

Solar Group Purchasing

Frederick County, MD

Eliminating Barriers to Increase Solar Capacity

ICLEI Case Studies

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EXECUTIVE SUMMARY

Solarize Frederick County was a solar group purchasing program that ran from April to August, 2013 in Frederick County, Maryland. Initiated by the County's Office of Sustainability & Environmental Resources (OSER) under the umbrella of the Green Homes Challenge, the program provided information, Solarize workshops, special incentive grants, and cost-cutting measures aimed at boosting solar capacity county-wide. The program concentrated marketing efforts in the Villages of Urbana and Myersville, but any household in the County could participate. Nearly 500 households expressed interest and over 300 individuals attended Solarize workshops and installation demonstrations. By its close, the program had far surpassed its goal of 30 households installing systems with 66 households collectively installing over 500kW of solar electric systems at a volume discount of 23.7 percent per household compared to standard retail pricing. Twelve households also installed the equivalent of 30.6 kW of solar hot water systems at a volume discount of 13.8 percent. When all incentives, tax credits, and discounts were taken together, participants reduced their first year costs by 54 to 88 percent. The ability to leverage an existing communications network in the Villages of Urbana for marketing the program was especially useful in driving uptake in that community. Furthermore, the offer of a \$2,000 - \$2,500 limited availability grant, funded by an EPA Climate Showcase Communities grant, significantly helped generate interest and drive participation.

CONTEXT

Frederick County is located in western Maryland and is part of the Washington, DC metropolitan area. The population is 239,582¹ with a density of 353.5 persons per square mile, below the state average of nearly 595.² The largest city in this primarily rural and suburban county is Frederick, with a population of 65,239.³ The population is relatively affluent, earning a median household income of \$82,133 annually,⁴ compared to a state average of \$72,419.⁵ By that measure, it is the 43rd wealthiest county in the United States.⁶

Solarize Frederick County was an innovative program that took advantage of federal and state incentives, federally funded local incentive grants, and a bulk purchasing discount to reduce costs, complexity, and customer commitment barriers related to adopting solar power in communities.



Photo Credit: Sandra Thomas

During the Solarize initiative, the county was governed by a five-member Board of Commissioners, including a President and Vice President, and ran a budget surplus. The fiscal year of 2012 ended with a General Fund balance of \$100.6 million, an increase of \$15.4 million from 2011.⁷

The Frederick County Department of Community Development operates the Office of Sustainability & Environmental Resources (OSER), which promotes energy and resource conservation and sustainable living through various programs and resources. OSER's Sustainable Action Team has developed the *Sustainable Action Plan for County Operations* which outlines the county's current and future commitment to sustainability, including conserving energy and reducing emissions.⁸



Photo Credit: Sheldon Shealer

Potomac Edison, an investor-owned utility, supplies most of the county with electricity; the exception is the City of Thurmont, which is served by Thurmont Municipal Light Company, a municipal utility. Potomac Edison's residential customers paid 7.093 cents/kWh through September 20, 2014.⁹ This is considerably lower than the national average for residential electricity, which stood at 12.12 cents/kWh during 2013.¹⁰

According to government sources, Maryland had 120 megawatts of solar installed at the end of 2012¹¹, which represents immense growth from the amount installed in 2007 (0.1 megawatts).¹² Maryland's Renewable Portfolio Standard (RPS)

calls for two percent of all power to be sourced from solar by 2022, which would amount to about 1,200 megawatts.¹³ A typical 5-kilowatt system in the state has a pay-back period of 8 years, which is second only to New York (5 years). Maryland also offers full exemptions on property and sales tax related to purchasing solar.¹⁴

THE SOLARIZE MODEL

The solar group purchasing model, or Solarize, first started in the Southeast neighborhood of Portland, Oregon and quickly spread throughout the city and then to communities across the country. According to *The Solarize Guidebook* from the National Renewable Energy Laboratory (NREL), Solarize programs look slightly different based on specific community priorities, but they all contain three common elements that lead to market transformation.¹⁵ First, Solarize programs use competitive contractor selection. Selecting the contractor through a community-led competitive process provides transparency that builds customer and contractor trust and the selection-criteria can reflect the values of the community. The second key element is community-led outreach supported by a trusted local organization. Potential solar customers are often more responsive to appeals from fellow community members and the contractor can save money on marketing costs and instead focus on site assessments and

installations. Outreach can range from awareness building efforts, such as fliers and newsletters, to more detailed educational efforts, such as workshops and Q&A sessions. Thirdly, Solarize campaigns are limited time offers, which create a sense of urgency among residents who do not want to miss out on a good deal.

These elements can transform the solar market in communities by reducing market barriers. Solarize programs can *reduce high upfront costs* by presenting the full package of state and federal incentives from the outset and the group's higher volume purchasing power can lead to further costs reductions from the contractor due to marketing savings. Solarize programs *reduce complexity* for customers by pre-selecting the contractor and negotiating a price and generally providing practical answers and actionable information to potential customers through workshops and other outreach methods. Lastly, Solarize programs *motivate customers to act quickly* by offering a very competitive price for a limited time and providing people with greater confidence in their purchase decision as they are not going it alone.¹⁷

APPROACH

Program Structure

The County's Office of Sustainability & Environmental Resources (OSER) administered the Frederick County Solarize program. OSER embedded the Solarize program within an umbrella program called Green Homes Challenge, which "guides, rewards, and recognizes households for saving energy, adopting green lifestyle practices, and using renewable energy."¹⁹ By completing various actions, households can become certified as a Power Saver, Green Leader, or Renewable Star. As Frederick County obtains various grants or incentive funding, they embed the incentives within the Challenge to provide a continuous framework despite shifting incentives and to encourage residents' to remain engaged. OSER required households to register with the Green Homes Challenge to participate in Solarize.

Frederick County funded their Solarize program with a grant from the EPA Climate Showcase Communities Program. The funding has been approved from February 2011 to February of 2015 and consists of \$500,000 total, though the funding is spread across many Challenge programs, not just Solarize Frederick County.²⁰ Nevertheless, the EPA grant allowed the Solarize Frederick County program to provide a \$2,000-\$2,500 grant for a limited number of Solarize participants. Households that had already completed the Green Homes Challenge Power Saver Certification were eligible for the \$2,500 incentive, whereas those who had not completed Power Saver Certification were eligible for a \$2,000 grant.²¹ This structure provided motivation for households to first pursue energy efficiency upgrades in their homes before going solar. Solarize Frederick County consisted of both solar electric and solar hot water programs and offered purchase and leasing options.²²

THREE COMMON ELEMENTS OF SOLARIZE PROGRAMS

- 1) Competitive contractor selection: builds transparency and trust;
- 2) Community-led outreach: customers are often more responsive to appeals from community member;
- 3) A limited time offer: creates a sense of urgency¹⁶

SOLARIZE FREDERICK COUNTY PROGRAM GOALS INCLUDED:

- Educating the public about renewable energy options;
- Making solar installations more commonplace and affordable for homeowners;
- Supporting the renewable energy business sector and workforce;
- Reducing energy use from non-renewable sources; and
- Installing at least 30 solar electric systems.¹⁸



Photo Credit: Ron Kaltenbaugh

Selecting Target Communities

Although any resident of Frederick County could participate in the program, the County decided to target specific communities for community-led contractor vetting and selection as well as marketing.²³ To select the target communities, the County issued a Request for Proposal (RFP) and received particularly strong proposals from two communities: Villages of Urbana and the Town of Myersville. Villages of Urbana is a relatively new master planned community first established in 1999 between the cities of Gaithersburg and Frederick. The community consists of new, large homes that are ideal for solar installations from a site assessment perspective. Myersville is an older town with a population of 1,626, according to the 2010 U.S. Census.

Myersville was also a good candidate due to strong support from local officials and the Town's experience issuing RFPs, as the County preferred not to be the entity issuing the RFP for contractors.²⁴

Selecting the Contractors

The Program Administrator worked with Myersville and Villages of Urbana to develop the RFP for the solar electric and solar hot water contractors and convened a selection committee that consisted of residents, volunteer Green Ambassadors, and representatives from the home owners association. Six companies submitted proposals for solar electric and three companies submitted for solar hot water. The committee interviewed the top contenders and selected Astrum Solar for solar electric and Solar Energy Services for solar hot water based on the following criteria:

- Experience and longevity of company;
- Credentials and expertise of staff;
- Local connection;
- Quality of products.
- Pricing and discounting;
- Established leasing partnerships;
- Capacity to increase resources to meet demand;
- Marketing creativity and support; and
- Quality of administrative system.²⁵

Tier Structure

Solarize Frederick County negotiated the following tier structures with their contractors. The tiers were designed so that as more households signed contracts and the collective number of kilowatts (kW) or solar thermal systems installed increased, the price declined for all households. Tiered discounts also applied to leased solar electric systems. The tier structure incentivizes customers to tell their friends, family, and neighbors

about the program to bring in more customers and receive a deeper discount. The solar electric program had the potential to reduce costs up to 23.7 percent from retail pricing if more than 250kW were contracted. Additional detail on the pricing tiers can be found in the Appendix.

Outreach and Marketing

In accordance with the “limited-time-offer” nature of Solarize programs, enrollment for Solarize Frederick County ran from April 26 to August, 30, 2013.²⁶ As stated above, the program targeted Villages of Urbana and Myersville for special community-led marketing. In Villages of Urbana, the program was able to leverage the property management company’s existing and well-utilized communication system of weekly e-mails and a monthly newsletter for marketing purposes. The town of Myersville had three volunteer Green Ambassadors who are very familiar with renewable energy that helped with outreach. In addition, the County helped provide and disseminate postcard mailings and door hangers in several communities.²⁷



Photo Credit: Lisa Orr

Both before and during the enrollment period, the County hosted Solarize 101 Workshops about the benefits of solar and how Solarize works, followed by Solarize 201 Workshops where participants met the installers and learned about their products and services.²⁸ These workshops helped to demystify solar energy systems and explained all the financial incentives and costs to show how these systems were affordable to purchase and lease. Workshop attendance in Villages of Urbana was strong with 104 individuals attending four workshops. Attendance at workshops in Myersville was lower, with 57 individuals attending three workshops.²⁹ Another helpful marketing tactic was to host solar installation demonstrations where neighbors could come see a solar energy system being installed and talk to their neighbors, the Solarize coordinator, and contractor representatives.³⁰

Solarize Frederick County was also marketed to residents of the County at-large through the official county website, newspaper articles, presentations to neighborhood advisory councils, and additional Solarize 101 and 201 workshops. The program focused on encouraging participants to spread the word within their community. Each participant was asked to tell three other neighbors about the program in further effort to spread the word.³¹ The tier structure also incentivized word-of-mouth marketing.

OUTCOMES

Over the course of the campaign, nearly 500 households expressed interest and over 300 individuals attended Solarize workshops and installation demonstrations. On July 2, 2013, Solarize Frederick reached tier five for solar electric with over 250kW contracted at a discount of 23.7%. By the close of the program, 66 households had signed contracts

for solar electric systems for a total of 511.6 kW. Five households chose lease options, but the vast majority chose to purchase their systems. On August 22 2013, the solar hot water program reached tier two, for an average discount of 13.8%. By the close of the program, 12 households signed contracts for solar hot water systems for a total equivalent to 30.6 kW. Collectively, these installations will reduce CO₂e by 484 metric tons annually.³²

Despite Villages of Urbana and Myersville both being target communities, Villages of Urbana experienced much greater participation. During the program, 20 households from the Villages of Urbana signed contracts and two households Myersville signed contracts. The rest of the households came from other parts of the County, which accounts for a larger share of the County populations than these two communities.³³ One possible explanation for the high level of participation in the Villages of Urbana may be that this community is home to a property management company that operates a strong and trusted communications network that the program tapped into.³⁴ The absence of such a communications network in Myersville and a more developed tree canopy and shading, which reduces site suitability for solar, may have influenced the lower participation in that community.



Photo Credit: Chad Baker

Solarize Frederick County was shown to have ripple effects on demand for solar even shortly after it ended. Five households in the Village of Urbana community had missed the deadline for enrollment, but still wanted to go solar. They had learned enough about the Solarize model that they were able to implement their own mini-solarize program in which they issued an RFP for solar bids and were able to obtain a discount even greater than the Solarize Frederick volume discount.³⁵

According to the Program Administrator, Astrum Solar, the solar electric contractor, came away very satisfied with having participated in the program. In addition, the Program Administrator has heard from other solar installers in the County that have noted a growth in sales in the months since the Solarize Frederick campaign, further illustration the impact of the program on local solar demand.³⁶

The solar hot water program did not reach the same level of success as the solar electric program. The primary factor for this difference is that in Frederick County, solar electric is a viable option for many more households because everyone uses electricity in their homes. However, there are several criteria that influence the cost effectiveness of solar hot water systems. For example, solar hot water tends to be more cost effective for families of four or more. In addition, natural gas is currently relatively inexpensive, so switching to solar hot water is not as cost effective for homes with existing natural gas hot water systems. Another factor may have been that households did not want to use roof space for solar hot water and then not be able to fit a 5 kW solar PV system on their roof (smaller systems were priced higher). Lastly, the contractor's internal

communications and administrative challenges may have been another barrier to greater enrollment.³⁷

Factors Contributing to Success

The incentive grants of \$2,000- \$2,500 were critical for driving the success of the program. In addition to the limited-time nature of the program overall, the limited number of incentive grants further incentivized customers to act quickly. Customers were not as excited about the volume discount and uptake slowed down once the incentive grants were all accounted for.³⁸

The program consisted of a range of marketing techniques, from workshops to fliers to tabling at events, that all helped build interest and participation in the program. However, the communications network run by the property management company in Villages of Urbana was likely a key driver of success in that community and points to the effectiveness of leveraging existing social networks.

In preparation for the campaign, program staff did extensive research on programs nationwide to develop their approach. *Solarize Portland* in Portland, Oregon, among other similar programs, was used to guide the development process for *Solarize Frederick County*. That research, as well as the creation of thorough handbooks for each *Green Homes Challenge* initiative, was critical to the program's success by virtue of providing the basis for public and staff education before the program launched.³⁹



Photo Credit: Catherine Wilhemsen

LESSONS LEARNED

Communities issuing RFPs for solar contractors should ask to see an example of the customer contract to make sure that the various layered incentives are clearly laid out. *Solarize Frederick County* aggregated disparate incentives, making the process much simpler for the customers compared to going solar on their own. The discounts and incentives were a point of confusion for some customers, but it can be very valuable and motivating for customers to clearly see on their contract all of the discounts they are receiving as a result of participating in the program.⁴⁰

In advance of developing a solar hot water program, administrators should consider assessing demand for solar hot water systems in their community, because a number of factors, including low natural gas prices, can influence the cost effectiveness of solar hot water systems. In addition, it may be easier to run only a solar electric program rather than a combined electric and hot water program. For example, in Frederick County had run only a solar electric campaign, they could have used the contractor's, Astrum Solar, already developed online intake form and system, which would have saved the time of creating and managing a new intake system, and saved Astrum Solar from having to manually enter

prospect information into their intake system.⁴¹

Trusted communication networks are critical for the success of community-led marketing. In that regard, marketing materials, such as mailers, should look and come from trusted source, such as the local government, community group, or property management company. Some of the marketing materials from Solarize Frederick County had a slick design and may have looked like company sales materials that households are accustomed to ignoring rather than information about a local government-led program.⁴²



REPLICATION

Solarize Frederick County was made possible by funding sources that are not necessarily available to all local governments. In lieu of special funding and grants like the EPA *Climate Showcase Communities* program, local decision-makers must be creative in finding financial support to start a solar group buy campaign.

Communities should also consider the human resources needed to run a Solarize initiative. Solarize Frederick County benefitted from having a strong coordinator who devoted time to RFP development, contractor selection, creating outreach materials, and delivering educational workshops and presentations. While the program coordinator leveraged

volunteers to add capacity, her commitment and program management skills were critical to success.

Counties seeking to launch a Solarize program may consider this model, in which the County found two smaller communities that were interested in partnering in contractor selection and community-led marketing through an RFP. It is important for program administrators to consider a community's existing communications capacities when selecting the targets for community-led marketing. Program administrators should look to strong existing networks that they can leverage.

Solarize Frederick County made going solar especially attractive because it combined a federal incentive from the EPA with Maryland's tax exemptions and rebates. Program administrators may consider making sure that contractors clearly enumerate these layered incentives in the customer contract.

Photo Credit: Russ Poole

RESOURCES & DOCUMENTS

- *Solarize Frederick County* web page: <http://www.frederickcountymd.gov/index.aspx?nid=5350>
- Presentation from *Solarize Frederick County* workshop: http://frederickcountymd.gov/documents/6616/6617/6628/7697/Solarize%20201%20-%20Intro%20-%205-23-13_201306121327468395.pdf
- *The Green Homes Challenge's Renewable Star Handbook*: http://www.frederickcountymd.gov/documents/6616/6617/6628/FINAL%20oes_rshandbook_04.09.13_201304091046051850.pdf
- Office of Sustainability and Environmental Resources: website <http://www.frederickcountymd.gov/index.aspx?NID=3530>
- *Sustainable Action Plan for County Operations*: frederickcountymd.gov/documents/6616/6617/6625/Sustainable%20Action%20Plan%20for%20County%20Ops_Final.07.23.10.PDF

PROGRAM CONTACT INFORMATION

Lisa Orr

Sustainability Program
Coordinator, Office of
Sustainability & Environmental
Resources

301-600-6864

lorr@frederickcountymd.gov

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Author: Stephan Schmidt, ICLEI Intern

Author: Melissa Higbee, ICLEI Program Officer

Editor: Riana Ackely, ICLEI Program Officer

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APPENDIX: SOLARIZE FREDERICK PRICING

Solar Electric (PV) Pricing

	Total kW Installed by all Solarize Participants	Price per Watt	% Discount from Retail
Retail*		\$4.52	
Tier 1	1 to 25	\$3.85	14.8%
Tier 2	25 to 50	\$3.80	15.9%
Tier 3	50 to 100	\$3.65	19.2%
Tier 4	150 to 250	\$3.55	21.5%
Tier 5	>250	\$3.45	23.7%

Source:

<http://www.frederickcountymd.gov/index.aspx?NID=5460>

*Astrum's average 2013 retail per kW cost for a 6.3 kW system

Solar Electric (PV) Lease Pricing

	Total kW Installed by all Solarize Participants	Lease Price per Watt
Tier 1	1 to 25	\$0.012
Tier 2	25 to 50	\$0.110
Tier 3	50 to 100	\$0.105
Tier 4	150 to 250	\$0.100
Tier 5	>250	\$0.096

Source:

<http://www.frederickcountymd.gov/index.aspx?NID=5460>

Solar Thermal Pricing

	System Size (people served)	Retail Cost	Solarize Cost	% Discount from Retail
Tier 1: Up to 10 systems	1 to 2	\$8,725	\$7,725	11.5%
	2 to 3	\$9,446	\$8,446	10.6%
	3 to 4	\$9,625	\$8,625	10.4%
	5+	\$10,064	\$9,064	9.9%
Tier 2: 11-29 systems	1 to 2	\$8,725	\$7,416	15.0%
	2 to 3	\$9,446	\$8,137	13.9%
	3 to 4	\$9,625	\$8,343	13.3%
	5+	\$10,064	\$8,755	13.0%
Tier 3: 30+ systems	1 to 2	\$8,725	\$7,004	19.7%
	2 to 3	\$9,446	\$7,725	18.2%
	3 to 4	\$9,625	\$8,034	16.5%
	5+	\$10,064	\$8,343	17.1%

Source: <http://www.frederickcountymd.gov/index.aspx?NID=5460>

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