

Getting Started on Energy Actions: Planning Solar for the Whole Community

October 28, 2019

Presented by: Tracey Woods, Research and Project Specialist, Sustainable Jersey Nancy Quirk, Energy Program Manager, Sustainable Jersey



Webinar Presenters



Adam Beam Research Analyst, DVRPC



Molly Jones *Executive Director, Sustainable Princeton*



Michael Winka Senior Policy Advisor, NJBPU



Ryan Gergely *Research Scientist, NJDEP*



Agenda

- Sustainable Jersey Solar Actions
 - Make Your Town Solar Friendly Action
 - Community-Led Solar Initiatives Action
- Guidance on Zoning and Permitting for Solar
- Community Engagement Strategies for Solar
- New Jersey Board of Public Utilities
 - Community Solar Pilot Program
- NJ Department of Environmental Protection
 - Demonstration of NJDEP Solar Siting Analysis Tool
- Community Solar Case Study: Sustainable Princeton



Make Your Town Solar Friendly Action

Supportive Solar Zoning Ordinance

- Adopt Solar Zoning Ordinance
 - Permitted accessory use in all zones
 - Not regulating for aesthetics/glare
- Amend Permitting Fee Ordinance



Note: <u>Solsmart</u> *Silver* designation qualifies for 30 points for this action

Streamlined Permitting

- Post requirements online
- Expedited permitting
- Permitting checklist
- Offer narrow inspection timeframe
- Train permitting, codes, inspection staff

TWO additional activities:

- Train first responders
- Cross-train codes and permitting staff
- Expedited permitting
- Offer narrow inspection timeframe
- Expedite or eliminate zoning review

Community-Led Solar Initiatives Action

Municipal efforts can overcome solar obstacles by enabling community to find:

- Information about solar
- Trusted contractors
- Discounted pricing

Two tiers, 10 and 15 points

For 10 points: Community-Led Solar Purchasing Program

- Solarize Program
- Online Solar Marketplace

Additional 5 points for outreach and incentives to promote solar



Meeting the Requirements for the *Make Your Town Solar Friendly* Action

> Adam Beam Delaware Valley Regional Planning Commission

Action Requirements





Zoning Icon: jayati bandyopadhyay from the Noun Project Permitting Icon: Adnen Kadri from the Noun Project

Action Requirements







Solar Ordinance Goals

A clear and transparent ordinance that reduces unnecessary restrictions on solar PV installations



The following areas must be addressed by the ordinance to qualify for the action:

- 1. Intent/Background/Purpose
- 2. Definitions
- 3. General Regulations
- 4. Permitting Fees



1. Intent/Background/Purpose

- Address goals and benefits of solar/renewable energy.
- Example from <u>Buena Vista Township</u>, NJ

§ 115-106 Sustainable energy accessory use systems.

[Added 11-24-2008 by Ord. No. 14-2008]

- A. Purpose. The purpose of this section is to promote the safe, effective and efficient use of small wind energy systems and solar energy systems to reduce the on-site consumption of utility-supplied electricity.
 - (1) The following apply:
 - (a) Wind and solar energy are abundant, renewable, and nonpolluting energy resources.
 - (b) Converting wind and solar rays to electricity will reduce our dependence on nonrenewable energy resources, and decrease air and water pollution that results from the use of conventional energy sources.
 - (c) Distributed small wind energy systems will also enhance the reliability and power quality of the power grid, reduce peak power demands, and help diversify the state's energy supply portfolio.
 - (d) Small wind energy systems and solar energy systems make the electricity supply market more competitive by promoting customer choice.
 - (2) The Municipal Land Use Law provides that part of the intent and purpose of the Act is to promote the utilization of renewable energy resources (N.J.S.A. 40:55D-2.n).



2. Definitions

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- Include in the definition of a solar energy system: solar collectors or solar energy devices used for space heating, space cooling, electric generation, and water heating
- Define and distinguish between large-scale or primary use installations and secondary or accessory use installations

Example: Woodbridge Township, NJ

- B. Definitions. The following terms, when used in this section, shall have the following meanings:
 - (1) Solar Energy System A solar energy system consisting of one (1) or more photovoltaic or solar hot water devices either building integrated, roof-mounted, or as a canopy as well as related equipment which is intended for the purpose of reducing or meeting the energy needs of the property's onsite principal use. Solar energy systems may generate energy in excess of the energy requirements of a property only if it is to be sold back to a public utility in accordance with the NJ Net Metering law.
 - (2) Solar Energy Facility An energy facility that consists of one or more groundmounted, free-standing, or building-integrated solar collection devices, solar energy related equipment and other associated infrastructure with the primary intention of generating electricity or otherwise converting solar energy to a different form of energy for primarily off-site use.

3. General Regulations

- Accessory use by-right in all major zones
- Sensible setbacks and height requirements
 - Differentiate regulations for systems on sloped and flat roofs
 - Differentiate regulations for roof mounted and ground mounted systems
- Be aware of regulations that can limit siting/functionality



Zoning Best Practices

Be aware of regulations that can limit siting/functionality

Aesthetics

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- Only a major concern in historic districts
- Sensible height and setback requirements should be enough to curb less attractive installations
- Avoid excess screening and placement regulations, such as "no panels facing the street"



Source: HelioPower, https://heliopower.com/residentialsolar/solar-resources-center/the-ugly-side-of-solar/

Zoning Best Practices

Be aware of regulations that can limit siting/functionality

- Glare
 - Panels meant to absorb light, not reflect it
 - All panels are coated in an anti-reflective material



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Source: Liz Compitello

Zoning Best Practices

Historic Preservation

- Minimize visibility
 - Rear slopes, on new construction, ground mounted
- Should be reversible and not damage the property



Concept source: Rebecca Ross, Delaware County Planning Department

Solar in NJ Municipal Land Use Law

- <u>N.J.S.A 40:55D-4</u> Solar energy is an "inherently beneficial use"
- <u>N.J.S.A 40:55D-38.1</u> Exempts solar panels from calculations of impervious surface or impervious cover
- <u>N.J.S.A 40:55D-66.11</u> permits renewable energy facilities in industrial zones by right on parcels of 20 contiguous acres or greater
- <u>N.J.S.A 45:22A-48.2</u> "Solar Rights Law"
 - HOAs cannot prohibit solar
 - Any HOA regulations may not increase cost of installation by more than 10% of initial installation

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4. Permitting Fees

- Use a flat fee instead of a value-based method.
- Best practices:
 - Residential permit fees: \$400 or less, including zoning, building, and electrical permits.
 - Commercial permit fees: based on cost recovery and capped at a reasonable level
 - New Jersey Unified Construction Code (NJAC 5:23-4.20c)
 - 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.

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Make Your Town Solar Friendly







Solar Permitting Goals

Make the solar PV permitting process as transparent, simple, and efficient as possible.



Solar Permitting & Inspection Requirements

– Mandatory:

- Post Permit Requirements Checklist Online
- Complete two of the following:
 - o Train local first responders in solar;
 - Cross-train building, zoning, inspection, and permitting staff;
 - o Implement an expedited permit process;
 - o Offer a narrow inspection appointment window;
 - o Expedite or eliminate zoning permit requirement;
 - o Amend permitting fees ordinance



Solar Permitting Checklist

- List all required forms and where they are located
- List and describe required diagrams or plans including the number of copies needed
- List any other required documentation, signature or approvals
 - E.g. engineer wet stamp
- Describe fee structure and payment options
- Include submittal instructions
- Provide information about office locations, hours, and appropriate staff contacts
- Include citations to relevant code or other sources as much as possible for the applicant to reference.



Solar Permitting & Inspection Requirements

- Mandatory:

o Post Permit Requirements Checklist Online

Complete two of the following:

- Train local first responders in solar;
- Cross-train building, zoning, inspection, and permitting staff;
- Implement an expedited permit process;
- Offer a narrow inspection appointment window;
 - Exact times preferred
- Expedite or eliminate zoning permit requirement;
 - Fine to except Historic Districts
- Amend permitting fees ordinance

Solar Permitting & Inspection Requirements

- Implement an expedited permit process;
 - Most residential rooftop systems share many similarities of design
 - Usually for systems of 15 kW capacity or less
 - The expedited permit process is intended to simplify the structural and electrical review of a small PV system project and minimize the need for detailed engineering studies and unnecessary delays.
- Common Eligibility Requirements for Expedited Process
 - Array composed of 4 or fewer strings
 - Inverter with rated output of 13.44 kW or less
 - Use of an engineered mounting system on a code-compliant roof and a rooftop distributed weight of less than 5 lb/sq. ft. and less than 40 lbs. per attachment
 - Use of listed components (PV, inverter, etc.).
- <u>Solar ABCs Expedited Permitting One-Pager</u>
- <u>City of Philadelphia Expedited Permitting Process</u>

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SolSmart

- US DOE designation and technical assistance program
- In line with the *Make Your Town Solar Friendly* Action
 - If you achieve SolSmart Silver designation, you should qualify for Make Your Town Solar Friendly
- Municipalities and counties can receive up to 100 hours of free technical assistance from national experts.
- Bordentown City, Haddonfield Borough, West Windsor Township, and Camden County have been designated.
- Go to <u>www.solsmart.org</u> for more information.



Other Resources

- Sustainable Jersey Guidance
- <u>DVRPC's Solar Landing Page</u>
 - Guidance zoning and permitting documents
 - SolSmart resources
 - Examples of ordinances and permitting processes from SolSmart Communities



Community-Led Solar Initiatives: Solarize

How Solarize Works



How Solarize Works

High• Group purchasepfront• Volume discount –
below market rate

Complexity

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- Competitive selection of installer
- Community workshops and outreach

Customer• Limited time offerInertia• Peer pressure

Who do I trust? Installers are unknown entities to most residents Residents uncertain if pricing is competitive and system is quality Incentives and policies are complicated Calculating value of investment is complicated Is solar right for me?







Solarize Process



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Solarize Philly

- Run by the Philadelphia Energy Authority
- Discounted pricing
 - Tiered pricing structure
- Standardized equipment
 - Guaranteed quality
 - o Modules, inverters, and optimizers
- Streamlined application process
 - Both permitting and interconnection
- Currently on Phase 3
- Learn more at <u>https://philaenergy.org/programs-</u> initiatives/solarize-philly/



Solarize Philly

Solar means savings. Solar means jobs. SOLARIS NOV.

Capacity

Clean Energy

Economy

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Signed up

Signed

Created

Solarize Philly – LMI Component

- Pilot program for low-and-moderate income households
 - Funded through small program fee
- Special financing option for 45 households
 - \$0 down, 15-year lease
 - Lease payments structured with a goal of providing 20% savings in year 1
- Requirements:
 - Income threshold
 - Must not be on PECO's Customer Assistance Program
 - Must have paid all PECO bills on-time and in-full for the past year
 - Owner-occupied
 - Roof less than 7 years old

Thank you

Adam Beam (215) 238-2830 abeam@dvrpc.org

Community-Led Solar Initiatives Action

Two tiers, 10 and 15 points

<u>For 10 points:</u> Community-Led Solar Purchasing Program

- Solarize Program
- Online Solar Marketplace



Image: NREL. Emerging Opportunities and Challenges in Financing Solar. www.nrel.gov/docs/fy16osti/65638.pdf



Glen Rock's EnergySage Landing Page

energy <mark>sage</mark> 🖗	Smarter energy decisi	ons	\$88.838.4638	Sign In		
Why EnergySage	Research Solar 🔻	Solar Calculator	Shop Loans	Energy Upgrades 🔻	Get Competing Solar Quotes Online	
					Enter zip code	>

Explore your solar options today!

Glen Rock and EnergySage have partnered to help you go solar and save more money!



How the EnergySage Marketplace Works

The EnergySage Marketplace gets you quotes online from multiple, pre-screened local installers and helps you compare offers in an apples-to-apples format so you get the best deal.



EnergySage Online Solar Marketplace

SEE ALL (ό) Apples-to-apples comparison makes it easy to pick the best quote.	Ames Solar A Select Installer HIDE (1 of 6) View Full Quote Contact Installer	Lechmere Solar A Select Installer HIDE (2 of 6) View Full Quote Contact Installer	Broadway Select I HIDE (3 of View Fu Contact	Solar A Main : nstaller Sele (6) HIDE Il Quote View Installer Con	Solar > ect Installer (4 of 6) v Full Quote tact Installer			
INSTALLER								
				Ames Solar 🥕	Lechmere So	olar 🥕	Broadway Solar 🗷	Main Solar 🗷
Company 🚱	ame company			Select Installer	Select Ins	taller	Select Installer	Select Installer
		SEE ALL (6	5)	HIDE (1 of 6)	HIDE (2 of 6)		HIDE (3 of 6)	HIDE (4 of 6)
Ratings & reviews 🔞	***** (¤	Gross system pric	e 🕜	\$24,995	\$2	25,000	\$16,760	\$20,420
EQUIPMENT		Less: Rebate	es 🕜	-\$2,000	-\$	\$2,000	-\$1,800	-\$1,920
Panel manufacturer	Sup Power Corporat	= Out of pocket system pric	e 🕜	\$22,995	\$2	23,000	\$14,960	\$18,500
Panel rating		Less: Federal IT	C 🕜	-\$6,899	-\$	\$6,900	-\$4,488	-\$5,550
Panel warranty	25 Year	Less: State/Local tax credit	ts 🕜	-\$1,000	-	\$1,000	-\$1,000	-\$1,000
Inverter manufacturer	SupPower Corporat	= Net system pric	e 🕜	\$15,097	4	15,100	\$9,472	\$11,950
	S O M	Price per Wat						
Inverter warranty	10 Year	Gross system pric	ie 🙆	\$24.995	Ś	25.000	\$16,760	\$20.420
		/ System size in Watt	- 0	5 230	**	5.040	4 410	4 800
System Design 📀		- Price per Watt (\$/W	n 0	\$4.79		\$4 94	43.80	\$4.25
Number of panels 🔞	1	- The per wall (9/ w		41.10		4-2.70	40.00	41.20
Watts per panel 🔞	32	SOLAR COSTS & BENEFITS						More 🔶
System size 😡	5.23 kV	Net system pric	e 🖸	\$15.097	Ś	15.100	\$9.472	\$11.950
Production in year 1 🕜	5,600 kW	Price per Watt (\$/W	7.0	\$4.78	× ·	\$4.96	\$3.80	\$4.25
Production ratio 🔞	1.0	TICC PCT VALLE (9/ VA		¥ 1.1 0		¥1.70	\$5.00	¥ 1.20
% of electricity from solar 🔞	1049	First year, first month electricity cost calculated by EnergySage						
		Compare with utility bil \$86 per mont Cost of utilit Cost of sola Saving	l: h @ y @ ur @ js @	\$86 \$0	\$86	\$1	\$86 \$9	\$86 \$5
20-year total electricity cost calculated by EnergySage								

Community Led Solar Initiatives Action

For an additional 5 points (15 points total)

Activities to Promote Solar and Incentives to Promote Solar.

Examples of Activities to Promote Solar:

- Municipal landing page for solar
- Workshop for residents and businesses
- Chamber of Commerce in support of the solar program
- Newsletter for businesses about solar
- Visible recognition program

Examples of Incentives to Promote Solar:

- Waiver of permitting fees for solar in nonprofits
- Incentive for utilizing local workforce in solar projects
- Development bonus for solar ready construction or subdivision
- Incentives for solar on parking lots
- Revolving loan fund for solar projects

Community Shared Solar







Allows community members who cannot put solar on their own property to enjoy and benefits of solar.

Panels that are located remotely are net-metered the same as if they were the property.



Images: www.nrel.gov/docs/fy11osti/49930.pdf www.energy.gov/eere/solar/community-and-shared-solar

Community Benefits of Community Solar

- Expand access to solar in the community
- Energy savings for municipal operations
- Energy savings for residents
- Local generation of clean energy
- Local job creation
 - local workforce development
- Community pride



www.americansolarworkforce.org/wpcontent/uploads/2018/09/FINAL_Strategies-for-Solar-Workforce-Development-TOOLKIT.pdf



Municipal Roles

- Zoning
 - large scale ground mount solar
 - large scale rooftop solar
 - reduce zoning barriers
- Permitting
 - help developers understand local permitting requirements
 - permitting fee structure to incentivize community solar



betterbuildingssolutioncenter.energy.gov/sites/default/ files/attachments/On_Site_Solar_Decision_Guide.pdf





New Jersey's Community Solar Energy Pilot Program

Mike Winka, NJBPU



What is Community Solar?

- A larger, remotely located solar array or facility that is virtually divided among multiple participants ("subscribers") by means of a credit on their utility bill.
- Participation can be in the form of:
 - Ownership: buying a direct share or portion of the community solar project or panels
 - Subscription: buying a portion or share of the electric output produced by the community solar project





What is Community Solar?





Community Solar in Other States



Source: NC Clean Energy Technology Center; Smart Electric Power Alliance⁵



Pilot Program Characteristics

Structure	 3-year Pilot Program Anticipated Pilot Program start: early 2019 Projects selected via an application and competitive scoring 				
Size	 Individual community solar project capacity limit: 5MW Annual capacity limit: 75MW for PY1, at least 75MW PY2&3 Min. 10 subscribers, max. 250 subscribers per 1MW capacity 				
Siting	 Prohibition of community solar on preserved farmland Siting on Green Acres open space subject to DEP approval Additional siting restrictions may be set in the application 				
Credit Value	• Bill credit set at retail rate net metering, minus SBC				
Low & Moderate Income (LMI) Access	 At least 40% of program capacity reserved for LMI projects Option for further 10% reserved for LI projects 				



FOR MORE INFORMATION

Visit: NJCleanEnergy.com

Contact: <u>communitysolar@njcleanenergy.com</u>

Stay Informed: Sign up for community solar updates by emailing <u>webmaster@njcleanenergy.com</u>



Siting Community Solar

- Size of community solar project
 - 1 MW is about 5 acres
 - 2 MW can serve 200-400 households
- Location of community solar project
 - Private land
 - Public land
 - Public buildings
 - Commercial rooftops
 - Warehouses
 - Manufacturing facility
 - Large commercial complex
 - Affordable Multifamily Housing



betterbuildingssolutioncenter.energy.gov/sites/default/f iles/attachments/On_Site_Solar_Decision_Guide.pdf



Solar Siting Analysis Tools

https://www.nj.gov/dep/aqes/solar-siting.html



Ryan Gergely New Jersey Department of Environmental Protection





Working to Bring Community Solar to Princeton





Presentation by Molly Jones Executive Director, Sustainable Princeton October 28, 2019





- **1. Started with education**
- Educated ourselves through conversations with developers and experts working in other states; leveraged SJ contacts
- Studied examples of successful projects (MN, MA, CO, etc)
- Shared lessons learned with:
 - o General community
 - o Community leaders
 - Affordable housing providers





Community Solar Basics

Why do this? Financially benefits subscribers and increases renewable energy sources in the state



- Avoids the need for individual installation and individual maintenance of rooftop solar panels.
- Provides access to solar energy to renters as well as households, institutions or businesses whose roofs aren't appropriate for solar installation.
- PSE&G still maintains and operates the distribution system (wire function)



Concerns Expressed

- How do we ensure people can exit program without incurring a major expense?
- Can my subscription discount be larger than my electricity bill?
- What happens if a weather event severely damages the array?
- How will this impact me if the power lines go down and my electricity is out?



Community Solar Basics

2. Worked to understand who plays what role



Source:mncerts.org/solargardens



Sorting Out Roles

Potential role of municipal governments:

- Become an "anchor" subscriber for a community solar project
- Provide land for construction of a solar array
- Conduct a competitive procurement on behalf of the community

Potential role of affordable housing:

- Become an "anchor" subscriber for a community solar project
- Put all LMI properties into a community solar project



What is an "anchor" subscriber

- An entity that subscribes for a substantial proportion of the solar array (Up to 40% in NJ program)
- Serves as a financial back stop for the bank or entity financing the project
- Needs to be an entity with a solid source of revenue (such as a municipality)
- Discount received for the subscription would need to benefit the anchor stakeholders





3. Putting together an application





Decision Making Consideration

- Appreciated that these project include complex dynamics with a lot of intricacies to understand
- Did not have the internal experience required to put together a viable application
- First and foremost need to represent the best interests of community members so want assure a competent, experienced team
- Consultant fees rolled into a successful project, so no upfront cost to the municipality

Proceeded with contracting services of an energy consultant



Specifics of Princeton's Application

- Community leaders decided to focus on providing subscriptions to 100% low to moderate income earners
- Partnering with affordable housing providers to build the trust required for this approach
- Consultant lead the application development
- Application submitted in early September





Why prioritize Low to Moderate Income?

Energy Burden at each Income Level for Princeton Owners and Renters



Area Median Income (AMI)



Very Competitive Application Process

- A total of 252 applications were submitted
- Of these 232 have at least 51% LMI
- Unsure how many applications are for projects within our utility territory

Our fingers (and toes) are crossed for Princeton's application!



Sustainable Jersey Supporters & Sponsors

Program Underwriters



Sustainable Jersey for Schools Supporters & Sponsors

Program Underwriters



Upcoming Events

Energy Events

Webinar: Funding Energy Projects Part 1 New Jersey's Clean Energy Program Incentives November 6, 2019 @ 1 PM-2 PM

Webinar: Funding Energy Projects Part 2 How Energy Savings Improvement Plans Fund Energy Upgrades (ESIP) November 13, 2019 @ 1 PM-2 PM

> Working Group: Energy Tracking and Management November 1, 2019 @ 9:30 AM-Noon TCNJ or call in option

> > Focus Group: Community Solar November 7, 2019 @ 9:30 AM-11 AM TCNJ or call-in option



Energy Savings Improvement Plan

- ESIP How-To Guide
 - Case Studies
 - Flow chart
 - Contracting options
 - Glossary

How to Implement an Energy Savings Improvement Plan Sustainable Jersey How-To Guide, V.2



Sustainable Jersey Sustainability Institute at The College of New Jersey Forcina Hall, 3rd Floor 2000 Pennington Rd. Ewing, NJ 08628-0718

http://www.sustainablejersey.com/grants-resources/publications/



Sustainable Jersey Annual Luncheon

Tuesday, November 19, 2019

12:00pm – 1:45pm

The Crown Ballroom, Sheraton Convention Center Hotel, Atlantic City

Highlights:

- Pre-Luncheon Networking Session (10:30am - Noon) *Certifying communities should arrive early to have their group photo taken prior to the start of the luncheon
- Luncheon (Noon 1:45pm)
- Recognition of the 2019 Sustainable Jersey Certified Communities
- Conveyance of Special Awards





