


# Solar Powering Your Community

## Building Local Solar Markets



 Powered by  
**SunShot**  
U.S. Department of Energy

# About the SunShot Solar Outreach Partnership



The SunShot Solar Outreach Partnership (SolarOPs) is a U.S. Department of Energy (DOE) program designed to increase the use and integration of solar energy in communities across the US.

**Poll:** Who's in the audience?

**Poll:** What experience does your local government have with solar?

# Agenda

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- 09:10 – 09:20 Introduction to Solar
- 09:20 – 09:40 Case Study: Beaverton, Oregon
- 09:40 – 10:00 Case Study: Gainesville, Florida
- 10:00 – 10:15 Discussion: Lessons Learned

# Agenda

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# Solar Technologies



**Solar Photovoltaic (PV)**



**Solar Hot Water**



**Concentrated Solar Power**

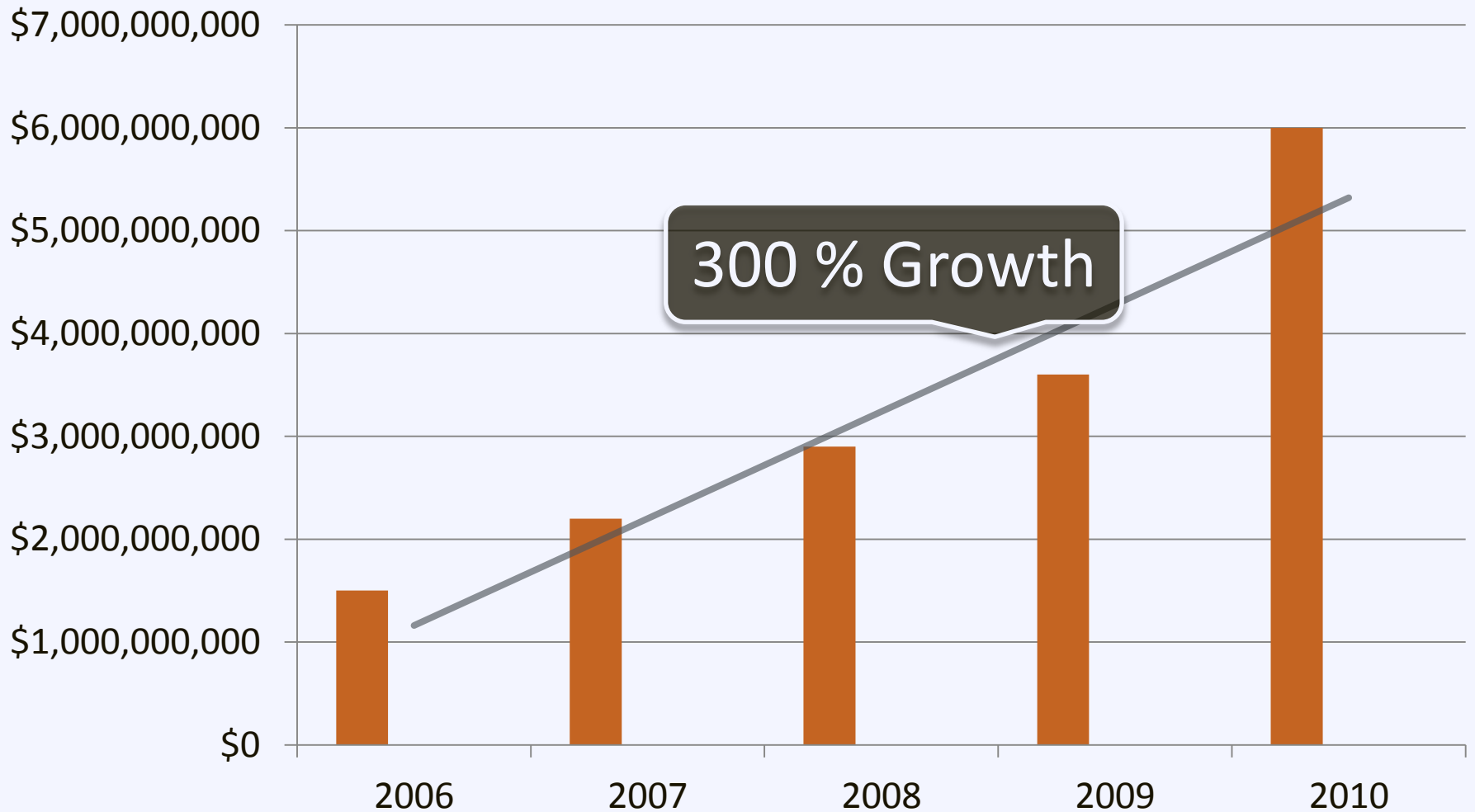
# Benefits

- Local economy growth
- Local jobs
- Energy independence
- Stabilizes price volatility
- Valuable to utilities
- Smart Investment

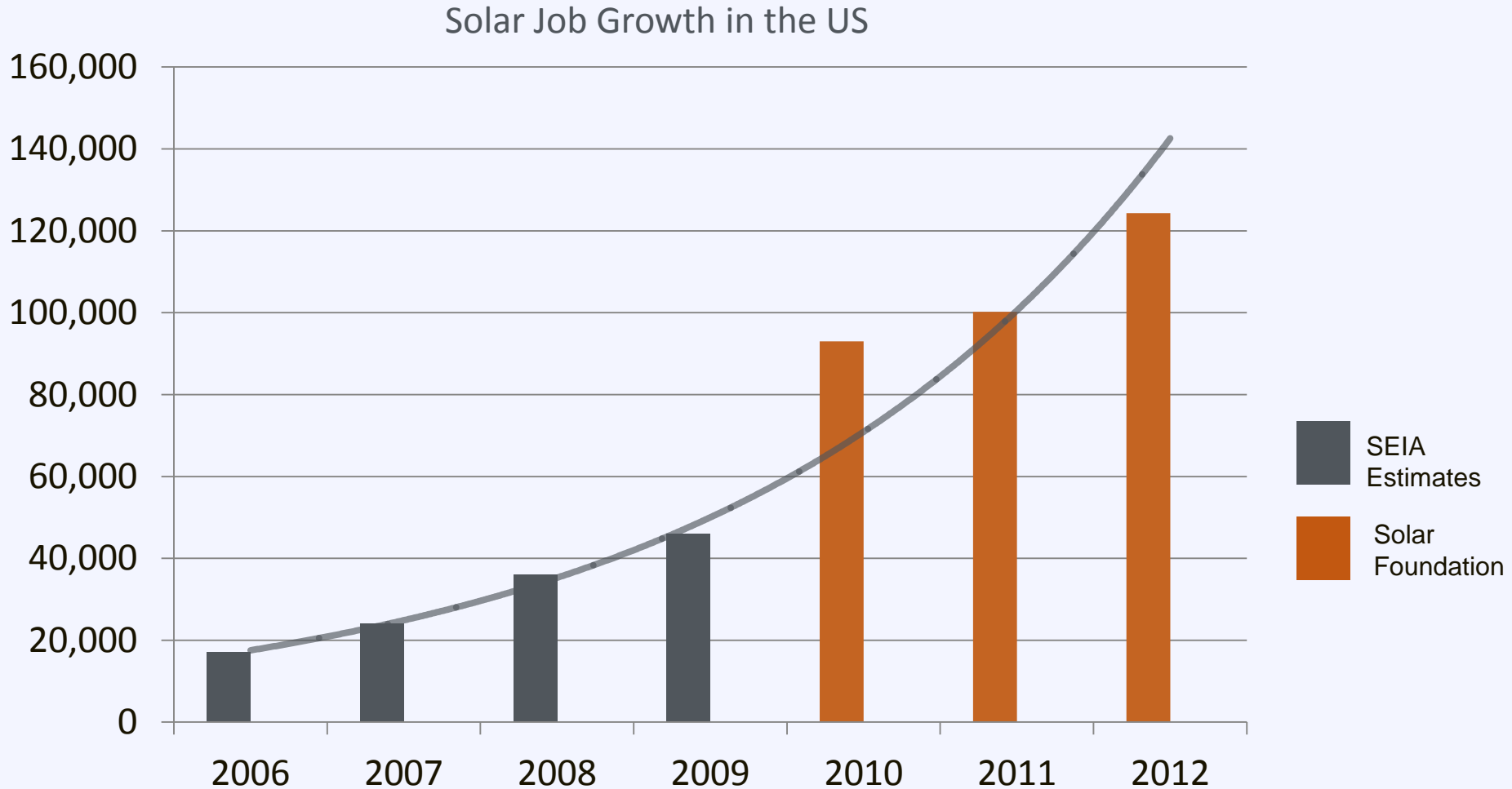




# Benefit: Economic Growth

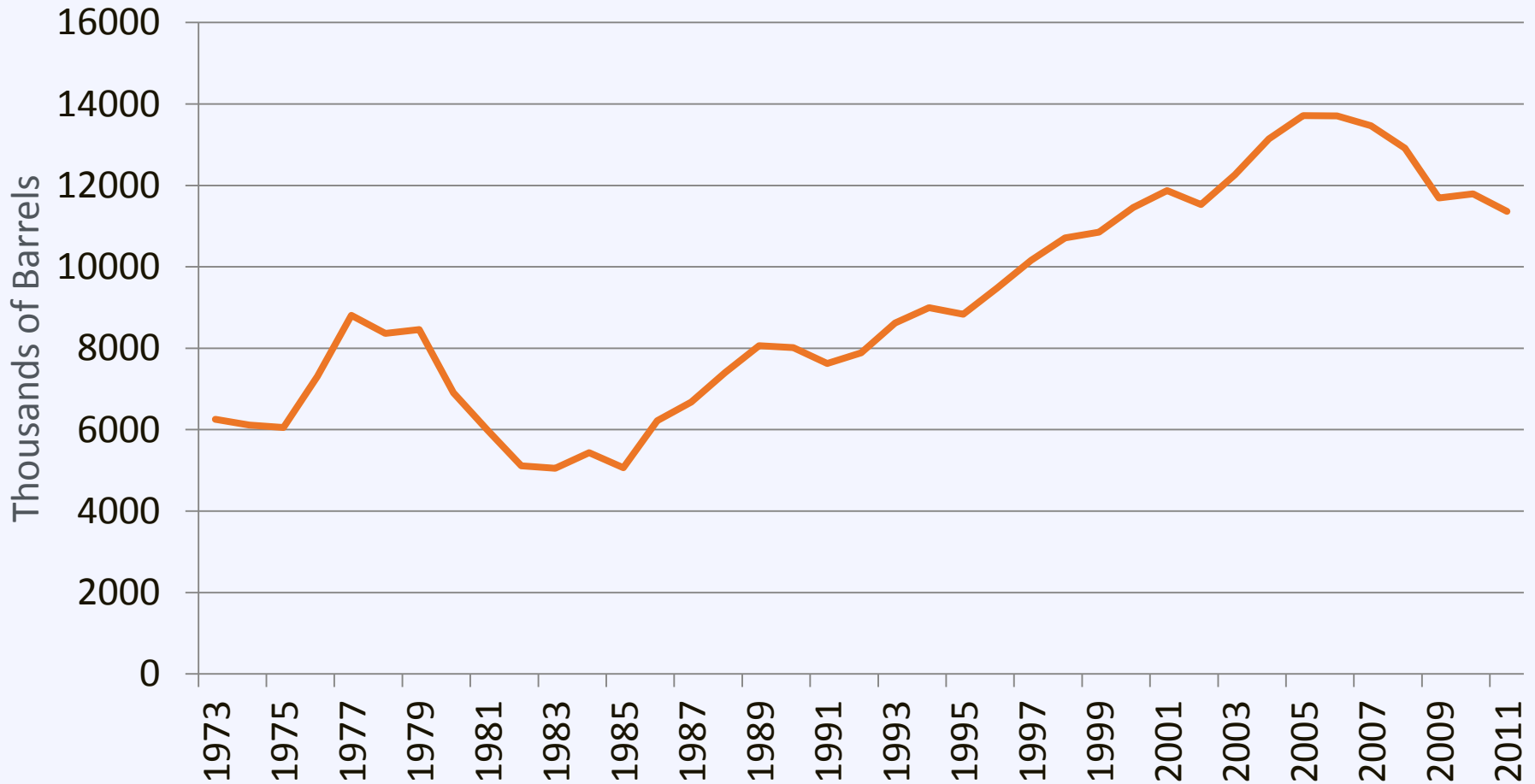


# Benefit: Job Growth



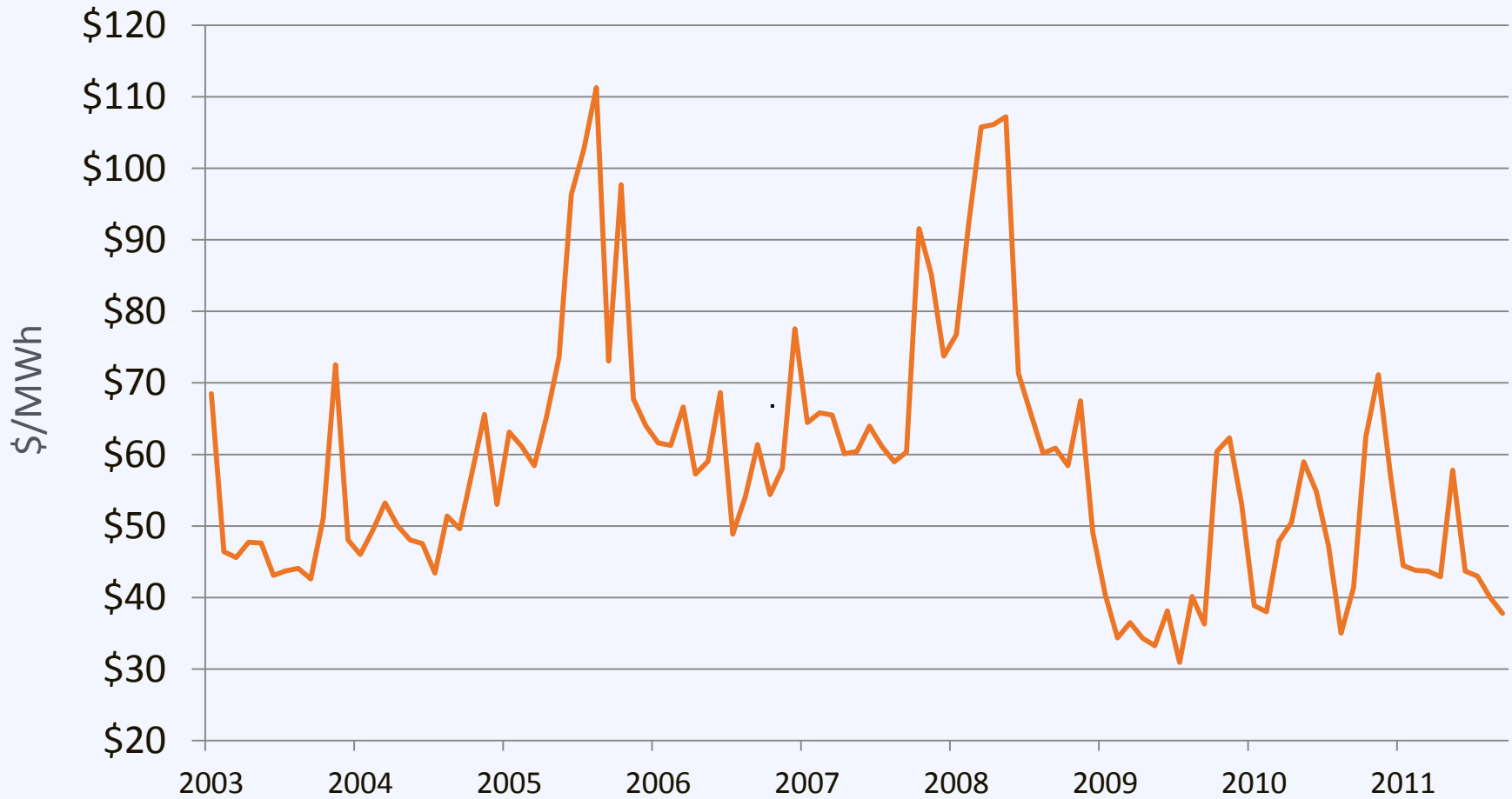
# Benefit: Energy Independence

Daily US Oil Imports



# Benefit: Stabilize Energy Prices

Boston Area Average Wholesale Price



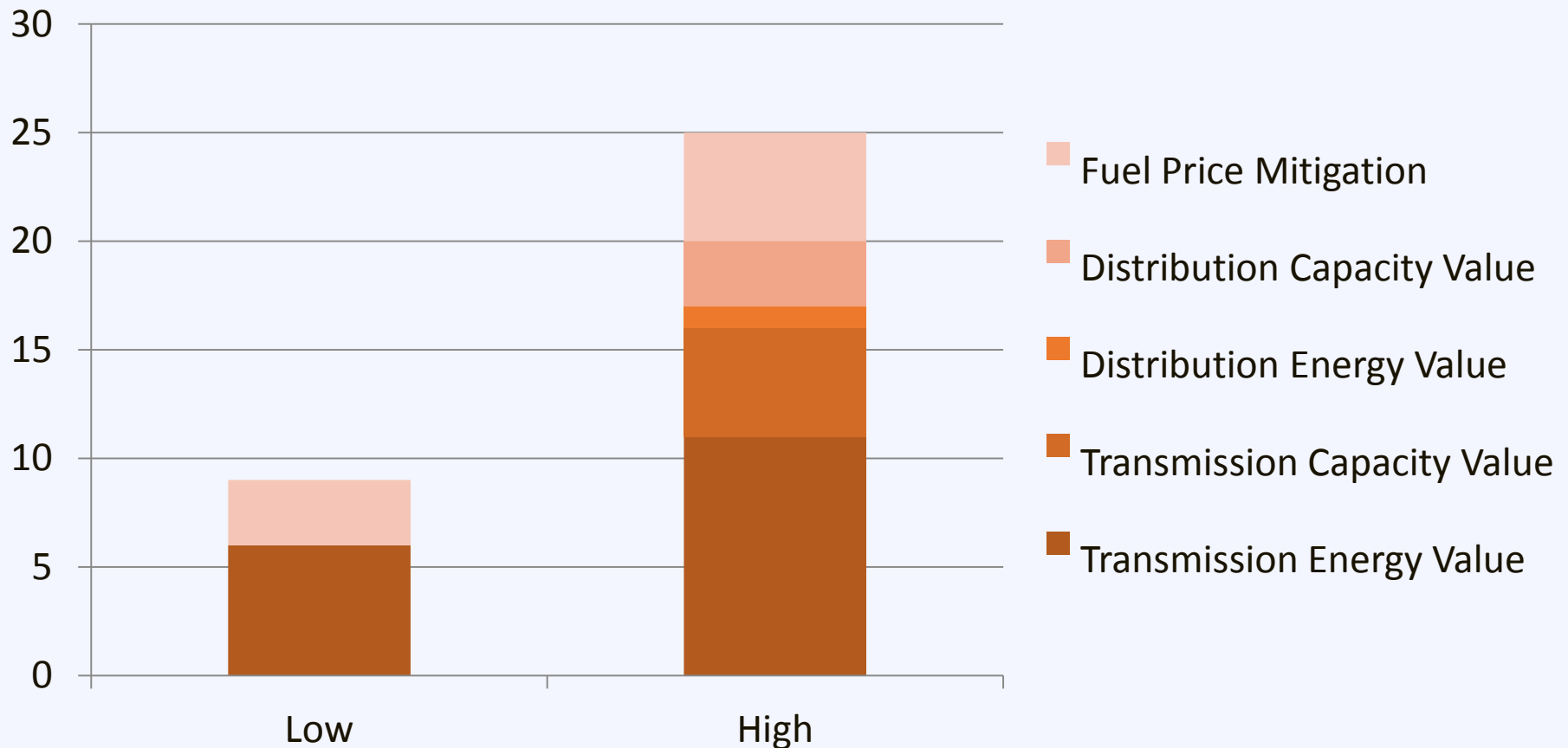
# Benefits: Valuable to Utilities

- Avoided Energy Purchases
- Avoided T&D Line Losses
- Avoided Capacity Purchases
- Avoided T&D Investments
- Fossil Fuel Price Impacts
- Backup Power



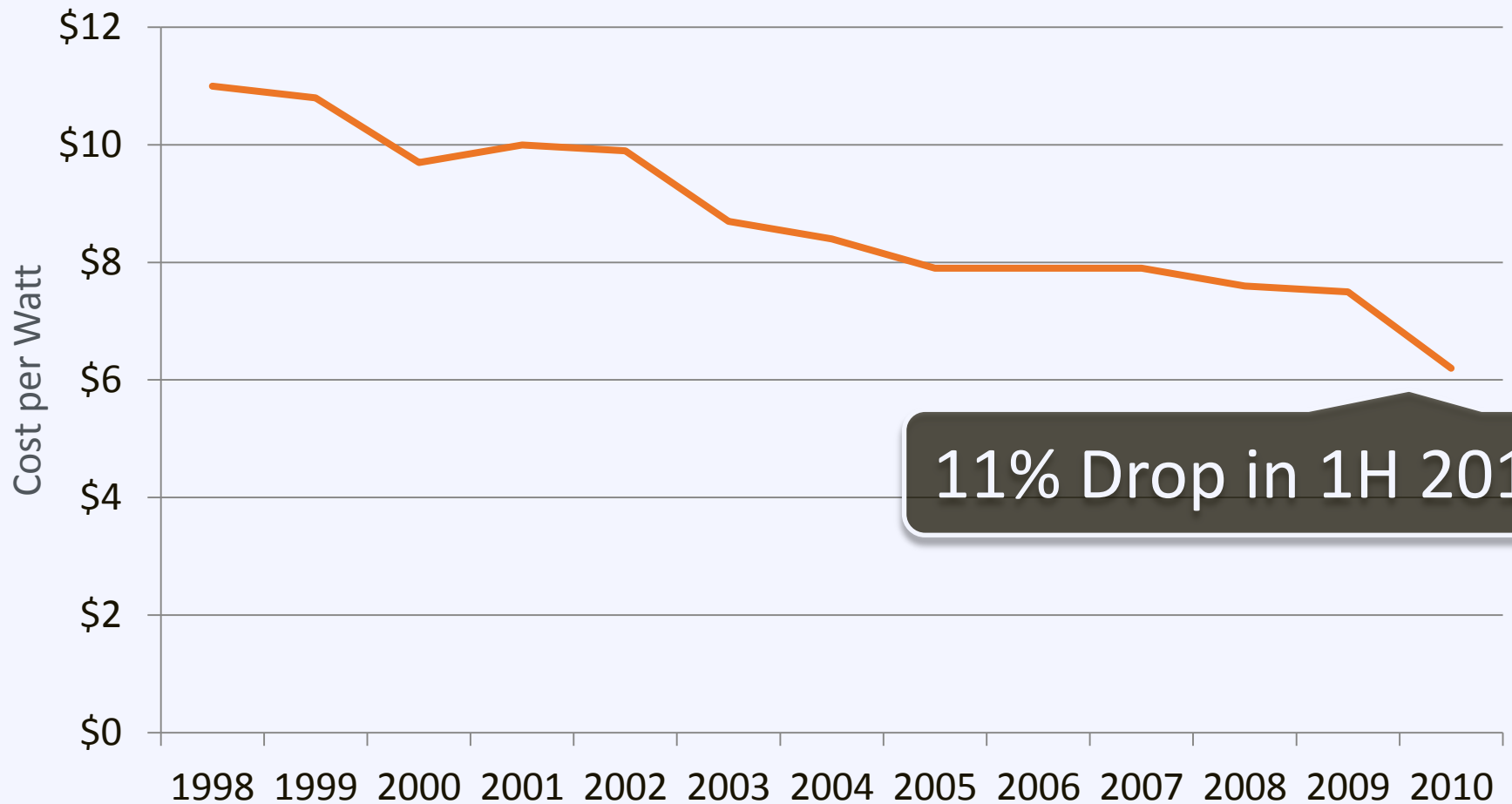
# Benefits: Valuable to Utilities

Value to utility is \$0.10 to \$0.25 / kWh beyond electricity (NY)



# Benefit: Smart Investment

US Average Installed Cost for Behind-the-Meter PV



11% Drop in 1H 2011

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10:00 – 10:15 Discussion: Lessons Learned

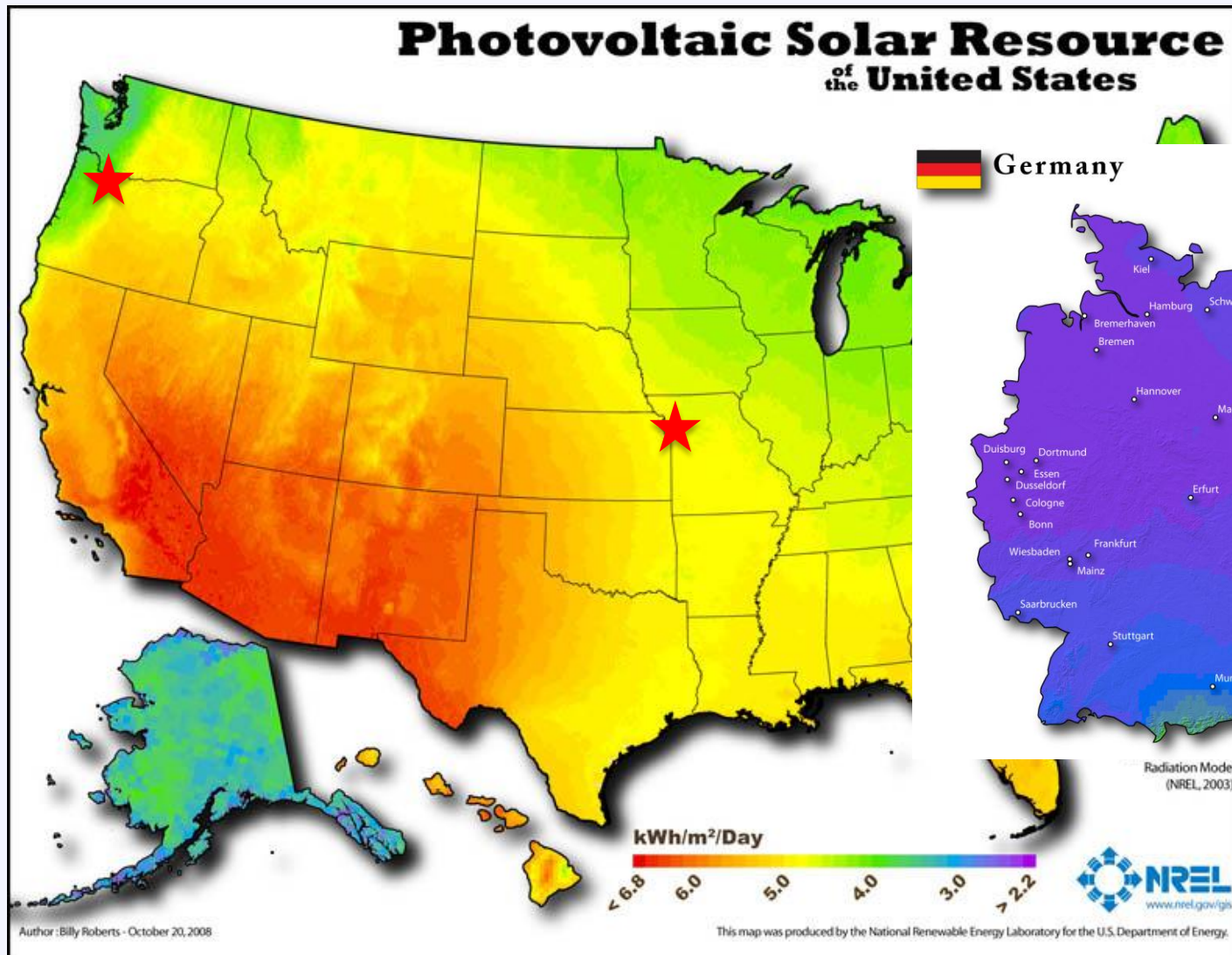


**Poll:** Which of these barriers is the biggest hurdle in your community to adopting solar?

# The City of Beaverton



# The City of Beaverton



# City-Led Solar Initiative



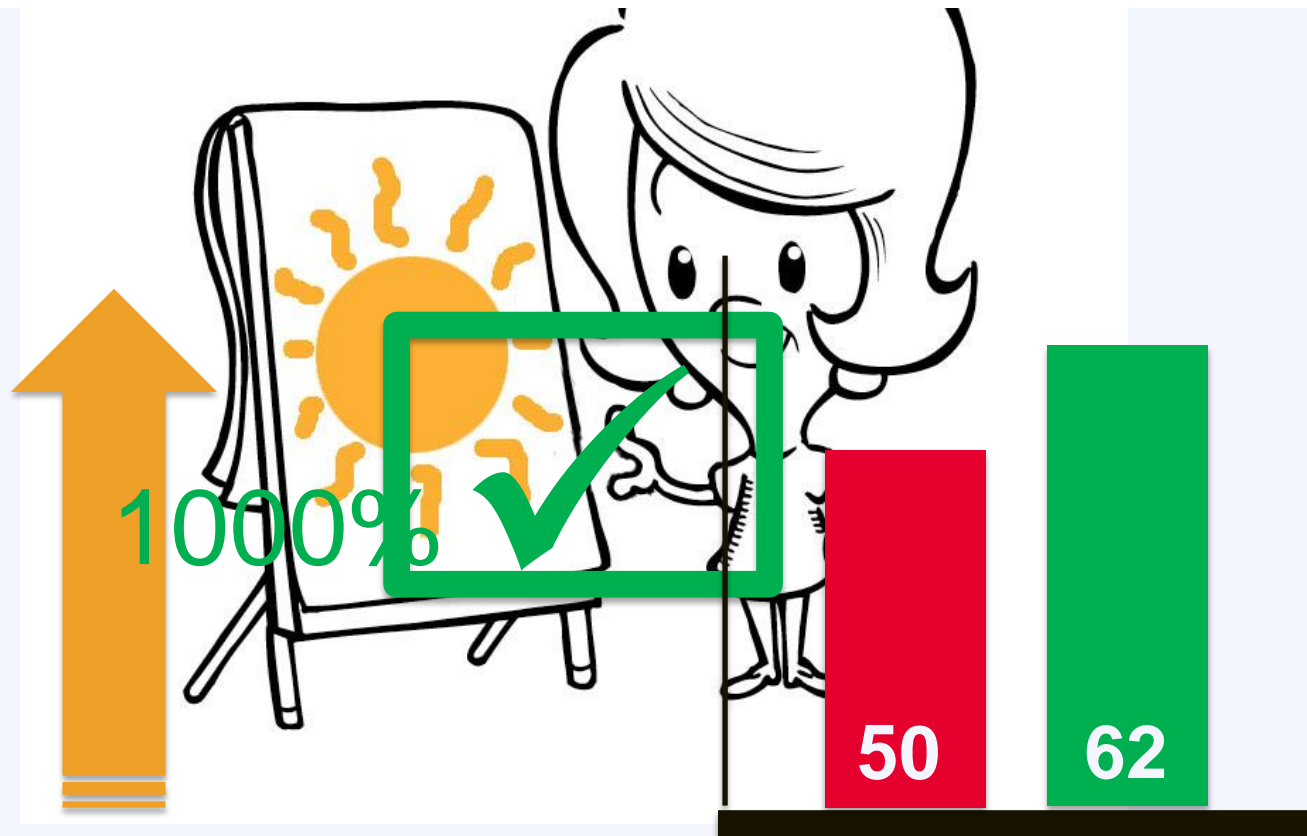
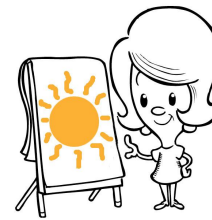
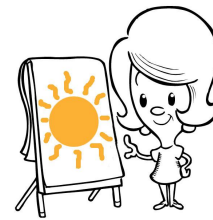
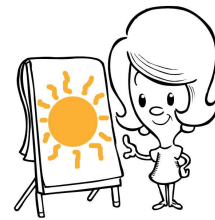
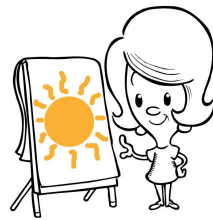
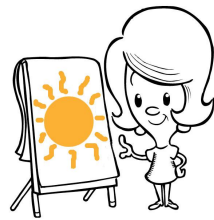
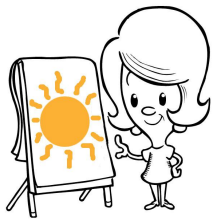
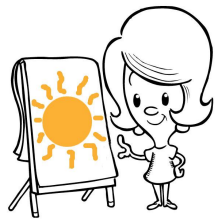
# Barriers



# Pilot Program



# Results and Lessons



# Full Scale Program

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- Lessons learned from pilot were incorporated into city-wide program
  - Highly competitive RFP process
  - Streamlined permitting
  - Ensured contractor could handle large volume of inquiries
- Goal of installing solar on 220 homes
- City's Role
  - \$19,000 for AmeriCorps volunteer to manage project
  - \$10,000 for marketing and outreach
  - No other costs; merely provided endorsement of contractor



# Competitive Request for Proposal

In 2010, the City of Beaverton conducted a pilot program to gauge the community's interest in solar. A full citywide program for 2011 will be a three-pronged outreach and educational campaign to encourage the City-Led Outreach and Education businesses and pool owners in the Beaverton area. It was initiated to respond to one of the priorities of the Mayor's 10 Point Plan

## City-Led Outreach and Education

Beaverton to install solar technologies such as Solar Photovoltaic (PV) systems, solar attic fans, and solar thermal systems on their home. The purpose of this program is to help identify and overcome barriers to the Identify and Overcome Barriers the resources necessary to help residents overcome existing monetary and logistical hurdles through education and support.

## Identify and Overcome Barriers

A key element to the Solar Beaverton Residential Home Program is to coordinate a per-watt price lower than the typical residential installation cost and offer a subsequent discount for solar attic fans and solar thermal systems. The City may select one or more firms as a result of this Request for Proposal (RFP) process to provide the site assessment, design, equipment procurement, and

## Negotiate Volume Discount

### 4.3.4 Use of Local and Sustainability Oriented Providers

Provide information about Local and Sustainable Providers local goods and service providers.

## Local and Sustainable Providers

### 4.3.6 Project Benefits to Beaverton Community

Explain how the Project Emphasis on Community Benefits social benefit for the Beaverton community.

## Emphasis on Community Benefits

# Live Light Energy

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**Committed**

# Addressing Barriers



Group Purchasing      Short-Term Financing  
Tax Credit-Certified Technicians

Marketing and Outreach  
Workshops



“One Stop Shop” Website



[PROGRAM](#) • [BENEFITS](#) • [FAQ](#) • [WHAT TO EXPECT](#) • [EVENTS](#) • [PRICING](#) • [SIGN UP](#) • [BLOG](#) • [POOLS](#)

## Sign Up

Find out which **All-American package** is right for you. Sign up here for a free, no obligation site assessment to see if you qualify for incentives. We'll provide you comprehensive educational report customized to your home.

LiveLight Energy does not charge for site assessments, a savings of up to \$200. This educational report is comprehensive and individualized to your home or building. Data from reports are given to property owners for their own use.

First Name

Last Name

Address

City

State/Province

Zip

Phone

Email

Company

Average monthly electric bill?:

Average monthly natural gas bill?:



### EVENTS AND DATES



### ARCHIVES

[June 2011](#)

[May 2011](#)

[April 2011](#)

[March 2011](#)

# Addressing Barriers

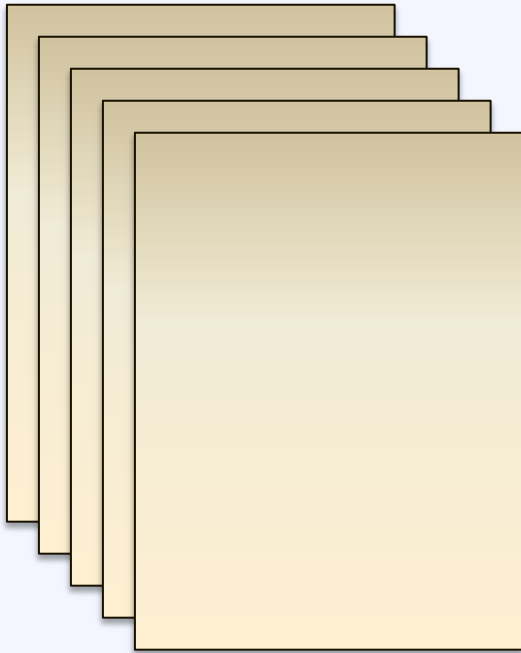


Use of Deadline



Streamlined Permitting Process

# Streamlined Permitting



Single Form

“Over the  
Counter”  
Process





## Get Solar for no Money Down!

Sign up now so you can take advantage of the State energy tax credit before it goes away on **June 30**, saving you as much as **\$6,000**

### Solar Beaverton Upcoming Workshops

Sunday, June 5

#### Solar Open House

3:00 - 5:00 PM - Various homes in Beaverton  
Visit [solarbeaverton.org](http://solarbeaverton.org) for exact locations

Tuesday, June 7

#### SolarWorld Walkthrough - Free Refreshments

7:00 - 9:00 PM - SolarWorld USA Headquarters  
25300 NS Evergreen Road

Wednesday, June 8

#### Basics of Solar Workshop

7:00 - 8:00 PM - Nature Park Interpretive Center  
15655 Millikan Way

Tuesday, June 14

#### Financials of Going Solar

7:00 - 8:00 PM - Umpqua Bank  
2840 NW Town Center Drive

Visit [solarbeaverton.org](http://solarbeaverton.org) for more event and workshop dates.

### Solar Beaverton Program Zero Down Pricing Example

For a limited time, you can **QUALIFY** for no payments of interest for 12 months.

Market average for a 3kW electric system  
**\$22,500\***

+ Source: Energy Trust of Oregon  
\*Pricing may vary and may be dependent upon roof composition, individual structural considerations of the surveyed building, or other legal and safety requirements.

Base Price for a 3kW System \$17,500

Energy Trust Incentive  
\$1.75 per watt **-\$5,250**

Net Out of Pocket Cost \$12,250

Federal Tax Credit  
30% off net price **-\$3,690**

State Tax Credit  
\$2.10 per watt, \$6,000 max **-\$6,000**

**Net Cost to You**  
After 4 years **\$2,610\***

6% discount with a cash purchased system

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



## Now is the Time for Solar!

Solar Beaverton will help you understand the process of getting solar electric (PV) systems as well as all of the financial incentives for solar. In this program, your neighbors will be pursuing solar with you, so you not only have peers to talk to, but the streamlined process makes solar easy and affordable.



### What to Expect - The Solar Beaverton Process

1. Residents are invited to attend free educational workshops provided by the City of Beaverton in conjunction with the Energy Trust of Oregon and Solar Oregon.
2. Next is your free solar site assessment from the solar contractor. This will teach you a lot including how big a system you can get and what different options will cost. (You don't have to have attended a workshop in order to sign up)
3. Each participant, after site assessments and optional educational workshops, decides whether or not to commit to solar.
4. Each participant who decides to commit signs his/her contract with the chosen contractor. This solar contractor will coordinate equipment purchases and the installation schedule to conserve resources.
5. Your system is installed!
6. Everyone gets the appropriate signatures needed and the right paperwork for the Energy Trust of Oregon, the State of Oregon and Federal Tax Credits. Start enjoying your new solar energy!

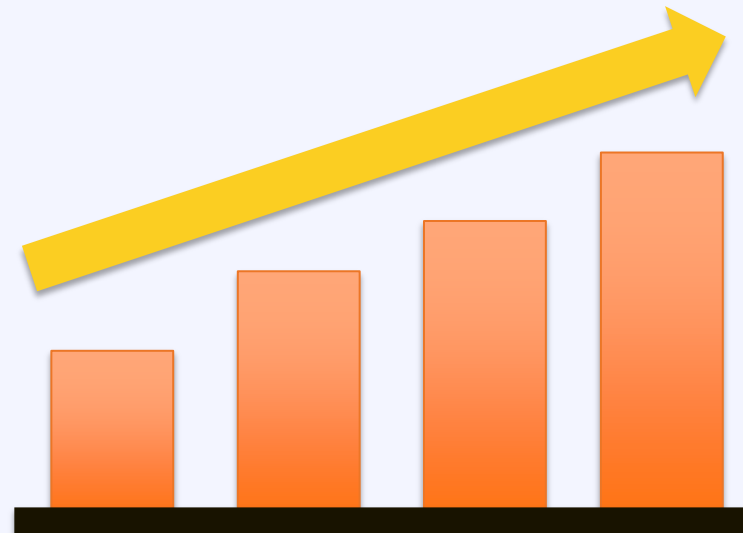
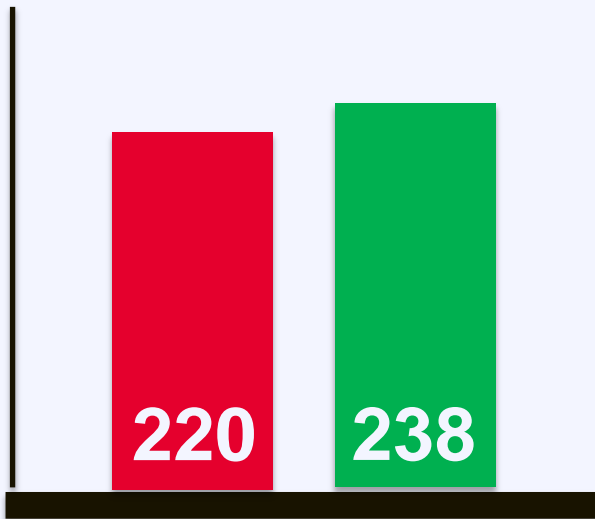
For more information:

Visit: [www.solarbeaverton.org](http://www.solarbeaverton.org)

Call: 1-888-91 WATTS (919-2887)



# Results



# Summary: Key Elements

- City-led partnership



- Competitive Contractor Selection
  - Volume Purchasing
  - Inclusion of Sustainability Criteria
  - Orientation Around Barriers
- Community Feedback

# Similar Programs and Best Practices



<http://solarizependleton.com/>

# Similar Programs and Best Practices



**SunShot Initiative**

**Solar Energy Resource Center**

[http://www4.eere.energy.gov/solar/sunshot/resource\\_center/](http://www4.eere.energy.gov/solar/sunshot/resource_center/)

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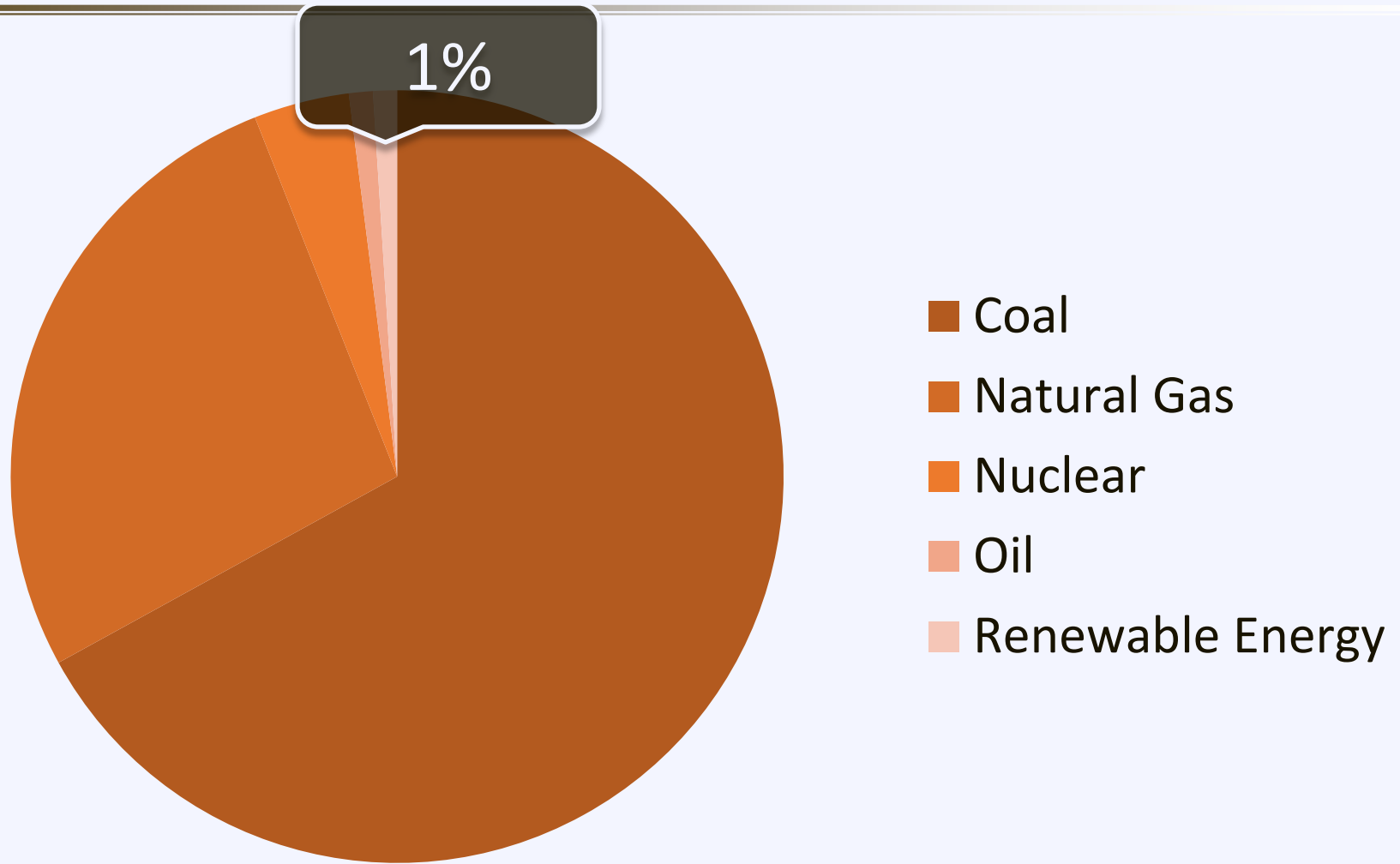
Even with progressive solar programs in place, Gainesville was not meeting its goals

# Gainesville Regional Utility (GRU)

- 93,000 Customers
- Budget of \$385 million
- Largest customer is UF



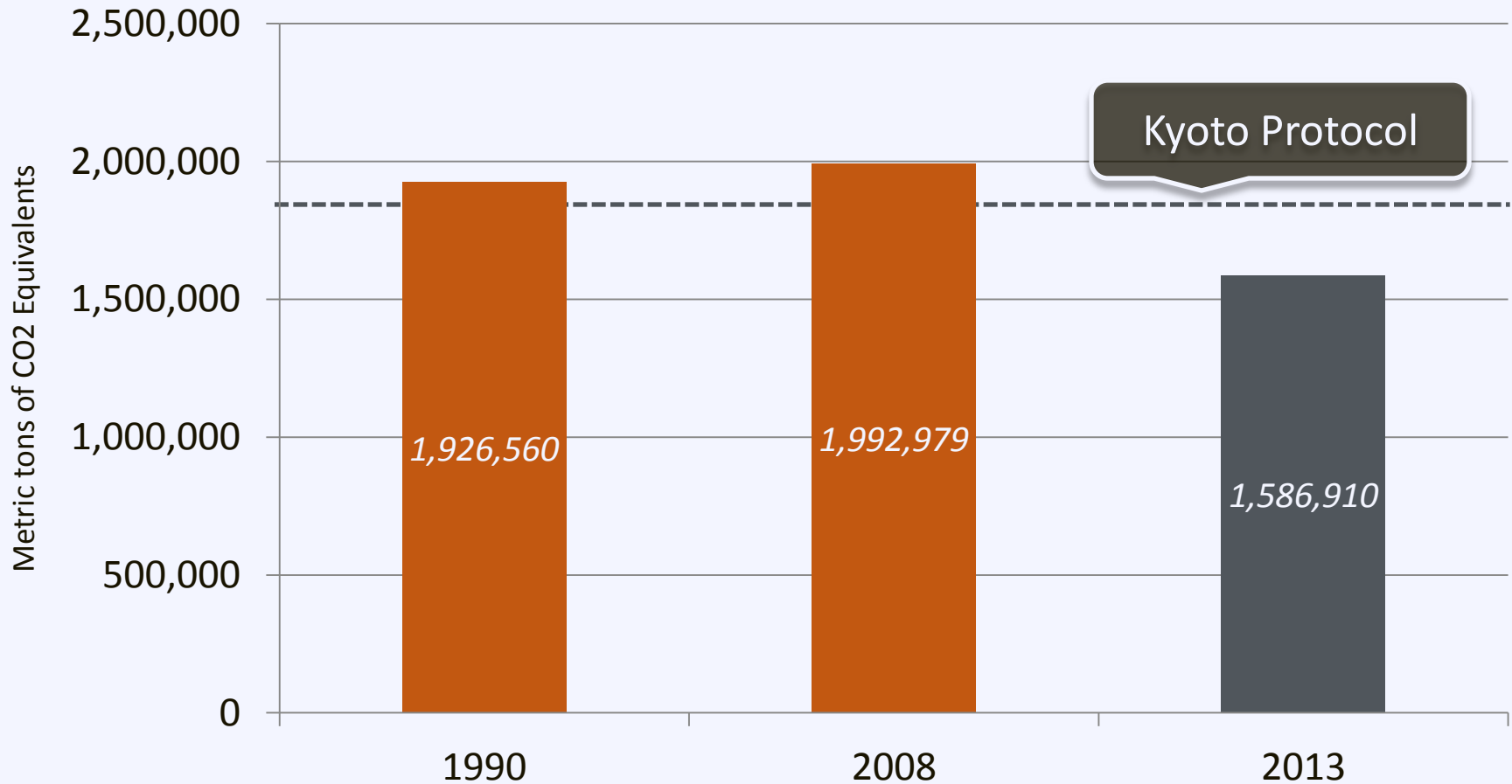
# Gainesville Regional Utility (GRU)





# Gainesville Carbon Goals

## Total Gainesville Carbon Emissions



**Goal:** To reduce fossil fuel energy purchase by 143,000 MWh per year by 2016

# Solar Rebate Program (2007 – 2008)

Upfront Rebate + Net Metering at Retail Rate

- \$1.50 per Watt
- 5 kW limit for residents
- 25 kW limit for businesses

# Net Metering

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Net metering allows customers to export power to the grid during times of excess generation, and receive credits that can be applied to later electricity usage

# What is Net Metering?

*Morning*



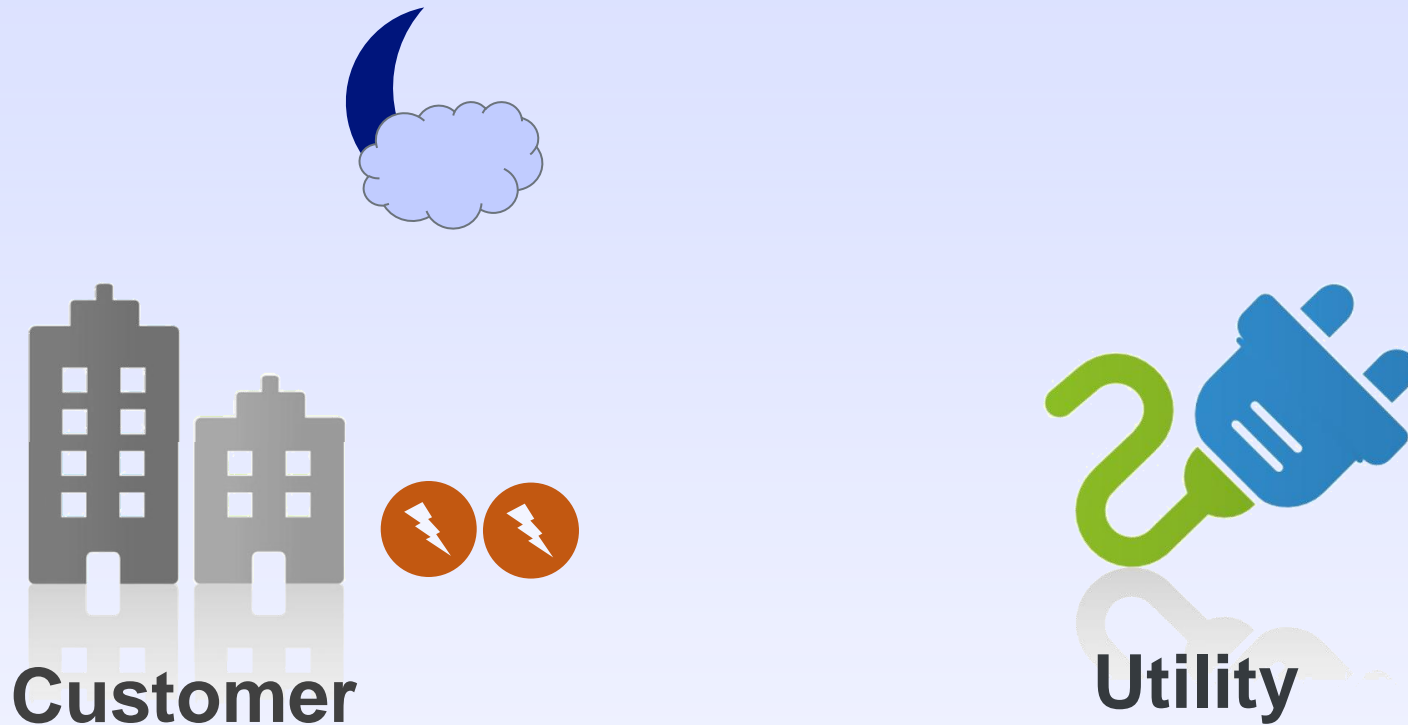
# What is Net Metering?

*Afternoon*



# What is Net Metering?

*Night*



Solar covers 100% of the customer's load, even at night!

# Solar Rebate Program (2007 – 2008)

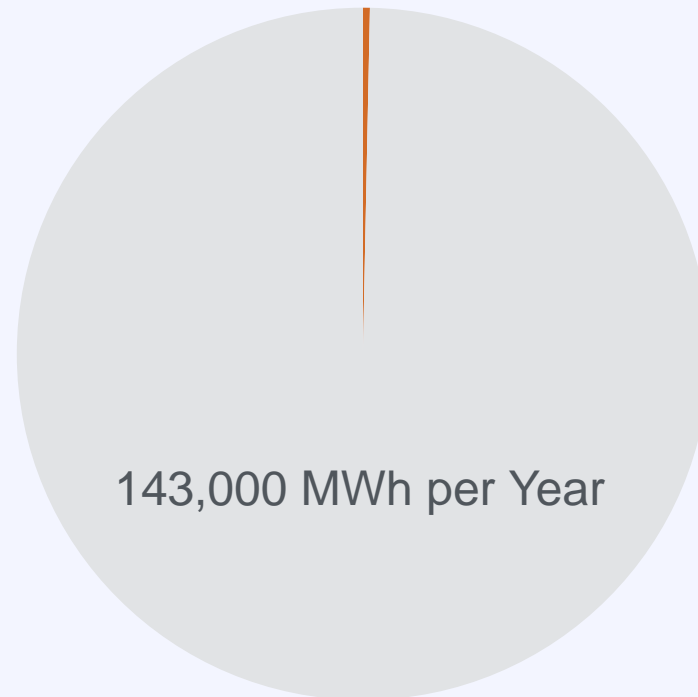
Upfront Rebate + Net Metering at Retail Rate

- 9.4 to 14 cents per kWh
- Limited to excess energy generated



# Solar Rebate Program Results

Incentive program helped GRU reach 0.5% of Goal



# Barriers with Incentive Program

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## Barriers to Customer:

1. Complicated
2. Return on investment is uncertain
3. Does not support customers who:
  1. Have shaded roofs
  2. Have sites too small to meet their load
  3. Are landlords and do not use electricity

# Barriers with Incentive Program

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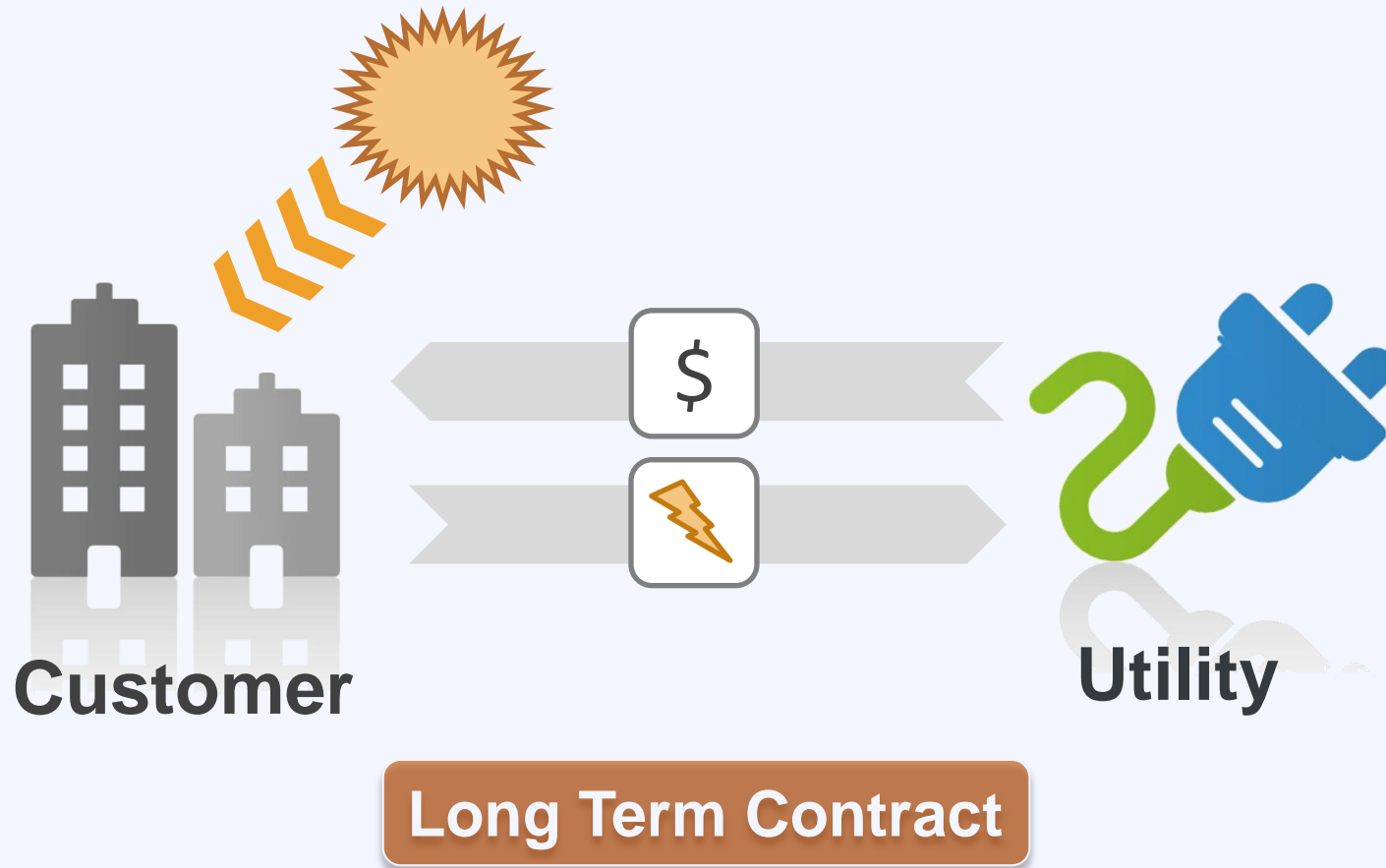
## Barriers to Utility:

1. Not serving all customers
2. Return on investment is uncertain
3. Revenue loss through net-metering

# Feed in Tariff (FiT)

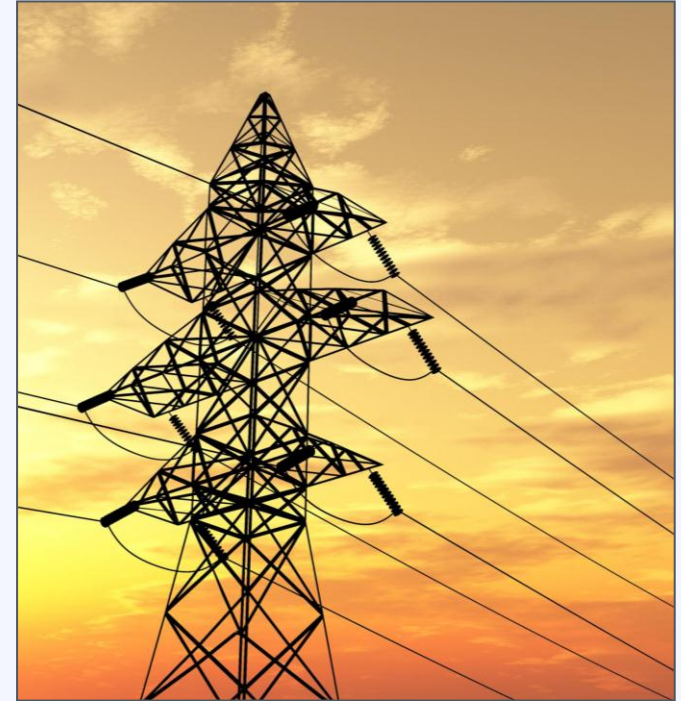


# What is a Feed in Tariff?



# Components of a Feed in Tariff

- Fixed price payment
- Long term contract
- Guaranteed power purchase
- Price based on generation cost



# GRU FiT: Program Design

**32 MW Capacity**

**2009**  
4 MW

**2010**  
4 MW

**2011**  
4 MW

**2012**  
4 MW

**2013**  
4 MW

**2014**  
4 MW

**2015**  
4 MW

**2016**  
4 MW

# GRU FiT: Program Design

**Current Program**

**Proposed Solar Feed in Tariff**

*IRR Results (%)*

**Residential**

2.29

**Gen. Serv. Non-Demand**

4.73

**Gen. Service-Demand**

-0.64

**Large Power**

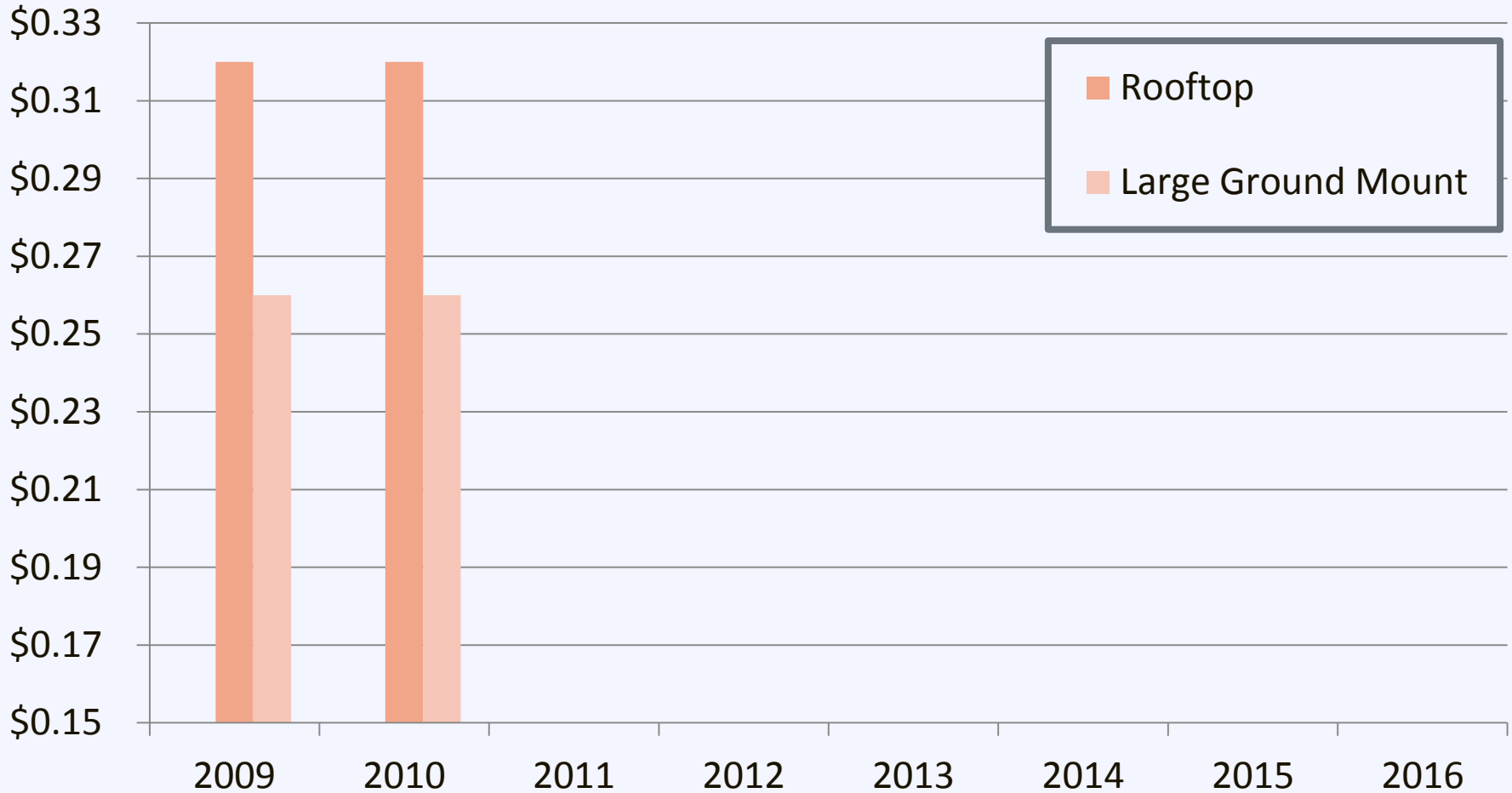
-0.79



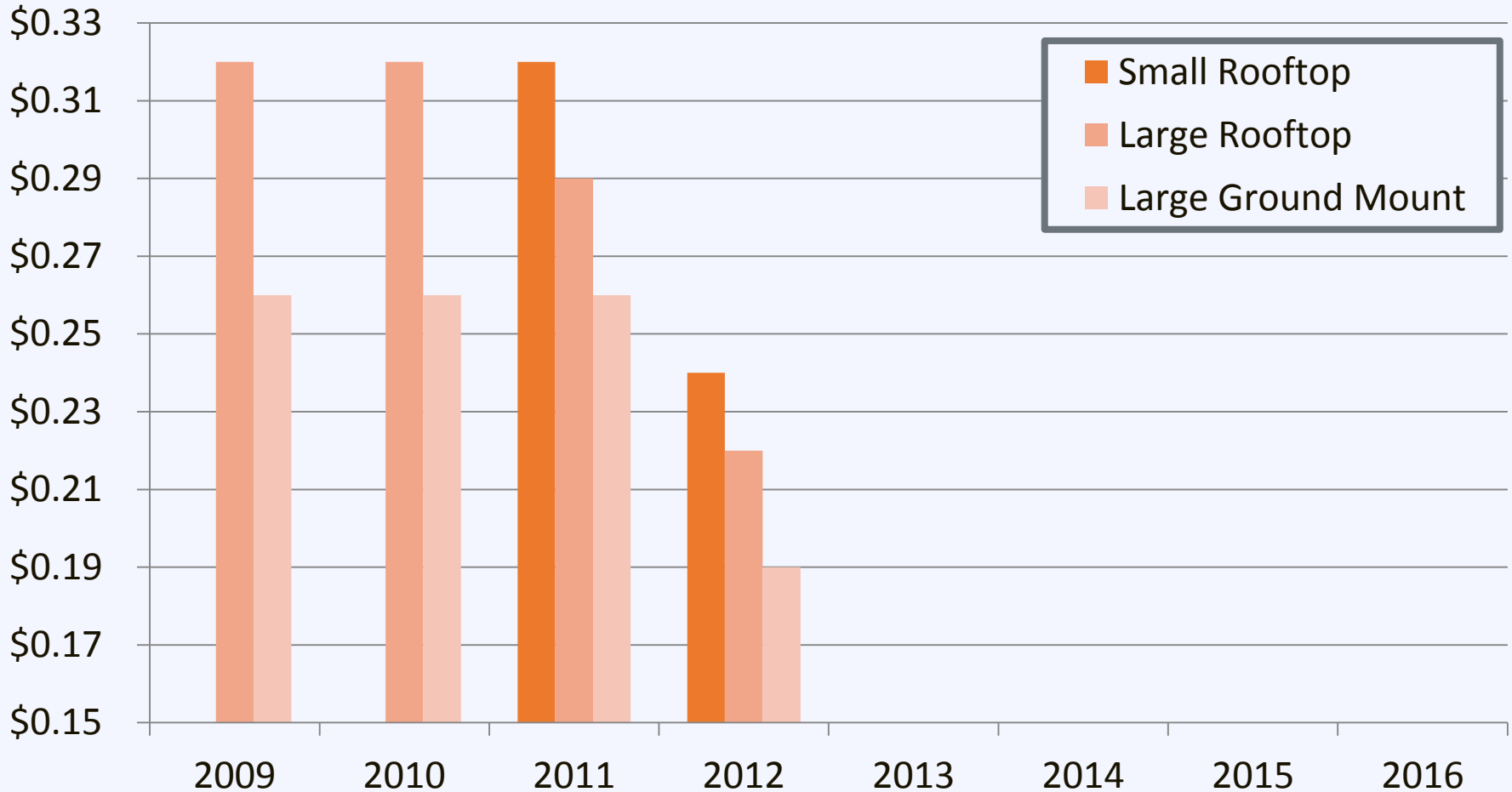
# GRU FiT: Program Design

	Current Program	Proposed Solar Feed in Tariff
	<i>IRR Results (%)</i>	
<b>Residential</b>	2.29	<b>6.43</b>
<b>Gen. Serv. Non-Demand</b>	4.73	<b>6.43</b>
<b>Gen. Service-Demand</b>	-0.64	<b>6.43</b>
<b>Large Power</b>	-0.79	<b>6.43</b>

# GRU FiT: Contract Rates



# GRU FiT: Contract Rates

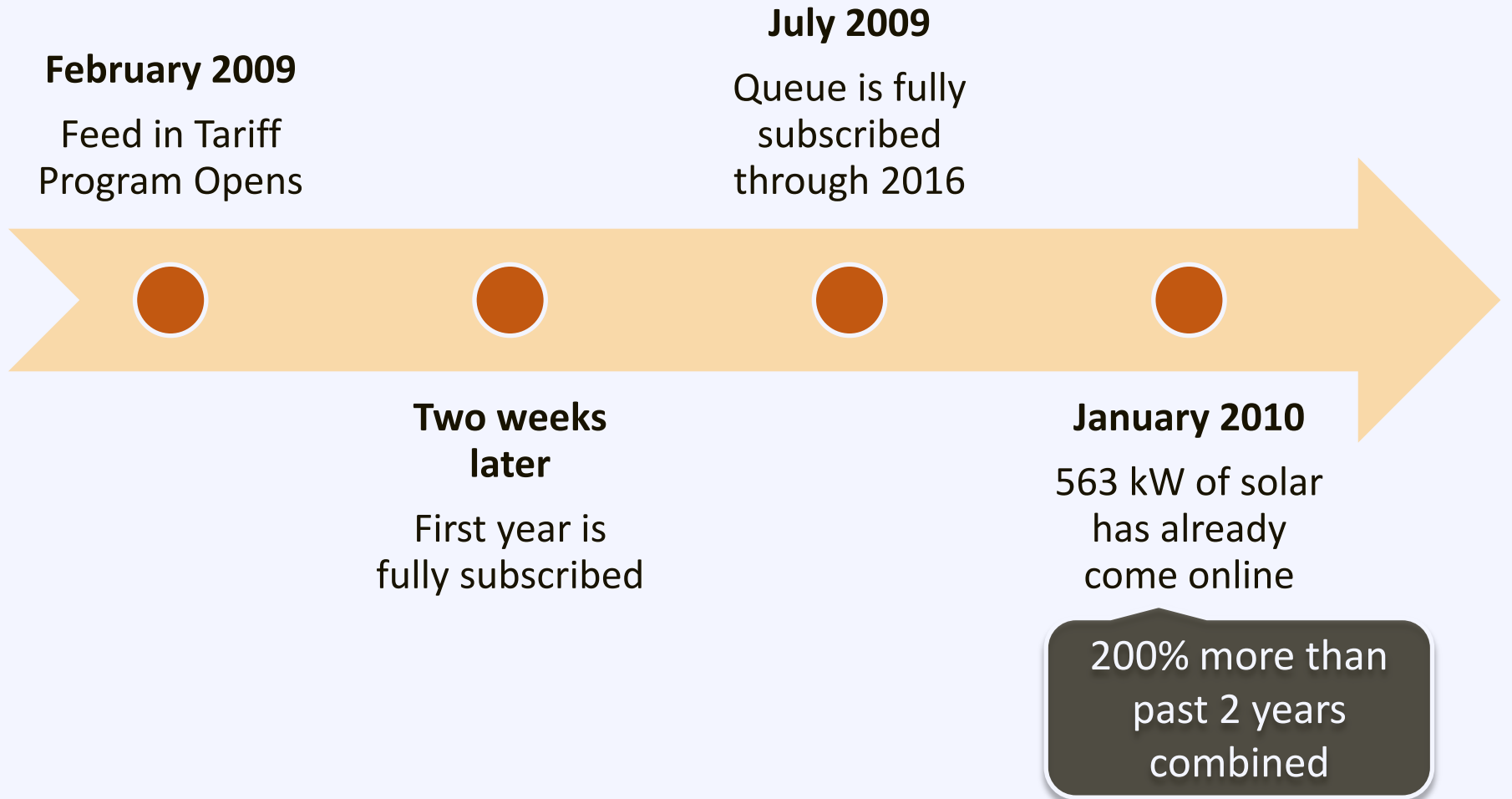


# GRU FiT: Application Process

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- |           |                                    |
|-----------|------------------------------------|
| Start     | 1. Submit application with deposit |
| 60 Days   | 2. Obtain engineering approval     |
| Immediate | 3. Contract Execution              |
| 60 Days   | 4. Purchase equipment              |
| 60 Days   | 5. Complete Construction           |
| Complete  | 6. Audit and Acceptance            |

# GRU FiT: Launch Timeline



# GRU FiT: Launch Timeline

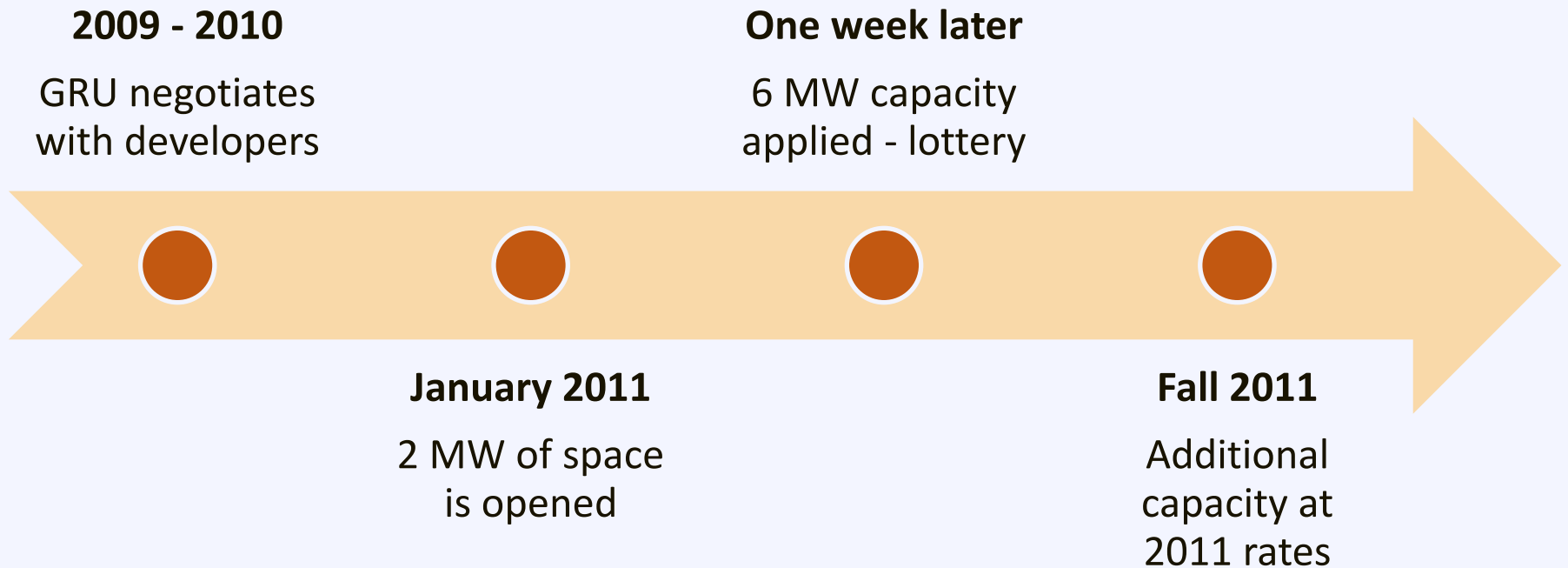
**February 2009**  
Feed in Tariff  
Program Opens

**July 2009**  
Queue is fully  
subscribed  
through 2016

**Two weeks  
later**  
First year is  
fully subscribed

**January 2010**  
563 kW of solar  
has already  
been installed

# GRU FiT: Reconfiguring the Program



# FiT Addresses Key Barriers

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## Barriers to Customer:

1. Complicated
2. Return on investment is uncertain
3. Does not support customers who:
  1. Have shaded roofs
  2. Have sites too small to meet their load
  3. Are landlords and do not use electricity



# FiT Addresses Key Barriers

## Barriers to Customer:

### 1. Complicated

FiTs are simple contracts with predefined pricing

### 3. Does not support customers who:

1. Have shaded roofs
2. Have sites too small to meet their load
3. Are landlords and do not use electricity

# FiT Addresses Key Barriers

## Barriers to Customer:

1. Complicated
2. Return on investment is uncertain
3. **Predefined pricing ensures ROI** *Businesses who:*
  1. Have shaded roofs
  2. Have sites too small to meet their load
  3. Are landlords and do not use electricity

# FiT Addresses Key Barriers

## Barriers to Customer:

A customer does not need to build solar onsite to receive financial and environmental benefits

### 3. Does not support customers who:

1. Have shaded roofs
2. Have sites too small to meet their load
3. Are landlords and do not use electricity

# FiT Addresses Key Barriers

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## Barriers to Utility:

1. Not serving all customers
2. Return on investment is uncertain
3. Revenue loss through net-metering

# FiT Addresses Key Barriers

## Barriers to Utility:

1. Not serving all customers
2. Expanding opportunity will drive market growth
3. Revenue loss through net-metering

# FiT Addresses Key Barriers

## Barriers to Utility:

1. Not serving all customers
2. Return on investment is uncertain
3. By directly compensating for performance, GRU can accurately predict program costs and benefits

# FiT Addresses Key Barriers

## Barriers to Utility:

1. Not serving all customers
2. Return on investment is uncertain
3. Revenue loss through net-metering

GRU resells electricity produced under FiT program, meaning no revenue loss

# GRU FiT: Cost

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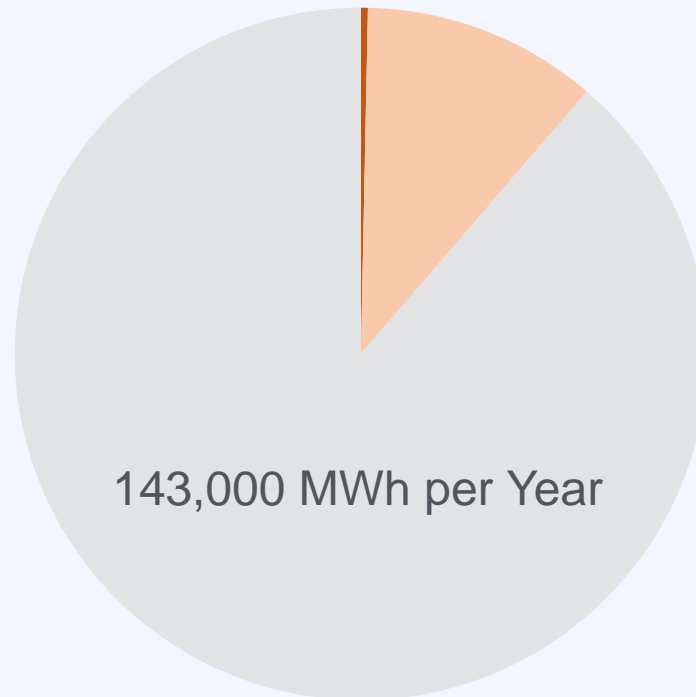
\$1 per Month per rate payer

Similar cost as  
rebate program



# GRU FiT: Projected Impact by 2016

Expected to contribute to 11% of Energy Goal



The FiT program provides a better investment yield than the rebate program for the customer and utility

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**10:00 – 10:15 Discussion: Lessons Learned**

**Discuss:** How can you take what you have learned today back to your community?



Powered by

**SunShot**

U.S. Department of Energy

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