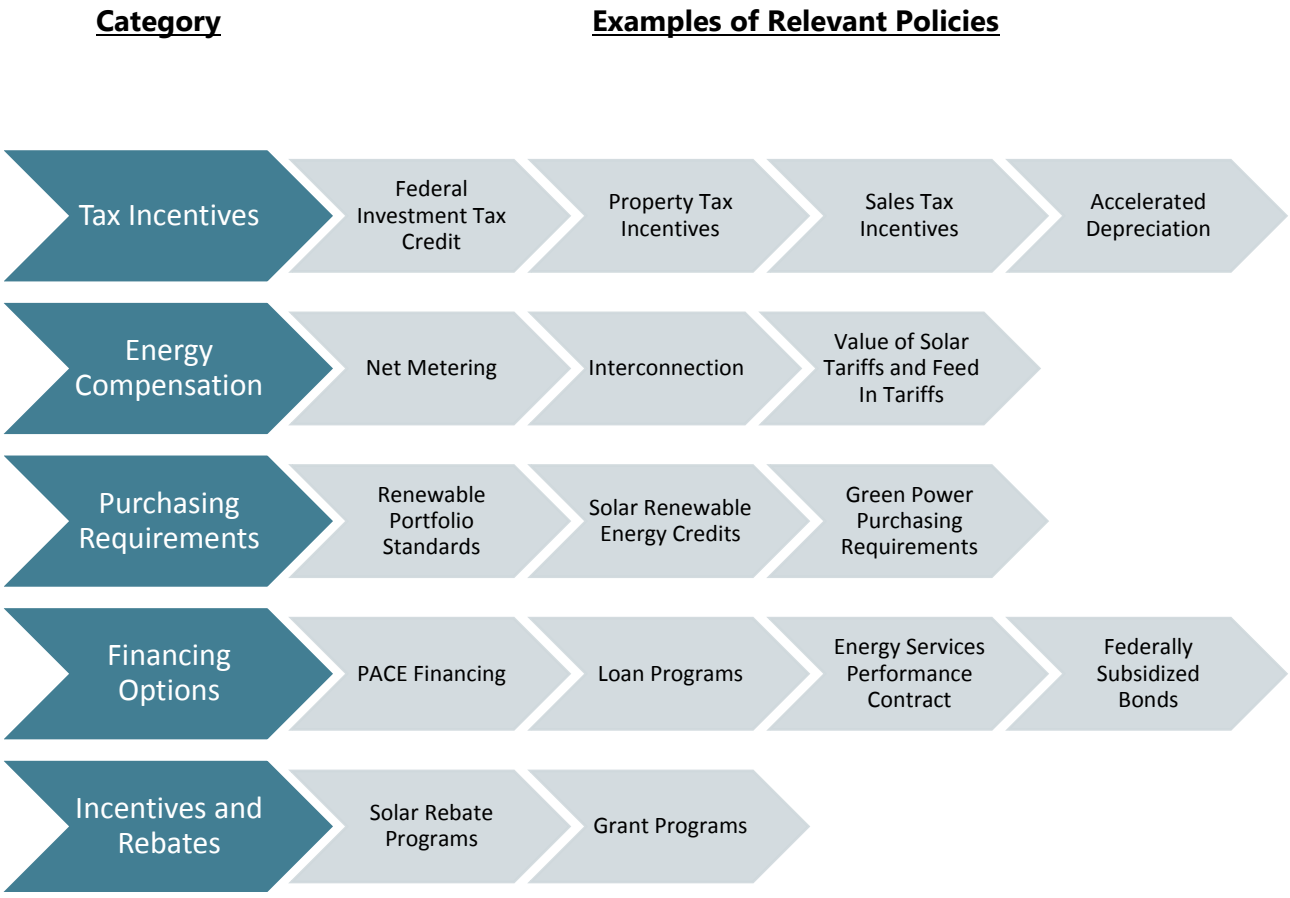
COVER IMAGE CREDIT

Photo by Northern Alberta Institute of Technology. "Solar Reference Array." March 29, 2012. CC BY-ND 4.0. Retrieved from https://www.flickr.com/photos/nait/6915219490

OVERVIEW OF POLICY TYPES AND AVAILABLE RESOURCES

General categories of solar policies are highlighted in the figure below, with relevant resources (described in greater detail below). In thinking about these policies, local government staff may wish to engage internally with important decision-makers from various departments or agencies and externally with interested stakeholders, including the electric utility, solar industry, developers, homeowners associations, and environmental advocates.



POLICY OVERVIEW

Why is policy so important for solar energy?

Solar policies, from financial incentives to rules and regulations, impact the value of a solar investment and a customer's ability to go solar. Financial incentives, including tax policies, financing options, rebates and grants, reduce the customer's cost of going solar. Regulatory issues include electric utility rate design, net metering or other solar tariffs, interconnection standards, and renewable portfolio standards or other rules requiring the purchase of renewable energy. These rules can increase the value a customer or developer receives from going solar.

The Database of State Incentives for Renewables and Efficiency (DSIRE) is the most comprehensive source of information for state, local, and federal policies that support renewable energy. Users may visit the online database to obtain complete information on what incentives and rules for solar exist in their jurisdiction. All of the policies described in this toolkit are tracked in DSIRE. DSIRE also includes a glossary that provides descriptions of those policies, links to additional resources, and detailed maps that summarize the status of key policies by state.

Key Resource

→ **Database of State Incentives for Renewables and Efficiency (DSIRE)** (NC Clean Energy Technology Center and U.S. DOE). Available at: www.dsireusa.org
- **Glossary:** http://www.dsireusa.org/support/glossary/
- **Detailed Summary Maps:** http://www.dsireusa.org/resources/detailed-summary-maps/
- **Additional Publications:** http://www.dsireusa.org/resources/presentations-and-publications/

Tax Incentives

What income tax benefits are there for going solar?

One of the largest factors that has increased the affordability of solar in recent years is the Federal Investment Tax Credit (ITC). The ITC is a nonrefundable tax credit worth 30% of the cost of a solar PV system placed in service by December 31, 2019, and is available to individuals and businesses. The value of the ITC steps down over the following years through 2021, after which it remains at 10% permanently for businesses and expires for homeowners.

Businesses may also take advantage of accelerated depreciation, which allows the business to recover a solar investment through depreciation deductions on its tax return. Solar energy systems

can qualify for 50% bonus depreciation through 2017, with depreciation rates stepping down over the next two years.

Key Resource

→ **Understanding the Investment Tax Credit** (NC Clean Energy Technology Center). Available at: http://solaroutreach.org/resource/residential-and-commercial-itc-factsheets/#.Vp6ylfkrJpg

What other tax incentives may be available for solar PV systems?

Some states and localities have property tax exemptions, exclusions, abatements, or credits. Often, property tax incentives for solar exclude the added value of a PV system from the valuation of the overall property for tax purposes.

Sales tax incentives typically provide an exemption from, or a refund for, the state or local sales tax for the purchase of a solar energy system.

Key Resource

→ **Understanding Sales Tax Incentives for Solar Energy Systems** (NC Clean Energy Technology Center). Available at: http://solaroutreach.org/resource/understanding-sales-tax-incentives-for-solar-energy-systems/#.VqE7_vkrLIU

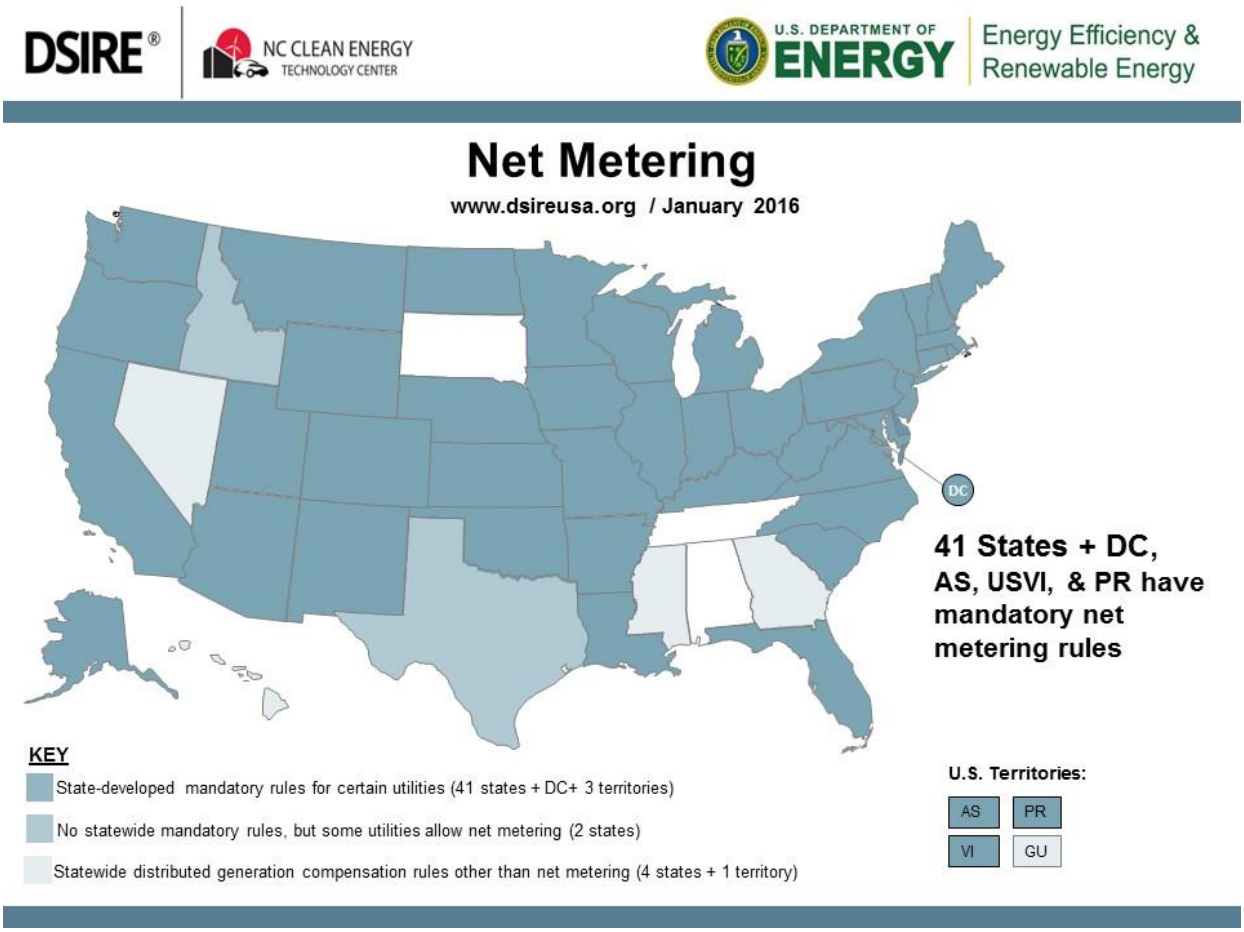
→ **Property Taxes and Solar PV Systems: Policies, Practices, and Issues** (NC Solar Center and Meister Consultants Group). Available at: http://solaroutreach.org/resource/property-taxes-and-solar-pv-systems-policies-practices-and-issues/#.Vqj9y_krJpg

Energy Compensation and Interconnection

What policies influence how much solar customers can save on their utility bills?

Customers with solar PV recoup their investment by reducing the amount of electricity they purchase from their utility and receiving compensation for any excess energy their system produces above what the customer is using at the time. There are a few ways such compensation can be structured; the most common policy for solar customers is net metering.

Net metering allows a customer to export electricity to the grid when the PV system is generating more than the customer is using. The customer may use such excess generation to offset their electricity consumption from other times in the same billing cycle on a one-to-one basis. Forty-one states (plus DC) have statewide rules requiring certain utilities to offer net metering to customers, as seen in the following map.



With a **Value of Solar Tariff**, payments for the solar energy are based on an analysis of the quantified, comprehensive value of solar energy. Such tariffs have not been widely implemented to date, but several states have designed, or have begun to design, a methodology for calculating the value of solar.

Other arrangements to compensate solar customers usually come in the form of a buy-all/sell-all arrangement, in which the customer purchases all of her electricity from the grid at the retail rate and sells all of the solar generation to the utility at another rate. A **Feed in Tariff** provides a fixed price for the solar energy over a fixed period of time. The price may vary, but is often above the retail price of electricity. At a minimum, buy-all/sell-all arrangements in the U.S. compensate electricity generated from solar PV at a rate equivalent to the utility's avoided cost of generating or purchasing other electricity.

Key Resources

- → **Map of Net Metering Policies** (NC Clean Energy Technology Center). Available at: http://www.dsireusa.org/resources/detailed-summary-maps/
- → **Freeing the Grid** (Vote Solar and IREC). Available at: http://freeingthegrid.org/
- → **Rethinking Standby & Fixed Charges: Regulatory and Rate Design Pathways to Deeper Solar PV Cost Reductions** (NC Clean Energy Technology Center and Meister Consultants Group). Available at: http://solaroutreach.org/resource/rethinking-standby-fixed-cost-charges-regulatory-rate-design-pathways-deeper-solar-pv-cost-reductions/#.VqFF2_krLIU
- → **The Intersection of Net Metering & Retail Choice** (IREC and the NC Solar Center). Available at : http://www.irecusa.org/wp-content/uploads/2014/07/Intersection-Retail-Choice-Net-Metering.pdf

How do interconnection rules impact the value of solar?

Interconnection rules dictate the requirements for PV systems to be able to connect to the electric grid. The specifics of a state (or utility's) interconnection processes affect how quickly solar energy systems can come on line and how costly they are to connect.

Key Resources

- → **Freeing the Grid** (Vote Solar and IREC). Available at: http://freeingthegrid.org/
- → **Model Interconnection Procedures** (IREC). Available at: http://www.irecusa.org/model-interconnection-procedures/

Renewable Portfolio Standards and Green Energy Purchasing

Where can I learn more about requirements and incentives to purchase renewable energy?

Twenty-nine states and Washington DC have a renewable portfolio standard (RPS), a state law that requires utilities to obtain a certain percentage or quantity of their electricity sales from renewable sources. Some RPS rules include a carve-out for a specific amount of solar energy to be used to meet the overall requirement. An RPS may also apply "extra credit" to solar energy used to comply with the RPS, or a multiplier that increases the value of renewable energy certificates associated with solar energy.

In addition to state level RPSs, some jurisdictions have a goal or requirement for public agencies to obtain a certain amount of renewable energy for their own usage. These types of rules are catalogued in DSIRE as "Green Power Purchasing Policies."

Key Resources

- → **Map of Renewable Portfolio Standard Policies** (NC Clean Energy Technology Center). Available at: http://www.dsireusa.org/resources/detailed-summary-maps/
- → **State-Federal RPS Collaborative** (Clean Energy States Alliance). Available at: http://www.cesa.org/projects/state-federal-rps-collaborative/
- → **Electricity Markets and Policy Group: Renewables Portfolio Standards Resources** (Lawrence Berkeley National Laboratory). Available at: https://emp.lbl.gov/projects/renewables-portfolio
- → **Green Power Partnership** (U.S. Environmental Protection Agency). Available at: http://www3.epa.gov/greenpower/index.htm

Clean Energy Financing

What options exist for securing low-cost financing for solar projects?

Several public policies and programs seek to address the availability and cost of financing for solar. **Property Assessed Clean Energy (PACE) Financing** allows property owners to secure the upfront costs of solar and repay those costs over time on their property tax bill. For local governments in particular, an **Energy Services Performance Contract** can provide energy upgrades at no out-of-pocket cost. Rather, the energy services provider recoups its investment through a portion of the guaranteed energy savings. States must pass enabling legislation to allow municipalities to utilize these financial models.

Key Resources

- → **Commercial Property Assessed Clean Energy (PACE) Financing** (The Solar Foundation). Available at: http://www.thesolarfoundation.org/fact-sheet-commercial-pacefinancing/
- → **PACENation: Resources (PACENow).** Available at: http://solaroutreach.org/resource/innovative-solar-pv-financing-methods-invest-solar-pv-energy-services-performance-contracting/#.VqFZO_krLIW
- → **Innovative Solar PV Financing Models: Invest in Solar PV through Energy Services Performance Contracting** (NC Clean Energy Technology Center). Available at: http://solaroutreach.org/resource/innovative-solar-pv-financing-methods-invest-solar-pv-energy-services-performance-contracting/#.VqFZO_krLIW

States, cities, and the federal government also offer various loan programs for which solar PV projects may be eligible. Such loan programs offer reduced interest rates, flexible repayment, loan guarantees, or other credit enhancements that bring the total cost of borrowing down. The federal government also offers subsidized clean energy bonds in the form of **Qualified Energy Conservation Bonds (QECBs)** and **Clean Renewable Energy Bonds (CREBs)**.

- → **Follow the Money: Utilizing Federally-Subsidized Bonds for Solar** (Solar Outreach Partnership Blog). Available at: http://solaroutreach.org/2015/10/09/follow-the-money-utilizing-federally-subsidized-bonds-for-solar/#.VqFYcPkrLIU
- → **QECB Paper** (Energy Programs Consortium). Available at**:** http://www.energyprograms.org/programs/qualified-energy-conservation-bonds/
- → **Local Lending for Solar PV:** A Guide for Local Governments Seeking to Engage Financial Institutions (Meister Consultants Group). Available at: http://solaroutreach.org/wp-content/uploads/2013/11/Local-Lending-for-Solar-PV-Final-Feb-2014.pdf

Rebates and Incentives

Do solar customers qualify for any rebates or equipment cost reductions?

Though not as prevalent as in earlier stages of the development of the solar market, some states and utilities offer customers a rebate for solar PV systems. Usually, the rebate varies with the size of the system. These types of incentive programs frequently step down over time or as quotas or limits in the program are reached. States, local governments, utilities, and other organizations sometimes offer grants that may be used to purchase solar equipment. Such grant programs are commonly tailored to schools, non-profits, and low-income customers. To find rebate or grant programs in your area, visit www.dsireusa.org.

Key Resource

- → **Database of State Incentives for Renewables and Efficiency (DSIRE)** (NC Clean Energy Technology Center and U.S. DOE). Available at: www.dsireusa.org