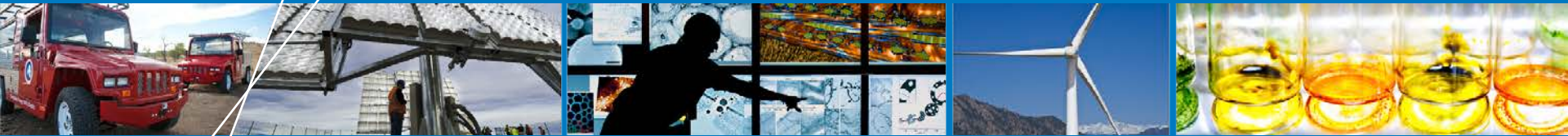


Changing Dynamics in the Voluntary Market



**EPA Green Power Partnership
Webinar**

Jenny Heeter

January 27, 2015

History of the Voluntary Market

- The voluntary market (or green power market) allows consumers and institutions to purchase renewable electricity to match their electricity needs.
- The voluntary market is independent from the compliance market, which includes obligations to meet state renewable portfolio standards (RPSs).
- Voluntary options emerged in anticipation of electric market restructuring in the 1990s; utilities wanted to offer choice.
- The ability of residential customers to choose suppliers was predicted to drive voluntary purchases; however, non-residential customers have actually been driving the voluntary market.

How to Purchase

- **Utility Green Pricing Programs:** About 800 utilities offer programs, though sales and customers are dominated by a small number of programs.
- **Competitive Suppliers:** Products offered in states with retail competition.
- **Unbundled REC Marketers:** Primarily used by large commercial and institutional customers. Unbundled REC products are separate from electricity purchases; RECs can also be part of a bundled product.

Ability to Purchase Green Power

- Today, about 50% of consumers have the option to buy green power from their utility or electric supplier; all customers have the opportunity to purchase RECs (renewable energy certificates).

Purchasing Options are Expanding

Existing and emerging purchasing methods

Utility green pricing

Competitive supplier

Unbundled Renewable Energy Certificates (RECs)

On-site renewables

Power purchase agreements

Community choice aggregation

Community solar

Large customer renewable energy tariff

Direct project investment/crowdfunding

Value proposition

- Match all or part of electricity consumption with renewable energy
- Meet corporate sustainability goals

- Provide location for renewable development
- Potentially lower electricity bill
- Meet municipal GHG reduction targets
- Support local solar development
- Potential price hedge

REC treatment

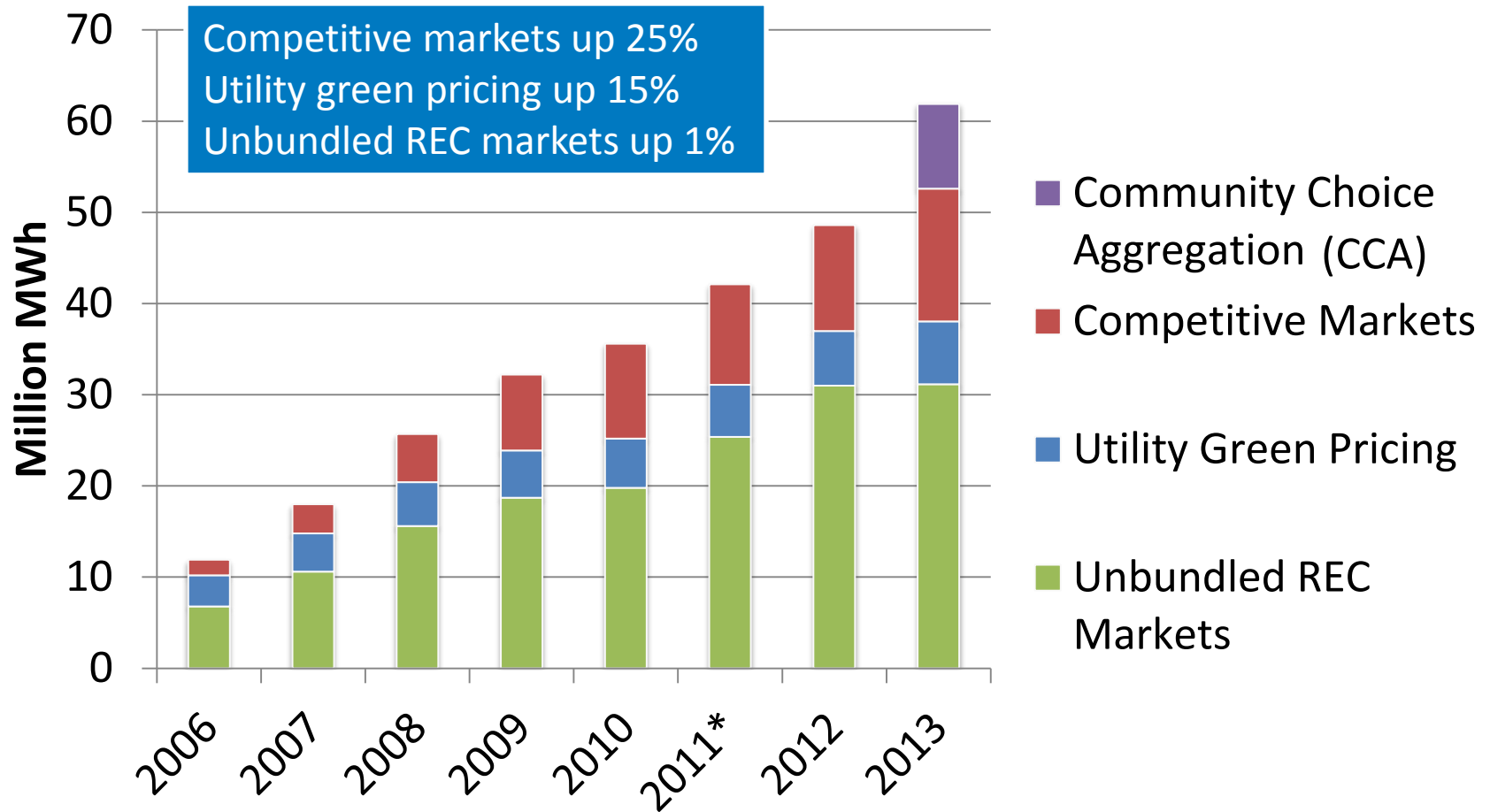
Purchaser keeps RECs

Purchaser does not necessarily keep RECs

How Large is the Voluntary Market?

**More than 1.5% of
total U.S. electricity
generation.**

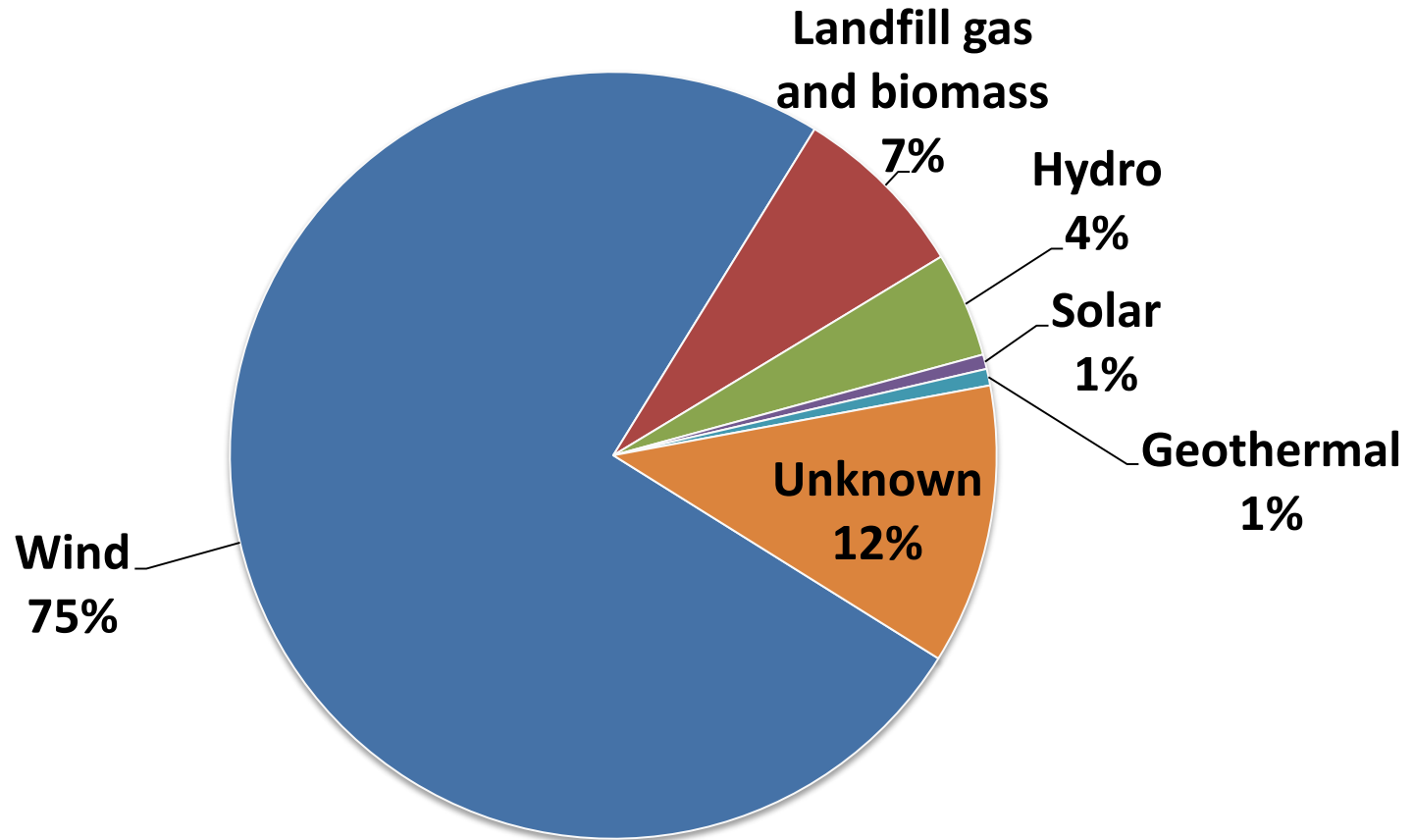
Voluntary Market Increases to 62 Million MWh



The overall voluntary market continues to exhibit strong growth, with the largest increase coming from the competitive markets.

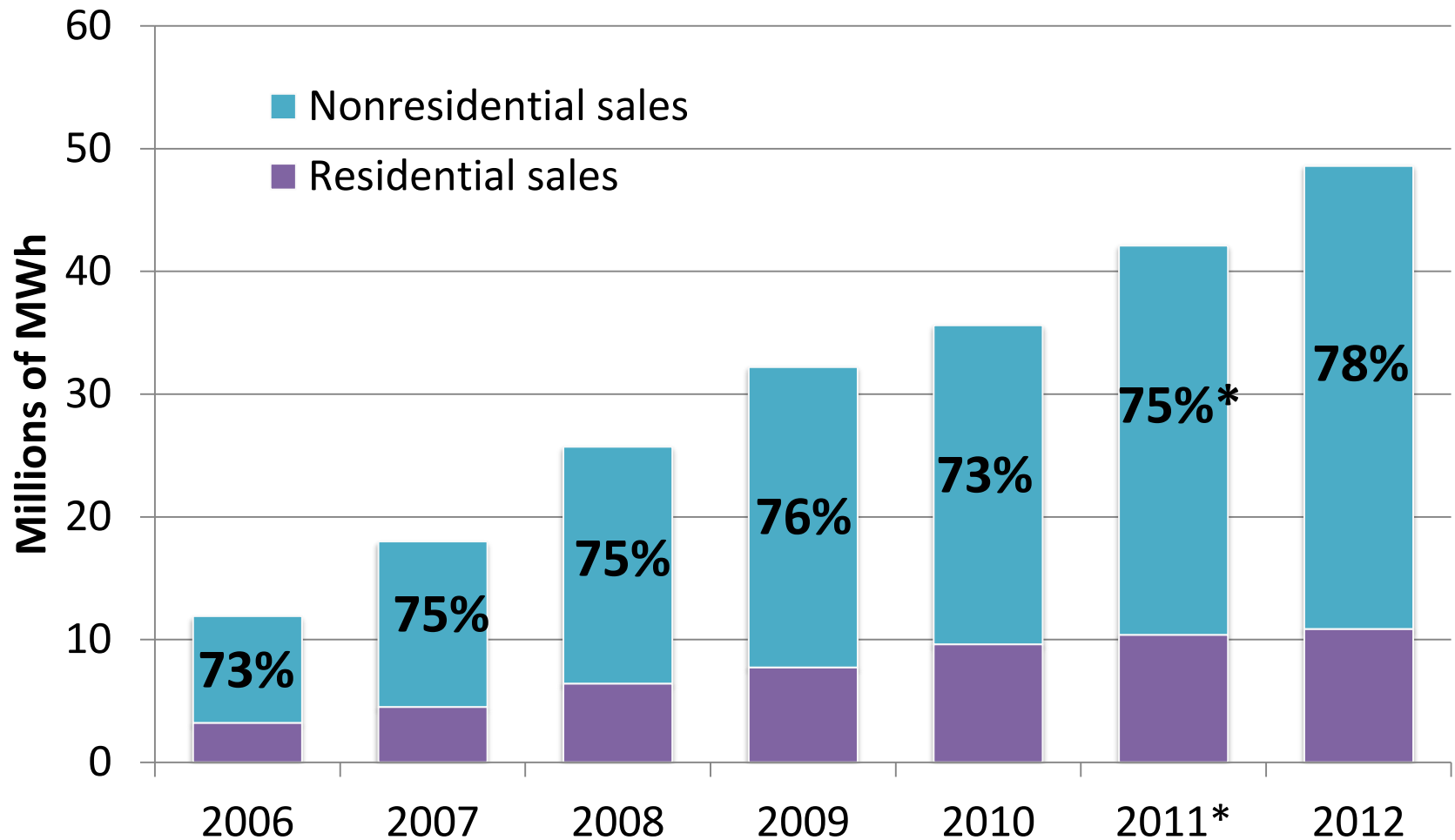
*Voluntary sales for 2011 are estimated as the mid-point of 2010 and 2012 sales.

Voluntary Supply Dominated by Wind



In 2013, 75% of the supply for the voluntary market came from wind. Solar energy provided approximately 2.5% of supply for utility green pricing programs.

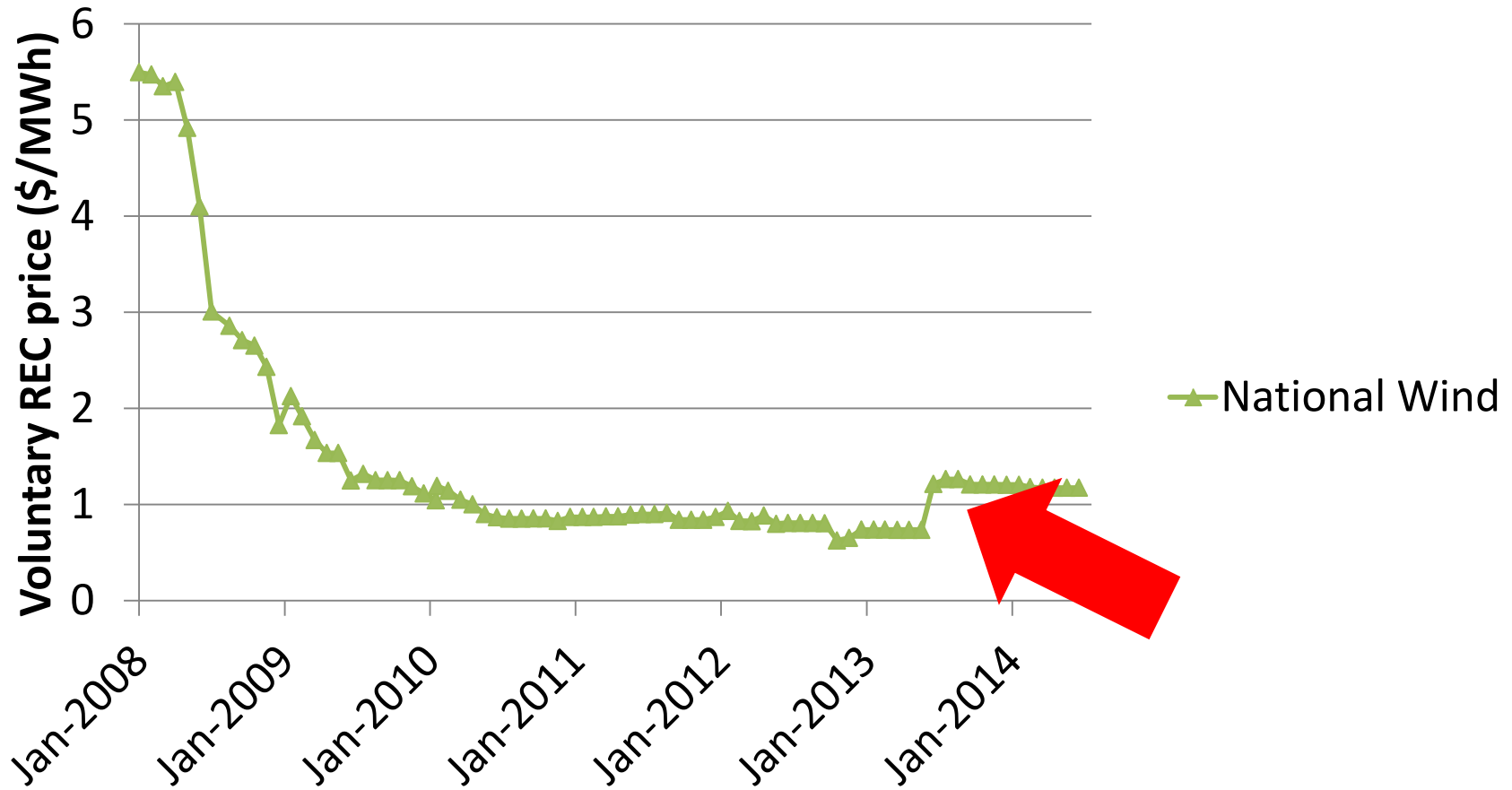
Nonresidential Purchases Dominate Market



*Voluntary sales for 2011 are estimated as the mid-point of 2010 and 2012 sales.

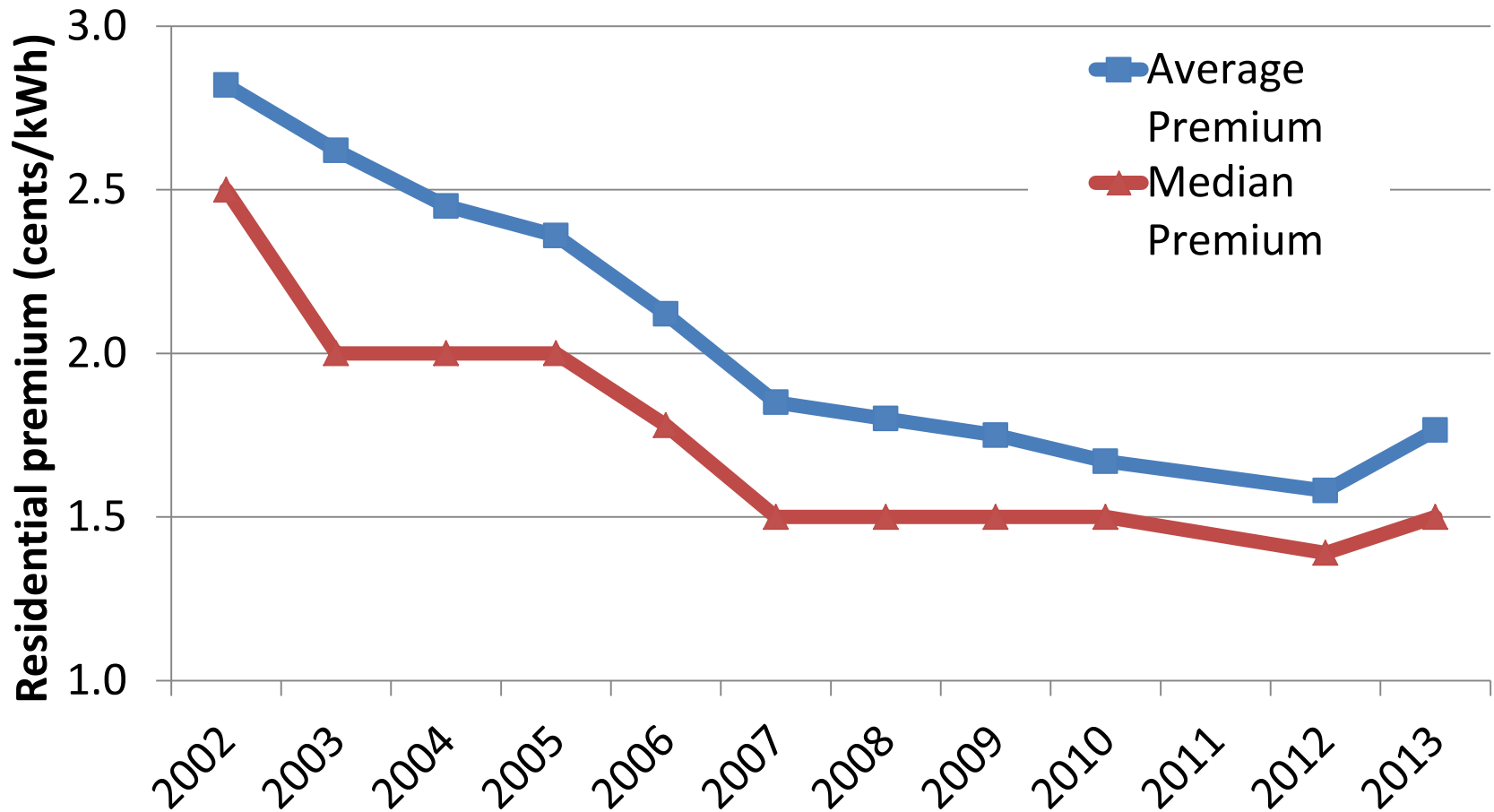
How much do products cost?

Voluntary REC Prices Up to >\$1/MWh in 2013



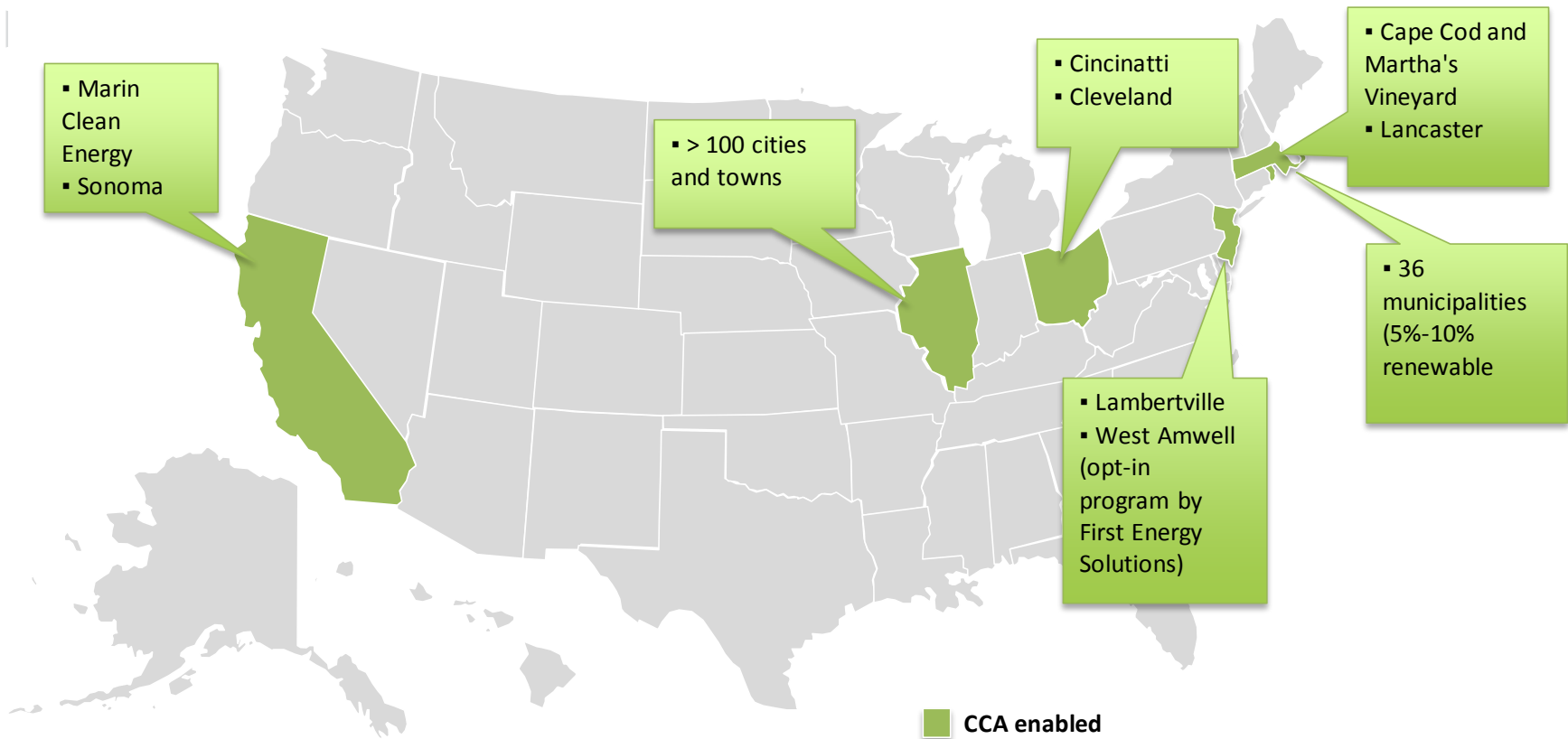
Voluntary REC prices started to rise in mid-2013 after years of decline; September prices more than \$1/MWh. The increased price may be due to tightening in the Texas market. By fall 2014, prices had declined to under a dollar, with a few trades less than \$0.80/MWh.

From 2002-2013, Utility Green Pricing Premiums Decline ~4% Annually



Average and median utility green pricing programs increased in 2013; additional programs with higher premiums reported for the first time. For programs that reported both 2012 and 2013 data, there was little change in average and median premiums.

CCAs Support 9 million MWh of RE



CCAs supported 9 million MWh of renewable energy; 2.4 million customers participating. Some CCAs are interested in sourcing more local supply.

Major Green Pricing Programs Increase

- **Sales by utility green pricing programs increased 15% between 2012 and 2013.**
 - Some of our Top 10 programs saw large increases in sales. Other programs still losing customers and sales.
 - PGE increased sales by 26%
 - Austin Energy increased sales by 16%.
 - CPS Energy increased sales by 14%.
 - TVA was new to our Top 10 list with nearly 200,000 MWh in sales.

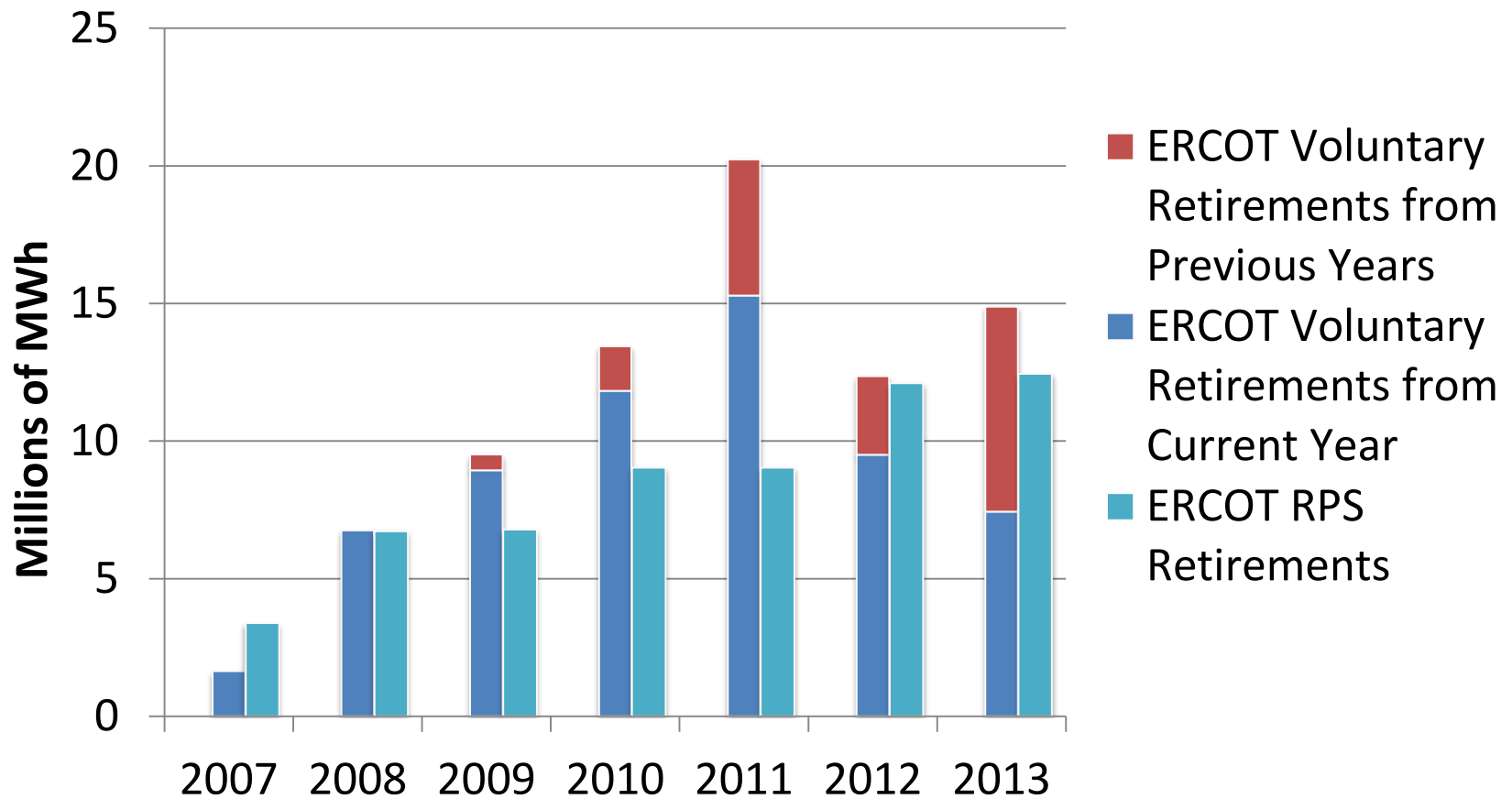
A Few Utilities Offering RE Tariffs; Success Remains to Be Seen

- **Duke, NV Energy, and Dominion Virginia have created renewable energy tariffs for large customers**
- **Action underway in Oregon to establish a renewable energy tariff; per House Bill 4126**
- **Tariff rates typically include fees and administrative charges, plus the cost of the renewable energy resource**
- **Subscription rates TBD**

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	46%	0%	0%	0%
2-5 years	52%	0%	0%	19%
6-10 years	2%	5%	<1%	4%
11+ Years	0%	95%	>99%	77%
Percent of total procurement	55%	36%	7%	2%

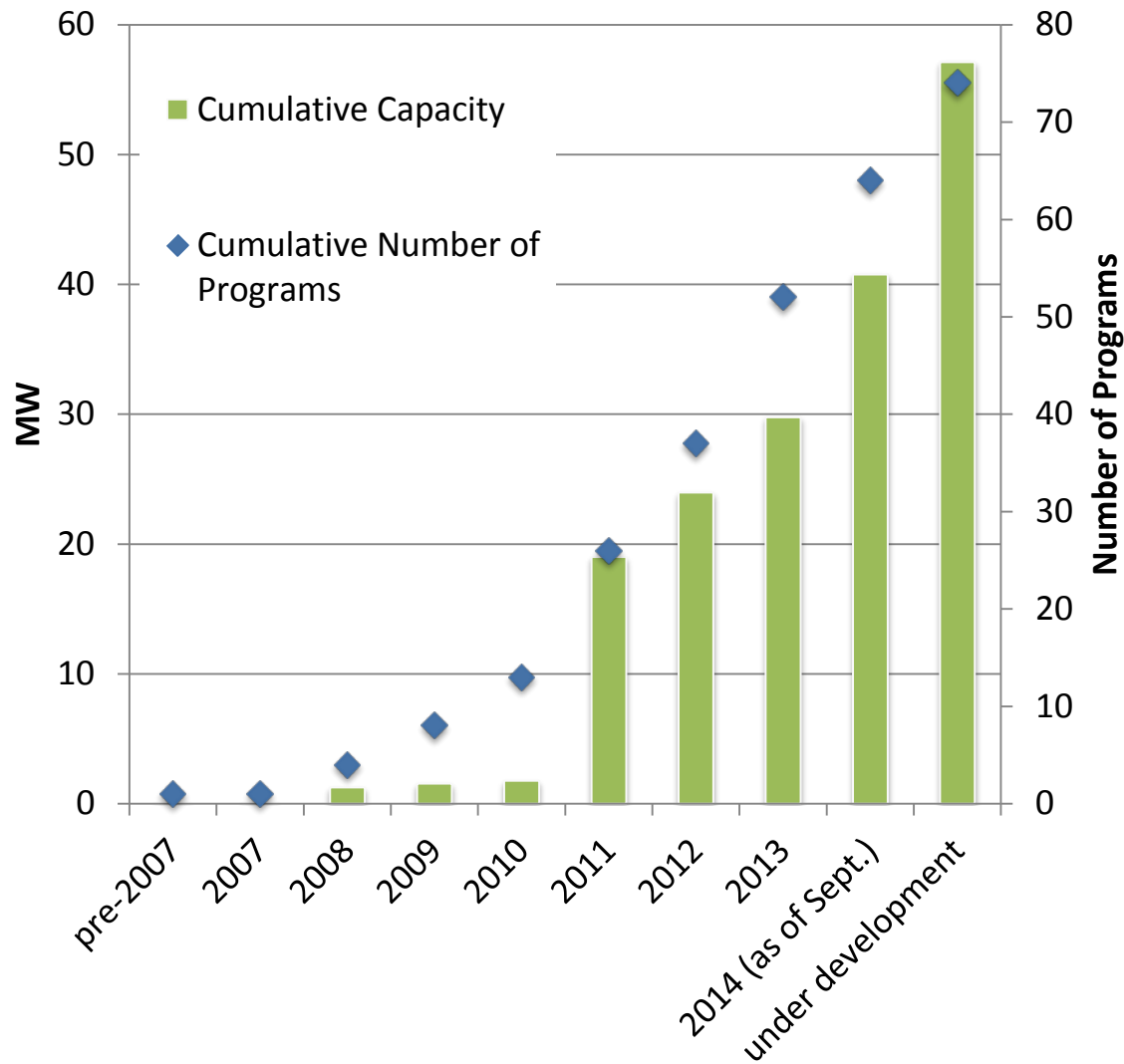
Voluntary Action in Texas Increase from 2012; Still Below 2011 Levels



Voluntary retirements in ERCOT increased slightly in 2013, when retirements for previous years are included. In 2013, 7.4 million MWh were for retired for 2013 and 7.5 million MWh were retired for previous years.

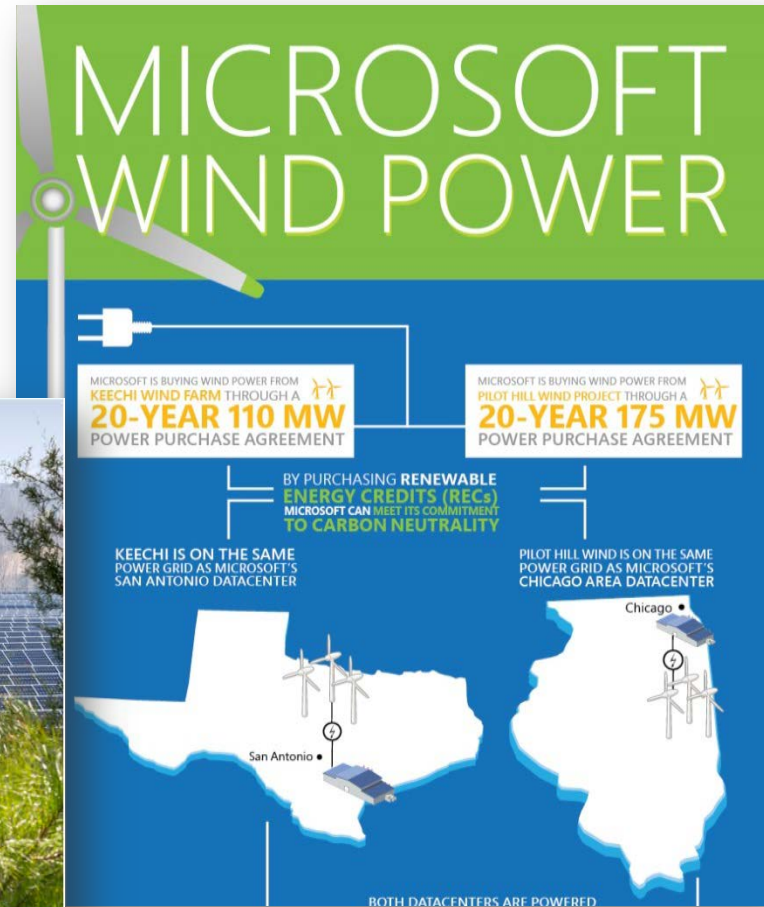
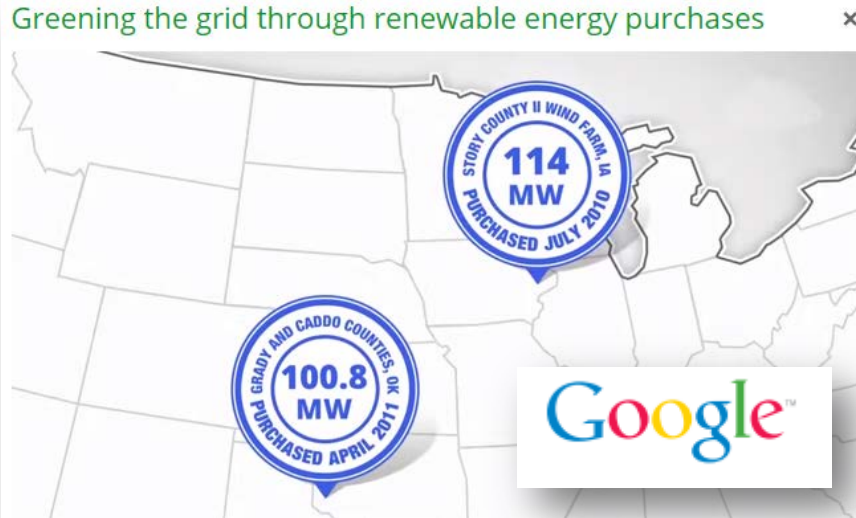
Source: ERCOT, 2008-2014

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 (≈ 40 MW) in the context of the larger green power market.*
- *Large scale community solar programs are under development in California, per AB 43.*

Washington Post: “Using the Web? Congrats, you’re an environmentalist”



*The largest 70 information and communications technologies (ICT) companies purchased 8.4 million MWh of RE in 2013.
Data centers alone account for ~2% of U.S. electricity use.*

Summary

- **Green power market totaled 62 million MWh in 2013, up from 48.6 million MWh in 2012.**
- **Approximately 5.4 million customers are purchasing green power; 2.4 million of those are participating in CCAs.**
- **Utility green pricing sales and competitive market sales increased by 15% and 25%, respectively, while the unbundled REC market saw very modest growth and was nearly flat.**
- **REC prices in 2013 increased to >\$1/MWh; have since declined.**
- **Community solar continues to expand.**
- **ICT sector makes up more than 10% of voluntary market; is procuring in innovative ways.**

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[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 Vehicles](#)

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](#) | [More Events](#)

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The annual ranking of leading utility green power programs.

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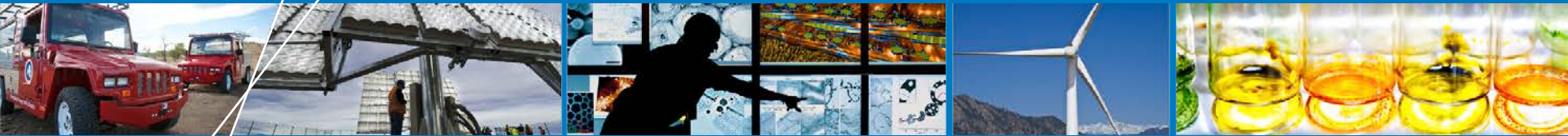
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Full report available:

<http://www.nrel.gov/docs/fy15osti/63052.pdf>

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