



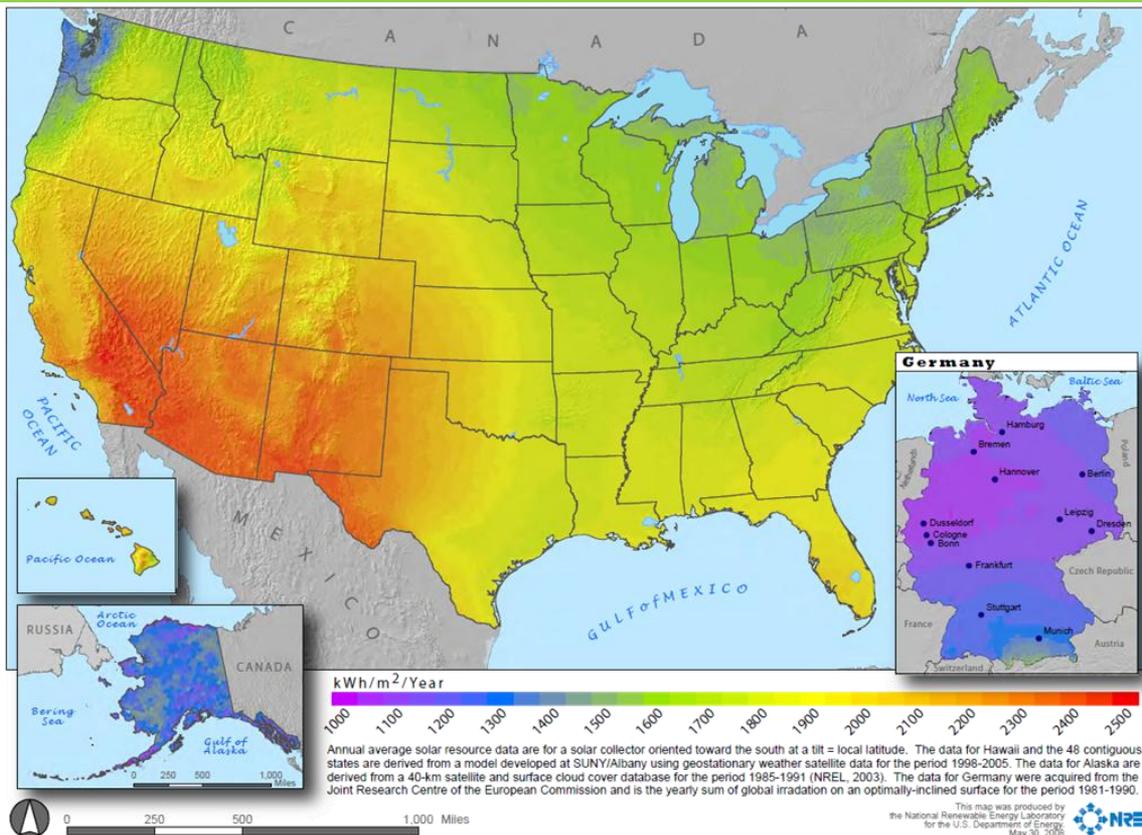
# Solarize Madison

## Community Solar Partnerships and Strategies

# Presentation Outline

- Market Context – PV “Soft Costs” and Community Solar
- Solarize Madison Project Goals
- Project Location and Partners
- Project Process and Timeline
- Project Results

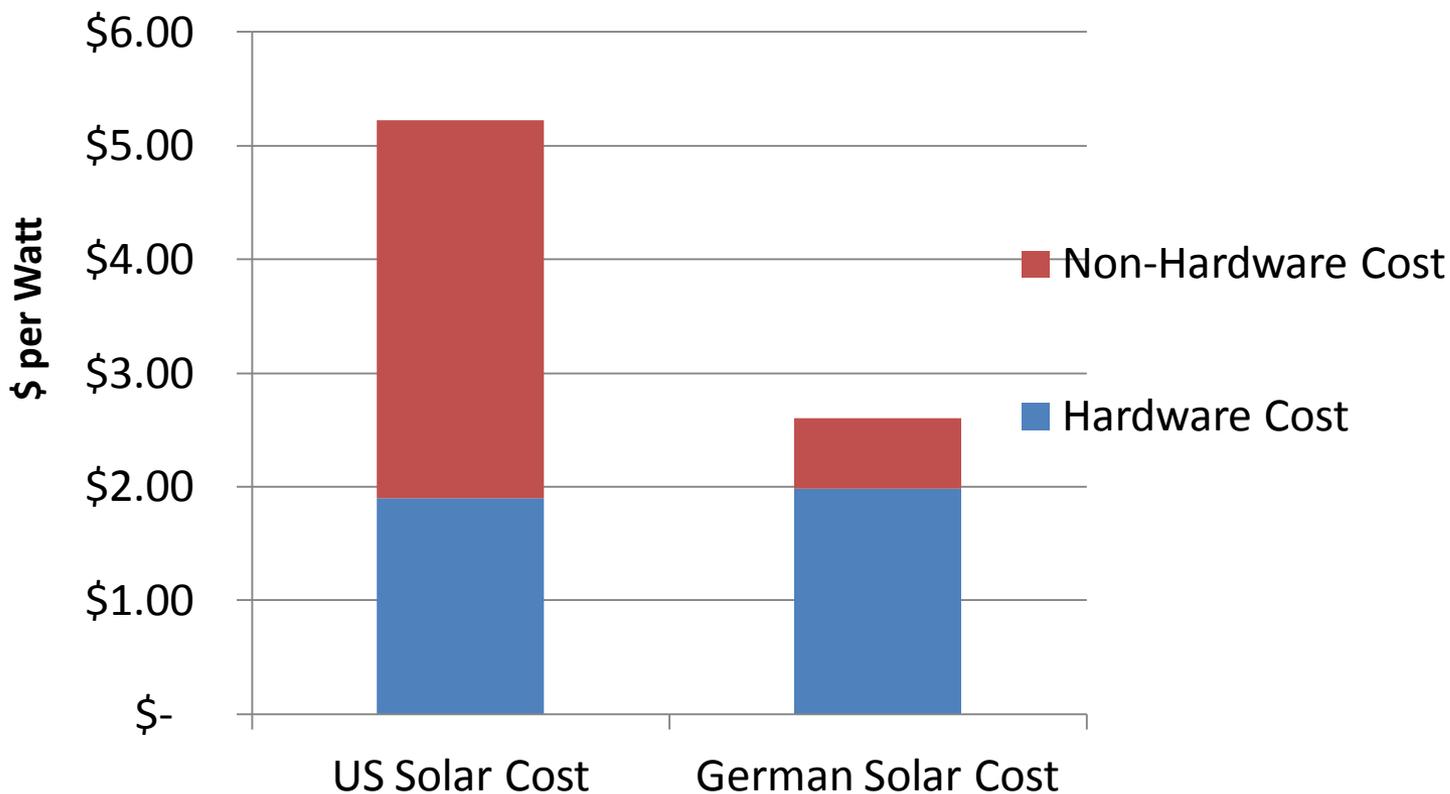
# Question: Why so much PV in Germany?



An Independent Contractor to:

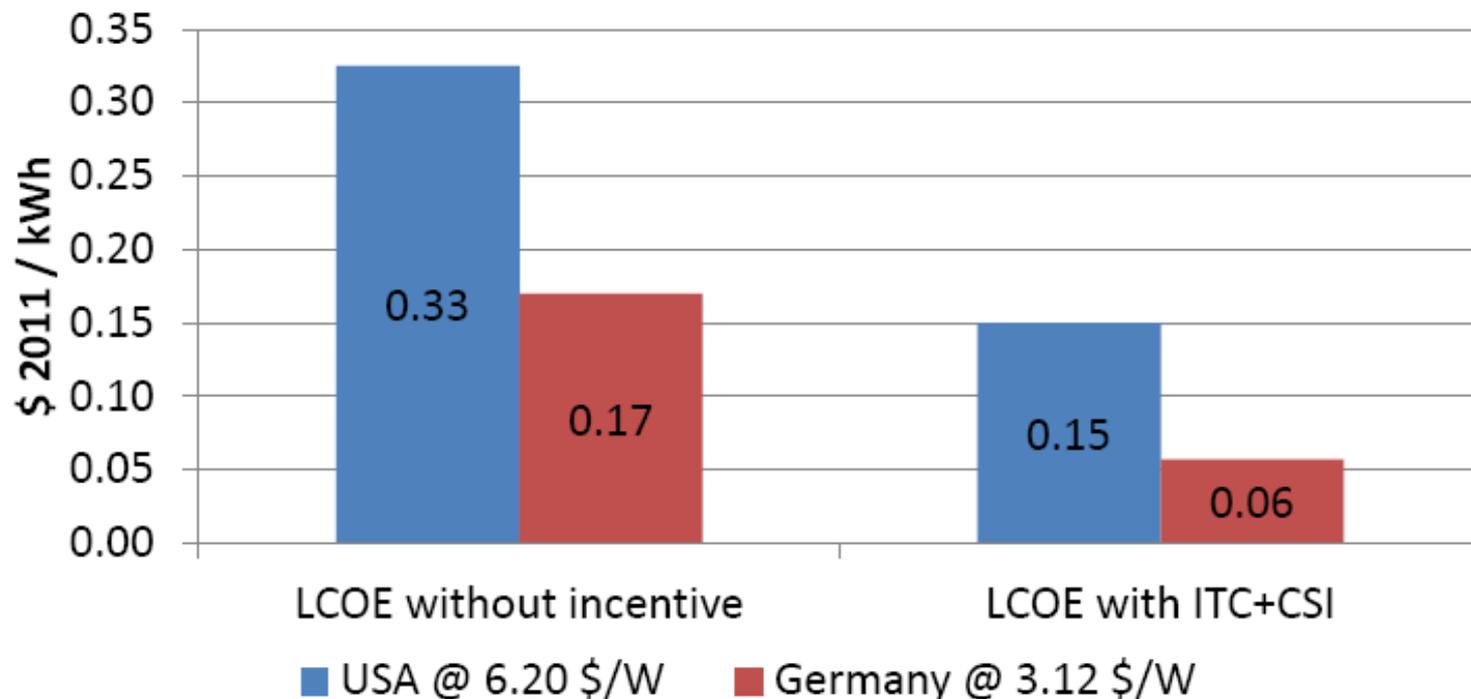


# Comparison of US and German Solar Costs



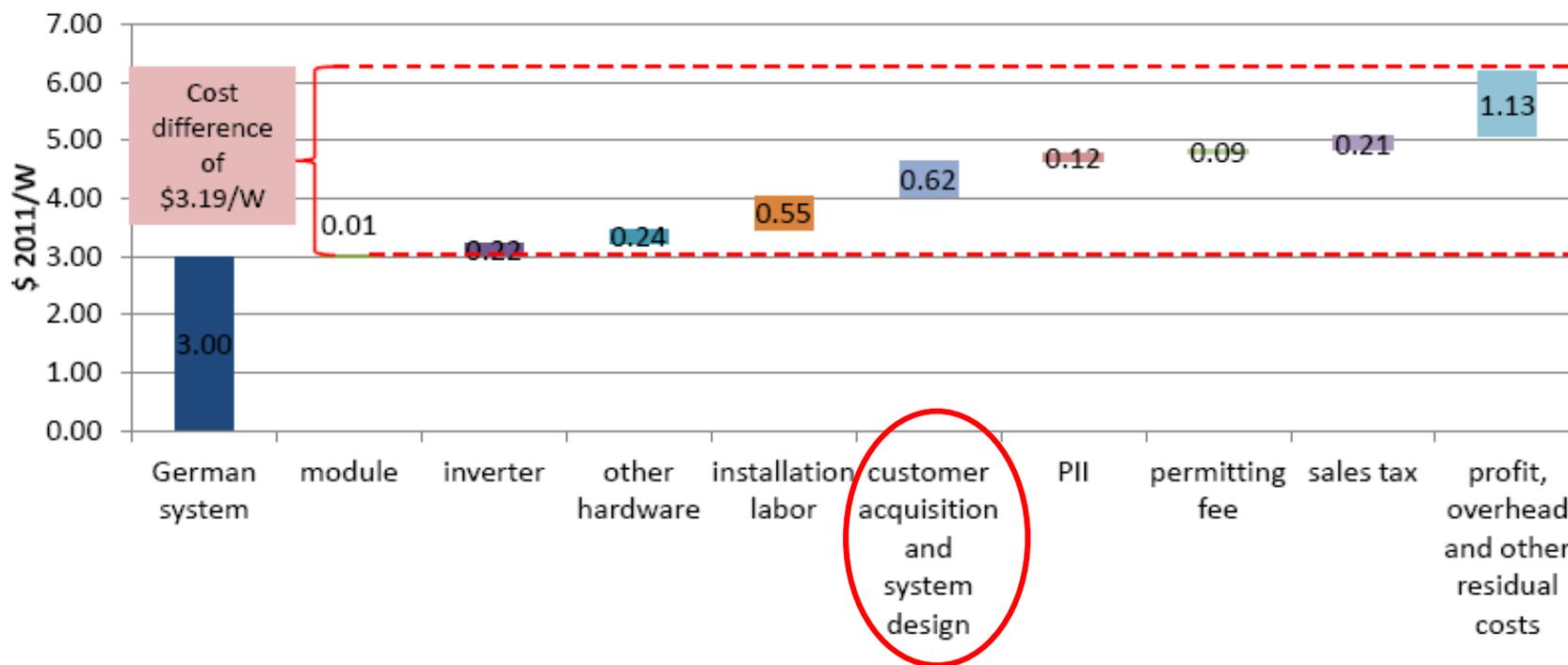
# Comparison of US and German Solar Costs

## LCOE for a residential PV system in Los Angeles

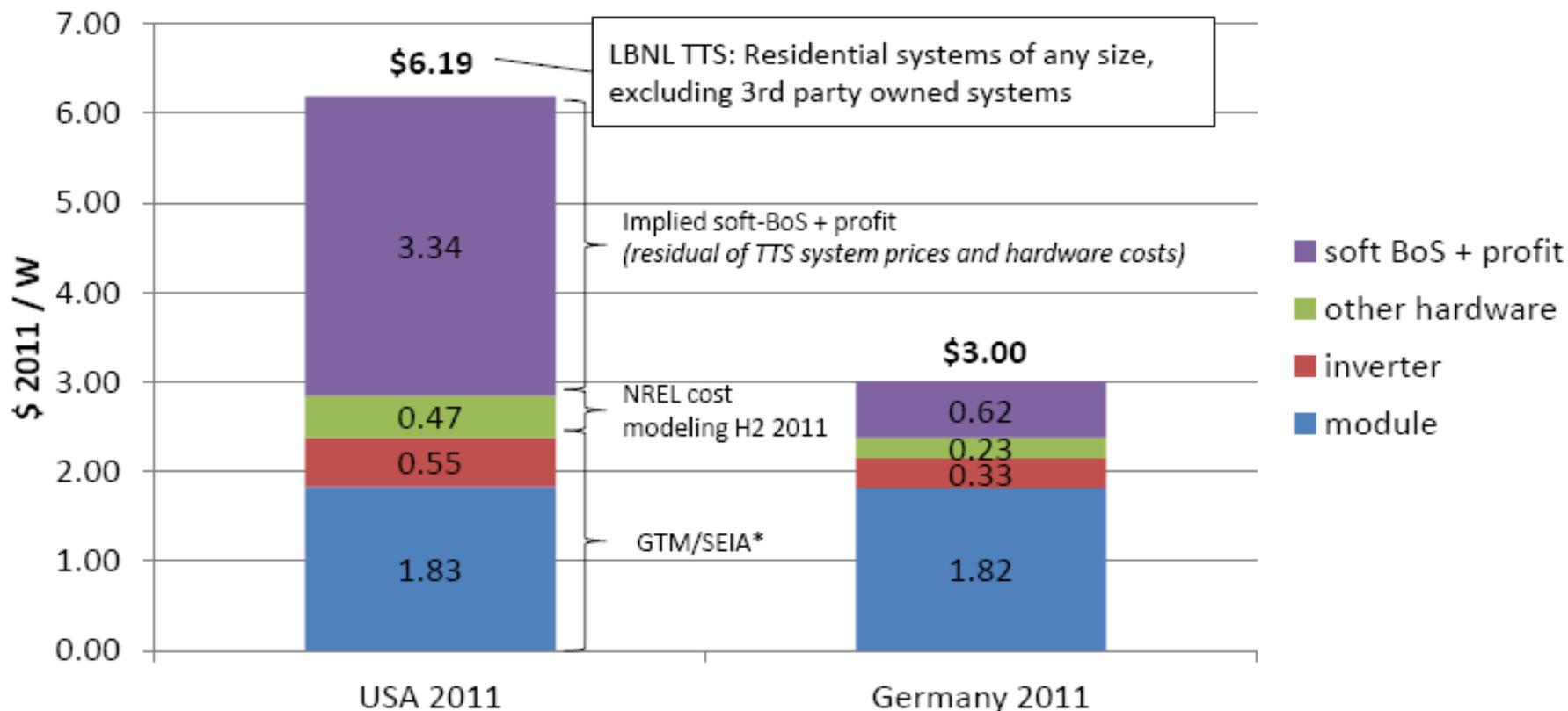


# Comparison of US and German Solar Costs

**Breakdown of Cost Differential Between German and U.S. Residential PV**  
(customer-owned systems)

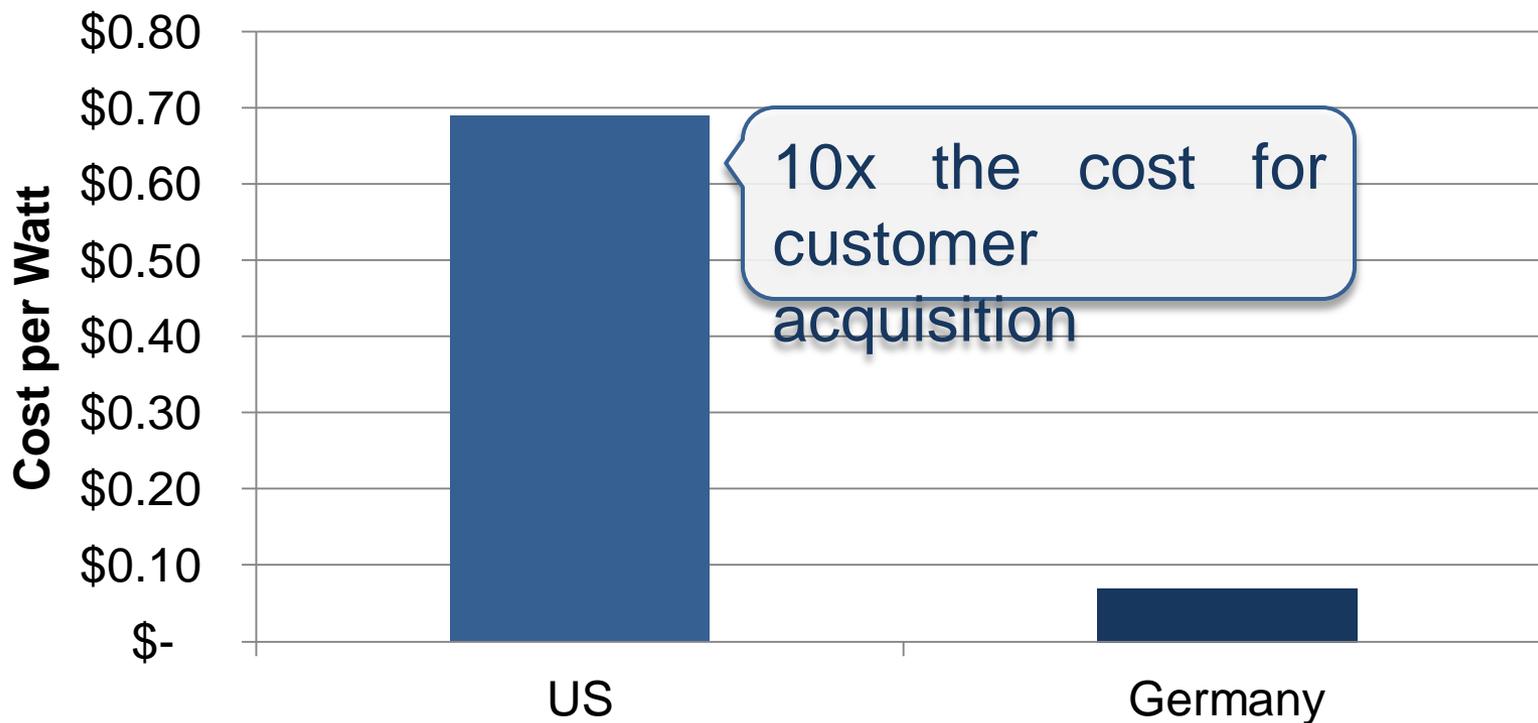


# Comparison of US and German Soft Costs



# Comparison of Acquisition Costs

## Customer Acquisition



# PV Soft Costs and US DOE SunShot Program




**Residential, Commercial, and Utility-Scale Photovoltaic (PV) System Prices in the United States: Current Drivers and Cost-Reduction Opportunities**

Alan Goodrich, Ted James, and Michael Woodhouse

NREL is a national laboratory of the U.S. Department of Energy, Office of Energy Efficiency & Renewable Energy, operated by the Alliance for Sustainable Energy, LLC.

Technical Report  
NREL/TP-6A20-53347  
February 2012  
Contract No. DE-AC36-08GO28308




**Non-Hardware ("Soft") Cost-Reduction Roadmap for Residential and Small Commercial Solar Photovoltaics, 2013-2020**

Kristen Ardani<sup>1</sup>, Dan Seif<sup>2</sup>, Robert Margolis<sup>1</sup>, Jesse Morris<sup>2</sup>, Carolyn Davidson<sup>1</sup>, Sarah Truitt<sup>1</sup>, and Roy Torbert<sup>2</sup>

<sup>1</sup>National Renewable Energy Laboratory  
<sup>2</sup>Rocky Mountain Institute

NREL is a national laboratory of the U.S. Department of Energy, Office of Energy Efficiency & Renewable Energy, Operated by the Alliance for Sustainable Energy, LLC.  
This report is available at no cost from the National Renewable Energy Laboratory (NREL) at [www.nrel.gov/publications](http://www.nrel.gov/publications).

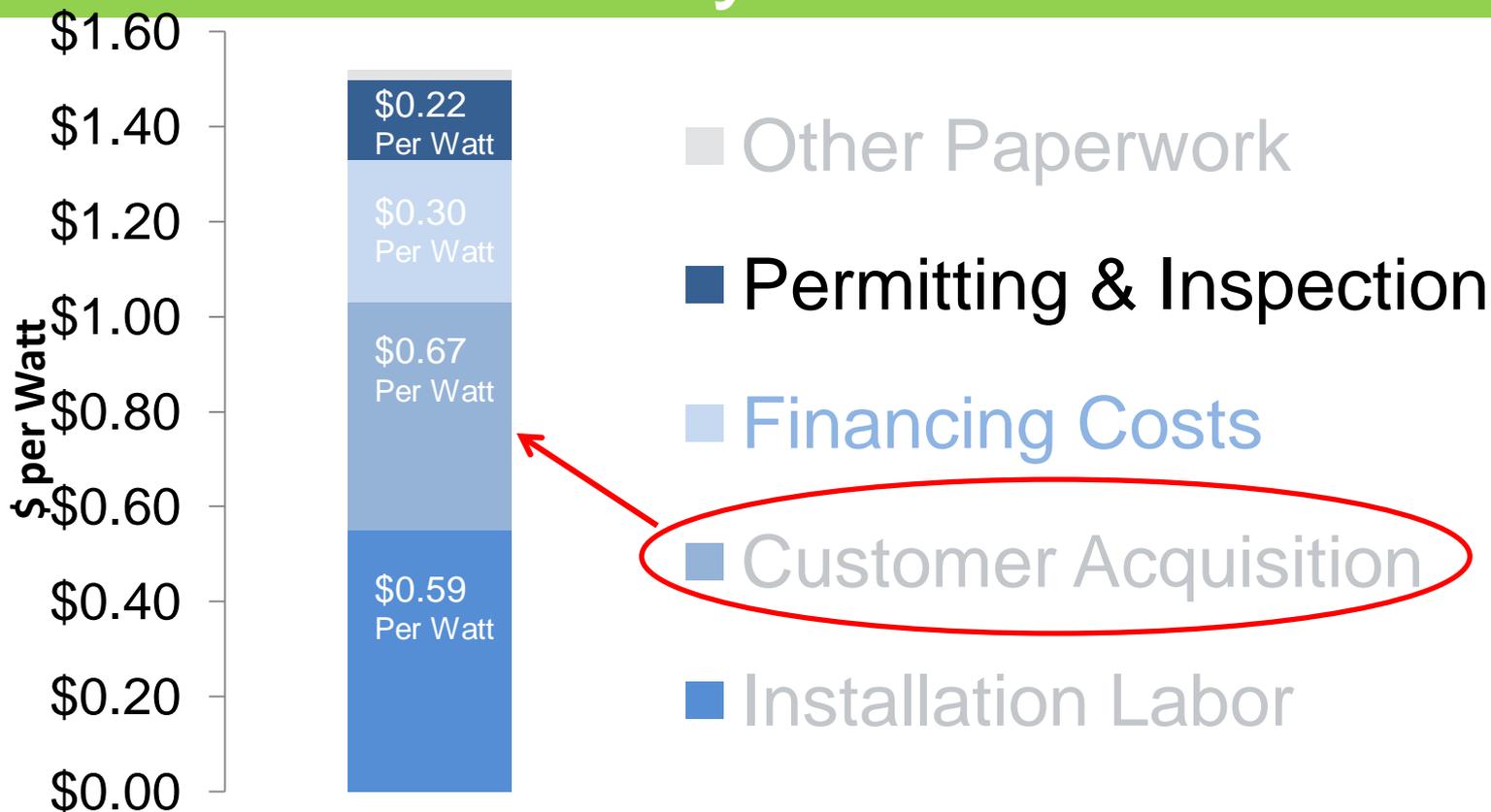
Technical Report  
NREL/TP-7A40-59155  
August 2013  
Contract No. DE-AC36-08GO28308



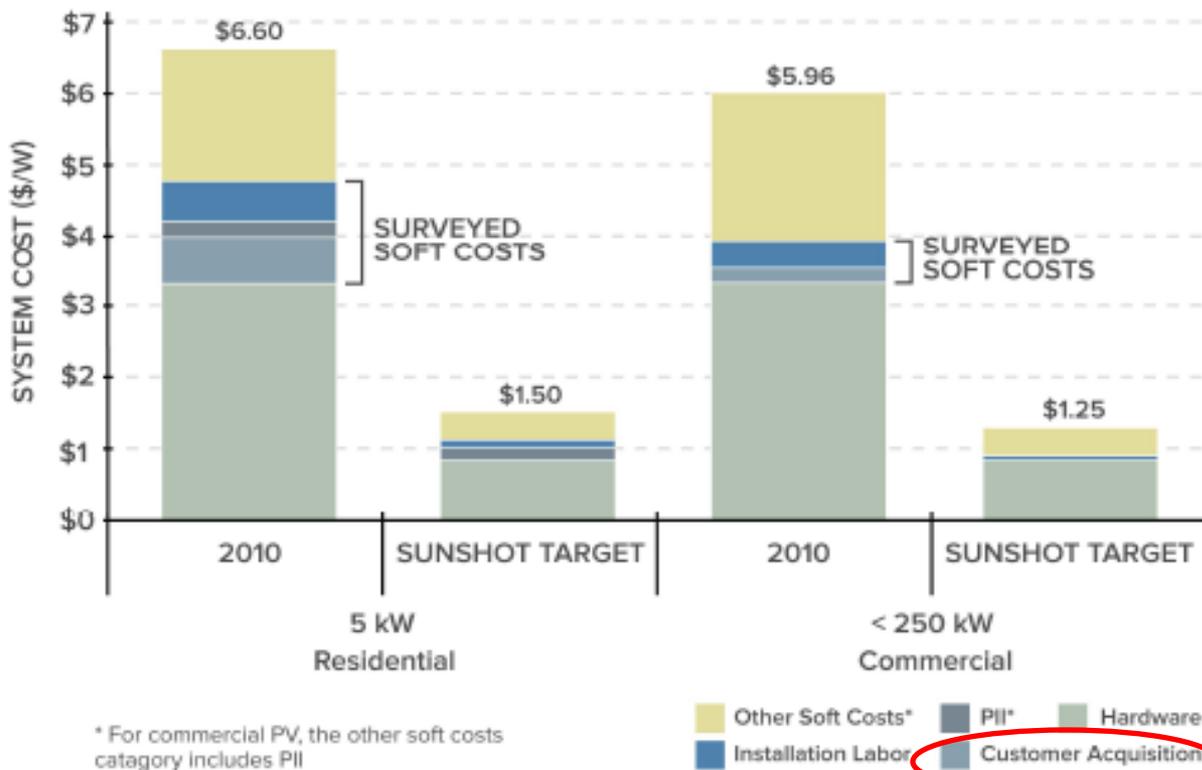
**Benchmarking Non-Hardware Balance of System (Soft) Costs for U.S. Photovoltaic Systems Using a Data-Driven Analysis from PV Installer Survey Results**

November 2012

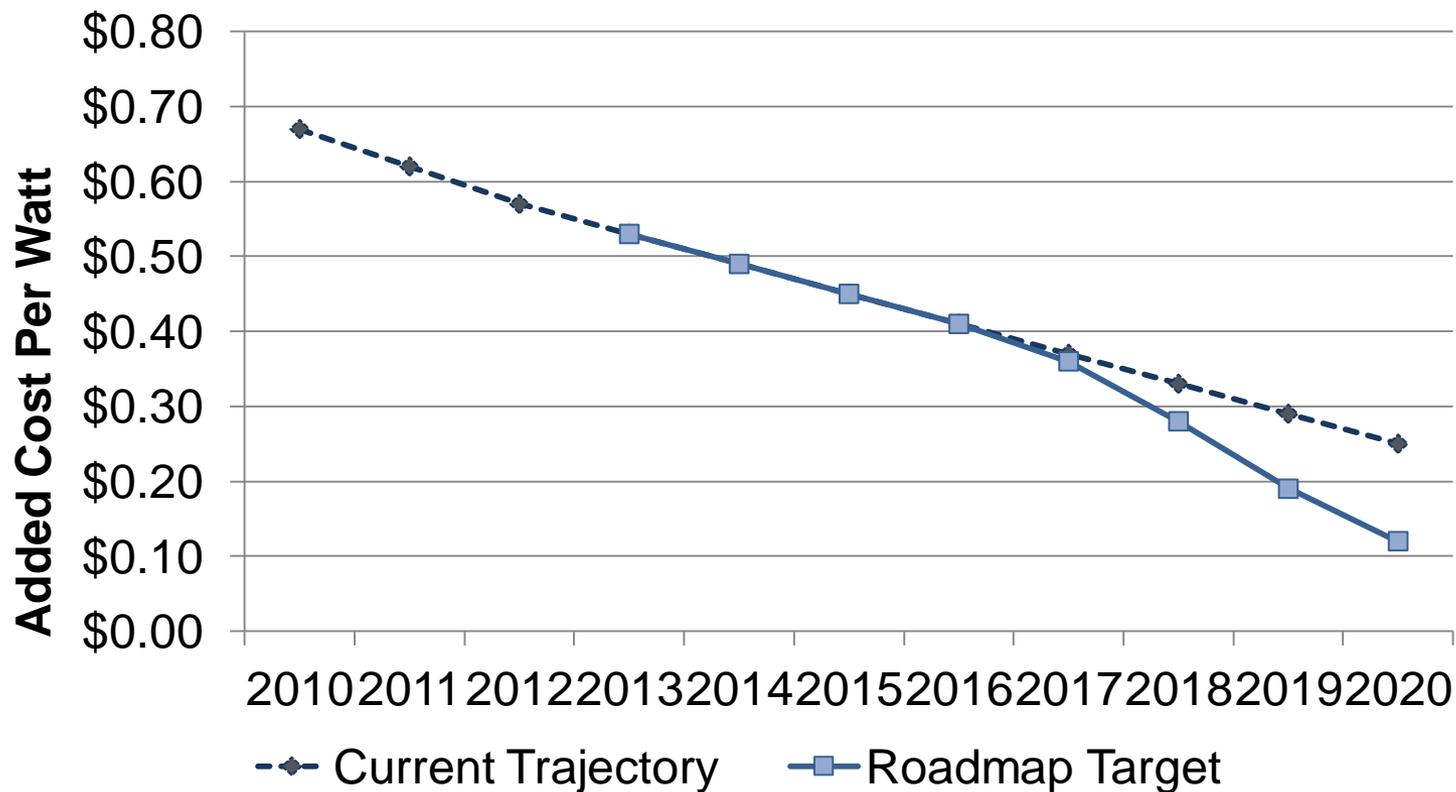
# U.S. Surveyed Soft Costs



# SunShot Soft Costs Roadmap



# SunShot Customer Acquisition Roadmap



# Community Solar

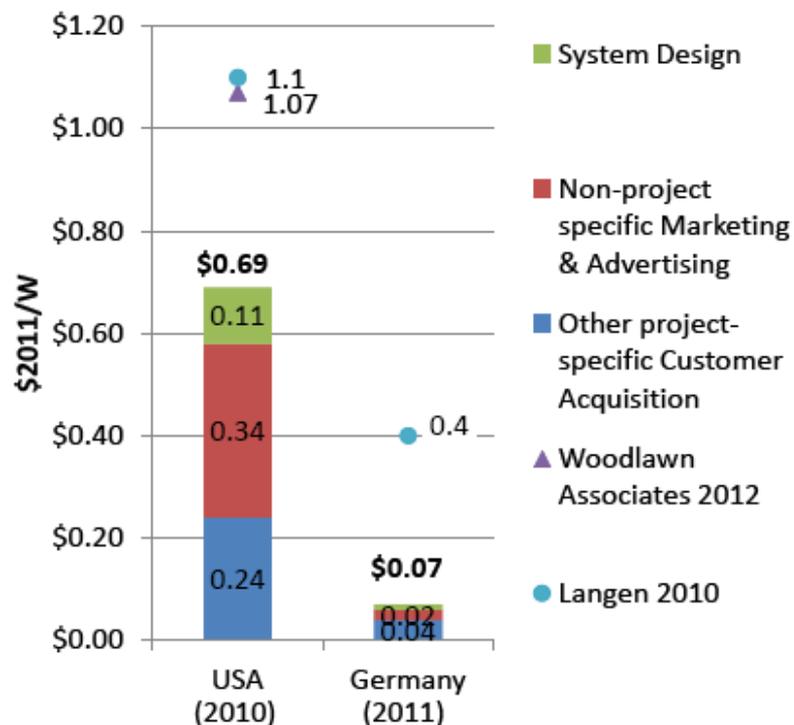
**Solarize:** Group purchasing for residential solar PV projects



# Solarize and Customer Acquisition Costs

- Mean bid success rate is slightly lower in the US (30% in US vs. 40% in Germany)
- German installers leverage partnerships with equipment manufacturers
- Langen (2010) points to simpler and more certain value proposition in Germany (i.e., FiT), installer learning, and critical mass for word of mouth

Average Customer Acquisition Costs



# Solarize and Customer Acquisition Costs

## Barriers

High upfront cost



Complexity



Customer inertia



## Solutions

Group purchase

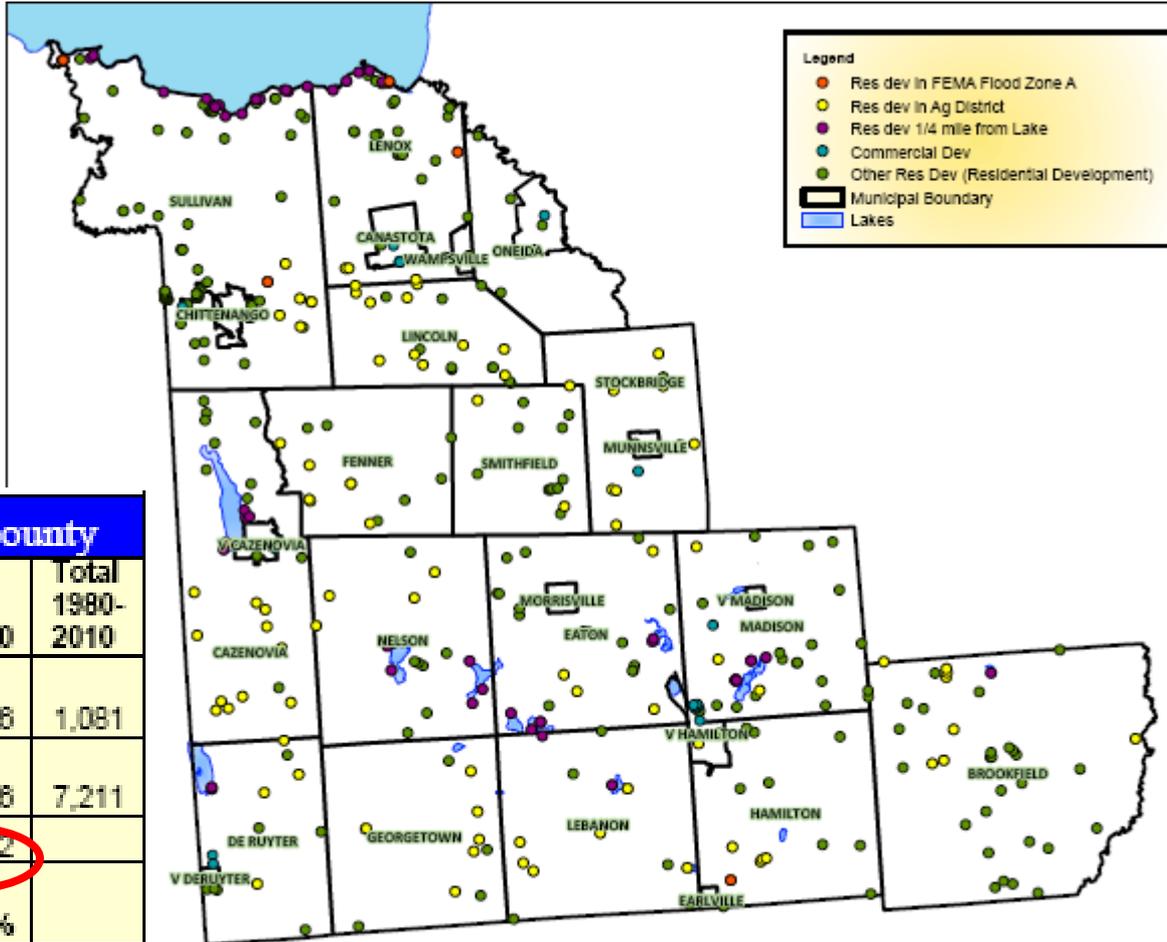
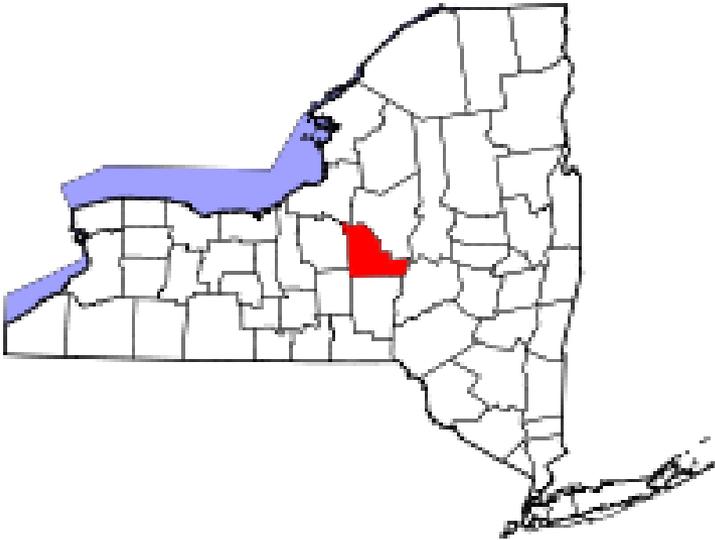
Community outreach

Limited-time offer

# Project Goals

- Transform interest in clean energy into action by tackling the three major market barriers:
  - cost
  - complex process
  - customer commitment
- At least 15 solar photovoltaic (PV) and 20 solar hot water installations
- Reduce costs by 20-30 percent

# Project Location



**Table 4: Population Change in Madison County**

	1980	1990	2000	2010	Total 1980-2010
POP in City/ Villages	31,895	32,492	31,173	32,976	1,081
POP in Towns	33,255	36,628	38,268	40,466	7,211
<b>TOTAL</b>	65,150	69,120	69,441	<b>73,442</b>	
% in City/ Village	49.0%	47.0%	44.9%	44.9%	
% in Towns	51.0%	53.0%	55.1%	55.1%	

# Project Partners



# Project Process

Select  
Installer

Marketing  
&  
Workshop  
s

Enrollment

Site  
Assessme  
nt

Decision  
&  
Installation

An Independent Contractor to:

**nyszerda**  
Energy. Innovation. Solutions.



Central New York  
**cip** climate change  
innovation program

Central NEW YORK  
**energy**  
CHALLENGE 

# Project Timeline

- February: engage partners
- March: RFP issued
- April: installer selection
- April – May: outreach and education (workshops and open houses)
- July 12 – enrollment closes
- July-October: assessments, proposals, contracting, installation

# Installer Selection



Making Power Work For You



SOLARIZE MADISON:  
REQUEST FOR PROPOSALS FOR THE INSTALLATION OF  
SOLAR ENERGY SYSTEMS



## INVITATION FOR PROPOSALS

Notice is hereby given that proposals are invited for Professional Services related to the installation of small solar energy systems through the Solarize Madison Program. The program consists of services to design, procure, and install new, photovoltaic (PV) systems (direct owned or leased) for a cohort of Madison County consumers based upon the scope of work contained in this Request for Proposal (RFP). The intent is to select one or more firms to provide services.

The Request for Proposals document may be obtained by email ([scott.ingmire@madisoncounty.ny.gov](mailto:scott.ingmire@madisoncounty.ny.gov)) or downloaded from [www.solarizemadison.com](http://www.solarizemadison.com). Sealed proposals must be submitted to no later than **May 4<sup>th</sup>, 2012 at 3:00 PM** to:

Madison County Purchasing Department  
Attention – Solarize Madison County  
PO Box 635  
Wampsville, NY 13163

For more information, contact: Scott Ingmire, Director  
Madison County Planning Department  
315-366-2498  
[scott.ingmire@madisoncounty.ny.gov](mailto:scott.ingmire@madisoncounty.ny.gov)

Dated this 30 March 2012.

An Independent Contractor to:



# Solar PV Pricing Tiers

PV System Equipment Information		Total Participant Capacity (kW)	< 50kW	50 – 75kW	75 – 100kW	100 – 200kW	> 200kW
Modules	Inverters						
250W Solar World SunModule Mono	SMA	Price (\$/Watt)	\$3.70	\$3.65	\$3.60	\$3.50	\$3.50
265 W Suniva Module	SMA	Price (\$/Watt)	\$3.80	\$3.75	\$3.70	\$3.60	\$3.60
250 W ASW Module	Enphase	Price (\$/Watt)	\$3.90	\$3.85	\$3.80	\$3.70	\$3.70

# Solar Thermal Pricing Tiers

Solar Hot Water System Equipment Information		Total Participant Capacity (kit)	1-5 Kits	6-10 Kits	11-15 Kits	16-20 Kits	> 20 Kits
Modules	Tank						
SPP VHP-30	80 gal.	Price (\$/kit)	\$7,231	\$7,081	\$6,931	\$6,781	\$6,781
1 Collector SPP Spartan	60 gal.	Price (\$/kit)	\$6,464	\$6,314	\$6,164	\$6,014	\$6,014
2 Collectors SPP Spartan	80 gal.	Price (\$/kit)	\$7,313	\$7,163	\$7,013	\$6,863	\$6,863

An Independent Contractor to:



# Marketing & Workshops

- 6 Q&A sessions throughout Madison County
- 4 In-Depth educational sessions
- Over 200 attendees



Cornell University  
Cooperative Extension  
Madison County



An Independent Contractor to:



# Marketing & Workshops

## Solarize Madison

Follow us on

Search

- Home
- Solar Program
- 2013 Pricing Options
- Sign-up
- About CNY Solar
- 2013 Workshops**
- Testimonials
- Calendar of Events
- FAQ
- Contact Us
- More



- Home
- Solar Program
- 2013 Pricing Options
- Workshops
- Sign-up
- Calendar of Events
- Testimonials
- About CNY Solar
- Contact Us

More:

Volunteers & Sponsors

### Education Workshop & Tour

June 9, 2013



Phil Hofmeyer and participants had an interactive discussion and hands-on experience about solar PV equipment at the Nuts and Bolts workshop.

### The Nuts and Bolts

Time: 10:00 a.m. - 12:00 p.m.

Location: Shannon Hall, Room 104, at Morrisville

State College

Where do the nuts and bolts go in your solar hot water and solar PV system? An in-depth discussion of all of the components that make up your solar hot water or solar PV system and how all works together.

An Independent Contractor to:



# Marketing & Workshops

Wednesday, June 13, 2012 THE POST-STANDARD PAGE A-5

LOCAL NEWS

## Madison County to harness sun

**Project aims to bring solar-panel systems to residents at discounted prices.**

By **Alaina Potrilus**  
Staff writer

The county that brought windfalls to New York state is hoping to help homeowners, business and others install solar energy panels at a discounted rate with fewer hurdles.

Solarize Madison organizers hope to build at least 30 solar-photovoltaic, or solar-panel, systems across the county this year, officials said Tuesday at the Board of Supervisors meeting.

The project will help those interested in installing solar panels overcome financial and logistical roadblocks. Group purchasing will bring down installation costs, while project organizers will help guide participants through site assessment and design, financial services and installation.

County Planning Director

Scott Ingraine said the collaboration is the first of its kind in the state. The project takes a page from similar group-buying programs in Portland, Ore., which planned 120 residential solar installations in six months and led to other similar initiatives.

The volume purchasing should reduce costs to homeowners by 20 to 30 percent, Ingraine said.

When coupled with state and federal tax credits and incentives, the installation costs could drop by 70 to 80 percent, he said.

"We can have an even greater impact," Ingraine said. "The more people who sign up, the better pricing we can receive for all involved."

Solarize Madison organizers hope to sign up interested participants by Sept. 30. The first 15 homeowners to sign a contract will receive an additional \$2,000 solar incentive, paid for by a \$30,000 Climate Change Innovation Program demonstration grant county officials received in 2010 from the

**How to learn more**

Public information meetings are planned in the next two weeks for homeowners, business owners, farmers, institutions and municipalities interested in the Solarize Madison program.  
**Mondays** 7 to 9 p.m., Cazenovia Public Library, 100 Albany St., Cazenovia.  
**Tuesdays** 7 to 9 p.m., Chittenango Library, 101 Falls Blvd., Chittenango.  
**June 21:** 7 to 9 p.m., Hamilton High School, 47 W. Kendrick Ave., Hamilton.  
**June 25:** 6 to 8 p.m., Oneida Library, 220 Broad St., Oneida.  
**June 27:** 7 to 9 p.m., Cornell Cooperative Extension, 100 Eaton St., Morrisville.  
**June 28:** 7 to 9 p.m., DeRuyter Library, 803 Ullica St., DeRuyter.  
 Visit [solarizemadison.com](http://solarizemadison.com) for more information about Solarize Madison.

Central New York Regional Planning and Development Board

Madison County has a long history with green energy projects. In 2000, the state's first windmills were built in the town of Madison, and were soon followed by dozens of turbines turning on farms across the county.

Officials installed a methane

gas collection system at the county landfill in 1997, and started producing energy from the landfill gas in 2009. Last year, the facility was the first municipal landfill in the country to utilize solar technology on its flexible landfill cap. Ingraine said the new solar program will be the next chapter in the county's green energy history.



June 13, 2012 The Central New York Business Journal

**SPECIAL REPORT**

# ENERGY/ and GREEN BUSINESS

**ENVIRONMENT**

## Contractors believe Solarize Madison will help their firms shine

By **Beck Seltzer**

Journal Staff

To update New York companies are brightening their outlook for 2012 after being selected as contractors for a new solar-power group-purchasing program in Madison County.

The program, Solarize Madison, selected Rochester-based Arista Power Inc. and Endicott-based FTM Solar Works to install photovoltaic solar-power systems in Madison County. Arista Power will sell direct-buy systems, which owners pay close outright, while FTM will lease out systems.

Solarize Madison calls for the companies to install a combined minimum of 30 systems in 2012. It is open to a variety of individuals and organizations, including businesses, farms, homeowners, and municipalities.

The program is an attempt to lower the cost of a solar-power system by using group purchasing. So, a business or homeowner



Solar panels, seen mounted to the roof of a building, and a new solar-power group-purchasing program has been started in Madison County.

manager. If the program continues next year, which has not yet been decided, it will undergo a new request-for-proposal process to pick contractors, she says.

The Solarize Madison program is modeled after similar initiatives in Oregon and Massachusetts, according to Myers, who is working toward a doctorate's degree in renewable-energy technology at Morrisville State College. It has support from the Madison County Planning Department, the Central New York Regional Planning and Development Board, and the Renewable Energy Training Center at Morrisville State College.

"Most of the other Solarize programs have been strictly residential," Myers says. "We're opening it to all of Madison County, whether it be a homeowner, business owner, farm owner, or municipality."

Those who are interested in participating or leasing a solar system through the program will have to call by Sept. 30, according to Myers. So far, 12 people have expressed interest — and the program has

An Independent Contractor to:

Central New York

Central NEW YORK

**Sign up Today!**

*Empowering communities through collective bargaining*

Learn how this volunteer-driven volume purchasing program saves you money on a solar energy system. Solarize Madison is open to all homeowners, business owners, farmers, institutions and municipalities.

**Solar Ambassadors**

– Receive a **\$2,000 grant** towards your solar PV system costs. **Hurry, funds are limited!**

**Save upto 75-80% off the sticker price!**

**Final Workshop: The Nuts & Bolts**  
 July 30th at 7:00 pm  
 Charlton Hall Rm 215 at Morrisville State College  
 Register Online: [www.solarizemadison.com](http://www.solarizemadison.com)

Contact: Jamie Hart, Madison County Planning Department, Office: (315) 366-2378

Supported by:

# BUSINESS JOURNAL

CENTRAL NEW YORK

## Solarize Madison project hires Rochester contractor

by **Traci DeLore**

5/31/2012 1:29:00 PM

WAMPVILLE — The Solarize Madison community-focused, renewable-energy program has selected Rochester-based Arista Power, Inc. as one of two contractors to install at least 30 solar-photovoltaic systems in Madison County.

# Enrollment

## Solarize Madison

### Solar Ambassador Application and Agreement

Welcome to Madison County's Community Solar Program, Solarize Madison. By completing this Application, you have an opportunity to participate in and facilitate the success of the Solarize Madison. As a condition of participation in the Solarize Madison program, the System Owner becomes a Solar Ambassador and agrees to enter into and abide by the terms of this Application and Agreement.

**Please complete the information on pages 1 through 2.**

Applicant Information (Print):

Name \_\_\_\_\_

Telephone \_\_\_\_\_

Email \_\_\_\_\_

Service Address \_\_\_\_\_

City \_\_\_\_\_, New York Zip \_\_\_\_\_

Utility Name \_\_\_\_\_

Mailing Address (if different) \_\_\_\_\_

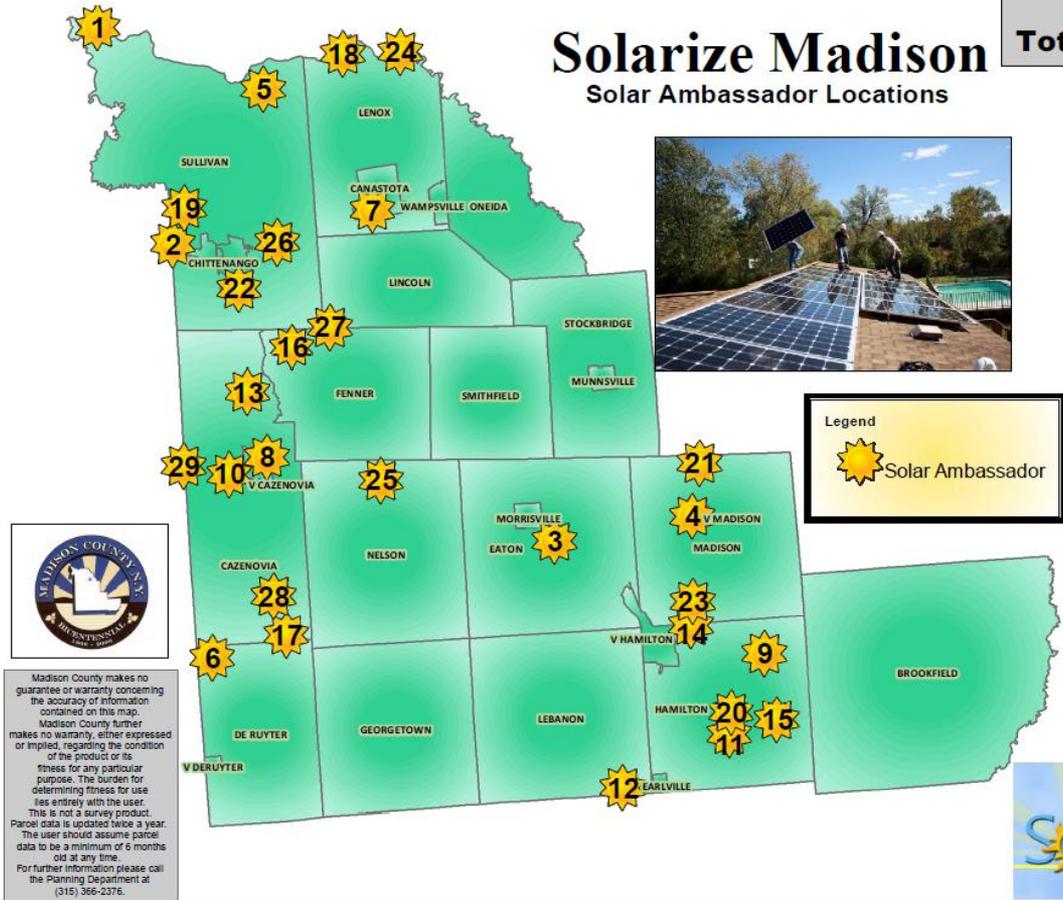
City/State \_\_\_\_\_ Zip \_\_\_\_\_

The responsibilities of becoming a Solar Ambassador for the Solarize Madison community solar program are as follows:

# Project Results

## Solarize Madison Solar Ambassador Locations

2012 Program  
**Total: 184.2 kW**



Legend



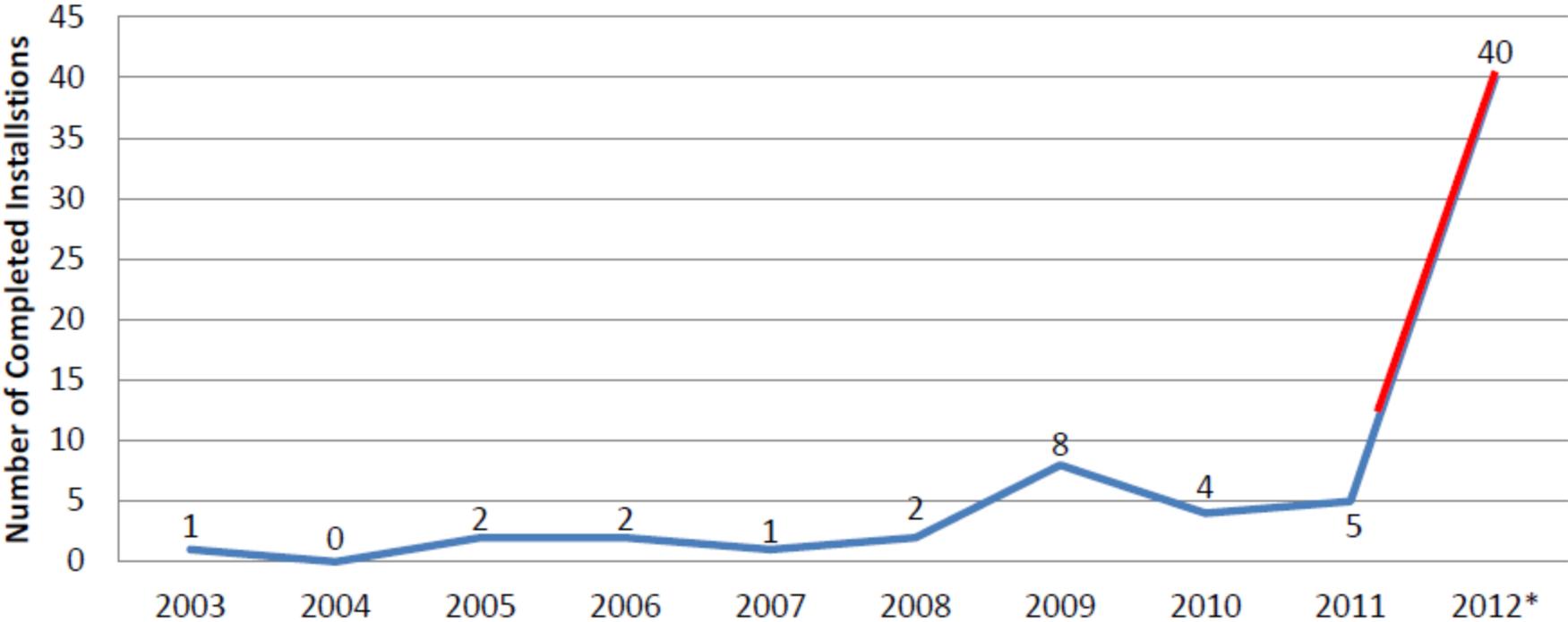
Solar Ambassador

	System Size (W)
1	6,000
2	9,750
3	7,000
4	7,000
5	4,000
6	7,000
7	7,000
8	3,000
9	3,000
10	5,000
11	3,000
12	3,750
13	7,000
14	4,320
15	3,000
16	11,000
17	8,000
18	7,000
19	6,500
20	15,750
21	6,867
22	5,886
23	6,867
24	6,867
25	7,000
26	1,500
27	6,867
28	7,000
29	7,280

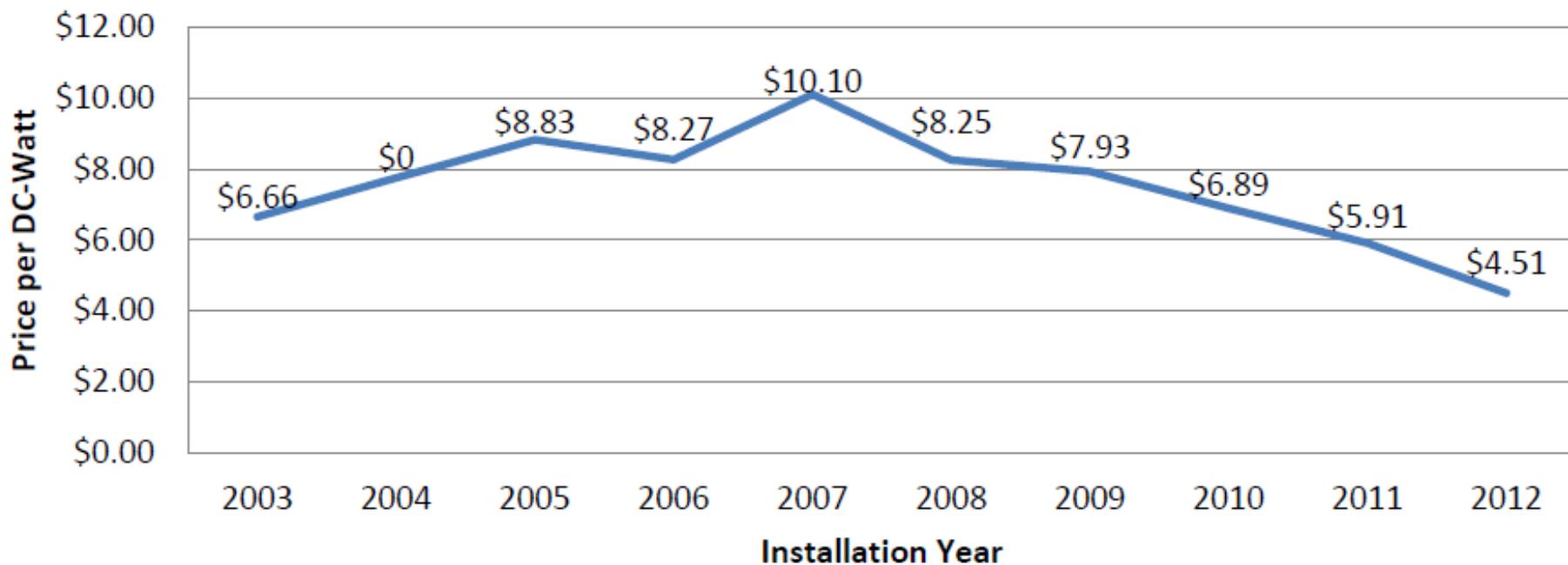


Madison County makes no guarantee or warranty concerning the accuracy of information contained on this map. Madison County further makes no warranty, either expressed or implied, regarding the condition of the product or its fitness for any particular purpose. The burden for determining fitness for use lies entirely with the user. This is not a survey product. Parcel data is updated twice a year. The user should assume parcel data to be a minimum of 6 months old at any time. For further information please call the Planning Department at (315) 366-2376.

## Madison County Installations 2003-2012



## Price per Watt-DC in Madison County, NY 2003-2012

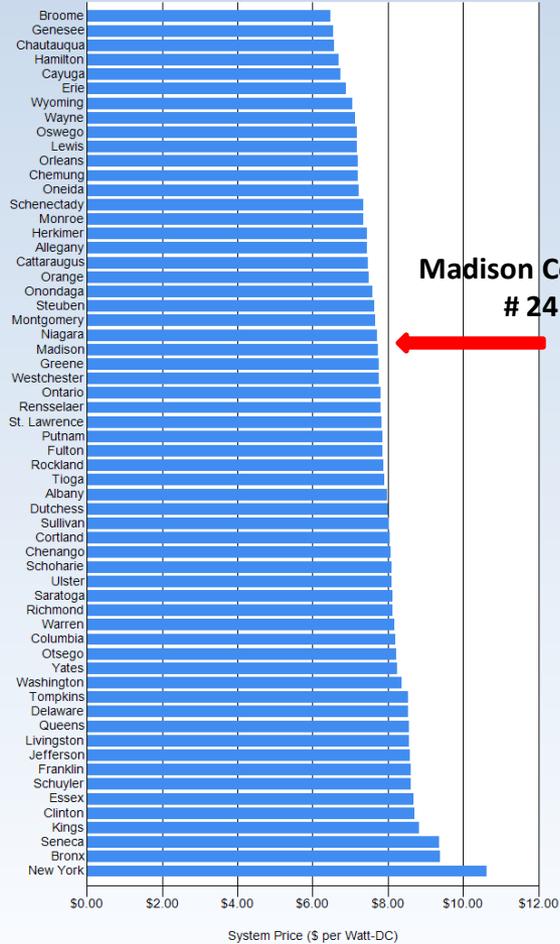


An Independent Contractor to:



# Project Results

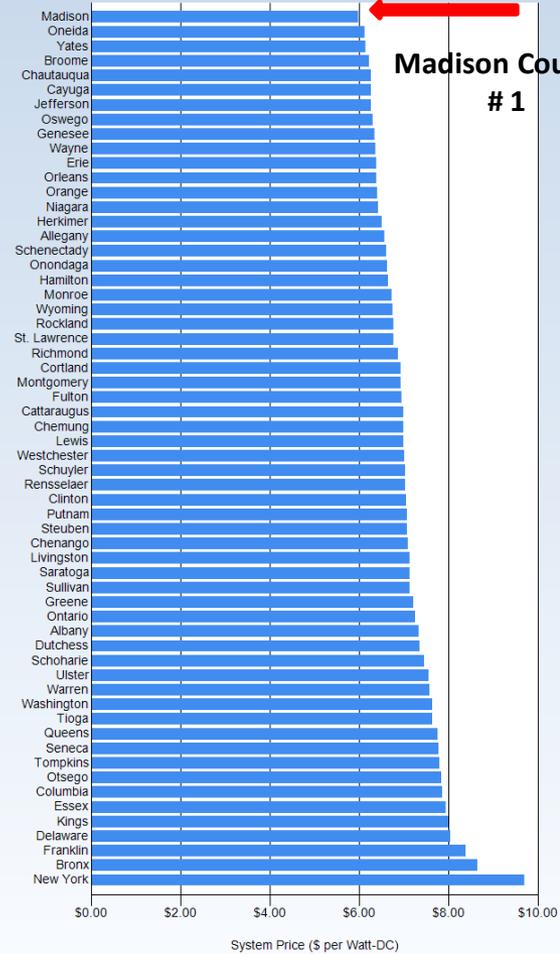
Price by County for Completed Systems



Included Dates: 1/1/2005 - 12/31/2011

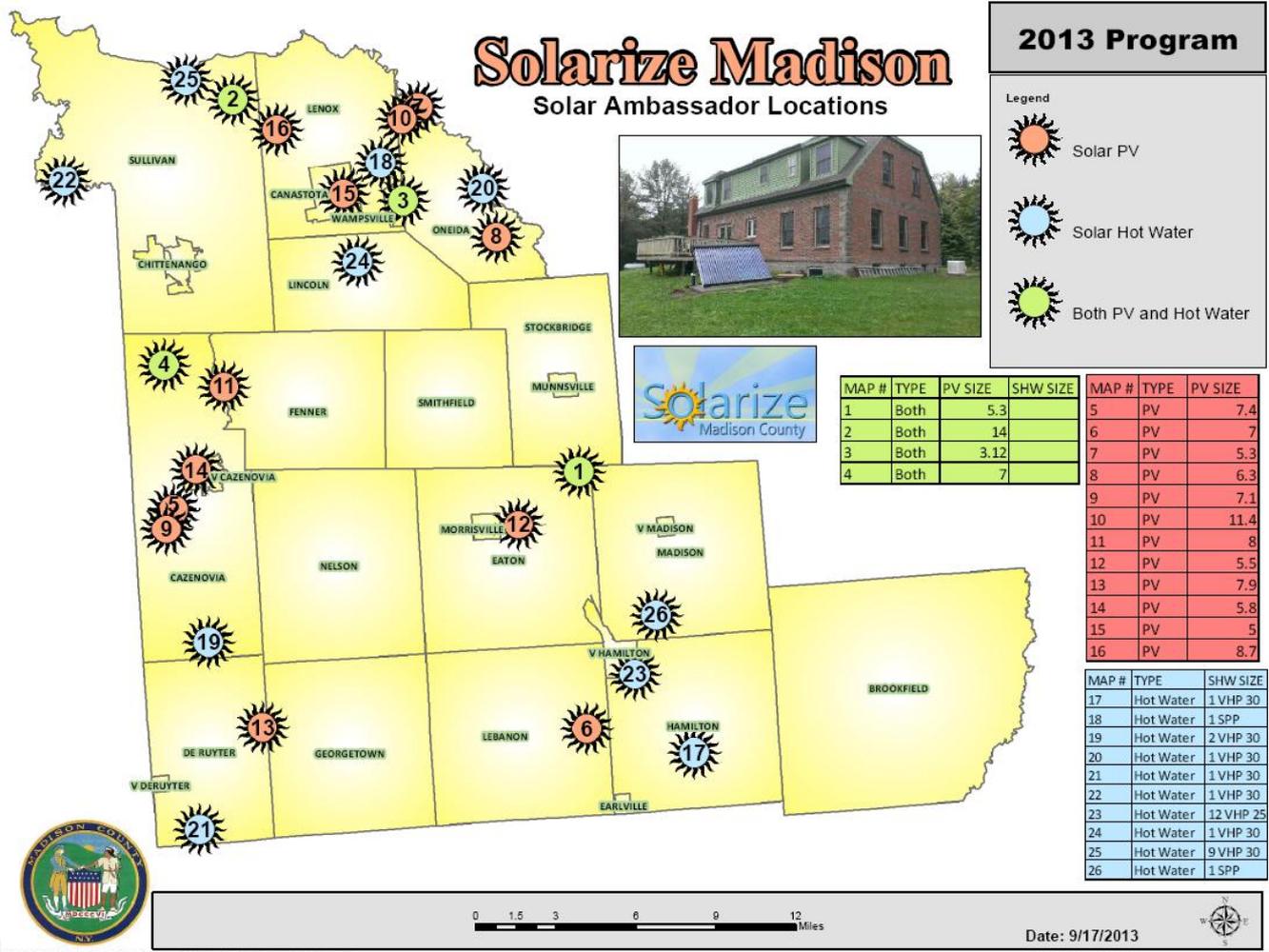
NYSERDA PV Program Analysis by PowerClerk® 4/3/2013 10:32 AM

Price by County for Completed Systems



Included Dates: 1/1/2005 - 4/3/2013

NYSERDA PV Program Analysis by PowerClerk® 4/3/2013 10:36 AM



Map Prepared by the Madison County Planning Department

# Project Results



Installed Solar PV	
2013 Total	137.8
2012 Total	184.2
Grand Total	322.0



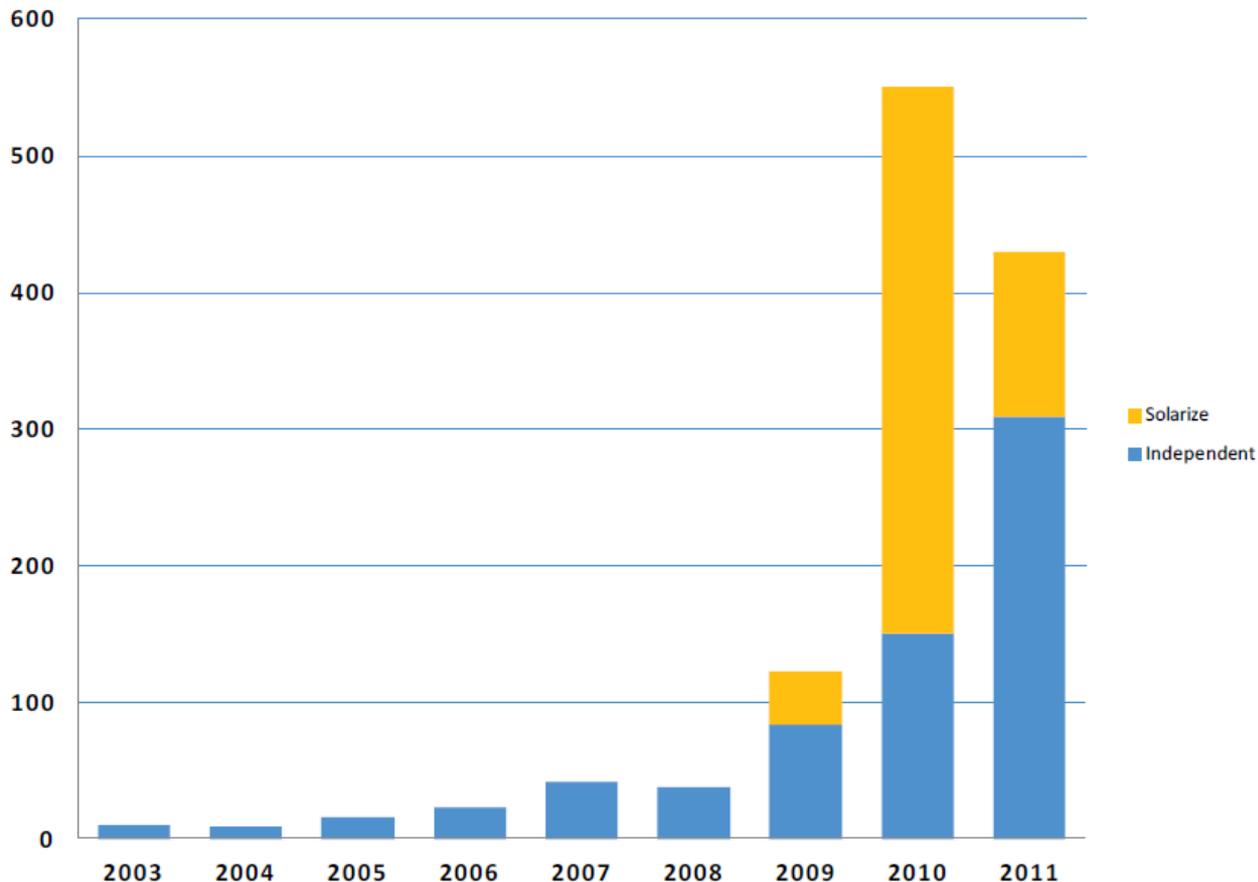
Grand Total 2012 and 2013		
Type	# of systems	kWh
Solar PV	50	322
SHW	23	

**50** new installations totaling 322 kW

**30% reduction** in installation costs

**280% increase** in residential installations

## Annual Portland Residential PV Installations



An Independent Contractor to:



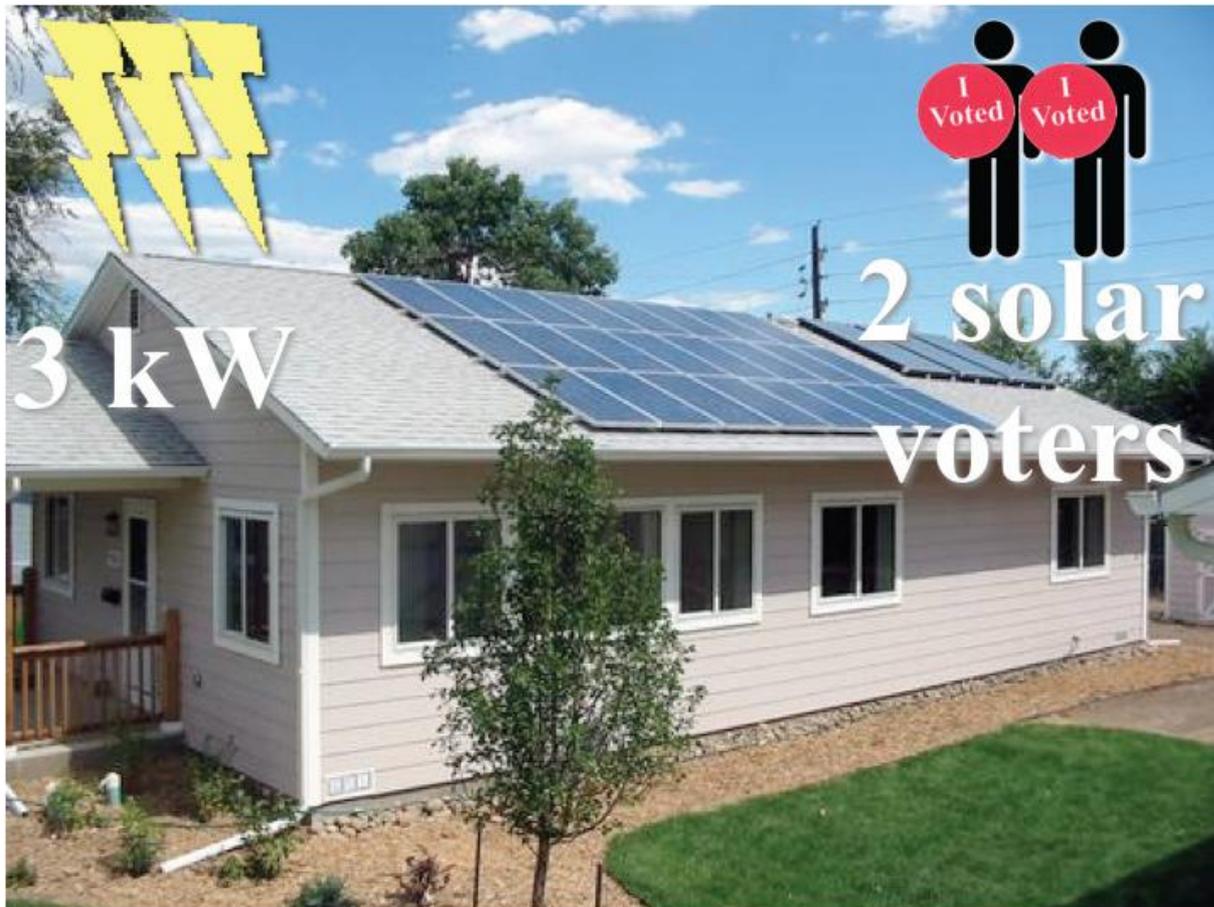
A household is

**0.78%** more likely to adopt solar

*for*

each additional installation in their zip code

Source: NYU Stern and Yale School of Forestry – Peer Effects in the Diffusion of Solar Panels



*Which matters more? 3 kilowatts or 2 solar voters?*

An Independent Contractor to:



# Questions?

Chris Carrick

CNY RPDB Energy Program Manager

[ccarrick@cnyrpdb.org](mailto:ccarrick@cnyrpdb.org)

# Climate Smart Communities Webinar

## E-Mail Addresses



- Mark Lowery  
[mdlowery@gw.dec.state.ny.us](mailto:mdlowery@gw.dec.state.ny.us)
- Kim Farrow  
[kxfarrow@gw.dec.state.ny.us](mailto:kxfarrow@gw.dec.state.ny.us)
- Climate Change Office  
[climatechange@gw.dec.state.ny.us](mailto:climatechange@gw.dec.state.ny.us)

# Climate Smart Communities Webinar

**Website Address**



<http://www.dec.ny.gov/energy/50845.html>