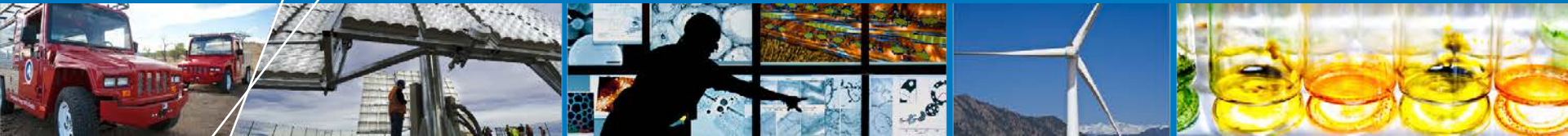


# Current State of the Voluntary Renewable Energy Market

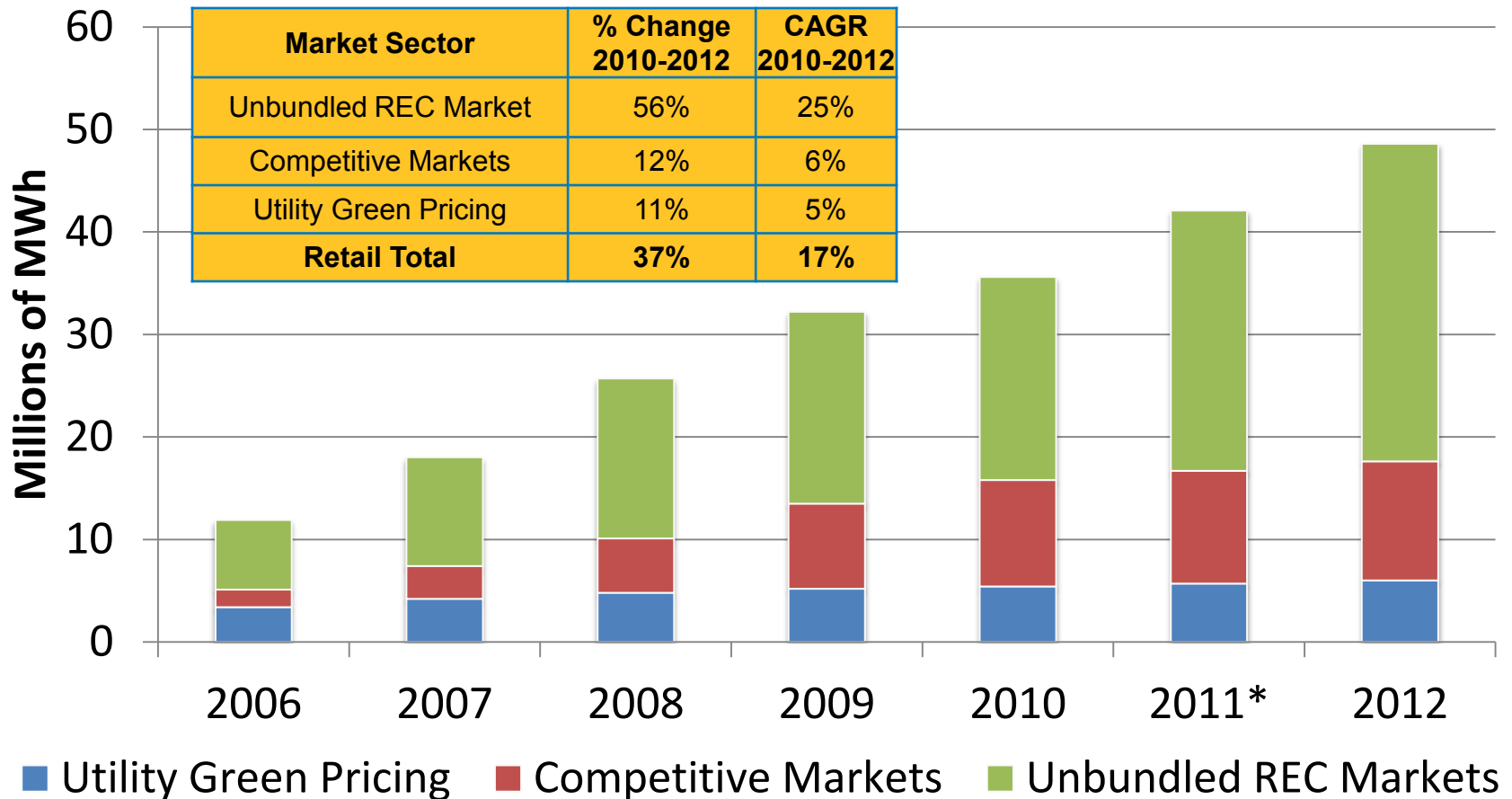


**Jenny Heeter, NREL**  
**Renewable Energy Markets  
Conference 2013**

**Austin, Texas**  
**September 24, 2013**

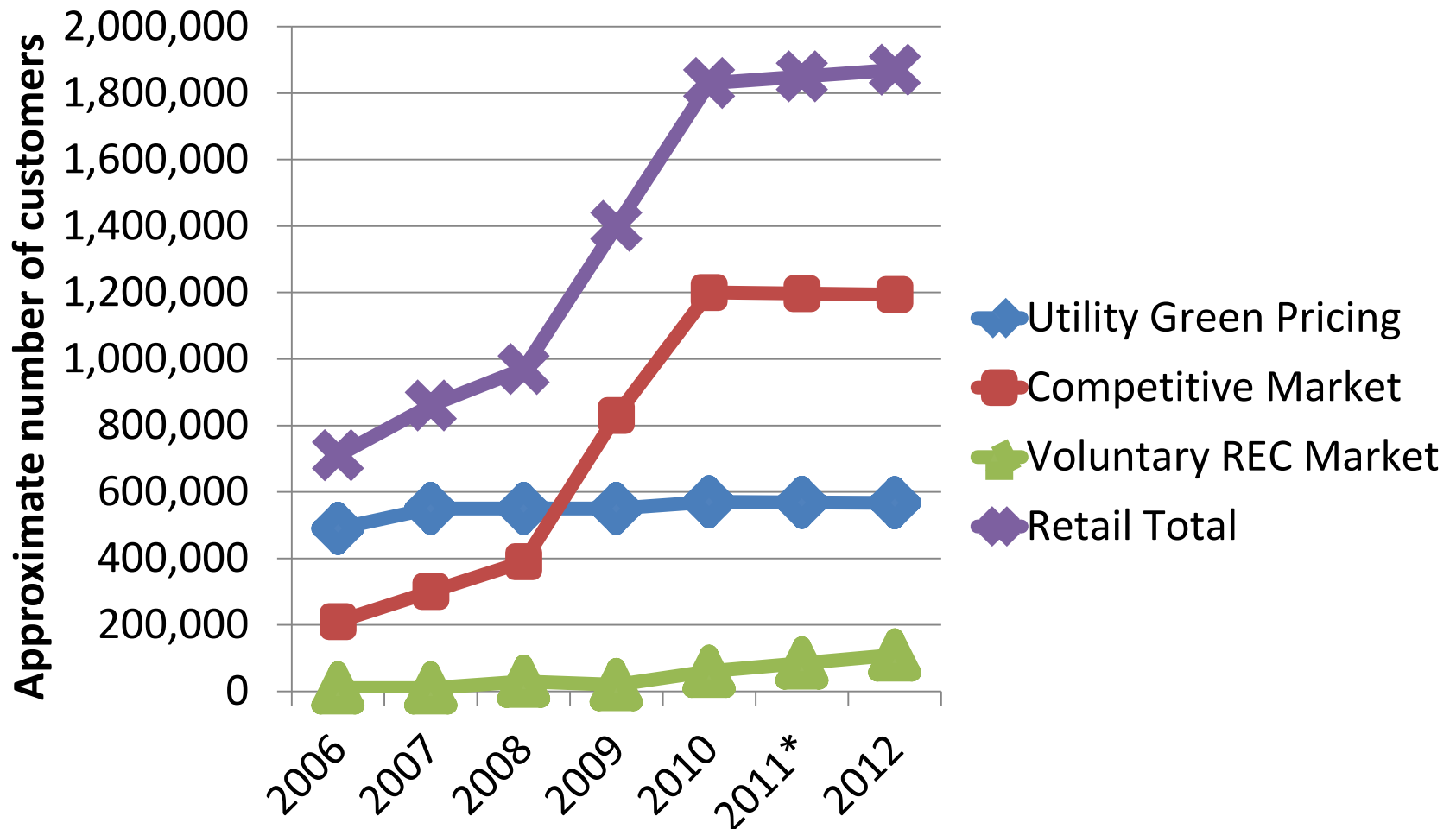
**NREL/PR-6A20-60357**

# Voluntary Market Increases 17% in 2012



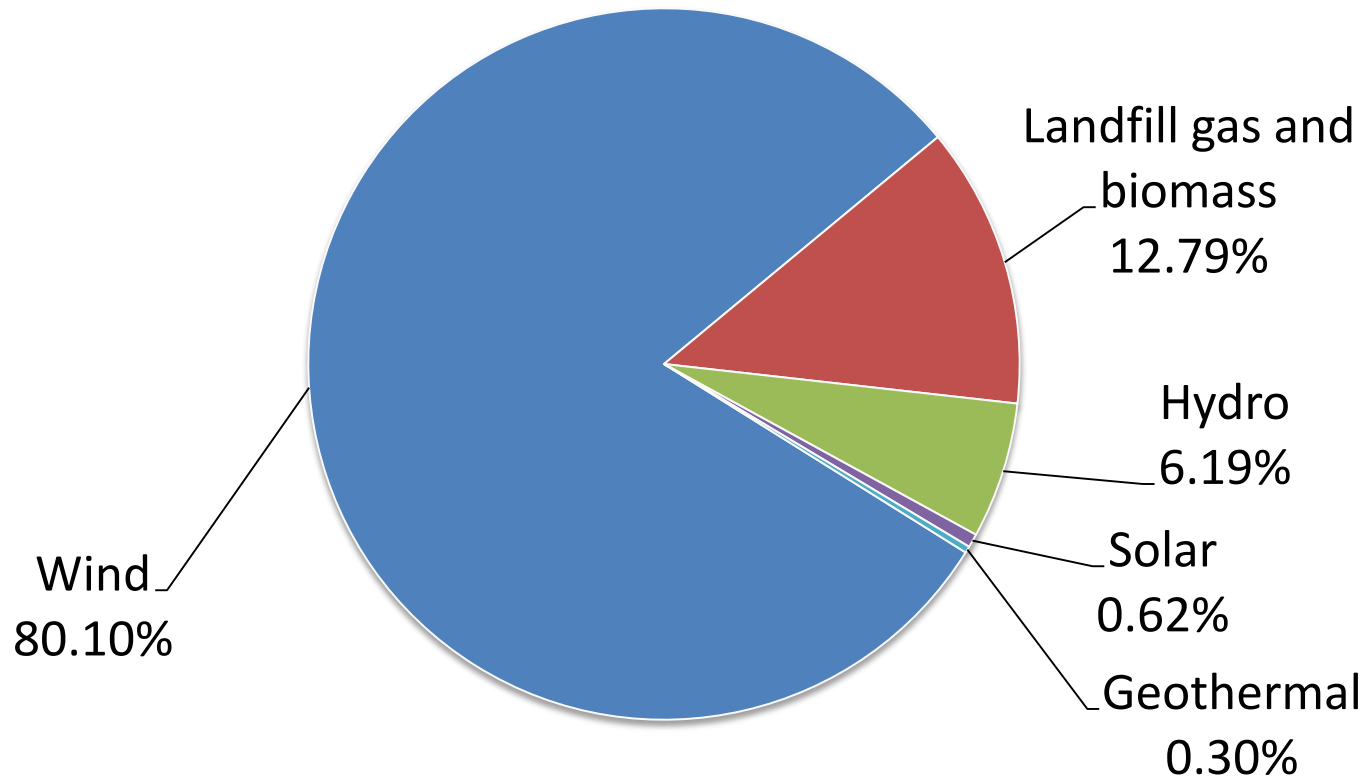
*The overall voluntary market continues to exhibit strong growth, increasing 37% from 2010 to 2012, representing compound annual growth rate (CAGR) of 17%. The unbundled REC market saw the largest growth – 56% from 2010 to 2012 (CAGR of 25%).*

# About 1.9 Million Customers, Primarily in the Competitive Market



*In 2012, most of the customer growth came from the unbundled REC market, 80% of which is residential customers.*

# Voluntary Supply Dominated by Wind



*In 2012, 80% of the supply for the voluntary market came from wind. The share of solar increased from 0.2% to 0.6%, and provided approximately 2% of supply for utility green pricing programs.*

# Solar an Increasing Share of Utility Programs

## Utilities Using at Least 2% Solar to Supply their Green Pricing Programs (as of December 2012)

Rank	Utility	% Solar
1	Sacramento Municipal Utility District	14.5%
2	Tennessee Valley Authority	5.9%
3	Xcel Energy (Colorado only)	3.0%
4	City of Palo Alto (California)	2.5%
5	Alameda Municipal Power	2.0%
5	PacifiCorp - Blue Sky Habitat & Usage	2.0%

NREL publishes these additional “Top 10” lists:

1. Total sales
2. Sales as a percentage of total retail electricity sales
3. Total participation
4. Customer participation rate
5. Lowest premium

Full lists available at:

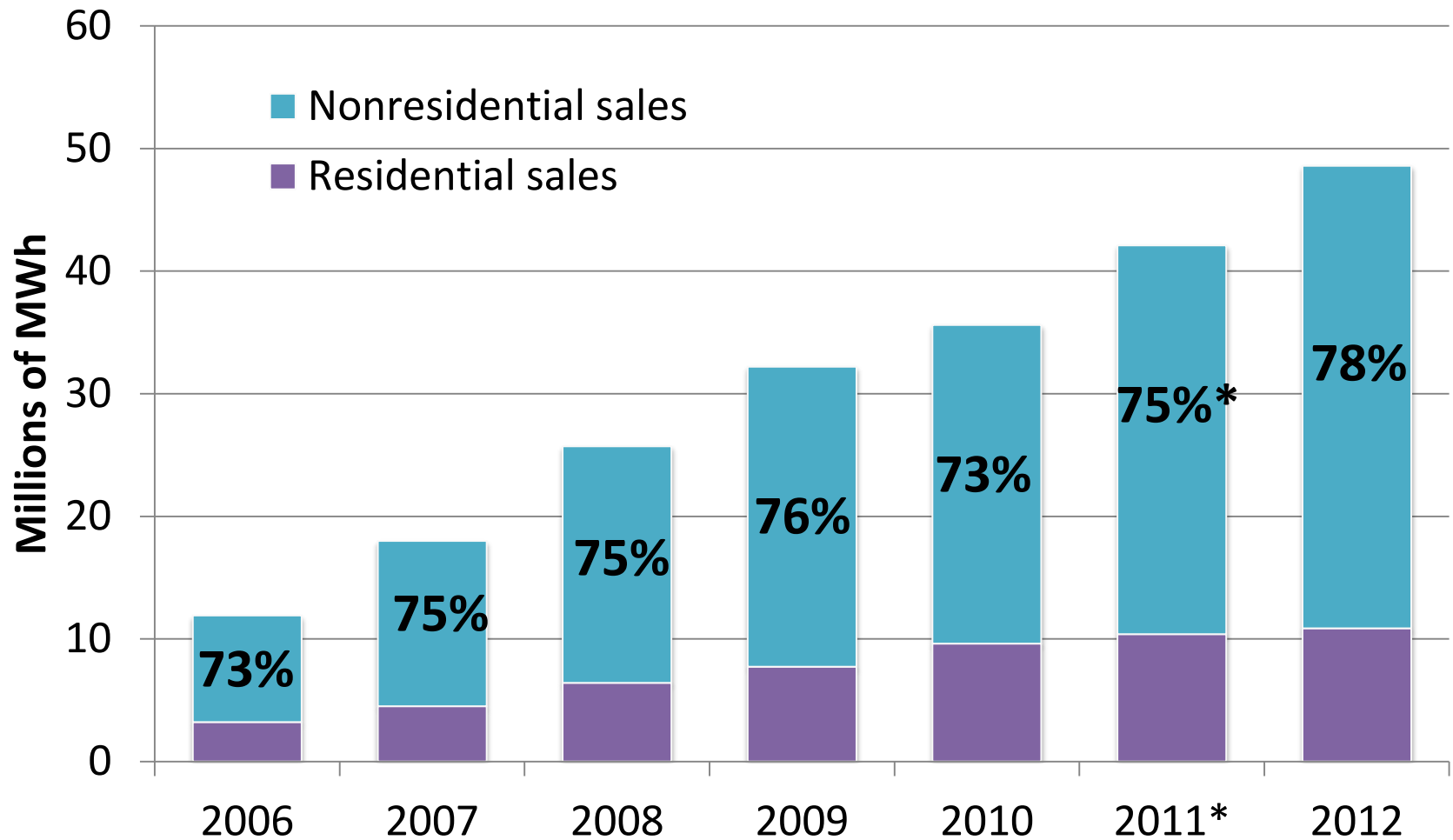
<http://greenpower.energy.gov>

Note: While additional individual utility products may include at least 2% solar, this list represents the overall mix provided by the utility to meet all of its green pricing needs.

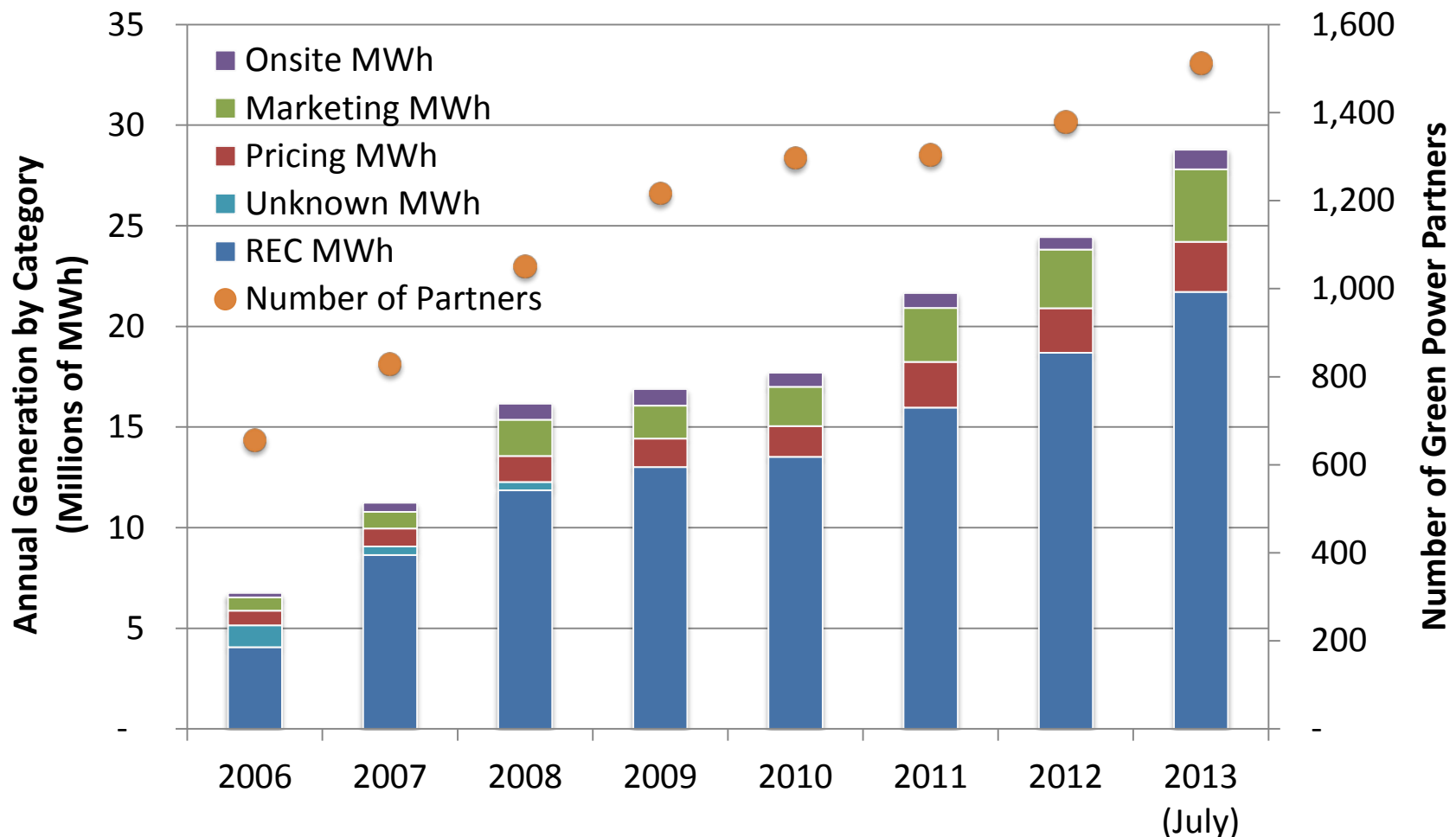
# Utilities Using Mix of Unbundled and Bundled RECs; Contract Length Varies by Procurement Mechanism

Contract length	Unbundled RECs	RECs bundled with electricity	Owned by utility	RECs produced by utility consumers
≤1 year	39.30%	0%	0%	0%
2-5 years	43.20%	0%	0%	41%
6-10 years	0.20%	8%	1%	45%
11+ Years	0.30%	92%	99%	15%
<b>Percent of total procurement</b>	56%	40%	3%	1%

# Non-residential Purchases Dominate Market



# EPA Green Power Partnership Growing



*REC markets make up largest share of GPP purchases. Purchases increased 13% between 2011 and 2012. As of July 2013, the Partnership had more than 1,500 customers.*

Source: EPA, 2013.





# Institutional Purchasing, 2012-2013

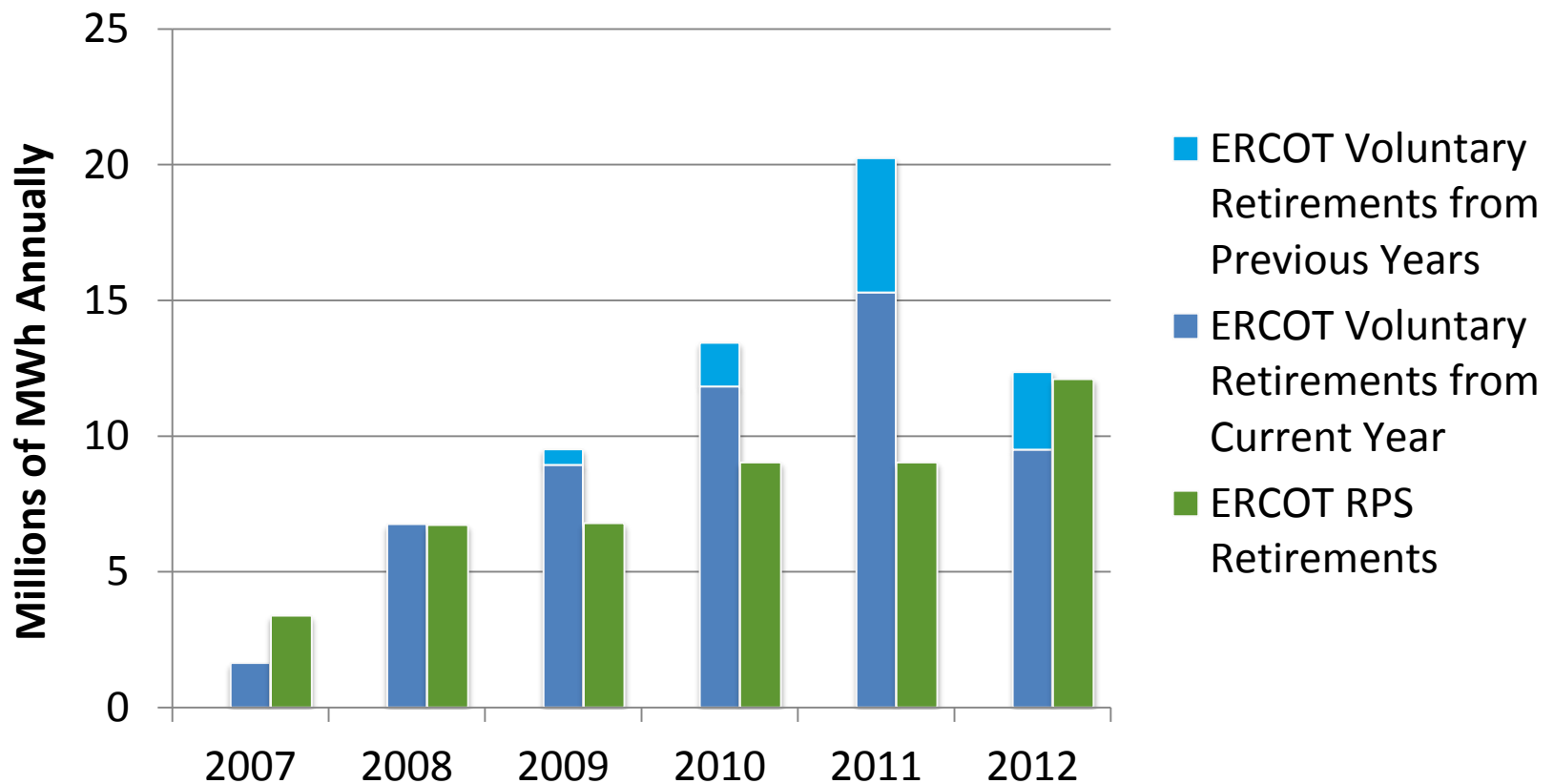
## New to EPA GPP and purchasing more than 100 thousand MWh

- Microsoft
- Unilever
- McDonald's USA
- EMC Corporation
- Metropolitan Pier and Exposition Authority
- Washington Real Estate Investment Trust
- Oklahoma State University
- U.S. EPA Superfund Program

## Existing EPA GPP but increased green power use by more than 200 thousand kWh

- Intel
- Apple
- U.S. DOE
- Staples
- District of Columbia
- JPMorgan Chase & Co.
- U.S. Department of Veterans Affairs

# ERCOT Voluntary Retirements Decline

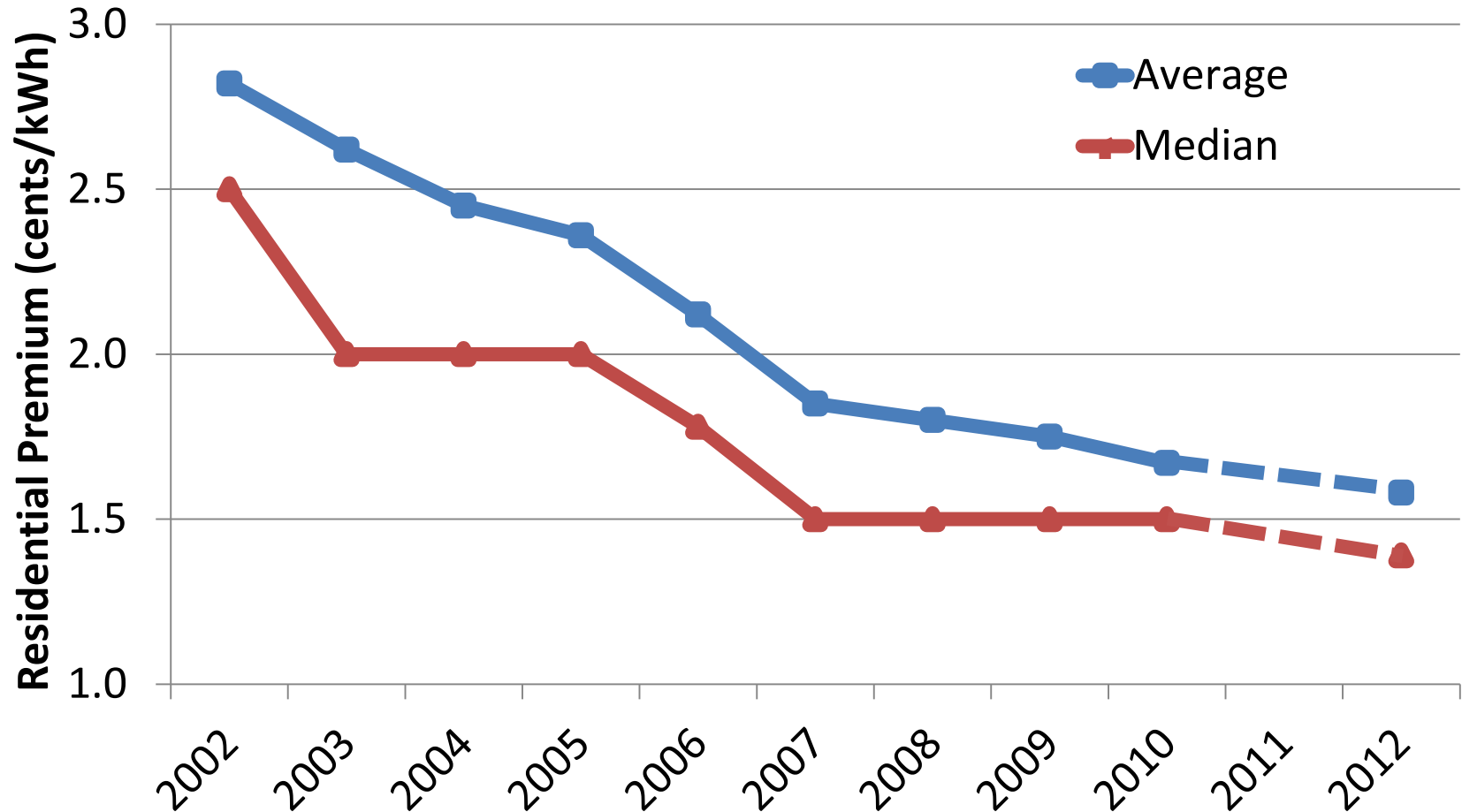


*Voluntary retirements in 2012 declined nearly 40% from 2011, while RPS retirements increased about 34%. Decreased voluntary retirements are likely due to an increase in REC price in Texas, causing some national REC purchasers to leave the Texas market.*

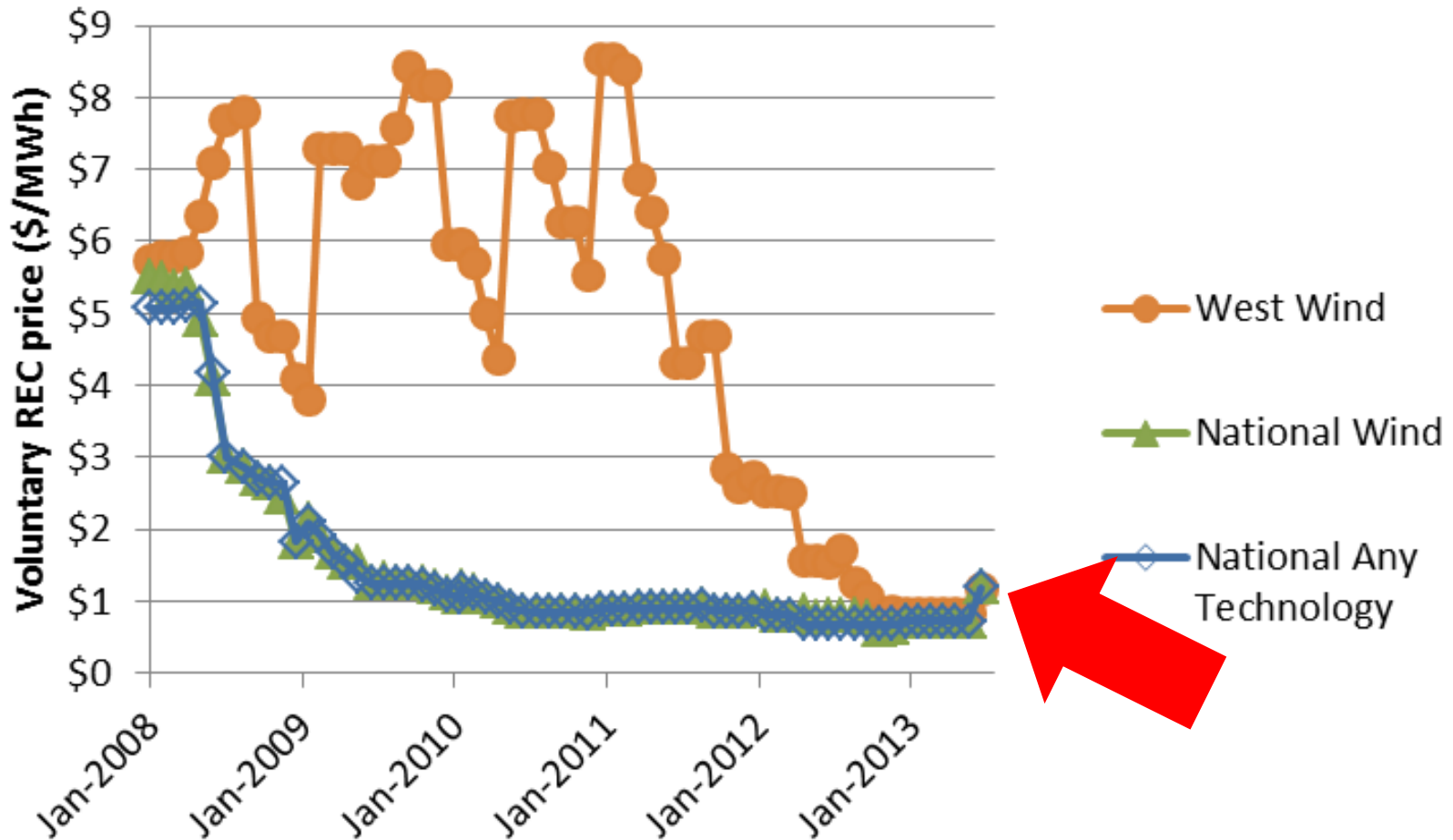
Source: ERCOT, 2008-2013



# Utility Green Pricing Premiums Decline ~6% Annually

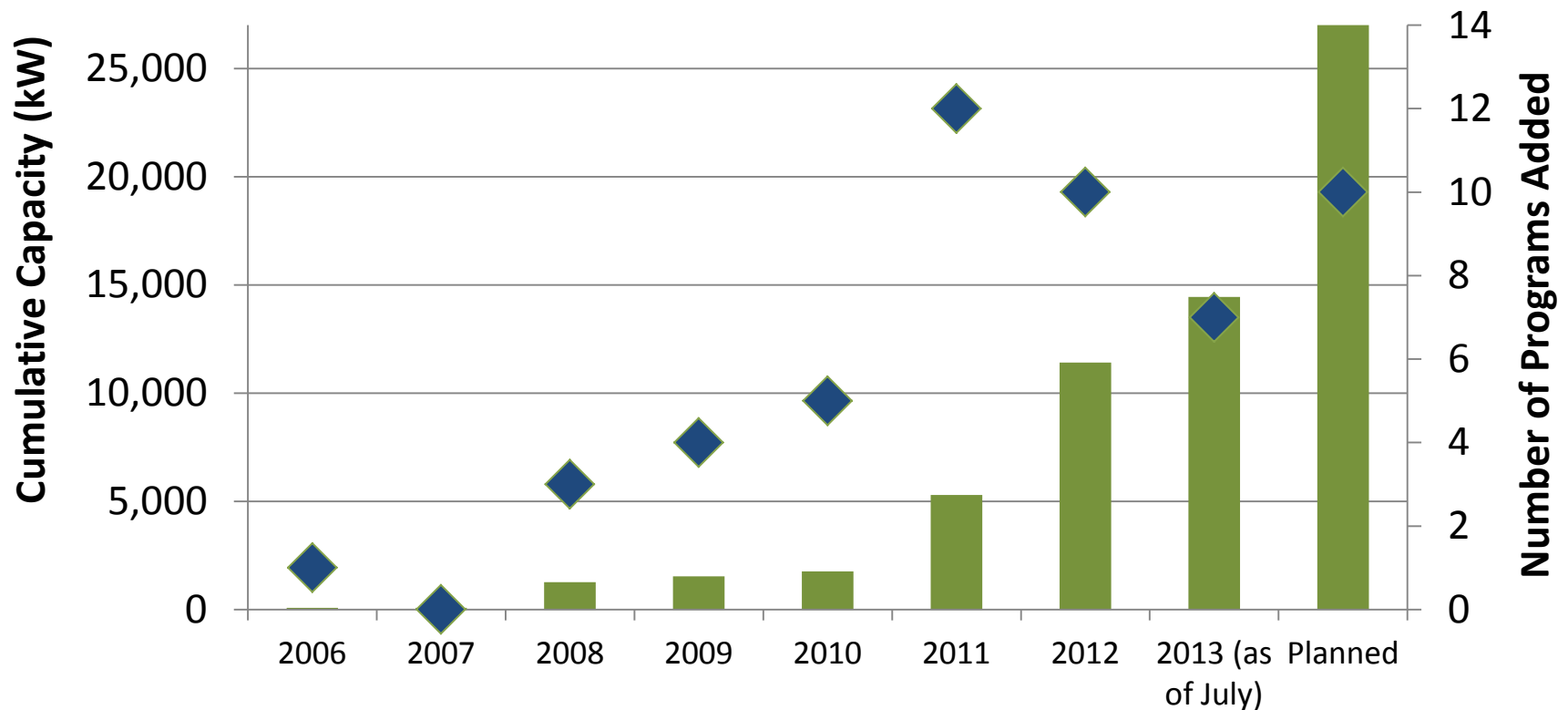


# Voluntary REC Prices



*Voluntary REC prices started to rise in mid-2013 after years of decline; September prices more than \$1/MWh. The increased price may be due to tightening in the Texas market.*

# Strong Growth for Community Solar



- *Community solar is a popular niche within the voluntary market, and a number of additional programs are planned.*
- *The installed capacity to date is still quite small ( $\approx 15$  MW) in the context of the larger green power market.*
- *California's AB 32 sent to Governor for signature. Would establish community solar that is additional to the state's RPS.*

# Community Solar Development – Select 2012 Projects

State	Utility/Program name	kW	Year Operational
AZ	UniSource Energy Services	1720	2012
AZ	Arizona Public Service	1338	2012
CO	Poudre Valley REA/Clean Energy Collective (CO)	115	2012
CO	Colorado Springs (CO)	2000	2012
MA	Brewster Community Solar Garden Coop. Inc. (MA)	346	2012
MN	Wright-Hennepin Cooperative Electric Association / Clean Energy Collective	40	2012
NC	Duck River Electric Membership Corporation	240	2012
NM	Kit Carson Electric Cooperative / Clean Energy Collective	100	2012
VT	Green Mountain Power	148	2012
WA	Olympia (WA)	75	2012



# Climate Action Plan Targets Federal Renewable Purchasing at 20% by 2020

Source	Level...	Applies to...
Climate Action Plan	20% by 2020	To be determined
EPA 2005 Federal Use Goal	3% FY07-09 5% FY10-12 7.5% FY13 and beyond	All Agencies
Executive Order 13423	½ of EPA 2005 Federal Goal from “New” Sources	All Agencies
DoD National Defense Reauthorization Act of 2007	25% of electricity by 2025	DoD
EPA 2005 BLM Production Goal	10,000 MW by 2015	BLM
EISA 2007 SWH Requirement	30% of hot water needs in all new buildings or major renovations	All Agencies

# Emerging Industrial Utility Green Power Tariffs

- A few utilities have proposed a utility green power tariff/rate for industrial customers.
- Rates would be designed so that the industrial customer could purchase from one individual renewable facility (typically solar).
- New rate development is being driven by Google and Apple.
- Examples: Duke Energy, Sierra Pacific Power Company (NV Energy), Dominion Virginia.



# Highlights

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- **Green power market totals 48.6 million MWh, up 36% from 2010 to 2012, representing CAGR of 17%.**
- **Unbundled REC market seeing largest growth.**
- **Utility green pricing programs are using more solar.**
- **REC prices increase to above \$1/MWh.**
- **Community solar continues to expand.**
- **New federal goal of 20% by 2020 will spur increased voluntary purchases.**
- **Industrial utility green pricing tariffs are emerging.**

# Additional Information

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

## The Green Power Network

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### Lead Story

#### Alameda Municipal Power Offers New 100% Renewable Energy Option

Alameda Municipal Power (AMP) of California has announced a new voluntary program offering its customers the option to purchase 100% renewable energy. On behalf of program participants, AMP will purchase Green-e Energy certified renewable energy certificates ... [See full story](#)

### Hot Off the Press

- [Made with Renewable Energy: How Many Companies are Labeling Consumer Products](#)
- [Solar Renewable Energy Certificate \(SREC\) Markets: Status and Trends](#)
- [Status and Trends in U.S. Compliance and Voluntary Renewable Energy Certificate Markets \(2010 Data\)](#)
- [Role of Renewable Energy Certificates in Developing New Renewable Energy Projects](#)
- [Consumer Attitudes About Renewable Energy](#)
- [Voluntary Green Power Market Forecast through 2015](#)
- [Guide to Purchasing Green Power: Renewable Electricity, Renewable Energy Certificates, and On-Site Renewable Generation](#)

### News

- [Walmart Introduces Industrial Wind Turbine at Distribution Center in California](#) | August 2012
- [US Army Announces \\$7 Billion Request for Proposal to Purchase Renewable Energy for Up to 30 Years](#) | August 2012
- [BMW and Green Mountain Energy Offer RECs for Electric Vehicle](#)

### Publications

- [REMA's Getting the Green Deal Done](#) | August 9, 2012 Webinar
- [EPA's Addressing Barriers to Renewable Energy Procurement](#) | September 19, 2012 Webinar
- [Renewable Energy Markets 2012](#) | September 23-25, 2012 Washington D.C. [Registration Now Open](#)

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**TOP 10** Top Ten Utility Green Power Programs  
The annual ranking of leading utility green power programs.

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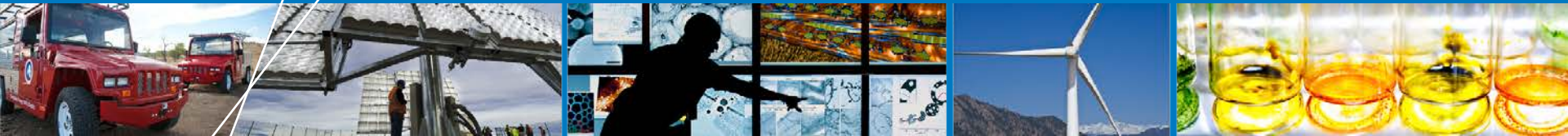
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