



BALL STATE
UNIVERSITY

Community-Scale Solar Electric (PV)

2024 IDEA Conference

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Community-Scale Solar Electric (PV)

1. Annual (free) PV Energy Flow
Familiarity

2. Exemplary Models
Day-to-day
Buildings
Landscapes

3. Muncie Examples
Cornerstone
Churches
YOC

4. Solarize PV
Group aggregation
individual Action

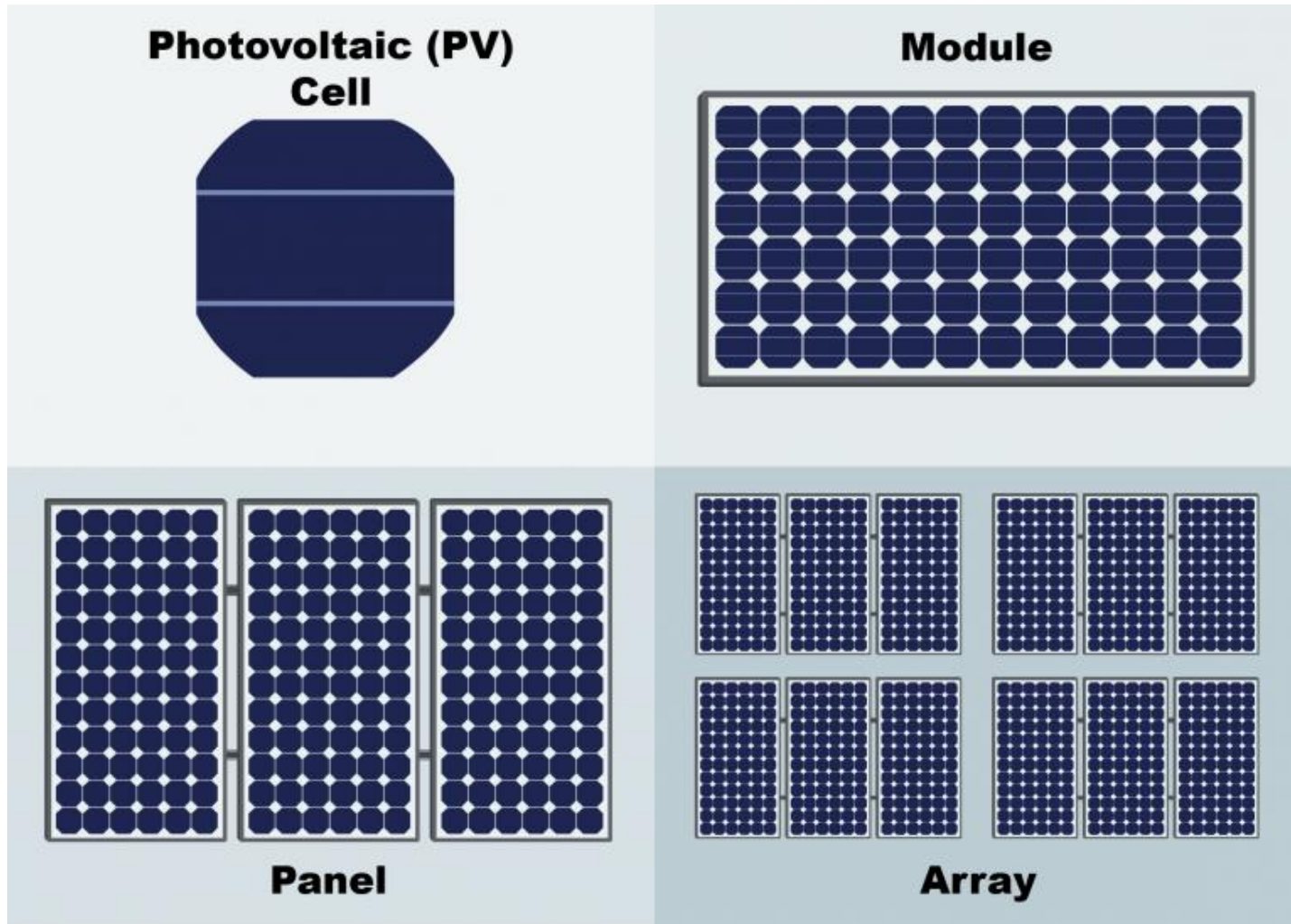
5. Community PV (dissimilar users)
Utility
3rd Party
Subscription Program

6. Incentives
Net Metering
Community Solar
Tax Credits
Direct Pay

7. Case studies available

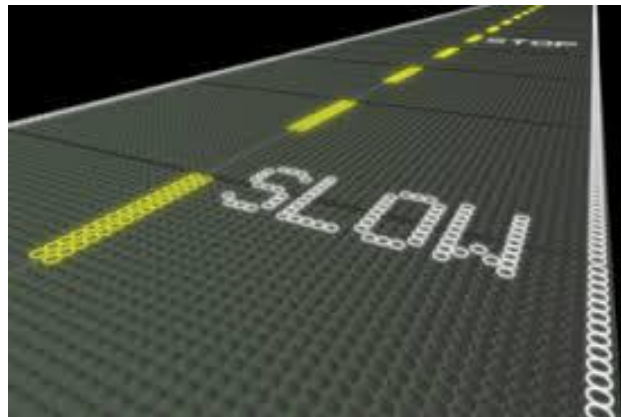
8. Guidebook for getting started

Solar Electrical Production (PV)



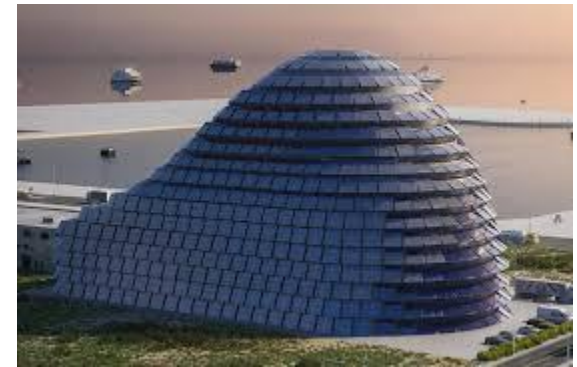
Solar-Electric PV

Day-to-Day Scale



Solar-Electric PV

Building Scale



Solar-Electric PV

Landscape Scale



The Layers

Solar Resource

The sun provides a tremendous amount of energy, **enough to satisfy all of the earth's needs in a fraction of a day.** It powers all solar photovoltaic and thermal technologies.

PV Modules

A photovoltaic module, or solar panel, is a packaged, interconnected assembly of light-sensitive semiconductors known as solar or photovoltaic cells. Solar panels are used as components in a larger system to generate electricity for **commercial and residential applications.**

Inverters

An inverter is **converts direct current (DC) to alternating current (AC).** Converted AC is set to usable voltage and frequency levels through the use of appropriate transformers, switching, and control circuits.

Measurement

An electric meter or energy meter is a device that **measures the amount of electrical energy supplied to or produced** by a residence, business or machine.

The Grid

The fundamental principles describing generation of electricity were discovered during the 1820s and early 1830s by the British scientist Michael Faraday. His basic method, called electromagnetic induction, is still used today: **electrical current is generated by the movement of an electrical conductor within a magnetic field.**

Indiana Solar Electric (PV) Policy

2015 Senate Bill 503: **Net Metering**

Tier 1. Anyone who currently owns or installs a solar system prior to December 31, 2017, will receive the original net metering benefits at **retail value until the year 2047**. After 2047, excess energy can be sold back at wholesale value.

Tier 2. Anyone installing a system prior to January 1, 2022, will receive the original net metering benefits at **retail value until the year 2032**. After 2032, excess energy can be sold back at wholesale value.

Tier 3. Finally, anyone installing a system after the year 2022 will receive **net metering benefits at wholesale value**.

2024 House Bill 1193: **Community Solar**

Requires the Indiana Utility Regulatory Commission (IURC) to **adopt rules governing community solar facilities**, not later than July 1, 2025.

Provides that, not later than 180 days after adoption of the rules, an electricity provider shall begin:

(1) **allowing connection of the electricity providers facilities with community solar facilities**, in which three or more of the electricity providers customers have entered into a subscription, and

(2) **crediting the electricity provider's subscribing customers** for the amount of electricity from the community solar facility for which the customers subscribes.

Indiana Solar Electric (PV) Policy

COMPARISON OF SOLAR TECHNOLOGY SOLUTIONS

	Behind-the-Meter	Community Scale	Utility Scale
Typical Size	5 KW–0.5 MW	0.5–5 MW	20–100 MW
Energy User	Households Businesses	Utility Customers (Co-ops, Munis, and IOUs) Residential Subscribers* Business Subscribers*	Utility Customers (Primarily IOUs)
Interconnection	Behind-the-Meter	Distribution Grid	Transmission Grid
Distributed Benefits	Yes	Yes	No

* Subscribers to shared solar receive bill credit from community solar production.

Indiana Solar Electric (PV) Muncie



Unitarian Universalist Church

A new rooftop system comprised of 80 solar panels, capable of producing 20 kilowatts of power and **reducing the church's annual \$6,000 electricity bill by more than 50%.** The public is urged to come and join in this special event.



Cornerstone Center for the Arts

A 150 kilowatt roof-mounted solar array producing clean, sustainable energy will allow for **a 75% electrical consumption reduction,** saving an average of \$38,000 per year.



Youth Opportunity Center, for the installation of

A 13 kilowatt roof-mounted solar array **producing 15 percent of the annual electricity needs** of its central services facility.

Indiana Solar Electric (PV) Muncie

Kennedy Library



25% of annual kWh demand

Indiana Solar Electric (PV) Impact



Obstacle to Solar

Fear that solar is too costly and not a good investment.

Lack time to do research and daunting.

Lack technical knowledge.

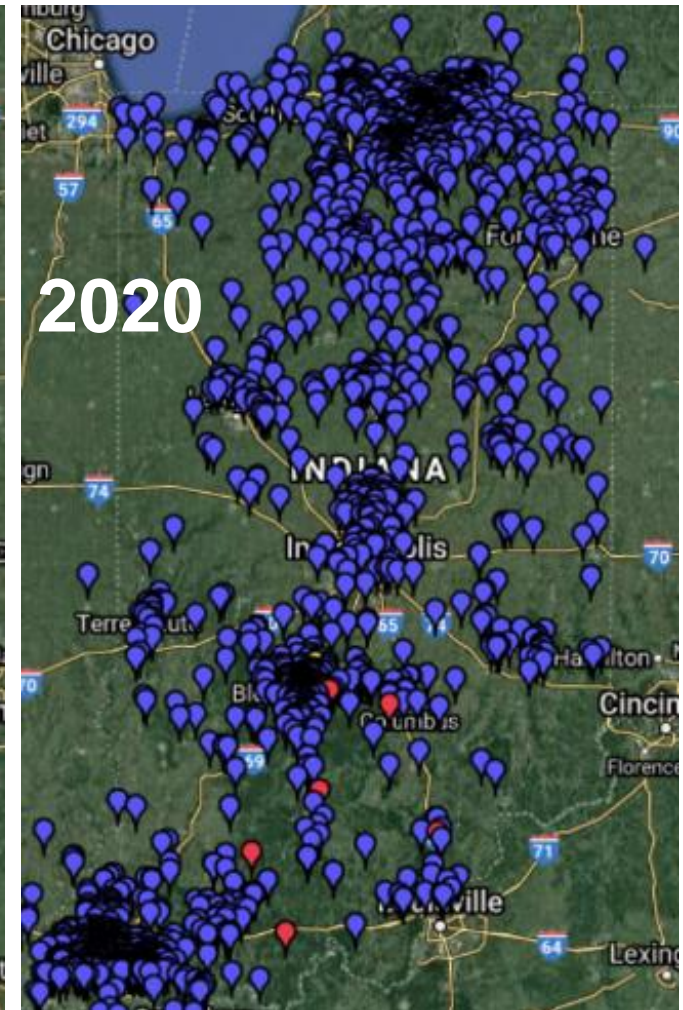
Does not know how to find a good installer.

Does not know what is a good price or product.

Solar is a rare thing to do and not normal

We do not have the funds.

Group Purchasing



Indiana Solar Electric (PV) Impact

- Riverstart Solar Park



Installed capacity of 200-megawatts of renewable energy

Project overview

Riverstart Solar Park is located approximately 80 miles northeast of Indianapolis in eastern Indiana. Located entirely within Randolph County, the solar park complements the area's agricultural resources with a stable, weather resistant cash crop in the form of landowner lease payments.

Indiana Solar Electric (PV) Impact

- Riverstart Solar Park

Economic benefits

Riverstart Solar Park significantly yields payments to landowners, local spending, and annual community investment.



\$180 million

Capital investment



\$700,000+

Paid to local
governments



\$5.1 million

Paid to landowners



\$173+ million

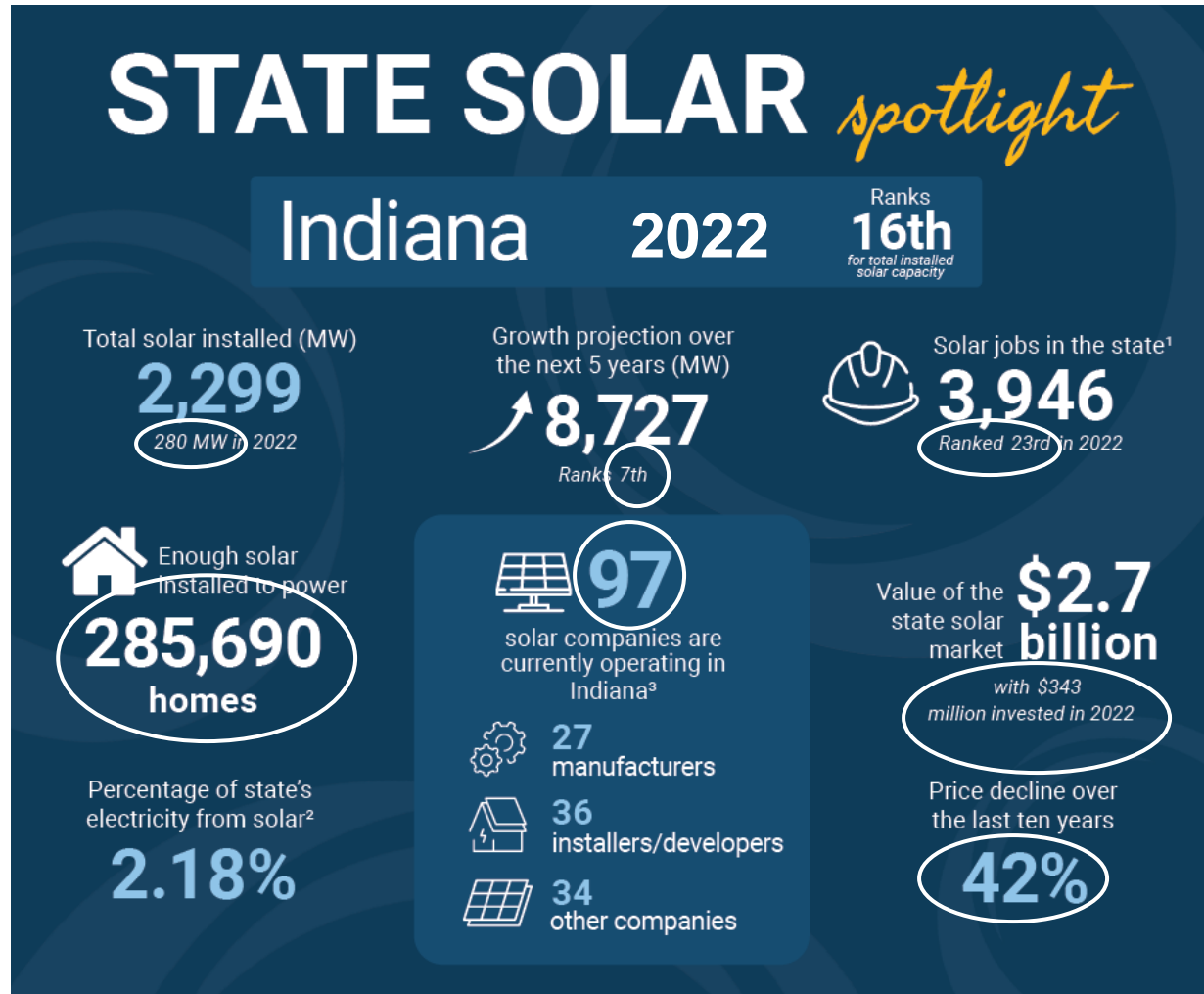
Spent locally



Job creation

530 construction jobs
and 8 permanent jobs
created

Indiana Solar Electric (PV) Impact



What is Community Solar?

A community solar system is any type of solar facility—most often a collection of solar panels—that **shares its power with the surrounding homes and businesses instead of a single building.**

Customers who benefit from solar energy projects like these **receive credits on their electricity bill for the energy generated and distributed to their local electric grid.**

Community solar developments are **often called solar farms or gardens** because of their local and communal nature.

They provide **people with renewable energy who otherwise wouldn't** normally use or can't benefit from solar energy.

However, **only the residents and businesses that have bought into the community solar program will receive the credits.**

Types of Community Solar Programs

#1 Utility Sponsorship

These solar projects are operated by a forward-thinking utility company wanting to expand its services and invest in [renewable energy](#). If you live close enough to the service area for a community solar garden, you will sign up through

the utility company for your area. **This option is perfect for long-term residents of a neighborhood who don't have the funds to install their own panels or their roofs can't support solar panels.**

#2 Private Company

Whether operating as a for-profit or nonprofit enterprise, the idea here is that solar companies want to invest in solar power generation, and they want small-scale investors.

You can buy a small, long-term ownership stake in the company in exchange for the solar energy generated by that solar farm. This becomes an option for people who have local utility companies unwilling to create option #1 for their customers.

#3 Subscription Program

This is the more affordable counterpart to option #2: the private company that built the community solar project doesn't sell you a long-term ownership stake. Instead, you simply pay a regular monthly fee in proportion to the number of solar panels needed to power your home for a given month.

You might not "own" your panels, but you get all the green energy benefits, making this the perfect plan for lower-income people who still want to go green and support the solar industry.

Why Community Scale PV?

In community scale PV projects or programs ...

the benefits flow to multiple customers such as individuals, businesses, nonprofits, and other groups.



In community scale PV projects or programs ...

residents, small businesses, organizations, municipalities **receive credit on their electricity bills for the power produced from their portion of a solar array, offsetting their electricity costs.**

<https://youtu.be/09JLpxVFZRU>

Benefits

Community scale PV projects or programs ...

can enable all households and businesses to **access the benefits** of solar energy, such as lower electricity costs, regardless of whether they're able to host a system on their own roof.

Community scale PV projects or programs ... provide

- **resilience during blackouts or weather events**
- **build community wealth**
- **create local jobs.**

Best Practices

Community scale PV projects or programs ...

ensure subscribers will
receive a bill credit, including
**at least 20% household
savings**

avoid exit fees, termination
fees, sign-up fees, or other
fees in the contract

Community scale PV projects or programs ...

provide an overview of what
will be included in the
subscription, **written in plain
language and provided in
the subscriber's primary
language**

Cost & Ownership

How much does it Cost?

... community PV projects and programs can have a Membership Interest cost of **< \$2.50 per watt before any tax credits are applied.**

Who owns the Panels ?

... the **PV panels comprise the Membership Interest.**

Community Scale PV Cost & Ownership



Financing?

Investors can work with their own bank, or the project can provide financing, **both of which have been used.**

Can Ownership Transfer ?

Yes, **ownership of the Membership Interest can transfer in the future.**

Cost & Ownership

Cost versus Roof ?

The typical cost of a residential solar rooftop installation is < \$2.50 per watt.

Economies of scale accompany a larger project, so **pricing is lower than a similarly sized array on the roof of a single house.**

If I Move?

Membership Interest is transferrable, so if you move out of state or out of your energy network territory you can sell your panels.

If you move to a new home or apartment within the same energy territory, you simply **transfer the Net Metering Credits from your old home to your new one.**

Tax Credits and Incentives

How they work?

In order to encourage more growth of renewable energy, the federal government has put incentives in place to help offset the cost.

The Federal solar tax credit **allows deduction of 30% of the solar energy system** from federal taxes.

The 30% tax credit will be available until the end of 2032.

Considered an Investment?

Yes, as with any major purchase this should be considered as an investment that does carry some degree of risk.

Every taxpayer's individual situation is unique, so prospective buyers should **consult with their tax advisors before making a final decision.**

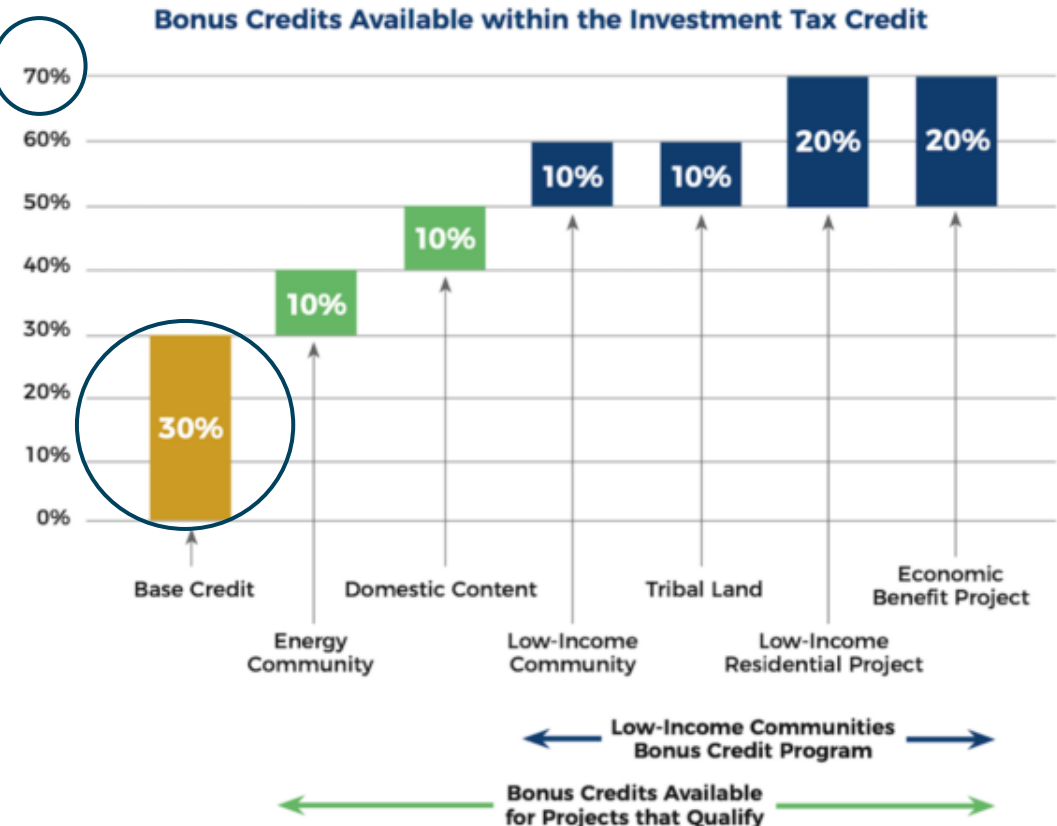
Direct Pay

The Inflation Reduction Act of 2022 (IRA) updated and expanded the Investment Tax Credit (ITC) for solar and battery storage projects in three major ways:

1) Nonprofits with no tax liability can now apply for **Direct Pay** reimbursement equal to the full value of the tax credit.

2) Storage-only projects are now eligible for the ITC.

3) The ITC now includes several 'bonus credits', which can significantly increase savings for projects serving low-income and underserved communities.



Maintenance, Management, Operation

Who is Responsible?

The developer creates an LLC that is responsible for the operations and maintenance of the Community Solar project.

Similar to a Condo Association, the LLC will manage the day to day operations of the project.

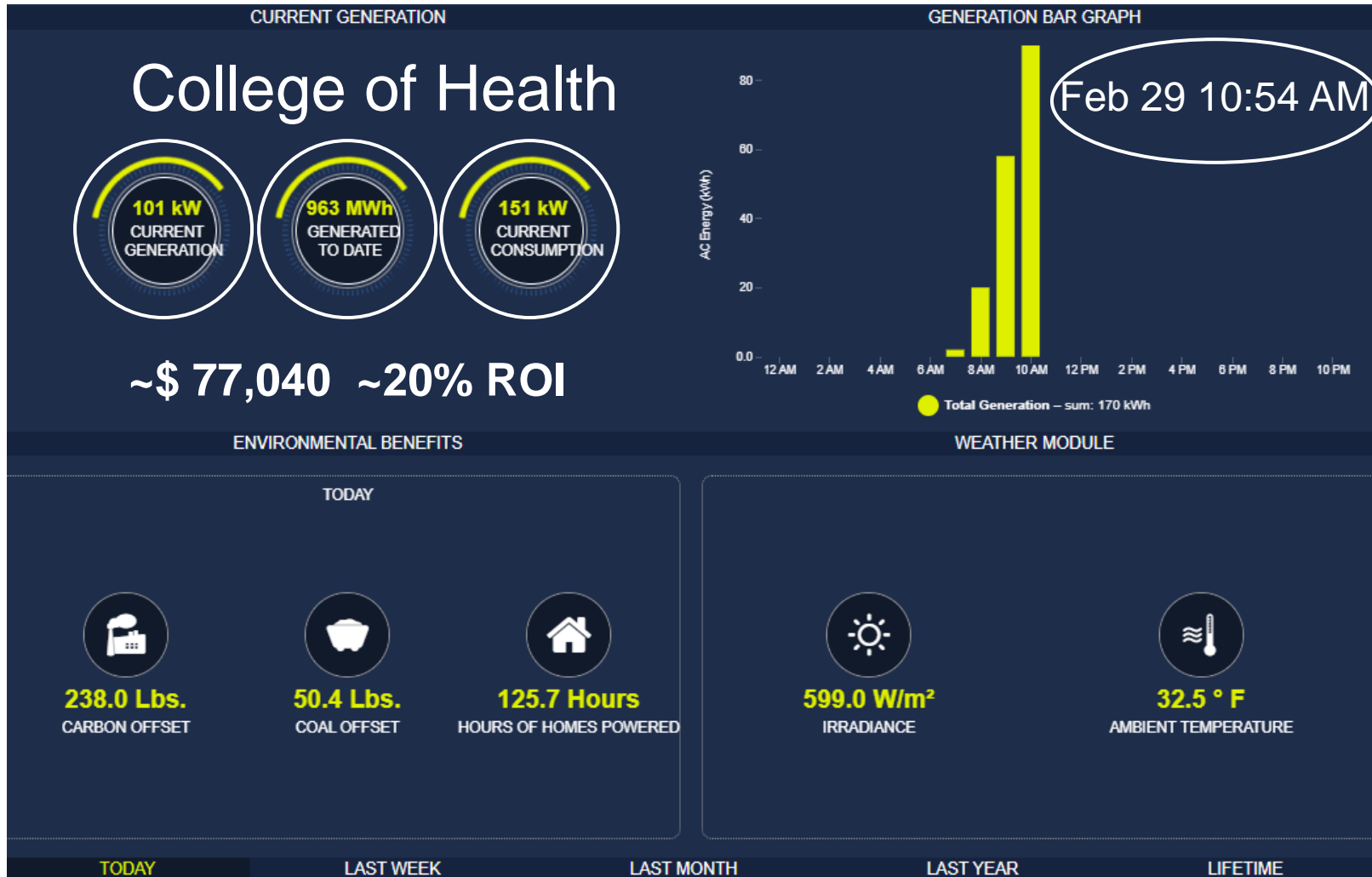
There will be at least two Operations & Maintenance inspections scheduled each year to ensure that the solar project is operating at maximum efficiency.

If Business Closes?

The LLC that has been created for the management of the Community Solar project is **specific to this project**.

It will endure for the life of the Community Solar project.

Maintenance, Management, Operation



Low Income Financing and Transactions

Accelerating Low Income Financing and Transactions (LIFT) for Solar Access Everywhere

<https://lift.groundswell.org/about/>



Orlando Utilities Commission



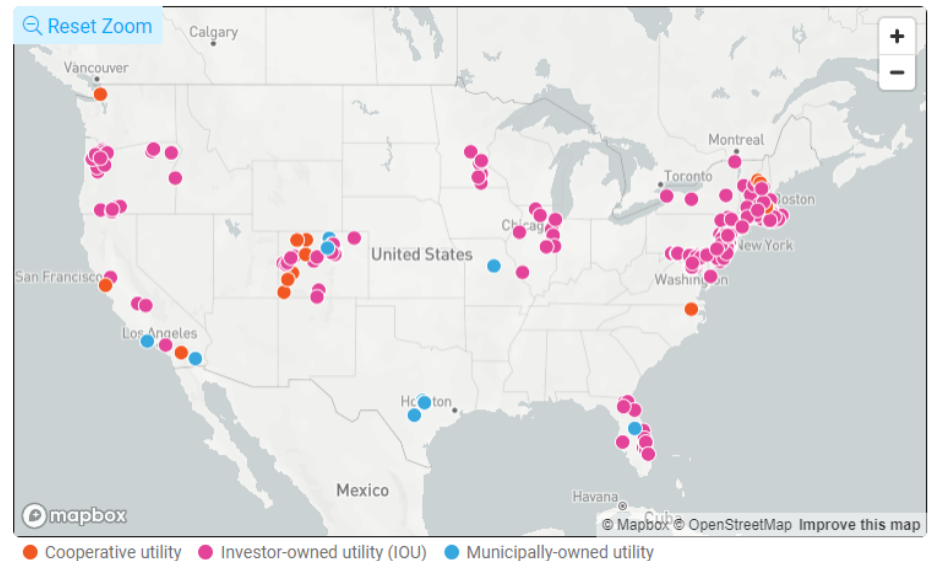
Coyote Ridge Community Solar Farm



Gar Creek Community Solar

Utility Type	State
All	All
Bill Credit Value	System Size
All	All
Enabling Legislation	LMI Customer Savings
All	All
Tax Benefits	RECs and Incentives
All	All

APPLY FILTERS CLEAR ALL FILTERS



LIFT Case Studies

Project Name:

COMMUNITY SOLAR FOR COMMUNITY ACTION

Community Action Agency spearheads no-fee community solar for low- and middle-income subscribers

Size:

110 kW_{DC}

Location:

91 Buck Drive, Westminster, VT 05158

of LMI customers:

50 households

Project Website:

<https://www.sevca.org/news/267-free-solar-energy-assistance-now-available-from-sevca-s-community-solar-for-community-action-project>



They mailed applications to around 700 households who had received weatherization and/or energy assistance.

They also publicized the enrollment period in local press. **Households with high energy burdens were targeted for subscriptions.**

Benefits amount to approximately **\$300/year in savings per household**, and SEVCA does not charge any subscription fees.

Subscribers rotate in and out of the program on a three year term.

LIFT Case Studies

Project Name:

DECATUR ISLAND COMMUNITY SOLAR Innovative and responsive co-op delivers benefits to LMI

Size:

1.0 MW_{DC}

Location:

640-876 Decatur Head Dr, Decatur Island, WA 98222

of LMI customers:

27

Project Website:

<https://energysavings.opalco.com/decaturn-island-community-solar/>

State solar production incentives. The Washington state solar production incentives (now exhausted) played a large part in increasing the financial benefits transferred to LMI and participating members.

Low upfront cost. The equitable subscriber enrollment process allowed LMI members to own a portion of the project at an entry cost of \$150.

Donated funds eliminated the burden on ratepayers. By design, the project was funded by member investors and various grants, so that there were no increases in energy charges to ratepayers.



LIFT Case Studies

Project Name:

IID-CITIZENS LOW-INCOME COMMUNITY SOLAR PROJECT

One of the largest community solar projects in the nation

Size:

23.08 MW_{AC}

Location:

E Peterson Road, Calipatria, CA 92233

of LMI customers:

12,000

Project Website:

<https://www.citizensenergy.com/post/citizens-energy-iid-dedicate-nation-s-largest-low-income-community-solar-project>



Reducing barriers to participation. IID virtually net-meters the power to program participants and Citizens used profits it earned from an investment in the Sunrise PowerLink transmission line to buy renewable energy for income-qualified IID ratepayers, which enables the program to function without any subscription or participation fees, reducing barriers to participation.

Supporting the local community. DEPCOM Power hired local craft labor to build the project, creating hundreds of local jobs, many of which were filled by U.S. veterans.

LIFT Case Studies

Project Name:

COMMUNITY SOLAR AT QUEENSBRIDGE HOUSES

Largest Community Solar on public housing in the United States expands benefits to LMI households

Size:

1.8 MW_{AC}

Location:

40 10th Street, Queens, NY 11101

of LMI customers:

125

Project Website:

<https://www1.nyc.gov/site/nycha/about/press/pr-2021/pr-20210422.page>



Bundling solar projects into a single investment vehicle.

Sunwealth uses innovative financing. They bundle solar projects together into a single investment vehicle (Solar Impact Fund), which allows investors to finance specific, clean energy projects ranging in size. Total cost of the project was \$7 million.

Workforce development. A cohort of NYCHA residents received in-person solar installation training and OSHA 30 certification.

Helpful Resources



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Contact MediaRelations@PublicPower.org or 202-467-2900

Chapter-by-Chapter Steps to Take

1. Set organizational Goals, Priorities and Authority
2. Gauge Market Potential / Customer Appetite
3. Identify potential sites & calculating PV potential
4. Select Program Design & Subscription Model
5. Evaluate Project Economics and Financials
6. Develop a Project Proforma
7. Issue RFPs & Project Timelines
8. Set Customer Acquisition, Program Implementation & Marketing
9. Finalize the Proposal Package

Helpful Resources

<https://www.energysage.com/solar/community-solar/community-solar-power-explained/>

<https://www.seia.org/initiatives/community-solar>

<https://www.nyserda.ny.gov/All-Programs/Programs/NY-Sun/Solar-for-Your-Home/Community-Solar>

<https://www.solarreviews.com/blog/community-solar-vs-home-solar>

<https://solstice.us/solstice-blog/what-is-community-solar/>

<https://chariotenergy.com/blog/do-i-need-technology-to-use-a-green-electricity-plan/>

<https://www.nrel.gov/docs/fy11osti/49930.pdf>

<https://www.energy.gov/eere/solar/community-and-shared-solar>

<https://www.seia.org/us-solar-market-insight>

<https://www.seia.org/research-resources/solar-market-insight-report-q4-2023/>

A satellite night view of the United States, showing the continental United States, Alaska, and Hawaii. The landmasses are dark, while the cities and urban areas are illuminated with bright yellow and white lights, creating a dense network of light points across the country. The surrounding oceans are dark blue.

Thank You