Solar information Session
Solar United Neighbors
Overview

1. Who we are
2. How we got started
We’re a community of people building a new energy system with rooftop solar at the cornerstone. We help people go solar, join together, and fight for their energy rights.
How We Got Started

Started in 2007 and it wasn’t easy!

Mount Pleasant Solar Cooperative
How We Got Started

It was harder than we thought!
Solar United Neighbors today

Arizona
Colorado
D.C.
Florida
Indiana
Maryland
Minnesota
New Jersey
Ohio
Pennsylvania
Texas
Virginia
West Virginia
Co-op/group purchase
- 50 – 100 neighbors
- Group decision process
- 6-8 month process
- Bulk negotiation for best pricing
- Sign individual contract

Individual Support
- Help reviewing up to 3 proposals
- Negotiate your own deal
- Can be faster timeline
- Ongoing advice & assistance (post install)
- $85 annual membership
Orange County x 6, St. Petersburg x 4, Space Coast x 2
Sarasota County x 2, East and West Broward
Hillsborough County x 3, Alachua County x 2
Seminole County x 2, Miami-Dade County
Leon/Tallahassee, Manatee, Palm Beach x 2, North
Pinellas, Volusia, Upper Keys, Franklin/Bay, Highlands,
Okaloosa & Walton Counties, Escambia & Santa Rosa
Counties

51 community solar co-op’s to date
Presentation in Three Parts

1. Solar technology
2. How solar co-ops work
3. Solar economics
Part 1: Solar technology
Part 1: Solar Technology

How does a solar panel work?

Solar photovoltaic (PV)

Converts solar energy to electricity
Part 1: Solar technology

System components: Panels

Panel / Module

Image Source: DuPont

Solar Array

Solar United Neighbors
Part 1: Solar Technology

System components: Inverters and racking

- Racking system & conduit
- String inverter(s)
- Microinverters
- String inverter(s) & DC optimizers
Part 1: Solar Technology

Terminology: Kilowatts (kW) & Kilowatt-hours (kWh)

- System measured in kW
- Electricity production in kWh
- Most homeowners install between 2 kW – 12 kW
Part 1: Solar Technology

How does solar connect to my roof?
Part 1: Solar Technology
How does it connect to my electrical panel?

Simple connection, most home electric systems don’t need upgrades before solar
Part 1: Solar Technology

What makes a site good for solar?

- Roof faces southerly direction
- No shading
- Enough space to mount panels
Part 1: Solar technology

**HOW SOLAR WORKS**

1. Solar Array
2. Solar Inverter
3. Electrical Panel
4. Utility Meter
Part 1: Solar Technology

What is net metering?

Allows flow of electricity to AND from customer

When generation is more than use, extra electricity flows back through meter

– You receive a credit on your power bill for that excess production
Net metering, continued

Monthly electric bill:

– [Amount electricity used] – [Amount electricity produced]

Utilities required by law to let you net meter
What happens when the power goes out?

When grid is down, solar shuts off (safety mechanism)

Need batteries if you want power during outages
Part 1: Energy Storage for Homeowners

The two main values of storage

- Backup Power for you
- Save money or get paid to help the Grid
Part 1: Energy Storage for Homeowners

You might want storage if...

- Frequent utility outages
- Critical loads at home (ex. well pumps, medical equipment)
- Emergency/disaster preparedness
The Johnsons lose power from the utility several times of year. Each time the power is out for the entire day.

6 kWh Battery Bank
- Fully re-charged by solar (5.6 kW) daily
- NOTE: No solar = 1 day only

What will run when the power is out:
- refrigerator; small microwave
- Some lights; Some outlets
- cable modem

What they chose not to power:
- stove; dryer; electric water heater;
Example Upfront Costs (small system)

$9,000 : 6 kWh of storage
   (lithium ion battery & installation)
+

$15,500 : 5.6 kW solar array
   (optional)
Part 1: Solar Technology

Frequently asked questions

• Warranties?
• How long do systems last?
• Homeowners’ insurance?
• Maintenance?
• Will HOA allow solar on my home?
• What if I’m in a historic district?
Part 2: How Solar Co-ops Work
Part 2: How Solar Co-ops Work

Solar co-op benefits

• Get best value on installation and support throughout the process
• Connect with fellow solar enthusiasts
• Become part of the growing solar movement
<table>
<thead>
<tr>
<th>MONTH 1 THRU 2</th>
<th>MONTH 3</th>
<th>MONTH 4 THRU 8</th>
</tr>
</thead>
</table>
| **1 LEARN about the solar co-op**                    | **4 SELECT an installer once the solar co-op has 30 participants**       | **★ SIGN UP DEADLINE**  
Last chance to join the solar co-op |
| Attend an info session, visit our website             | **Solar United Neighbors:**  
• Issues a competitive RFP on behalf of the solar co-op – open to all installers!  
• Review bids, call references and check licensing, equipment and warranties | **5 SCHEDULE**  
Installer site visit, receive customized proposal based on solar co-op pricing |
| **2 SIGN UP online to participate in the solar co-op** | **Solar co-op participants:**  
• come together to review bids, select a single installer | **6 SIGN A CONTRACT with the installer** |
| There is a sign-up deadline usually in month 5 or 6   |                                                                         | **7 INSTALL solar system**                                                     |
| **3 GROW THE SOLAR CO-OP**                            |                                                                         | **8 PARTY!**  
Meet your fellow solar neighbors and celebrate your successes |
Who picks the installer? Co-op participants!

Co-op participants select specific installer criteria including:

- Price
- Equipment quality
- Warranties
- Are a local company
Part 3: Solar Economics
Part 3: Solar Economics

A few considerations

• Solar is priced by the watt (not by panel)
• Solar is a long-term investment
• No moving parts & at least 25 year lifespan
• Average residential utility rate
• Rising energy prices
Solar is increasingly affordable

- Costs have dropped 90% since the 1970s
- Solar is no longer a specialty, expensive, or boutique project
- But, can still be daunting to tackle
Part 3: Solar Economics

Solar co-ops help reduce an installer’s soft costs so you can save money.

Assumptions: 5.7 kW system size, adjusted for inflation, national data.
### Part 3: Solar Economics

**EXAMPLE PRICING ONLY. ACTUAL SYSTEM SIZES WILL VARY.**

<table>
<thead>
<tr>
<th></th>
<th>4kW</th>
<th>8kW</th>
<th>12kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average FL solar co-op pricing ($2.16/Watt)</td>
<td>$8,640</td>
<td>$17,280</td>
<td>$25,920</td>
</tr>
<tr>
<td>Federal tax credit (26%)</td>
<td>-$2,246</td>
<td>-$4,493</td>
<td>-$6,739</td>
</tr>
<tr>
<td><strong>Net Cost</strong></td>
<td><strong>$6,394</strong></td>
<td><strong>$12,787</strong></td>
<td><strong>$19,181</strong></td>
</tr>
<tr>
<td>Estimated year 1 electricity savings*</td>
<td>$600</td>
<td>$1,200</td>
<td>$1,800</td>
</tr>
<tr>
<td>Estimated year 10 savings (cumulative)*</td>
<td>$6,500</td>
<td>$13,000</td>
<td>$19,500</td>
</tr>
<tr>
<td>Estimated lifetime savings (25 years)*</td>
<td>$18,100</td>
<td>$36,200</td>
<td>$54,300</td>
</tr>
<tr>
<td><strong>Net Profit</strong></td>
<td><strong>$11,706</strong></td>
<td><strong>$23,413</strong></td>
<td><strong>$35,119</strong></td>
</tr>
</tbody>
</table>
Assumptions
SRECs not included, 2% energy increase per year, 7kW System Size, Base Price $2.75/W, 1336 yearly production of 1kW, $0.1243 starting electricity rate, -0.5% panel degradation per year, 4% Interest rate on loan, 70% of cost covered by loan, $0 Operations and Maintenance over system lifetime

Cumulative Savings with Solar

Cost of solar system after 30% Tax Credit

30% Federal tax credit
Part 3: Solar economics

Because future solar costs are hard to predict, this chart assumes no decrease in installation cost year over year. The cost used here is $2.75/Watt. This varies by location, installer, and equipment.

* Not inclusive of state and local incentives
Part 3: Solar Economics

Financing

Installers offer financing
Banks offer loans

- Admirals Bank, SeaCoast Bank, SunCoast Credit Union
Financing, continued

PACE (Property Assessed Clean Energy) is available in 16 counties and many cities
www.floridapace.gov

SELF (Solar and Energy Loan Fund)
www.solarenergyloanfund.org
What’s Next?
What’s Next?

Join a Solar Co-op

[www.solarunitedneighbors.org/](http://www.solarunitedneighbors.org/)

Orlando or Pasco!

Join the [listserv](mailto:)

Like us on [Facebook](https://www.facebook.com/)

Spread the word!
Useful Resources

www.electricitylocal.com

www.Eia.gov_Florida

www.pvwatts.nrel.gov

www.fsec.ucf.edu
Thank You!

Erik Mariani

Solar United Neighbors of Florida