Ten Ways Your Community Can Go Solar:

A Toolkit for Cities and Towns



America's Cities & Towns are Solar Leaders

The United States has enough solar energy installed to power <u>over 13.5 million American homes</u>. America's cities and towns play a key role in driving the adoption of clean, renewable energy. Yet, most have only begun to tap their solar energy potential. Local governments can set the pace for solar growth by driving development through effective public policy and community engagement, reaping benefits for the environment, public health, grid resilience, and consumers.

This series of guides should serve as a toolkit for communities interested in leading the transition to clean, renewable energy. Each guide illustrates the importance of one of the following policy tools for advancing solar energy adoption, as well as guidelines, case studies and additional resources.

Click on any of the strategies below for encouraging local solar growth to explore the associated policy guide.

LEAD THE WAY

1. Set ambitious goals for solar energy adoption: A solar energy goal provides an opportunity to institutionalize a shared vision for a solar-powered future. Some cities have established solar goals as a part of a broader commitment to 100 percent renewable energy, while others have stand-alone solar commitments. Philadelphia has a goal of producing solar energy on 80 percent of suitable rooftop space by 2050, which will help the city transition to fossil fuel-free electricity by 2050. Such commitments that apply to the entire community drive the most progress in both distributed and utility-scale solar.

2. Power public buildings with solar energy: Cities can lead in the clean energy transition, boost the local solar market and save on electricity bills by powering their own operations with solar energy. Park City, Utah, is committed to powering city operations with 100 percent renewable electricity by 2022, and has installed solar panels on city transit buildings, police stations, affordable housing units, park buildings, and city hall.

STREAMLINE SOLAR DEVELOPMENT

3. Eliminate red tape: Homeowners and businesses often have to jump through too many costly zoning and permitting



Solar panels atop homes in Boulder, CO

hoops to go solar. Cities can eliminate barriers by expediting permitting processes, making zoning policies clear and non prohibitive for solar projects, and reducing application fees. The Department of Energy's <u>SolSmart</u> program can help cities make it faster, easier, and more affordable to go solar. The City of West Palm Beach achieved a streamlined, transparent online permit process through the program.

4. Adopt a Solar Homes policy for new construction: When it comes to reducing pollution and global warming emissions, any rooftop without solar is a missed opportunity. Cities can seize that opportunity and lower costs by requiring that new buildings include solar energy systems. The most cost-effective time to add solar to a home is when the home is being built and the workers are already on the roof. Several cities have adopted policies that all new homes be built with solar panels, including South Miami, Florida. After several California cities adopted solar homes policies, the state became the first to do so statewide via a building code update that went into effect on January 1, 2020.

EXPAND ACCESS

5. Develop and publicize local financing options: Not everyone interested in going solar can pay for a new solar installation up-front. In states with enabling legislation, Property Assessed Clean Energy (PACE) programs allows local and state governments to loan money to home and business owners for energy improvements, to be paid back on top of their property taxes. Cities can also partner with local financial

institutions to offer low-interest loans for solar projects. The "Milwaukee Shines" program, for example, partnered with Summit Credit Union to offer loans of up to \$20,000 for certain solar installations. Partnering with local solar installers to allow customers to lease panels over time can also help reduce up-front costs.

- **6.** "Solarize" your community: Bulk purchasing programs allow businesses, homeowners and nonprofits to purchase solar energy collectively, lowering the cost for everyone involved. Portland, Oregon, was the first to offer a "Solarize" bulk purchasing program, and many other cities have followed suit. In less than five months, "Solarize Athens" more than tripled the residential solar energy capacity in the Athens, Georgia, metropolitan area.
- 7. Encourage community solar projects: Community solar programs can allow apartment occupants and others unable to install their own solar systems to access clean solar energy. Customers can rent or own a set of panels in a shared project and receive a credit on their utility bill for the power they produce. Cities can work with utilities and third-party developers to develop shared solar projects.

GO BEYOND CITY HALL

- **8.** Partner with utilities: Cities should work with the electric utilities serving their areas whether municipal or investorowned as partners in unlocking the potential of solar energy. The City of Minneapolis established a partnership with Xcel Energy and CenterPoint Energy, the investor-owned electric and gas utilities serving the city, to chart a path to achieving its goal of using 100 percent renewable electricity citywide by 2030.
- 9. Establish a municipal utility or community choice aggregation: Cities served by investor-owned utilities that are not supportive of or responsive to renewable energy initiatives may want to consider forming a municipal utility or community choice aggregation (CCA) in order to gain greater control over their electric supply. From the Los Angeles Department of Water and Power to Nashville Electric Service, public power utilities are leaders in renewable energy adoption.
- 10. Support strong state-level solar policies: Cities can shine brighter when their state's energy policy landscape supports renewable energy development, and should advocate for state policies that facilitate the widespread adoption of solar energy for homes, businesses and utilities.



For more information about Environment America Research & Policy Center, for additional copies of this toolkit, or for copies of annual *Shining Cities* reports, please visit: www.environmentamericacenter.org

Set ambitious goals for solar energy adoption



WHY COMMITMENTS MATTER

A solar energy goal provides an opportunity to institutionalize a shared vision for a solar-powered future. The objective should be a specific, measurable amount of solar energy that is either produced or used within or by the city. While there are many different types of solar commitments, they all play an important role in guiding a community's transition towards clean energy. For instance:

- Agreeing on a goal brings decision makers, stakeholders, and community members together behind a shared mission.
- Articulating and sharing your vision publicly provides an opportunity to inspire constituents as well as other communities to participate in the transition.
- A goal will drive the adoption of policy solutions within its overall framework and ensure that solar development is considered in future government decisions, even as elected officials and personnel come and go.
- A goal will drive solar development. Goals that apply to the entire community's energy use will have the greatest impact, encouraging solar on homes, businesses, utilities and public buildings to power a variety of the community's energy needs.
- Creating an action plan that includes a solar-specific goal and timeline can also keep your community on track to meet any existing clean energy commitments.

CHOOSING THE RIGHT GOAL

You can craft a solar goal from the wide variety of possibilities that fit your community's specific energy landscape and needs. Engage with stakeholders as you consider several questions:

How comprehensive will your goal be?

Goals can apply to city operations only, or they can apply to an entire community's energy consumption. Similarly, they might apply specifically to electricity, or include all forms of energy use, including transportation and other sectors. While more expansive goals feel more challenging to measure and achieve, they bring more stakeholders into the vision you want to achieve and lead to broader solar energy adoption.

Communities that are new to renewable energy commitments or have seen limited prior progress may see setting goals that apply only to municipal electricity as a more approachable first step. However, we recommend that cities work towards a community-wide electricity or energy commitment in order to have the greatest impact.

What will you measure?

You can measure solar energy in many different ways, and the unit you choose should reflect your goals. If you want to boost the amount of solar energy produced within your community, you could aim for a number of solar rooftops, a percentage of

homes powered by solar, or a simple measure of total energy produced locally (e.g. megawatts). Alternatively, if you want to drive solar use more than production, consider setting a goal for the portion of electricity consumption fulfilled by solar. In growing communities, a target that scales with population, like a percentage or per capita figure, will have the greatest impact.

How ambitious should you be?

We need renewable energy goals that match the scale of the challenges our communities face. That said, effective goals must also recognize local realities. A goal that fails to aim high will not encourage real progress, but a seemingly impossible goal will also fail to motivate change. Factors like your community's current baseline, projected future energy needs and estimated solar potential can help you find the right balance. An ideal goal requires significantly faster adoption than expected with no action, but acknowledges that achieving the full solar potential of every rooftop may not be feasible.

What is your timeline?

A good goal always includes a deadline, and figuring out the right timeline for your community is also a balancing act. You should allow enough time to achieve your target, but still set a date that will necessitate change in the short term. Interim goals as stepping stones can accomplish both.

CASE STUDIES

As you work through these and other questions, check out commitments from other communities. Here are a few examples of strong solar goals:

- Interim Goals: In 2014, Philadelphia set a community wide goal of reaching 20,000 solar roofs by 2025. In 2018, the city added a longer term goal of installing solar on 80 percent of rooftop space suitable for solar at the time by 2050. In 2019 the city purchased 22% of its municipal energy from a 70 megawatt solar farm in Radnor as part of a broader plan to act on climate.
- Pairing city-only and community wide goals:
 New York City established a community wide
 goal of generating 1,000 megawatts (MW) of
 local solar energy, enough to power more
 than a quarter of a million homes, by 2030.
 The city has also committed to installing 100
 <u>MW</u> of solar electricity generation capacity
 on municipal rooftops by 2025, which will
 both set a strong example and move the city
 towards its broader vision.
- Solar as part of vision for 100 percent renewable: In April of 2018, the Las Cruces City Council voted unanimously to meet 100 percent of municipal energy needs with renewable energy by 2050. The council also approved a goal for the city to power its facilities with 25 percent renewable energy, largely solar, by 2022.

- Learn more about the energy plans in *Philadelphia*, *Las Cruces* and *New York City*.
- Environment America Research and Policy Center's <u>Shining Cities report</u> ranks major U.S. cities based on installed solar energy capacity so that you can see how your community stacks up.
- Google's <u>Project Sunroof</u> is a free tool that can provide an estimate of rooftop solar potential at the state, county, city, zip code or rooftop level.
- The U.S. Department of Energy also offers <u>Local Energy Data</u>, including renewable potential.
- The EPA provides a <u>framework</u> for establishing municipal renewable and solar energy goals.
- Environment America can provide additional examples of solar commitments and individualized guidance as your community considers a new energy goal.

Power public buildings with solar energy



THE IMPORTANCE OF CITY LEADERSHIP

Cities have an opportunity to lead in the clean energy transition by powering their own operations with solar energy. Installing solar arrays on municipal roofs is the most visible way to set an example, but where on-site solar is not feasible, cities can still use off-site solar power to accomplish their goals. Either way, cities that use clean, renewable energy to power their operations serve as important role models for their citizens and other communities and stand to benefit in several ways:

- Each municipal solar project acts as a publicly visible example of the clean energy that solar arrays can provide, right where that energy is needed.
- Using local solar companies to design, install and maintain municipal projects boosts the local solar market, helping it grow and mature in your community.
- Solar projects can make valuable use of existing city property and infrastructure, and ultimately reduce government spending on electricity.
- Your community can achieve its renewable energy goals faster when the city itself participates actively.

IDENTIFYING THE BEST OPPORTUNITIES

Most cities and towns have plenty of buildings and other properties where solar installations can be beneficial. To name just a few:

- Public school buildings can be excellent solar opportunities, as both significant power users and centers for learning. Schools often boast large, flat roofs perfect for solar panels, and stand to benefit from energy savings. Solar projects can double as environmental education opportunities in the classroom
- Closed landfills and other properties with limited uses, such as former industrial sites and vacant lots, can often house large-scale solar projects. Providing clean energy for your city is often the best possible use for these sites, which otherwise might remain empty eyesores.
- Cities often manage facilities that require a steady energy supply around the clock. Wastewater treatment facilities, for example, can benefit from on-site solar systems that both lighten their environmental footprint and add a layer of reliability, especially when paired with on-site storage.
- City-owned parking lots and garages get lots of sun exposure, and can be great places for solar carports or rooftop systems that double as shade for parked vehicles.
- Any city-owned rooftop with enough space and sun exposure should be considered as a potential solar site. The more visible the building is to the public, the better it can serve as a demonstration in addition to a clean power provider. City hall, police and fire stations, and public libraries are great places to start.

HOW TO GET STARTED

Once you have assessed your options and are ready to move forward with one or more solar projects, keep the following in mind:

- Each potential site will offer unique benefits and energyproducing potential. Be sure to weigh the pros and cons of each before making a final decision.
- Consider using a local solar installer, and shop around for the best proposal.
- Share your plans with the public. Press conferences or ribbon-cutting ceremonies keep your community involved and build support for future energy initiatives.
- Take advantage of the announcement of a new municipal project to make a public commitment to continue going solar. You could aim to power all of the city's schools with solar energy, power some percentage of city buildings with solar, or make plans to install solar on a certain set of city properties. Whatever the goal, it will ensure that each project ties into a broader vision.



Solar installation at Los Angeles City Hall

CASE STUDIES

Hundreds of cities across the country are enjoying the benefits of their solar projects every day. Here are a few examples of successful municipal projects that you can use to inform your city's plans:

- **Santa Fe, NM:** The city of Santa Fe has installed <u>enough renewable energy</u> on city facilities to provide 25 percent of its electricity needs, including over 4.6 MW of solar energy. You can find <u>solar installations</u> on community and convention centers, fire stations, the city's wastewater treatment plant and compost facility, among others.
- **Cincinnati, 0H:** The city of Cincinnati will power all of the city's municipal facilities with a new 1,000 acre, 310,000 panel array just outside the city. This solar array will be funded and built by Cincinnati's Creekwood Energy and Hecate Energy, which will provide solar energy to the city at a fixed rate via a 20-year contract. City administration says the array will save the city \$1.7 million over that time.
- Park City, UT: Park City, Utah, is committed to powering city operations with 100% renewable electricity by 2022, and has installed solar panels on a wide variety of city buildings in order to achieve that goal. Panels on transit buildings, police stations, affordable housing units, park buildings, and city hall are all part of the mix. The city used a number of funding sources to make these projects a reality, and shares that information with the public online along with real-time monitoring of energy production.

- Learn more about the solar projects in <u>Santa Fe</u>, <u>Cincinnati</u> and <u>Park City</u>.
- The National Renewable Energy Lab (NREL) offers a variety of <u>resources and trainings for local governments</u> planning solar projects, including on selecting, planning and financing projects.
- The EPA's Local Government Solar Project Portal offers similar project development resources and examples of local government progress.
- NREL's <u>REopt</u> model can recommend an optimal mix of renewable energy for buildings or communities to meet cost savings and energy goals.
- NREL's <u>System Advisor Model (SAM)</u> can make cost and performance projections for a specific project.
- Google's <u>Project Sunroof</u> can provide an estimate of rooftop solar potential for a site or community, and is a user-friendly tool for comparing locations.
- <u>EnergySage</u> can help you compare local solar installers, quotes, and financing opportunities.

3

Eliminate red tape in zoning and permitting



FRIENDLY PERMITTING AND ZONING CAN CLEAR THE WAY FOR SOLAR GROWTH

Homeowners and businesses interested in installing solar projects often have to jump through too many hoops, from cumbersome permitting processes to opaque zoning regulations. That kind of red tape can act as an obstacle, making it too difficult, time-consuming and expensive for many to make the transition to solar energy. While permitting and zoning laws include important protections for public safety, cities should make sure they do not unnecessarily slow or restrict solar energy development. Cities can eliminate barriers to going solar by expediting permitting processes, reducing application fees, and making zoning policies clear and non prohibitive for solar projects, providing a number of benefits:

- More efficient approval processes can save local governments time and money.
- Soft costs, or the non-hardware costs from permit applications and other fees, can make up to two-thirds of the cost of installing a home solar project, and inefficient permitting processes can add up to \$2,500 to the pricetag. A streamlined process can save customers money and make solar energy an affordable option for more residents and businesses.
- Improving local processes for going solar can grow the local solar economy. More than <u>one-third</u> of solar installers say they avoid working in communities where permitting is difficult, so you can attract more solar businesses with a friendly regulatory environment.

 Easy and approachable process requirements, in which necessary steps and fees are transparent and readily available, make it more likely that residents and businesses considering solar will move forward so that your community can reach its energy goals faster.

KEY FEATURES OF STRONG SOLAR PROCESSES

To encourage more solar deployment in your city, make your permitting process as affordable, fast, and user-friendly as possible. Working with local installers can help ensure that the process you design works efficiently. Be sure to include the following key features for a process that fits that bill:

- Provide a one-stop shop for solar permits, including an online checklist with all the necessary steps, a link to the appropriate application, and an explanation of the approval process, on your city website.
- Use a standard application form for permits based on best practices.
- Require just one permit application for a typical residential rooftop installation.
- Keep fees minimal, reasonable, and based on cost incurred by the city. They should not act as a source of revenue.
- Turn around applications as quickly as possible.

Your community's zoning policies should also support solar development. As you review and revise zoning requirements, start by identifying current limitations on solar development. Stakeholders, local experts, and community partners can all

provide helpful perspectives as you draft replacement language. Using the following <u>best practices</u> will ensure that your new code supports local solar growth:

- Implement a solar access ordinance to guard home and business owners' right to generate electricity from the sunlight that hits their property, <u>regardless of the actions</u> of neighbors or homeowners' associations.
- Avoid any language that limits solar based on visibility to the public or glare, unreasonably restricts system size, requires subjective reviews based on appearance or mandates consent from neighbors. These restrictions unnecessarily prohibit many rooftop solar projects.
- Establish a clear regulatory pathway for primary use of solar systems, such as through a special use permit or through inclusion among allowed conditional uses.
- For historic properties and other special cases, provide clear guidance for the installation of solar.
- Post an online resource that provides an overview of what types and sizes of solar arrays are permitted in which zones, the processes required for approval, and any other relevant information in your community's zoning code.
- Provide training for city inspectors and permitting staff on solar PV improves the speed and ease of the process of going solar.

SOLSMART CAN HELP COMMUNITIES ACHIEVE BEST PRACTICES

<u>SolSmart</u> is a national designation program funded through the Department of Energy. Through the program, communities can receive no-cost technical assistance from solar experts to help them implement best practices in permitting, zoning, and other solar processes. Communities can earn designation at the Bronze, Silver or Gold level by taking actions to make it faster, easier, and more affordable for residents and businesses to go solar.



Rooftop solar installations

CASE STUDIES

Over 350 communities have been awarded SolSmart designation, and many others have enacted solar-friendly permitting and zoning policies outside of the SolSmart program. Two examples are included below, and many more can be found in the additional resources provided.

- **The City of East Lansing, Michigan,** earned SolSmart Gold designation for permitting by providing an <u>online solar permitting checklist</u>, as well as streamlined permitting for small PV systems. The city also cross-trained permitting and inspection staff on solar PV.
- **The City of Boulder,** another SolSmart Gold community, provides a guide to zoning, permitting, and connecting to the grid for both traditional solar energy systems and solar energy installations that include on-site storage. Making the regulatory process for storage easy and transparent will encourage more deployment as the technology becomes widely available.
- **The City of Boise, Idaho,** reviewed their zoning code in order to eliminate any unintentionally cumbersome roadblocks to installing solar and allowed by-right accessory use in all zones. This allows solar installations without special hearings or permits, regardless of zone. Boise is also a <u>SolSmart Gold designated community.</u>

- You can learn more about the <u>SolSmart program</u>, see the <u>full criteria</u> for designation and <u>request a consultation online</u>.
- The <u>Solar America Board for Codes and Standards</u>, or Solar ABCs, provides recommended codes and standards for solar, including a standard permit application.
- The Interstate Renewable Energy Council (IREC) and Vote Solar have identified nine <u>Residential Solar Permitting Best Practices</u>, and additional case studies are included in this <u>explainer</u>.
- Delaware Valley Regional Planning Commission provides a framework and model ordinance for solar energy in zoning codes.

4

Adopt a Solar Homes policy for new construction



NEW ROOFS SHOULD BE BUILT FOR SOLAR

When it comes to reducing pollution and global warming emissions, any rooftop without solar panels is a missed opportunity. Cities can seize that opportunity by requiring that new buildings include solar energy systems. After all, the most cost-effective time to add solar to a home is when the home is being built and the workers are already on the roof. Some state and local governments have adopted policies that require new homes or commercial buildings have solar power, and the idea is spreading rapidly due to its positive impacts:

- Requiring solar panels on new homes could lower solar energy costs by leading to technological developments, market maturation and increased partnerships between home builders and solar companies. A 2018 National Renewable Energy Laboratory (NREL) study found that these advancements could collectively reduce the price of solar systems by 59 percent.
- A solar homes requirement can work with other energy policies, such as strong efficiency standards, electric vehicle incentives, and policies to encourage home energy storage, to build a clean energy system.
- Adding solar on all new homes would greatly reduce the need for fossil fuel energy sources and reduce global warming emissions.
- A solar homes policy would also make solar energy the default as your community grows and evolves, ensuring that future progress keeps pace with growth.

CHOOSING THE RIGHT POLICY FOR YOUR COMMUNITY

Requiring solar panels on <u>all new homes</u> will create a surge of distributed solar energy deployment. Cities can also consider variations of this policy, such as requiring solar on buildings of a certain size or on all new construction rather than just homes. Communities that are not ready to require solar panels can instead ensure that every new home and building be "solar ready," meaning a solar energy system could be easily installed in the future, as a first step.

Pairing a solar homes policy with strong energy efficiency standards for homes can amplify its positive impact. Single-family homes in some U.S. states would need up to 15 kW of solar energy capacity on average to meet current electricity consumption needs. Many roofs cannot host solar systems of that size, so meeting home energy needs with clean energy will require reductions in energy consumption. Strong energy efficiency requirements for buildings and appliances can help achieve that goal.

CASE STUDIES

Requiring solar on new homes

Several cities have adopted policies that all new homes be built with solar panels, including the city of South Miami, Florida. Citing climate threats to the Miami area, from sea level rise and tidal flooding to extreme temperatures, the <u>local ordinance</u> requires that all new homes be built with solar as a part of the city's goal of eliminating net greenhouse gases emissions by 2030. Specifically, the policy calls for the installation of <u>2.75 kilowatts</u> of solar per 1000 square feet on new homes, and on existing homes that increase their square footage by 75 percent or more.

After several California cities adopted solar homes policies, California became the <u>first in the country</u> to do so statewide. The policy, which takes effect in 2020, is part of an overhaul of the state's building code that aims to cut energy use in <u>new buildings by 50 percent</u>.

Requiring solar on new construction

Brooklyn, NY, passed two new laws requiring developers to install either solar panels, greenery or a combination of the two on all new roofs that went into effect November 15th, 2019. While building owners will assume the cost of the panels in construction, they will also receive significant tax incentives, getting back 20% of the equipment costs in the form of a property tax abatement and receiving a \$5,000 tax credit.

From a solar homes policy to a net zero policy

In 2014, the City of Lancaster, California, was the first city to mandate solar on all new buildings. Lancaster, which has a population of about 160,000, later adapted the ordinance to require that all new homes be zero net energy, or able to fully meet their own energy needs with on-site renewable sources. Rooftop arrays must provide two watts of solar energy for every square foot of the building.



The most efficient and cost-effective time to install solar is during construction.

RESOURCES

- Learn more about the standards adopted by the State of <u>California</u> and at the local level in <u>South Miami</u>, <u>Brooklyn</u>, <u>Tucson</u> and <u>Lancaster</u>.
- Environment America Research and Policy Center's report, <u>Solar Homes: The Next Step for Clean Energy</u>, discusses the potential benefits of solar homes policies if deployed nationwide, and includes policy recommendations for state and local governments.
- Learn more about the <u>International Energy Conservation Code</u> for buildings and how updating your efficiency codes could amplify a solar homes policy in your state or city.

VREL via Flickr, CC BY-NC-ND 2.0

Develop and publicize local financing options



FINANCING OPTIONS EXPAND ACCESS

Not everyone interested in going solar can pay for a new solar installation up-front. Statewide and citywide financing programs can make solar energy available to households, nonprofits and small businesses that might otherwise be priced out of the market. Solar financing options can include loans and installment programs, as well as leasing options that reduce up-front investment. Offering these options for your community can:

- Decrease up-front costs so that more community members can access solar energy
- Allow you to reach your solar goals faster by involving a broader portion of your community
- Create opportunities to partner with local financial institutions and solar installers to support the local economy

PROGRAMS TO CONSIDER

Several different categories of financing options can enable cities to expand solar access. Some of the most popular and beneficial include:

The Property Assessed Clean Energy (PACE) Program:
 This program allows local and state governments to loan money to home and business owners for energy and efficiency improvements, often through a third-party administrator. This program includes an option to tie a

loan for a solar installation to the property itself so that it is transferred to the new owner if the property is sold. Cities can adopt PACE legislation and issue PACE bonds, which the property owner then pays back on top of their property tax bills. This allows property owners to see energy savings as they pay off a solar project, usually resulting in net savings for the customer.

- Public-Private Partnerships: Cities can also partner with local financial institutions to offer low-interest loans for solar projects. The "Milwaukee Shines" program, for example, partnered with Wisconsin's Summit Credit Union to offer competitive loans of up to \$20,000 for certain solar installations. The loans can fund equipment, labor, permits, fees, and necessary building upgrades for a solar home project.
- Solar Leases and Power Purchase Agreements (PPAs): Cities should ensure that customers are able to lease solar installations through local solar installers over time. In a solar lease or PPA, the homeowner does not own the solar panels on their rooftop, but essentially rents the system from a local installer. The homeowner benefits from the energy that the solar panels generate, while the installer maintains the system and receives any applicable tax credits. In order to allow solar leases and PPAs, cities and states must allow companies that install solar panels to sell electricity to their customers without subjecting them to the same regulations as large utilities.



Solar financing options give more residents and businesses access to clean energy.

CASE STUDIES

Hundreds of cities have enabled these and other solar financing options, and are seeing faster adoption as a result. Here are a few examples:

- **The City of San Diego,** which is <u>a leader in total installed solar capacity</u>, allows residents and businesses to select from <u>eight providers</u> that have been authorized by the city to provide PACE financing.
- Thanks to legislation that enables residential PACE loans in the state of Missouri, **the City of St. Louis** offers funding to residential, commercial, industrial and multi-family properties in the city to finance energy efficiency and renewable energy property improvements through its <u>Set the PACE St. Louis</u> program.
- Since the **Milwaukee Shines program** was founded <u>in 2008</u> and the city began providing financing resources for home and business owners, the city has exceeded its goal of 1 MW of solar capacity significantly. As of January 2019, Milwaukee homes and businesses have more than 3.6 MW of solar energy installed.

- PACE Nation provides a map of where PACE programs are enabled throughout the U.S..
- The U.S. Department of Energy (DOE) provides a <u>resource page</u> on PACE financing programs, with information on how to set up a PACE program, policy frameworks for both residential and commercial programs, and webinars on a variety of PACE-related topics.
- Learn more about the financing options available in <u>San Diego</u> and <u>Milwaukee</u>.
- EnergySage Solar Marketplace can help consumers available compare lease and PPA options.





BULK PURCHASING BOOSTS DEMAND AND SAVES MONEY

Cities can work with local installers, nonprofits and community groups to offer bulk purchasing programs that allow businesses, homeowners and nonprofits to purchase solar energy collectively, lowering the cost for everyone involved. Solarize programs are bulk purchasing programs that bring customers together to negotiate better rates, select an installer for the group, and boost demand over a limited period of time. Solarize campaigns and other bulk purchasing programs help spur solar deployment while providing a myriad of benefits:

- Solarize campaigns educate the public about solar options and <u>can create a surge in solar installations</u> over a relatively short period of time.
- Bulk purchasing lowers costs so that more businesses and residents can afford to go solar and your community can achieve its solar goals faster.
- Residents also have more control and can make more informed decisions regarding installers when purchasing as a group.
- Solarize campaigns offer an opportunity to partner with local solar installers, non-profit organizations, and even nearby communities.
- Installers can save on marketing costs, reducing total costs for everyone.

KICKING OFF A CAMPAIGN

While Solarize and other bulk purchasing programs can look very different, most successful efforts share a <u>few common elements</u>:

- Competitive Selection: Most successful Solarize campaigns use a competitive process to identify a solar installer. Choosing one provider for your campaigns makes participation simple and less overwhelming. Doing so through a transparent, competitive process will also ensure that potential installers are treated fairly and customers can trust the decision. Some campaigns may prioritize different criteria in identifying an installer, from lowest price, to sustainable production to local job creation.
- Community outreach and creative marketing: In order to recruit enough participants, Solarize campaigns require a significant amount of community outreach and creative marketing efforts. Cities often partner with state agencies, non-profit organizations, neighborhoods, and the solar installer to amplify the impact of their campaign. Outreach efforts led by these partners will also allow the city and installer to save time and money on marketing.
- A clear goal and deadline: A Solarize campaign should be a limited-time offer with a clear deadline to encourage residents to act before the deal expires. Communities should also establish a specific goal going into the effort, such as doubling the number of residential solar systems in the town or neighborhood where the campaign will take place. This will motivate all partners involved and provide a compelling vision to share with participants.

SOLARIZE CAMPAIGNS VARY WIDELY, BUT MOST INVOLVE THE FOLLOWING STEPS:

- Pre-launch planning with partner organization(s)
- Recruiting technical assistance and community volunteers
- Choosing an installer
- Community outreach and promotion
- Enrolling customers
- Project site assessments, contracts, and financing
- Project installations
- Campaign evaluation



Philadelphia Mayor and Council members celebrate Solarize Philly's 150th Installation

CASE STUDIES

Neighborhoods, towns and cities, counties, and regions across the country have introduced Solarize and other bulk purchasing campaigns. The following are two case studies especially successful programs:

- **Portland, Oregon,** had the first "Solarize" bulk purchasing program in 2009. The <u>initial campaign</u> resulted in over 300 solar installation contracts within its first six months, ultimately saving participating customers 20 percent on costs. Three years of Solarize campaigns later, <u>over 1.7 MW</u> of rooftop solar capacity had been added throughout the city and the local solar industry had grown. <u>Community members</u> did the bulk of the outreach for the campaigns, supported by a well-established and respected neighborhood coalition and the city.
- In less than five months, <u>"Solarize Athens"</u> more than tripled the residential solar energy capacity in **Athens-Clarke County, Georgia.** A <u>coalition of community organizations</u>, including Environment Georgia, the Georgia Climate Change Coalition, Georgia Interfaith Power and Light, and Solar Crowd Source led the program. Solarize Athens reached the highest tier in its residential pricing, which means the price for solar dropped from \$3.19/watt to 2.90/watt for everyone involved, and included residential, nonprofit, and commercial installations. Within the first 5 months of <u>Solarize Athens 2.0</u>, 261 residents signed up to go solar, totalling 183.60 kW of new solar projects at an even lower average cost of \$2.76/ watt.
- Solar United Neighbors, a nonprofit that represents the interests of solar owners, has implemented their solar co-op model in communities across the country. Their co-ops organize 50 to 100 neighbors in a group to invest in rooftop solar together, helping them install an average of 7kw per roof and save \$35,000 on electricity bills on average over 25 years.

- The National Renewable Energy Lab put together a comprehensive guide for community Solarize campaigns called <u>The Solarize Guidebook: A community guide to collective purchasing of residential PV systems.</u>
- The Clean Energy States Alliance provides a step-by-step guide for initiating Solarize campaigns geared towards state-level programs called <u>Planning and Implementing a Solarize Initiative</u>: <u>A Guide for State Program Managers</u>.
- The SunShot Solar Outreach Partnership provides a Solarize Programs Toolkit, as well as no-cost technical assistance.

7

Encourage community solar projects



COMMUNITY SOLAR EXPANDS ACCESS

Community solar programs can allow apartment occupants and others who cannot install their own solar systems to purchase and benefit from clean solar energy. A 2015 <u>Department of Energy and National Renewable Energy Lab report</u> estimates that nearly half of all consumers and businesses are unable to install their own solar photovoltaic systems for a number of reasons. They may not own their building or have access to sufficient, sunny roof space. <u>Community solar expands access</u> by allowing customers to rent or own a set of panels in a shared solar project and <u>receive a credit</u> on their utility bill based on their share of the generated power. Community solar offers a number of benefits to consumers:

- Community solar programs expand access to solar energy to renters and homeowners whose properties are not suitable for on-site solar, helping your community adopt more renewable energy. According to the most recent Solar Energy Industry Association report, the community solar market is expected to add as much as 3.5 gigawatts of clean energy in the next five years. That would be enough solar energy to power approximately 700,000 additional american homes.
- Community solar can be <u>more affordable</u> than independent projects and often eliminates up-front investment barriers, providing more financial flexibility for participants.
- Community solar can and should deliver benefits back to

- consumers on their electric bills, using <u>virtual net metering</u> or bill crediting structures that fairly reimburse consumers for their share of the solar energy that a project supplies to the grid.
- Neighborhoods and other groups can go solar together through community solar programs, fostering a sense of community and a shared vision for a clean and renewable energy future.
- Shared solar projects allow a city to make the most use of solar-friendly spaces, such as publicly owned land outside the city limits, closed landfills, former industrial sites, vacant lots, and other properties with limited uses.
- Shared projects provide an opportunity for cities to partner with both local solar installers and their utility company to drive participation.

SHARED SOLAR MODELS AND HOW THEY WORK

There are two common models for shared solar projects. In the <u>utility-led model</u>, a local utility sponsors a project that customers can subscribe to for a monthly fee or tariff. In the <u>third-party community solar model</u>, which generally offers greater benefits for consumers, a third party developer or nonprofit organization sponsors a shared solar project. Community members, businesses and other institutions can then lease or own a number of solar panels in the project in return for energy bill credits for the energy those panels produce.

BEST PRACTICES FOR SHARED SOLAR PROJECTS

Shared solar projects should first and foremost benefit consumers. Following a few <u>best practices</u> will help ensure that they do:

- Make participation in and benefits of new shared solar projects available to all community members. Broad public outreach and marketing efforts can help, as can reserving a portion of total project capacity for residential and small commercial customers.
- Foster an open and competitive market for community solar developers to build and operate community shared projects and interconnect those systems to the serving utility's grid, encouraging customer choice.
- Establish bill credit mechanisms that provide subscribers with fair and stable economic benefits, compensating for the full value of the clean, local energy to the grid, environment and society.
- Ensure long-term stability and quality of the program to protect benefits to customers and the investments of developers.
- Work with utilities and regulators to ensure transparent siting and interconnection rules, as well as to make both processes smooth and efficient.



Community solar farm in Maine

CASE STUDIES

According to the Solar Energy Industries Association, there were <u>40 states</u> in the U.S. with at least one shared solar project online as of 2018. <u>In addition to the District of Columbia, 16 states</u> have policies that enable third-party community solar projects. So, you can choose from hundreds of shared solar projects as models for your own initiative. Below are just two examples of successful and beneficial community solar programs:

- Avista Utilities partnered with the third-party community solar developer Clean Energy Collective to offer participation in a shared solar farm with over 1500 panels in Spokane Valley to its Washington customers. Equipment for the project was made locally, participation was open to all types of customers, and the project's over 650 participants receive bill credits for up to 100% of their average monthly energy consumption.
- Serving upwards of 12,000 qualified low-income customers in the Imperial and Coachella Valleys in California,
 the 30 MW <u>Citizen's Energy community solar project</u> is one of the largest in the country. The array will operate
 under a 23 year purchase power agreement, and savings will be passed on to customers in the form of additional
 monthly discounts on their electric bills.

- The National Renewable Energy Lab provides <u>A Guide to Community Shared Solar: Utility, Private, and Nonprofit Project Development,</u> which serves as a resource for utility managers, government officials and staff and community organizers who want to develop community shared solar projects.
- The Department of Energy Office of Energy Efficiency and Renewable Energy offers <u>Policy Guidelines and Model Provisions</u> for shared solar energy programs.
- Department of Energy runs the <u>National Community Solar Partnership</u>, which provides a number of resources and working groups to expand access to and development of solar energy in low income communities.
- The Coalition for Community Solar Access provides a <u>Community Solar Policy Decision Matrix</u> for designing community solar programs and numerous <u>additional resources</u>.
- <u>EnergySage</u> can help cities evaluate opportunities for and benefits of community solar in their area.

Partner with utilities



UTILITY PARTNERSHIPS CAN AMPLIFY IMPACT

Cities should work with the electric utilities serving their areas – whether municipal or investor-owned – as partners in unlocking the potential of solar energy. Since utilities manage energy supply and have existing relationships with customers in their service area, their full cooperation in a solar effort can be hugely beneficial.

Opportunities to collaborate with your local power provider can range from joint outreach campaigns to increase distributed solar deployment, to collaboration on community solar projects, to shared ownership of renewable energy or carbon reduction goals. Working hand-in-hand with your utility will make any energy endeavor far more effective than would be possible

without their participation. Utility partnerships offer several benefits:

- Shared projects foster collaborative relationships that will help your city pursue future renewable energy efforts more effectively.
- Working with your utility as a partner will make better use of limited public resources.
- Utilities have more direct control of the local electricity supply, and have greater access and resources for large renewable energy projects than local governments do alone.
- Using customers' existing relationship with their power provider to publicize solar opportunities and programs will advance your outreach efforts and boost solar growth.

CASE STUDIES

The following are three examples of strong city-utility partnerships that led to successful solar energy programs:

NEW YORK CITY AND CON EDISON

In 2010, Con Edison worked with New York city and state agencies as well as the City University of New York (CUNY) on the 100 Days of Solar program. The effort involved reducing the approval time for a residential solar panel installation by improving coordination between the utility and government agencies, outreach to Con Edison customers about the economic and environmental benefits of solar power, and the creation of a utility website where customers can submit solar applications. One year in, solar power capacity had already more than doubled in New York City and Westchester County.

The NYC Solar Partnership that brought CUNY, the New York City Mayor's Office of Sustainability, and the New York City Economic Development Corporation together has since expanded to include a Solarize NYC initiative and a community shared solar program led by Sustainable CUNY.

SALT LAKE CITY AND ROCKY MOUNTAIN POWER

Salt Lake City has a community-wide goal of achieving 100 percent renewable energy, and reaching that goal will require a strong partnership with the local electricity provider Rocky Mountain Power. The city and utility came together with a partnership agreement and clean energy implementation plan. The plan includes increased city funding for the utility's residential energy efficiency efforts, incorporating data from the utility into the city's system for tracking progress, and a new community solar program.

MINNEAPOLIS PARTNERSHIP ON EMISSIONS REDUCTIONS

The City of Minneapolis established a partnership with Xcel Energy and CenterPoint Energy, the investor-owned electric and gas utilities serving the city, to achieve its goal of using 100 percent renewable electricity citywide by 2030. Through the partnership, the city and utilities work together to create and implement plans to reach that goal and track progress towards interim benchmarks. Excel has since announced a plan to achieve zero emissions by 2050 across all the states it serves.

This partnership came only after a <u>push for municipalization</u> in Minneapolis that drove the utilities to consider a more aggressive approach to renewable energy. Cities served by unsupportive utilities may want to consider forming a municipal utility in order to gain greater control over their local electric grids. The next guide in this toolkit explores that option in greater detail.

ASHEVILLE'S BLUE HORIZONS PROJECT

The Blue Horizons Project is a collaborative effort between the City of Asheville, the regional power provider Duke Energy, and other stakeholders that set out to avoid building a new transmission line and coal-fired power plant to meet growing regional energy demand. The group identified that reducing peak demand by 100 megawatts would eliminate the need for a new plant and is working to improve energy efficiency, add local renewable energy and storage projects, and update metering infrastructure to avoid adding a new fossil-fuel power plant to the local grid.

- Learn more about the <u>NYC Solar Partnership</u> and <u>100 Days of Solar</u> campaign as a model of a collaborative outreach effort.
- Check out Salt Lake City's <u>partnership agreement</u> with Rocky Mountain Power.
- Explore the <u>Minneapolis 2040 plan</u> and learn more about how the <u>Minneapolis Partnership on Emissions Reductions</u> functions in helping to achieve the city's climate goals.
- Learn more about Asheville's <u>Blue Horizons Project</u> and how efficiency efforts can amplify the impact of renewable projects in creating a clean electricity grid.
- The Interstate Renewable Energy Council, in collaboration with Vote Solar, provides a <u>Checklist for Voluntary Utility-Led Community Solar Programs</u> to help drive community solar implementation.
- The American Council for an Energy Efficient Economy provides an <u>overview of local government-utility partnerships</u> for cities served by investor-owned utilities, which includes engagement strategies, examples and additional resources.



WHAT IS A MUNICIPAL UTILITY?

Local governments can own and operate <u>municipal utilities</u> as not-for-profit ventures. Investor-Owned Utilities (IOUs) on the other hand, which function as profit-driven private businesses, serve most customers in the U.S.. Electric Cooperatives fall somewhere in between the two. Like municipal utilities, they operate as not-for-profit enterprises, but governed by their customers rather than local governments.

Community choice aggregation (CCA) offers an alternative in which the city, rather than the utility, is responsible for purchasing power. However, the private utility still maintains the transmission lines and provides customer services. CCAs can offer more local control over a community's electricity sources as well as more renewable energy than some utilities provide. By aggregating demand through a CCA, communities can also negotiate better rates with suppliers. Not all states have authorized CCAs, but they can expedite the transition to clean energy where there are enabled.

THE PROS OF PUBLIC POWER

Cities served by investor-owned utilities that are not supportive of or responsive to renewable energy initiatives may want to consider forming a municipal utility or CCA. Public power can offer far-reaching benefits for communities of any size:

- Many municipally owned and cooperative utilities are leaders in promoting solar power, especially through <u>community solar projects</u>. As community-owned, notfor-profit organizations, public utilities tend to be <u>more</u> <u>responsive</u> to their customers' interests private utilities, including regarding the growing demand for solar power.
- Since <u>public power utilities</u> are governed and regulated by local officials or an independent utility board, customers have more say in their operations. They can better hold their utility accountable through the election process, and can demand transparency around decisions.
- Communities have greater control over the priorities of public utilities than private ones. Decisions reflect the values and interests of the community, not the boardroom.
- Municipal utilities provide <u>financial support</u> for state and local government in the form of payments and contributions.
- On average, <u>municipal utilities boast</u> better customer service, greater reliability and lower rates than their investor-owned counterparts.

Through municipal utilities, cities can enact a number of programs and incentives to drive progress towards community

solar goals, including rebates and low-interest loans to help fund new solar installations, net metering or other performance based incentives to ensure that customers are compensated fairly for the solar power they provide to the grid, and community solar programs that expand access to clean energy.

THE MUNICIPALIZATION PROCESS

Forming a public power utility can be a long, challenging, and expensive process, but <u>most cities and towns</u> that have done so successfully agree that it is well worth the effort. Municipalization campaigns involve several <u>key steps</u>:

Feasibility, legal, and valuation studies: Many cities and towns considering public power hire outside experts to assess the economic feasibility of municipalization, identify relevant state laws that might limit or prohibit the process, and establish a reasonable price for the existing electric distribution system and facilities that the city would acquire. This information will inform future decisions as well as the process itself.

Community engagement: Community support for going public is critical to success, and cities should ensure that the public is informed and involved throughout the process. A citizen advisory committee can help engage the public, as can consulting local businesses and other stakeholders. Regardless of the methods you chose, prioritize transparency and public outreach.

Public referendum: In some states, the law requires a referendum to authorize a new public power utility or to establish an independent board to govern the new utility. In order to demonstrate strong community support, some cities may put the issue on the ballot even if not legally required to do so.

Price negotiation: Once any studies and votes are complete, the city or town will need to make an offer to the existing utility to purchase the local electricity system. This offer should be based on what the third-party valuation study or studies found reasonable. In many cases, you will need to negotiate to agree on a price somewhere between the initial offer and the existing utility's asking price. If the utility refuses to sell or negotiate a reasonable price, the city may consider condemnation using its right of eminent domain.

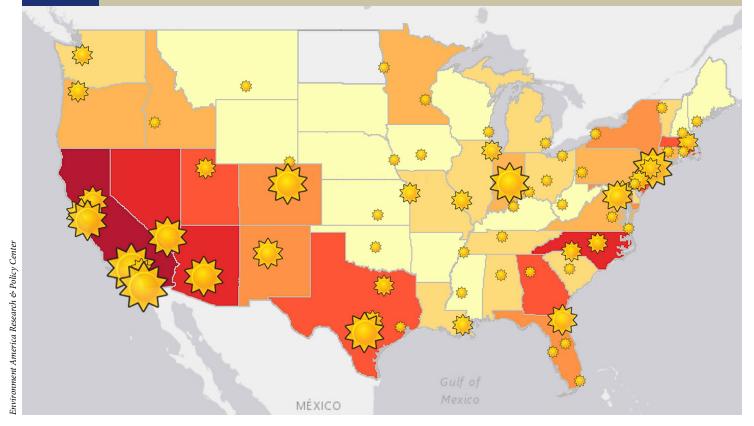
Management: Once the acquisition is under way, the city will need to make arrangements to manage the newly formed public utility. That may include construction, power supply and transmission arrangements, setting up a new governing body, hiring staff, and purchasing equipment. The city may need to contract out some of these functions to an experienced operator until it is ready to operate independently.

CASE STUDIES

- The **Los Angeles Department of Water and Power (LADWP)** is the nation's largest municipal utility, serving <u>over four million</u> residents. The public utility supplies the local grid with <u>nearly 30 percent</u> renewable energy sources, and the city consistently ranks at the <u>top of the list</u> in total installed solar capacity.
- As of October 2017, public electric provider **Austin Energy** supports more than 6,250 residential solar energy systems, 335 commercial installations, 44 school arrays, and 60 municipal projects. Residential customers can also earn a \$2,500 rebate by completing the solar education course and installing a qualifying solar photovoltaic (PV) system on their home.
- **Nashville Electric Service** is one of the largest public electric utilities in the country, serving more than 400,000 customers in middle Tennessee. Customers enjoy a number of benefits to the public utility, including the <u>Music City Solar community solar</u> array and <u>home energy-savings workshops</u>.

- The American Public Power Association's <u>Public Power for Your Community</u> report describes the benefits and process of establishing a public power utility in greater detail.
- <u>The Solar Foundation</u> reviews solar programs and case studies for municipal utilities.
- The EPA provides <u>case studies and additional resources</u> for communities interested in CCAs.

Support strong state-level solar policies



Environment America's <u>State of Solar map</u> shows how state and city progress often coincide.

STATE POLICIES CAN SHAPE YOUR COMMUNITY'S SUCCESS

America's cities, as centers of population growth and energy consumption, must lead the way in building a grid powered by clean, renewable energy. However, state policies can have a sizeable impact on a city's ability to expand solar energy. Research shows that solar energy policies – more than the availability of sunshine – dictate which states and, by extension, cities have successful solar industries and which do not. Cities can shine brighter when their state's energy policy landscape supports renewable energy development, and should advocate for helpful state policies in addition to shaping their own.

LOCAL VOICES CAN SHAPE STATE DECISIONS

Cities have a unique opportunity to influence the decisions made by their state elected officials and regulatory bodies in favor of policies that support the advancement of solar and renewables. Because mayors, city councilmembers, and other local officials represent their community's interests, their recommendations carry more weight than those of a single citizen and are more likely to affect state level policy decisions. Local leaders should leverage their influence to ensure that the state energy policy landscape is as conducive to their community's renewable energy transition as possible.

POLICIES TO ADVOCATE FOR

From renewable energy standards to incentive programs, many state policies affect a city's solar energy potential. The <u>most effective policies</u> facilitate the widespread adoption of small-scale solar energy systems on homes, businesses, and other institutions, while also encouraging large projects. <u>Examples</u> of state solar policies worth advocating for include:

Strong renewable energy targets for utilities, including specific requirements for solar energy adoption: States should adopt or increase mandatory renewable energy standards with solar carve-outs that require a significant and growing share of the state's electricity to come from the sun.

Strong statewide interconnection and net metering policies:

These critical policies ensure that individuals and businesses are appropriately compensated for the electricity that they provide to the grid and allow them to move seamlessly between producing their own electricity and using electricity from the grid when the sun is not shining.

Electric rate designs that encourage solar adoption, rather than disincentivizing it: Utilities may propose rate designs that add or increase charges to the electric bills of customers with rooftop solar arrays, including demand charges, increases in fixed charges, and higher rates. Structures like these limit the benefits of adopting solar energy, causing solar customers to pay almost as much on their energy bills as traditional customers, despite using far less energy from the utility over the course of a month. State governments should reject unfair proposals like this that discourage customers from switching to solar energy.

Authorization of programs that expand access: According to the National Renewable Energy lab, 49 percent of Americans don't own a home, have shading on their homes, or cannot afford a solar energy system. Policies that allow virtual or aggregate net metering and community solar enable low-income households, renters and apartment dwellers to collectively own solar energy systems and share in the net metering credits they generate. Enabling PACE financing can also expand access to solar power.

Public benefits charges on utility bills or other sustainable financing mechanisms for solar energy: These practices help fund solar energy for low-income households, non-profits, small businesses, and local municipalities to ensure that everyone has access to the benefits of solar power.

Authorization of third-party sales of electricity: Financing rooftop solar energy systems through third-party electricity sales significantly lowers the up-front cost of installing solar PV systems for commercial and residential consumers. States should allow companies that install solar panels to sell electricity to their customers without subjecting them to the same regulations as large utilities.

Tax credits, rebates and grants for solar energy installations:

These financial incentives are powerful tools that have made solar energy a financial option for many more Americans. In 2015, six of the 10 states with the most solar capacity per capita offered tax credits for solar installations, and four offered rebates or grants.

Policies that support energy storage, electric vehicle smart charging and microgrids: State governments should design policies that facilitate the transition from a power grid reliant on large, centralized power plants to a "smart" grid, in which electricity is produced at thousands of locations and shared across an increasingly nimble and sophisticated infrastructure. Such state policies should support the expansion of energy storage technologies, electric vehicle smart charging networks and microgrids, as important steps in powering all sectors of our society with renewable energy.

WHAT ADVOCACY CAN LOOK LIKE

Local elected officials have access to a wide variety of means to advocate for state energy policies that will set their communities up for success. A few of those options include:

- Lobbying state decision makers directly to make the case for the necessity of solar energy in your state's future and the policies that will help it grow.
- Joining in coalition with other local governments, stakeholders, or advocacy groups. Teaming up with other cities or elected officials, through a state municipal league, or via a national campaign such as Environment America's Mayors for Solar Energy can amplify the impact of your advocacy, and can also allow for collaboration with peers.
- Including the topic of renewable energy policies in public speeches, writing opinion pieces for local and state media outlets, and posting relevant content on social media allow elected officials to use the audience that comes with their position to build public support for strong energy policies.
- Leading by example with strong local policies can also encourage your state to step up to bat. For example, California only adopted a statewide policy to include solar on all new homes after dozens of cities throughout the state implemented similar policies with success.

- The Solar Energy Industries Association's <u>State of the States</u> report provides more detail on state policies that impact solar energy development.
- Learn more about our Mayors for Solar Energy project and join over 300 pro-solar local leaders today.
- Consider membership through the National League of Cities' state leagues or the U.S. Conference of Mayors.