Make Your Town Solar Friendly

June 2017

Through zoning and permitting rules governing solar power, municipalities can influence how quickly solar power is adopted by local residents and businesses. Reducing “soft costs” related to zoning barriers and streamlining permitting and inspection processes can potentially lower the cost of solar installations and reduce unnecessary delays for consumers. This action awards points to municipalities for taking steps to make permitting processes and zoning rules supportive of solar energy, while balancing the aesthetic and safety concerns of each community. In addition, implementing this action may qualify a municipality for the SolSmart National Designation. (See “What to Submit” section below for further information on the SolSmart program.)

There are no prerequisites for this action. Municipalities may complete one or both sections of this action.

1. Adopt a supportive solar zoning ordinance and adopt a permitting fee ordinance as recommended in the Sustainable Jersey Guidance for Solar Friendly Ordinances: 15 points.

2. Streamline solar permitting processes and inspections: 15 points.

For silver certified communities this action can count toward a Gold Star in Energy. See the Gold Star Standard section of this action for more information.

Why is it important?

Sunlight is a 100% clean and renewable source of energy, and solar is one of the fastest-growing renewable energy alternatives in the country. A range of solar technologies capture energy from the sun for electricity or heating. Solar photovoltaic (PV) panels transform solar radiation directly into electricity. Solar thermal (or solar hot water) collectors capture the sun’s energy as heat, and may be used to heat water for commercial and residential hot water needs, including for space heating.

Using solar energy is one of the most impactful strategies available for reducing greenhouse gas emissions. Solar is considered one of the purest forms of renewable energy and is demonstrably “cleaner” than virtually any other alternative. Beyond environmental value, however, solar energy brings numerous economic, social, and political benefits, as well as the creation of local jobs. The State of New Jersey has been a national leader in recognizing and encouraging the use of solar energy, and a solar or photovoltaic energy facility or structure is considered an “inherently beneficial use” in the Municipal Land Use Law.

A primary factor affecting increased adoption of on-site solar energy generation technology is the “friendliness” of the municipality to the siting and permitting of those systems. As the hard costs (like PV panel prices) for solar systems have dropped, “soft costs” such as engineering, customer acquisition, and permitting have become significant barriers to lowering the price. The municipality can therefore help encourage solar adoption by creating ordinances that are supportive, and implementing permitting processes and other changes that facilitate project development and reduce those soft costs.

Other factors – such as increasing general awareness, and preparing municipal staff (including first responders) through solar-specific training – directly help mature the solar market in NJ. As more sites (both residential and commercial) utilize solar-generated power, overall energy sustainability increases through decreased greenhouse gas emissions and reduced dependence on fossil fuels.

The New Jersey Energy Master Plan includes the goal to “Promote Certain PV installation,” in particular by encouraging the placement of solar on otherwise underutilized areas such as on or above impervious surfaces (e.g. parking lots) or on landfills, brownfields or areas of historic fill. In addition, the New Jersey Solar Act of 2012 set a Solar Renewable Portfolio Standard (RPS) requiring that by the year 2028, 4.1% of electricity sales must come from solar. Other supportive state laws include:


- N.J.S.A. 40:55D-38.1. This section of the MLUL exempts solar panels from calculations of impervious surface or impervious cover in municipal...
site plan and subdivision applications. This exemption makes it easier for larger solar installations to comply with local and state regulations. It
does not, however, exempt the base or foundation of the solar panels from the calculation. http://www.gannlaw.com/OnlineApp/dtSearch-
Data/TextFiles/Zoning/App-6.pdf

regulate the location of where the solar installation may be placed on the roof, concealment of supportive structures, fixtures, and piping, including
color harmonization with surrounding structures or landscaping. However, such requirements may not increase the solar installation cost or
maintenance costs by an amount estimated to be greater than 10 percent of the total cost of the initial installation, including labor and equipment;
nor may the requirements impede the solar installation from functioning at its intended maximum efficiency.
http://www.state.nj.us/dca/divisions/codes/codreg/pdf_regs/45_22A.pdf


- N.J.S.A. 4:1C-32. The State Agriculture Retention and Development Act was amended to permit solar energy on preserved farms to provide
power or heat to the farm, reduce the farm’s energy costs, or to provide a limited income opportunity to the farm owner. The solar facilities can occupy
no more than one percent of the farm, and are subject to the review of the State Agriculture Development Committee.
http://law.justia.com/codes/new-jersey/2014/title-4/section-4-1c-32.4

- N.J.S.A. 4:1C-1. The Right to Farm Act protections extend to the generation of solar energy on commercial farms with certain restrictions. The
revised statute provides commercial farms that wish to generate solar energy with protection against restrictive local ordinances and regulations, and subject to the laws of the State Agriculture Retention and Development Act and promulgating regulations.

Who should lead and be involved with this action?
The first step is for green team members, municipal staff, and municipal officials to meet and decide which tasks are the best fit for the municipality to
implement. Once the set of tasks is identified, the people involved will vary by task.

Supportive Solar Ordinance and Amended Fee Ordinance. The ordinance will involve the municipal staff and professionals (legal, engineering,
planning) responsible for making changes to zoning and land use regulations, and will likely require input from the Planning Board. The solar
ordinance and the amended fee ordinance will ultimately be approved by the municipality’s governing body.

Local historic preservation organizations and municipal staff responsible for zoning, building, and siting standards should be included in the
development of the solar ordinance. Groups such as homeowners association can be brought into the discussion at an early stage of development.
Local certified arborists and shade tree committees can help further understanding of the need to protect trees and how solar and tree cover are both
important in addressing energy consumption issues. First responders should also be included in this discussion from the outset to make sure that their
needs are addressed within the context of ordinance development and enforcement.

Streamline Solar Permitting and Inspections. Municipal staff, including zoning and code officials, as well as other administrative staff, must be
involved with changes to the permitting process.

Timeframe
The specific initiatives chosen will dictate the overall timeframe to complete this action. Estimate 4-6 months for drafting and implementing the
ordinance and 4-6 months for streamlining the permitting process. These two efforts can be pursued simultaneously and each will involve staff in
multiple departments. If the municipality wishes to adopt an online permitting system, involvement of the municipality’s IT department will be essential.

Project costs and resource needs
Adopting a supportive solar ordinance and an amending permits fee ordinances requires minimal resource investments. The primary cost will be
the time of the professional staff required to draft and implement the ordinance. Limited staff time, attorney review, and professional consulting may be
necessary for the drafting, review, and approval of the ordinance. Small costs may also be incurred to print and distribute informational materials
about the new ordinance. Similarly, the drafting and implementation of a streamlined permitting process will incur the time and costs of staff and code
officials, among others. Enforcement may require a very modest increase in staff time to ensure that solar energy system installations meet all
relevant codes and standards.

NOTE: If the municipality undertakes changes to permitting and inspection procedures as part of the “streamlining permitting” section of this action, it
is likely that staff time for permitting and inspection, as well as related costs to the municipality will be reduced.

What to do, and how to do it (“How to”)
Below are brief summaries of the two sections of the variable point action. Detailed guidance on how to implement these actions follows
the summaries.

Adopt a supportive solar ordinance: 15 points. The municipality must pass a Supportive Solar Ordinance that addresses areas identified in the
Sustainable Jersey Guidance for Creating a Solar Friendly Ordinance [insert hyperlink]. Further examples of specific language are provided in several
resource documents prepared by Department of Energy SunShot teams in various jurisdictions around the country listed in the Resources section of
the action. This language can be adopted and adapted for use by New Jersey municipalities. Ordinances that are not supportive will not be eligible to
receive points for this action. The municipality must also amend its permitting fees ordinance to address solar installations, as described in the
**Streamline solar permitting processes and inspections: 15 points.** The municipality must post the permit requirements checklist online AND implement at least TWO of the additional activities listed in the Streamlining Permitting section below. The suggested options are based on best practices identified by the Interstate Renewable Energy Council (IREC) and the Solar American Board of Codes and Standards (Solar ABCs).

**Developing a Supportive Solar Ordinance**

**Step 1: Assemble a team.** Whatever process a municipality uses to adopt new zoning and land use ordinances would be used here. Generally this begins with a meeting that includes elected officials as well as relevant municipal staff, such as planners, engineers, solicitors, code officials, and emergency responders. Members of the planning board, green team, Shade Tree Commission, or Redevelopment Agency may also be included.

**Step 2: Solar 101.** An initial step towards developing a solar ordinance is to understand how solar technology works and the siting needs that allow systems to operate properly. In this way, municipalities that wish to encourage solar can ensure that their ordinance does not impose unnecessarily stringent regulations on solar energy systems. See the Resources section of the action for basic introductory material on solar energy technologies.

**Step 3: Review planning goals and policies.** The solar ordinance will need to be compatible with the municipal master plan. Determine if any changes should be made to the master plan to strengthen the policy foundation for the solar ordinance.

**Step 4: Determine the scope and location for the solar ordinance.** It is recommended that municipalities adopt a solar ordinance as a stand-alone piece of legislation rather than try to fit it into an existing ordinance. The new ordinance can include supplemental regulations that would apply just to solar energy systems that balance solar system siting needs with the need for compatibility with adjacent land uses.

For example, supplemental regulations can be used to specify height exemptions, setbacks from lot lines, and impervious cover exemptions. Supplemental regulations for solar can encourage installations that are both cost effective (e.g. generate the maximum possible amount of solar energy) as well as compatible with existing land use goals (e.g. consistent with historic preservation areas).

Municipalities should not simply designate solar energy systems as an accessory use, subject to the same use regulations (such as height and setback) as any other accessory use. Standard accessory use regulations may be overly restrictive for solar energy systems, and may significantly affect performance or prevent outright the ability to install a solar system on a property.

**Step 5: Craft the Ordinance**

**How to construct a supportive solar ordinance**

The Sustainable Jersey "Guidance for Creating a Solar Friendly Ordinance" document provides detailed discussion and sample language for a supportive solar ordinance that meets the following objectives:

- is in accordance with state laws;
- is not overly restrictive or contradictory to the nature of solar PV energy systems and
- promotes safe and sound community development.

Guidance is provided to assist municipalities with crafting a solar ordinance that meets the objectives outlined above and is also best suited to each community’s character and land use objectives.

Guidance is organized around areas that need to be addressed by municipal ordinances in order to qualify for points for this action:

**Intent/Background/Purpose**
- Address goals and benefits of solar/renewable energy

**Definitions**
- Define solar technologies and terms

**General Regulations**
- Address issues such as height, size, setbacks, and lot coverage

**Permitting Fees**
- Establish permitting fees for residential rooftop solar PV installations

**Streamline Solar Permitting Processes and Inspections**

These recommendations are based on Project Permit: Best Practices in Residential Solar Permitting, prepared by the Interstate Renewable Energy Council (IREC) and VoteSolar.


**MANDATORY**

1. **Post Permit Requirements Checklist Online:** Information on permit fees, application requirements and the permitting process should be easily accessible online via the municipality’s website so applicants can review and prepare materials in advance. Municipalities can provide a submittal checklist of all requirements for rooftop solar PV and solar thermal permitting in a single online location.


- List required forms, such as building permit application form, and where they can be located
- List and describe required diagrams or plans including the number of copies needed
- List any other required documentation, signatures or approvals
The municipality must implement at least TWO of the activities below to streamline solar permitting and inspections.

1. **Train Local First Responders in Solar**: Participate in training and education programs for local first responders (law enforcement, fire, and/or emergency response departments) to increase understanding of solar technology, installation, and related safety issues. Indicate the specific course date, instructor or course provider, course description or syllabus, and course length. Describe how it was ensured that this information was put into practice by all members of the staff. Sample training options are provided in the Resources section.

2. **Cross-train building, zoning, inspection, and permitting staff**: Cross-training increases understanding of solar technology, installation, and related safety issues. Indicate the specific course date, instructor or course provider, course description or syllabus, and course length. Sample training options are provided in the Resources section.

3. **Implement an Expedited Permit Process**: The majority of residential rooftop PV systems can be processed quickly if they meet clearly defined review requirements. An expedited permitting review process for these systems enables review over-the-counter or via electronic processing within one day. For larger systems not covered by an expedited permit process, municipalities establish standard permitting requirements to make the process clear and transparent. The municipality should work to make these standards consistent with neighboring jurisdictions.
   - Travel to and from the building department can be one of the most cost-intensive parts of the permitting process for installers. Obtaining a residential PV permit should require no more than one visit to the building department for properly completed applications. If an over-the-counter option is not feasible, the municipality should offer a permit turnaround time of less than three days. Moving to a fully online permitting system can reduce travel time for installers and workload for municipalities. Municipalities can adopt a system that enables submittal, review, and approval of PV permits via email or a website within a short period of time.
   - At this time in New Jersey, only licensed engineers with a digital seal can submit applications electronically. Digital seals for electronic submission are not yet available for architects or electricians in New Jersey. Sustainable Jersey has an action in the Public Information and Engagement category, “Online Municipal Public Service Systems,” that provides guidance and resources for municipalities to offer services online (see: http://www.sustainablejersey.com/actions-certification/actions/#open/action/543). 

4. **Offer a Narrow Inspection Appointment Window**: Offering an exact appointment time or keeping the windows for inspection appointments at or below two hours greatly reduces the amount of costly worker time spent waiting for inspectors to arrive. Inspectors could also call contractors as appointment time grows close to further save time. Although NJAC 5.23-2.18 requires inspection within three business days, the recommendation of this action is to reduce the time required for inspections and create a process for reducing the appointment time window for scheduling inspections. Provide evidence of how appointments are made for inspection of solar installations.

5. ** Expedite or Eliminate Zoning Permit Requirement**: In the case of residential rooftop solar energy system installations, zoning permits should be expedited or eliminated as all equipment is to be affixed to existing residential/single family homes and all project specifications and details are already captured in the statewide NJ UCC Construction, Building, and Electrical Applications submitted with each job. The zoning guidance provided in this action is intended to help municipalities reduce zoning barriers and uncertainties so that zoning review can be eliminated for most residential solar installations.

6. **Amend Permitting Fees Ordinance**: Using a flat-fee method instead of a value-based method to assess permit fees streamlines the process and ensures that larger residential solar energy systems are not arbitrarily penalized. Fees should fairly reflect the time needed for city staff to review and issue a permit as these costs to the municipality remain constant regardless of system size for standard residential rooftop-mounted arrays. For further detail on permitting fees, see the Sustainable Jersey “Guidance for Creating a Solar Friendly Ordinance” document.

**NOTE:** Only municipalities that do NOT implement the Solar Zoning part of this action may select this option. Amending the permitting fee ordinance is a required activity for the Solar Zoning part of this action.

The amended permitting fees ordinance should establish reasonable residential permit fees in line with NJAC 5:23-4.20:

NJAC 5:23-4.20 (c) 2. iii. (13) For photovoltaic systems, the fee shall be based on the designated kilowatt rating of the solar photovoltaic system as follows:

- (A) One to 50 kilowatts, the fee shall be $ 65.00;
- (B) Fifty-one to 100 kilowatts, the fee shall be $ 129.00 and
- (C) Greater than 100 kilowatts, the fee shall be $ 640.00.

**What to submit to earn points for this action**

In order to earn points for this action, the following documentation must be submitted as part of the online certification application in order to verify that the action requirements have been met. Applicants can submit the points associated with Option A and/or Option B as outlined below. This means a municipality can earn 15 points if it completes Option A or Option B. Or it can earn 30 points if it completes Option A and Option B.

**Description of Implementation** – In the text box provided on the submission page for this action provide a short narrative (300 words or less) of what has been accomplished and the impact it has or will have on the community. If applying for the Streamlining Permitting section of this action,
specifically identify in your narrative the two additional tasks implemented for streamlining permitting and inspection selected by the municipality.

Option A for 15 points:

1. Supportive Solar Ordinance: Upload a copy of the solar supportive ordinance adopted by the municipality. The municipality must submit the supportive solar ordinance text, and an official document evidencing its adoption by the governing body. The ordinance must meet the criteria specified in the Sustainable Jersey Guidance for Creating a Solar Friendly Ordinance.

2. Amended Permitting Fee Ordinance: Upload a copy of the amended permitting fees ordinance that specifies the permitting fee structure described in the Sustainable Jersey Guidance document.

Option B for 15 points:

3. Online permitting requirements checklist. Upload documentation demonstrating an online permitting requirements checklist.

4. Complete TWO additional activities:
   a. Solar training for first responders. Upload documentation that identifies the course date, instructor or course provider, course description or syllabus, and course length. Describe who took the training and how it was ensured that this information was put into practice by all members of the staff. Training must be from within 2.5 years of the submission deadline.
   b. Cross-training of staff. Upload documentation that identifies the course date, instructor or course provider, course description or syllabus, and course length. Describe who took the training and how it was ensured that this information was shared with all members of the staff. Training must be from within 2.5 years of the submission deadline.
   d. Inspection scheduling. Upload documentation regarding how appointment times for inspections are scheduled to reduce time for inspectors and installers.
   e. Zoning Permit. Upload documentation regarding expedited zoning permit requirement for residential rooftop solar installations. If the zoning permit has been eliminated for residential rooftop solar installations, provide documentation.
   f. Permitting Fees. Upload a copy of the amended permitting fees ordinance that specifies the permitting fee structure described in the Sustainable Jersey Guidance document. NOTE: Only municipalities that do NOT implement the Solar Zoning part of this action may select this option. Amending the permitting fee ordinance is a required activity for the Solar Zoning part of this action.

SPECIAL NOTE: COMPLEMENTARY RECOGNITION WITH SOLSMART

Municipalities that receive the Silver designation level for the U.S. Department of Energy’s SolSmart community designation program will automatically qualify for 30 points for this action.

To apply for SolSmart designation, visit: http://www.gosparc.org/apply-now

Resubmission Requirements

To resubmit for points under this action, the municipality must document that the zoning ordinance, permitting fees, and streamlined permitting procedures are in effect as originally adopted. Training for staff must be from within 2.5 years of the submission deadline.

Approved Action Expiration Date

Approved actions will be set to expire in 2.5 years from the date of the June submission deadline.

The solar zoning ordinance and permitting fees may have adopted at any time in the past, but must meet the standards outlined in the Sustainable Jersey Guidance for Creating a Solar Friendly Ordinance. Training for staff must be from within 2.5 years of the submission deadline.

IMPORTANT NOTES:

There is a limit of six uploaded documents per action and individual files must not exceed 30 MB. Excerpts of relevant information from large documents are recommended.

All action documentation is available for public viewing after an action is approved. Action submissions should not include any information or documents that are not intended to be viewed by the public.

Gold Star Standard

Successful completion of this action at the 30 point level is one of the requirements for earning a Gold Star in Energy. For more information on earning a Gold Star in Energy see the Gold Star Standards section of the website.

Spotlight: What NJ municipalities are doing

Sustainable Jersey is currently working to identify municipalities that have successfully completed this action. If you would like to showcase your municipality’s accomplishments, please contact us as info@sustainablejersey.com

Supportive Solar Ordinance
**Borough of Glassboro (Gloucester County)**

ecode360.com/12606957

**Master Plan Sustainability Element Lawrence Township (Mercer County)**
The Green Buildings and Environmental Sustainability Element of the Master Plan.

**Resources**

**Sample Training Resources and Examples**

**IREC Photovoltaic Online Training Course for Code Officials**
Free online training for code officials, developed by Interstate Renewable Energy Council. For a nominal fee, the International Association of Electrical Inspectors (IAEI) offers CEUs for those who successfully score at 80% or better on all of the lesson assessment quizzes.
http://www.irecusa.org/workforce-education/allied-solar-professions/pv-online-training/

**The New Jersey Department of Community Affairs, Division of Codes and Standards** lists training opportunities for code officials.
http://www.state.nj.us/dca/divisions/codes/offices/licensing_cont_ed.html

**New Jersey Department of Community Affairs, Division of Fire Safety in cooperation with Kean University**

- **SOLAR POWER: STRATEGY AND TACTICS FOR THE FIRST RESPUNDER**
  This course will assist first responders in making critical decisions at emergency incidents involving solar power. The program includes history, facts, application, function and growth of solar power. The course will address pre-fire planning, size-up, as well as basic strategy and tactics for these types of incidents. An open dialogue involving case studies and NFPA information will be used to assist students in decision making that effect on-scene personnel and safety.

**New Jersey Planning Officials Session at NJ League of Municipalities Conference 2016**

- **NEW ENERGY SOURCES AND PLANNING**
  Master Plan & Zoning issues faced when planning for new energy sources—electric/hydrogen/natural gas/solar. Are your Master Plans and/or Ordinances up to date to accommodate new energy sources? 1.5 CM (AICP)

**Rutgers Center for Government Services Continuing Education Seminars**

- **Sample Continuing Education Seminars on Solar for code officials**

**NEC ARTICLE 690, SOLAR PHOTOVOLTAIC SYSTEMS**
Participants will become familiar with, interpret, and review the most significant elements of the National Electrical Code Article 690, related codes, standards and regulations, and safety for the inspector. The materials and methods for these systems are covered to enhance the performance of electrical subcode officials or electrical inspectors. This five hour seminar is comprised of 2 sessions, each 2.5 hour long, and is aimed at persons already licensed as an Electrical Subcode Official or Electrical Inspector.

**NEC-IRC-UCC THE SUBCODE CONNECTION**
A comprehensive breakdown of the UCC assigned electrical subcode responsibilities regarding plan review and inspection of residential construction projects is presented. Existing rules and regulations for residential electrical installations such as solar, generators and elevator responsibilities are also reviewed in great detail. This seminar is presented in a high quality Power Point presentation with dynamic graphics, exclusive UCC agency driven icons and color coded procedural symbols.

**Solar Simplified Solar PV Code Trainings and Resources**
http://solarsimplified.org/permitting/solar-related-building-codes/guide-for-code-officials

**On-line Solar PV Code Training** (Free for building officials and inspectors)
https://www.nterlearning.org/web/guest/course-details?cid=3786

- The U.S. Department of Energy and the National Training & Education Resource (NTER) have partnered to develop and offer a free online training program for building and electrical code officials who perform inspections of residential photovoltaic (PV) solar energy installations. The aim of this training program is to help establish a consistent and streamlined PV inspection process in jurisdictions throughout the country--saving time and reducing costs for consumers. CEUs are available.

**Zoning and Permitting Background Documents**

**American Planning Association (APA)**

- **Briefing Papers #3: Integrating Solar into Local Plans**
  https://www.planning.org/research/solar/briefingpapers/localplans.htm

- **Briefing Papers #4: Integrating Solar into Local Development Regulations.**
  http://www.planning.org/research/solar/briefingpapers/localdevelopmentregulations.htm
Sample Solar PV Permit Applications and Solar Permit Checklists

Boulder County, Colorado
Solar Photovoltaic Systems Checklist

Grow Solar
Residential Solar PV Permit Application (Model Solar Permit)

Milwaukee, Wisconsin
Expedited Solar Permit Application

Minneapolis, Minnesota
Solar Permit Application Checklist
[or]

Utah Clean Energy
Solar Simplified Model Solar Permit Checklist


EnergySage
Solar 101: How Does Solar Work?
http://www.energysage.com/solar/101/

Union of Concerned Scientists
How Solar Energy Works


- Energy 101: Solar PV. [video]

- Everything You Wanted to Know about Solar Water Heating Systems. [solar thermal]
  https://energy.gov/energysaver/articles/everything-you-wanted-know-about-solar-water-heating-systems

- Solar Water Heating Basics. [solar thermal]
  https://energy.gov/eere/energybasics/articles/solar-water-heater-basics