



DC Cooperative Housing Coalition:

Solar Overview

Your roof space has never been
worth more!

honeydew
ENERGY ADVISORS

Agenda



Incentives



Racking System Options



How To Go Solar



Examples



The Ontario Case Study



Q & A

Incentives for DC Solar Energy Systems

- **30% Investment Tax Credit**

- Recuperate 30% of your investment in year one of owning the asset.
- Extra 10% for American made products
- Consult your accountant: association cannot directly claim

- **Solar Renewable Energy Credit**

- Generate income just for producing your own electricity! 1 MWh = 1,000 kWh = 1 SREC which is valued at \$430 / SREC.

- **Electric Savings / Sales**

- With a Net Metered interconnected system, you utilize all electricity generated to offset your energy usage and costs.
- With a Community Solar interconnected system, the solar electricity bypasses your meter and is sold directly to the utility company at a wholesale rate





Different Solar Racking Systems

- Ballasted System on Flat Roof
- Direct Install on Flat Roof
- Elevated Rooftop Canopy on Flat Roof
- Flush Mount Canopy on Flat Roof
- Flush Mount System on Pitched Roof



Ballasted Solar Racking System

Ballasted systems are a more traditional racking system weighed on your roof using cinderblocks. There will be no direct attachments to your roof, unless the solar company believes there needs to be some additional support - this will be analyzed through the engineering process once the contract is executed.



Elevated Rooftop Solar Canopy

For buildings that plan on replacing or repairing their roof after a solar installation, an elevated rooftop solar canopy is the best solution to leave room underneath for new equipment installations. The canopy is installed directly to your building's existing support columns without voiding any warranties, just like a roof anchor for window washing. The canopy will shade your roof, significantly reduce the temperature of your roof membrane, HVAC equipment, and top floors, and minimize wear & tear from the sun's rays, hailstorms, etc. – extending the lifespan of your roof and HVAC equipment. Since the canopy is elevated above obstructions on the roof, roofers and maintenance contractors can work underneath the array.



Direct Attachment Racking System

Direct attachment racking systems are mounted to the main beams or girders of the building to streamline structural approval. Each stanchion installed into your roof will be flashed and warranted by a roofer of your choice. Generally, a direct attachment will allow more panels on the roof vs a ballasted system due to the reduced spacing between each of the rows of panels. The system will shade your roof, significantly reduce the temperature of your roof membrane and top floors, and minimize wear & tear from the sun's rays, hailstorms, etc. – extending the lifespan of your roof.



Flush Mount Rooftop Solar Canopy

For buildings with obstructions on their roofs, an elevated rooftop solar canopy is the best solution to maximize the solar system size and benefits. The specific canopy being proposed is a low profile, flush support system that requires minimal penetrations. The flush support system will also weigh less than a traditional ballasted system (weighed down on your roof using cinderblocks). The system is mounted to main beams or girders to streamline structural approval. The canopy will shade your roof, significantly reduce the temperature of your roof membrane and top floors, and minimize wear & tear from the sun's rays, hailstorms, etc. – extending the lifespan of your roof.



Pitched Roof Flush Mount System

Pitched roof flush mount systems are installed directly to the roof. They happen to be the most economical racking system installation compared to ballasted and canopy systems and are installed on shingle and tiled roofs. The only roofs that aren't qualified for pitched roof flush mount systems are slate and clay roof tiles.

How to Go Solar



- **Power Purchase Agreement (PPA) - Net Metered (NEM) Interconnection**
 - No Upfront Cost or Liability
 - Third-Party pays for array, ongoing maintenance, and holds all liability / ownership
 - Solar company sells electricity generated to you for a fraction of Pepco's rate OR offer upfront sum with higher PPA rate
 - This WILL improve your Energy Star Score

- **Roof Lease - Community Solar (CREF) Interconnection**
 - No Upfront Cost or Liability
 - Third-Party pays for array, ongoing maintenance, and holds all liability / ownership
 - Solar company pays you an annual lease payment over 20 years or an upfront sum in exchange for renting your roof space
 - 100% of the electricity goes straight to the grid through Community Solar
 - This will not improve your Energy Star Score

- **Ownership – NEM or CREF Interconnection**
 - Own the array yourself
 - Benefit from 30% Investment Tax Credit, SREC Revenue, and Electric Savings / Sales Revenue
 - This WILL improve your Energy Star Score IF NEM

Solar Economics Examples

- DC CHC Member
- System Size: 112 kW
- Annual Production: 140,000 kWh



Power Purchase Agreement (PPA)



Procurement Model	PPA Lowest Rate	PPA Upfront Cash
System Size	112 kW	112 kW
Installation / Maintenance Cost to Co-op	\$0	\$0
Solar Rate	0¢ / kWh	9¢ / kWh
1 st Year Energy Savings*	\$21,000	\$8,400
5-Year Energy Savings*	\$108,176	\$45,803
10-Year Energy Savings*	\$224,655	\$101,452
15-Year Energy Savings*	\$350,074	\$167,548
20-Year Energy Savings*	\$485,119	\$244,738
Upfront Cash	\$0	\$100,000

**Assumptions: 15¢ / kWh Pepco rate, 2% Pepco annual escalation fee, 0.5% annual solar degradation rate*

Solar Roof Lease (Annual v Upfront)



Procurement Model	Solar Roof Lease Annual Payments	Solar Roof Lease Upfront Payment
System Size	112 kW	112 kW
Installation / Maintenance Cost to Co-op	\$0	\$0
Roof Lease Rate	\$80 / kW Annually	\$1,000 / kW Upfront
1 st Year Roof Lease Revenue	\$8,960	\$0
5-Year Roof Lease Revenue	\$46,628	\$0
10-Year Roof Lease Revenue	\$98,110	\$0
15-Year Roof Lease Revenue	\$154,949	\$0
20-Year Roof Lease Revenue	\$217,704	\$0
Upfront Roof Lease Revenue	\$0	\$112,000

Ownership Model



Procurement Model	Ownership Model
System Size	112 kW
Installation Cost to Co-op	\$336,000 (\$3 / watt)
Annual Maintenance Cost to Co-op	\$2,240 / yr (\$20 / kW / yr)
1 st Year Energy Savings*	\$21,000
1 st Year SREC Revenue	\$56,818
30% Investment Tax Credit (1 st Year)	\$100,800
20-Year Cumulative Net Cash Flow**	\$946,805
Payback Period**	3.19 Years
20-year IRR**	27%

*Assumptions: 15¢ / kWh Pepco rate, 2% Pepco annual escalation fee, 0.5% annual solar degradation rate

**20-Year Net Cash Flow accounts for installation / maintenance costs, energy savings, SREC revenue and 30% ITC



CASE STUDY: The Ontario Co-op



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