

Voluntary Markets: Lay of the Land



**Renewable Energy
Markets 2009:
Green Power 101**

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9/13/09

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Big Picture: Green Power Market Status

- Voluntary green power markets give consumers choices to purchase electricity from renewable energy sources.
 - About 25% of U.S. utilities offer a green power program.
 - Competitive retail markets often provide green power options.
 - Renewable energy certificates (RECs) can be purchased nationwide.
- About 50% of consumers have option to purchase green power directly from their utility/power supplier.
- Green power sales growth has averaged 31% annually in recent years.
 - Pace of change slowed in 08 from 53% to 34% and in green pricing from 25 to 12%.
 - 2008 was first time # of residential participants in regulated markets stayed flat since tracking began in 2002.
- >24m MWh in total 08 sales.
- Nonresidential purchases are increasingly driving the market
 - Over $\frac{3}{4}$ of sales to nonresidential customers in 2008.

Lay/Land

- Who
- What
- Where
- When
- How
- Why
- How Much
- What Next
- What For (really?)

who

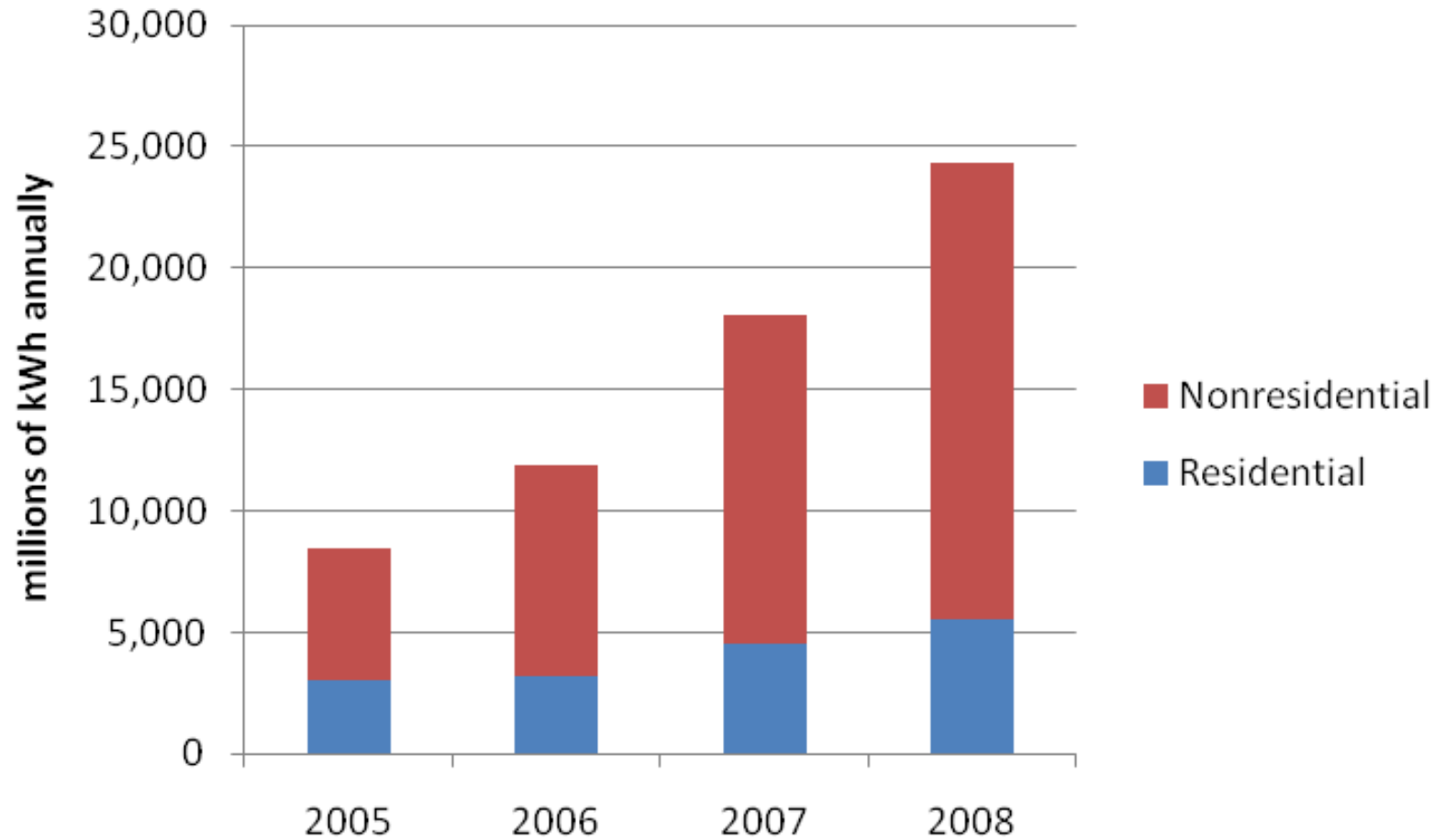
Top 10 Utility Green Pricing Programs kWh Sold (2008 data)

<i>Rank</i>	<i>Utility</i>	<i>Resources Used</i>	<i>Sales (kWh/yr)</i>	<i>Sales (aMW)</i>
1	Austin Energy	Wind, landfill gas	723,824,901	82.6
2	Portland General Electric	Wind, biomass	681,943,576	77.9
3	PacifiCorp	Wind, biomass, landfill gas, solar	492,892,222	56.3
4	Xcel Energy	Wind	362,040,082	41.3
5	Sacramento Municipal Utility District	Wind, solar, biomass, landfill gas, hydro	325,275,628	37.1
6	Puget Sound Energy	Wind, solar, biomass, landfill gas, hydro	291,166,600	33.2
7	Public Service Company of New Mexico	Wind	176,497,697	20.1
8	We Energies	Wind, landfill gas, solar	176,242,630	20.1
9	National Grid	Biomass, wind, small hydro, solar	174,612,444	19.9
10	PECO	Wind	172,782,490	19.7

Top 10 Programs: Customer Participation Rate (2008 data)

Rank	Utility	Customer Participation Rate	Program(s)	Program Start Year
1	City of Palo Alto Utilities	21.0%	<i>Palo Alto Green</i>	2003
2	Lenox Municipal Utilities	10.5%	<i>Green City Energy</i>	2003
3	Portland General Electric	9.7%	<i>Clean Wind Green Source Renewable Future</i>	2002
4	Madison Gas and Electric Company	9.6%	<i>Green Power Tomorrow</i>	1999
5	Silicon Valley Power	8.4%	<i>Santa Clara Green Power</i>	2004
6	Sacramento Municipal Utility District	7.8%	<i>Greenergy</i>	1997
6	City of Naperville Public Utilities	7.8%	<i>Renewable Energy Program</i>	2005
8	Pacific Power – (Oregon only)	6.2%	<i>Blue Sky Block Blue Sky Usage Blue Sky Habitat</i>	2002
9	River Falls Municipal Utilities	5.3%	<i>Renewable Energy Program</i>	2001
10	Lake Mills Light & Water	5.0%	<i>Renewable Energy Program</i>	2001

Green Power Purchases by Customer Segment



Top 20 U.S. Green Power Purchasers

(as of April 2009)

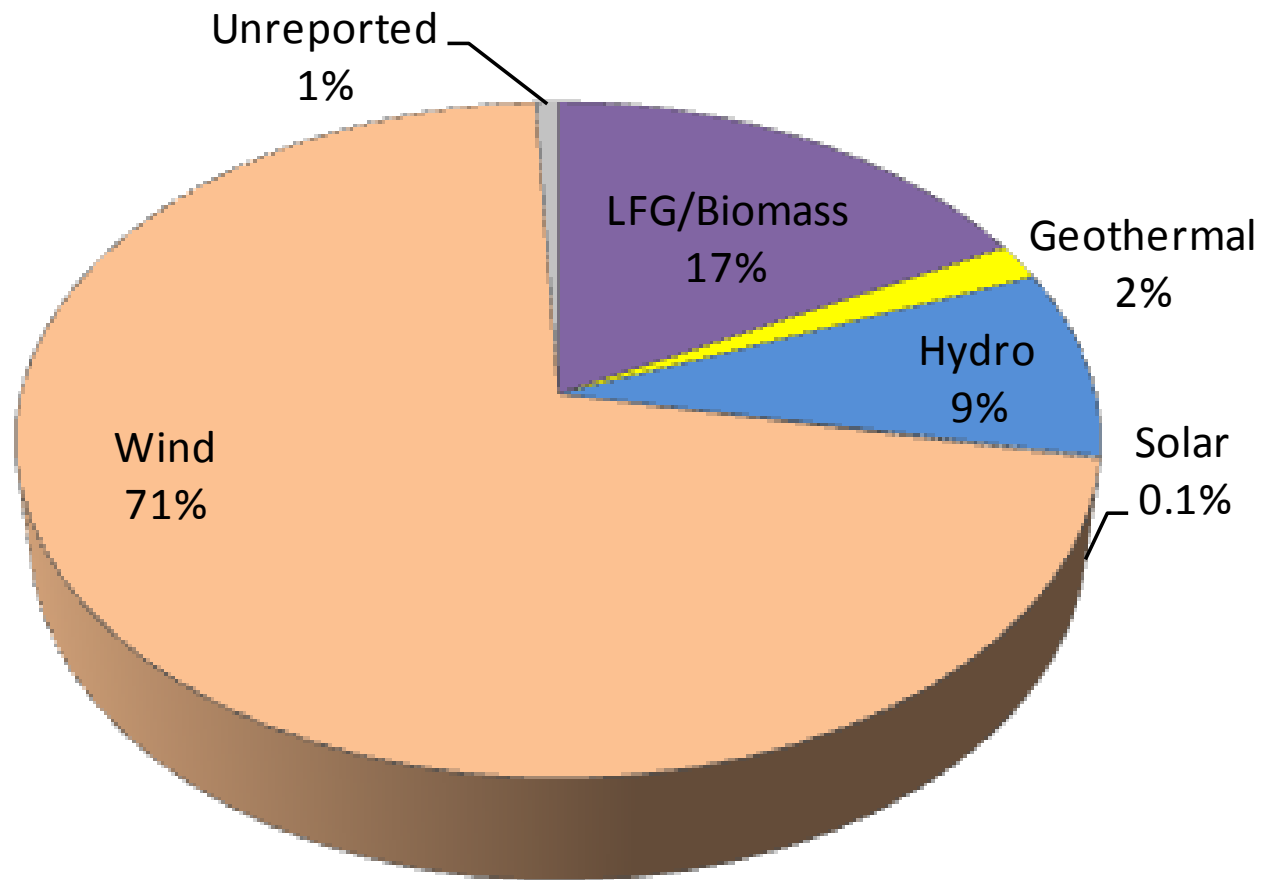
<u>Ranking</u>	<u>Company</u>	<u>kWh/year</u>
1	Intel Corporation	1,301,200,000
2	PepsiCo	1,144,773,154
3	Kohl's Department Stores	600,990,000
4	Dell Inc.	553,708,000
5	Whole Foods Market	526,995,000
6	The Pepsi Bottling Group, Inc.	470,216,838
7	Johnson & Johnson	434,854,733
8	U.S. Air Force	426,233,001
9	Cisco Systems, Inc.	400,996,000
10	City of Houston, TX	350,400,000
11	City of Dallas, TX	333,659,840
12 (tie)	(tie) Commonwealth of Pennsylvania	300,000,000
12 (tie)	(tie) HSBC North America	300,000,000
14	U.S. Environmental Protection Agency	285,000,000
15	Wal-Mart Stores, Inc/ California & Texas Facilities	243,328,000
16	Kimberly-Clark Corporation	223,000,000
17	City of Chicago, IL	214,635,000
18	Starbucks	211,291,000
19	University of Pennsylvania	192,727,000
20	DuPont Company	180,075,000

Marketers and Brokers

- ~20-25 active retail REC marketers
- More at the wholesale level
- ~14 active REC brokers

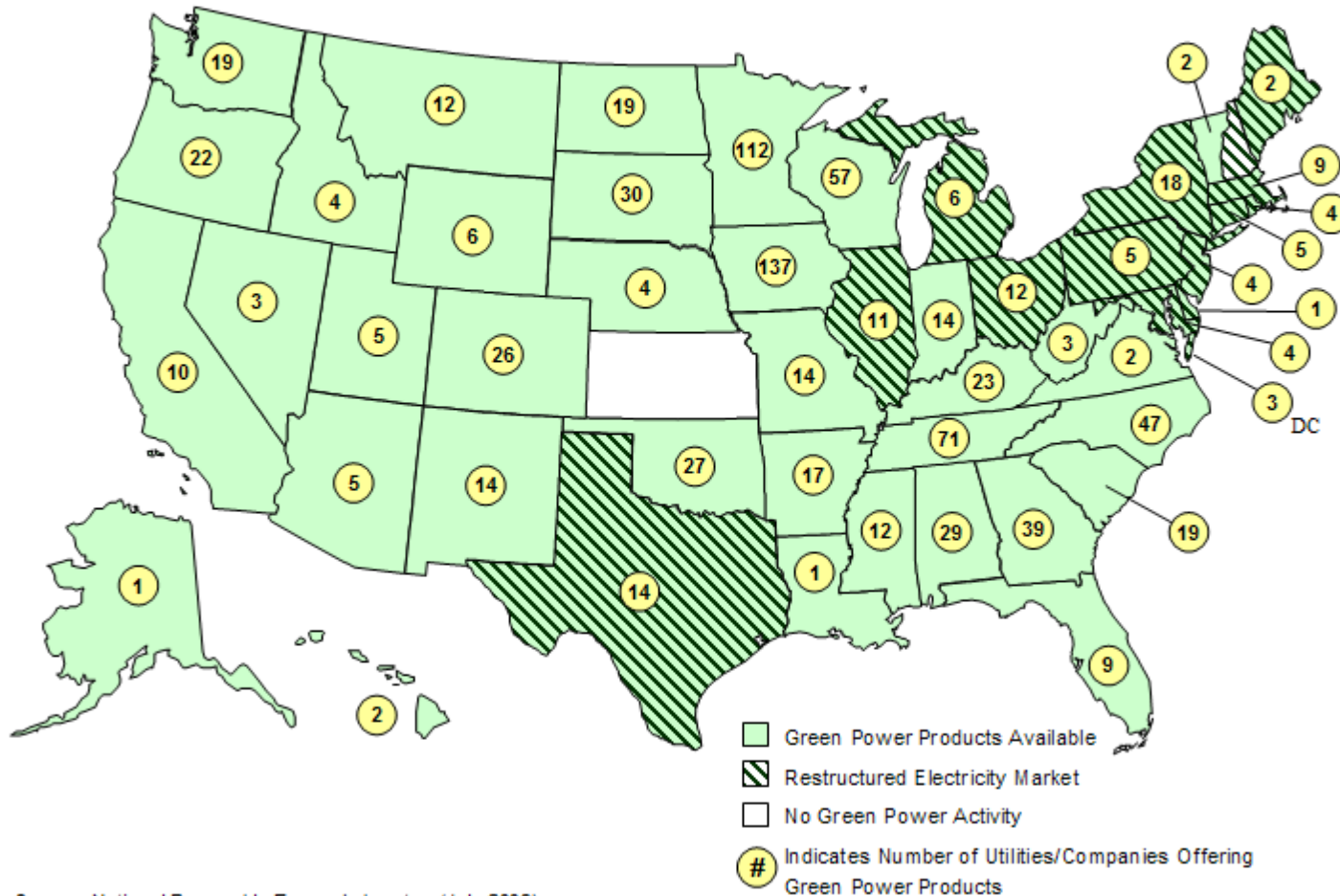
what

Sources of Green Power, 2008



Where

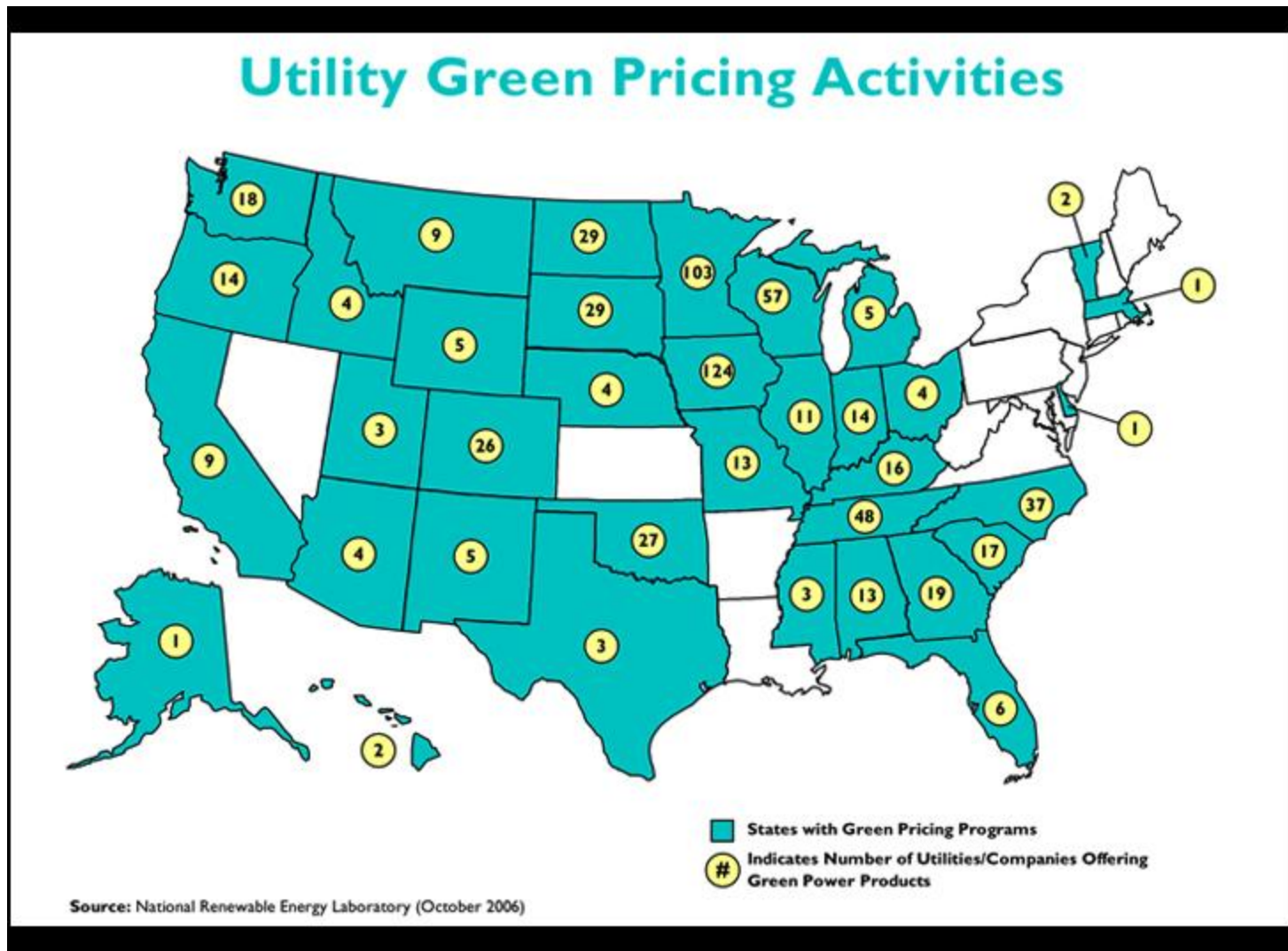
States with Green Power Programs



Source: National Renewable Energy Laboratory (July 2009)

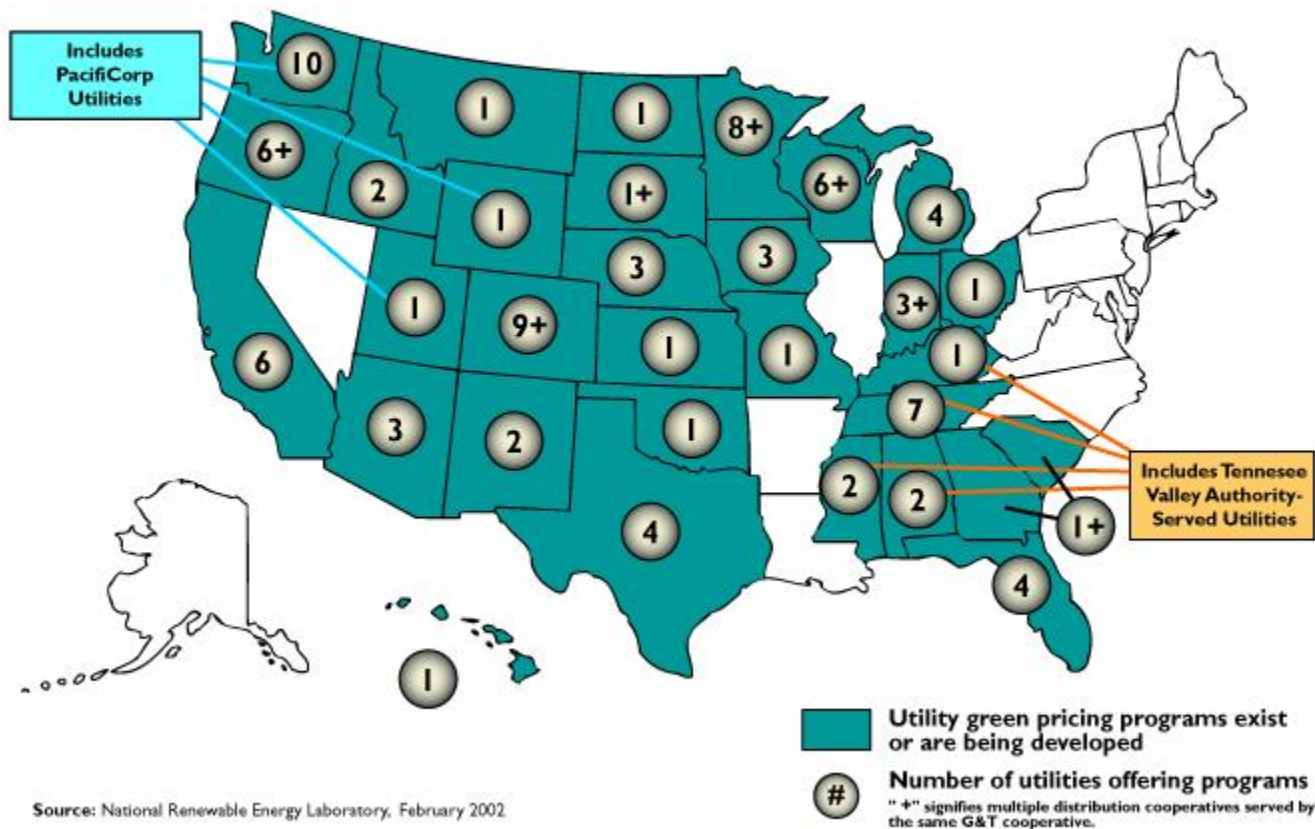
When

When I was younger (2006)...



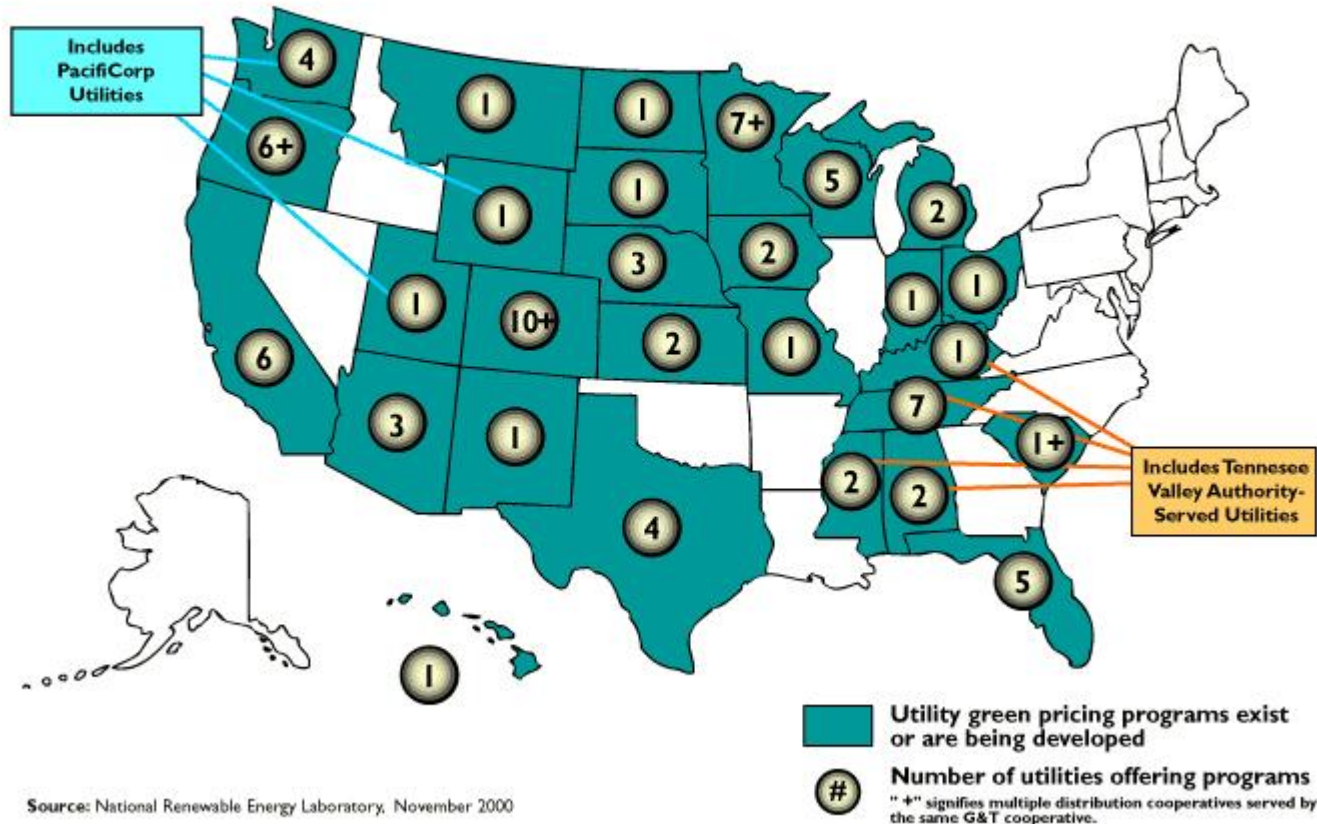
When I was a child...(02)

Utility Green Pricing Activities



When I was but a glimmer in poppa's eye ... (00)

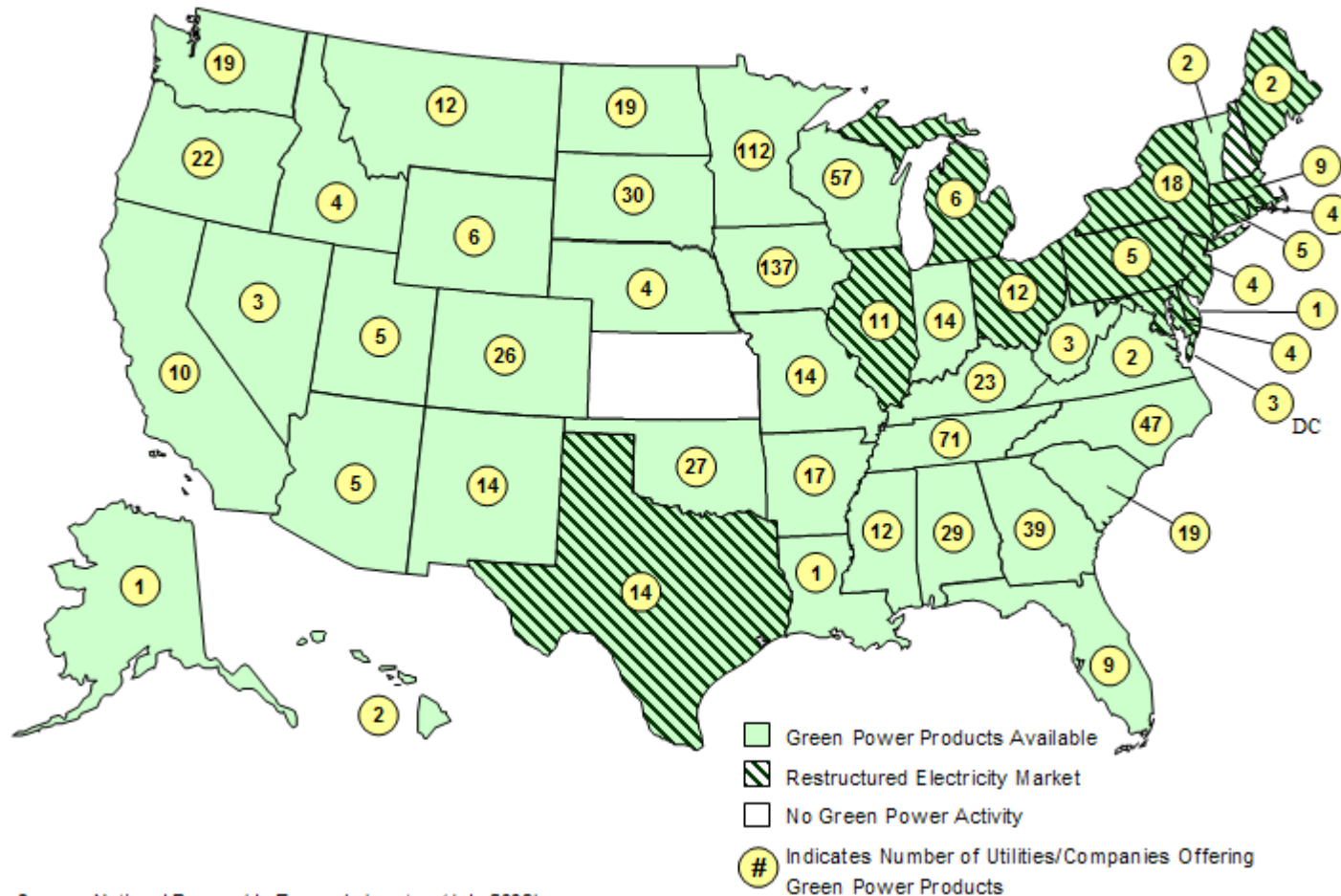
Utility Green Pricing Activities



Insert Snickers and Guffaws Here

And now
back to the
present...

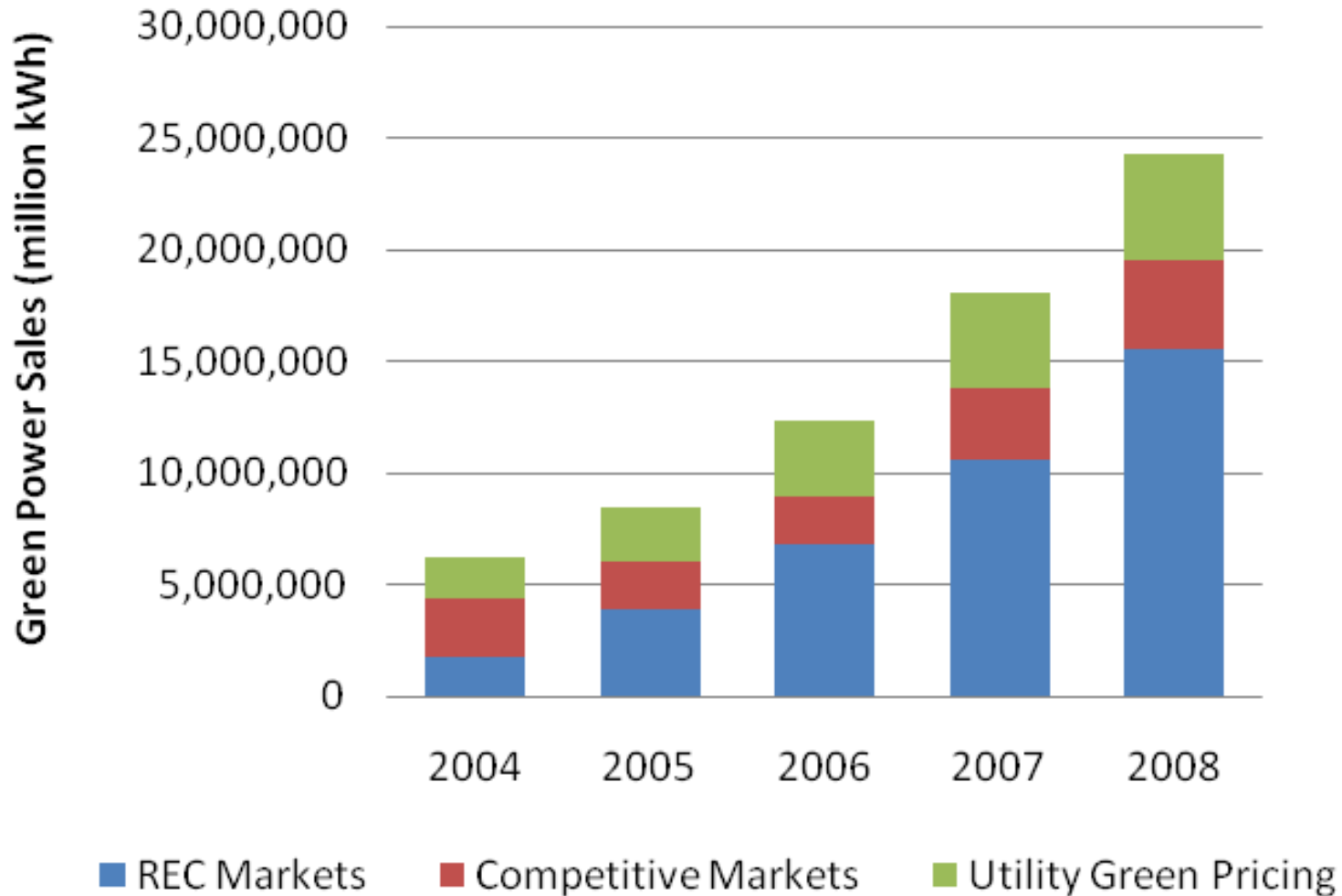
States with Green Power Programs



Source: National Renewable Energy Laboratory (July 2009)

How

U.S. Voluntary Green Power Sales



U.S. Voluntary Green Power Sales

(millions of kWh)

Market Sector	2004	2005	2006	2007	2008	% Change 2007/2008
Utility Green Pricing	1,800	2,500	3,400	4,300	4,800	12%
Competitive Markets	2,700	2,200	1,700	3,200	3,900	22%
REC Markets	1,700	3,900	6,800	10,600	15,600	47%
Retail Total	6,200	8,500	11,900	18,100	24,300	34%

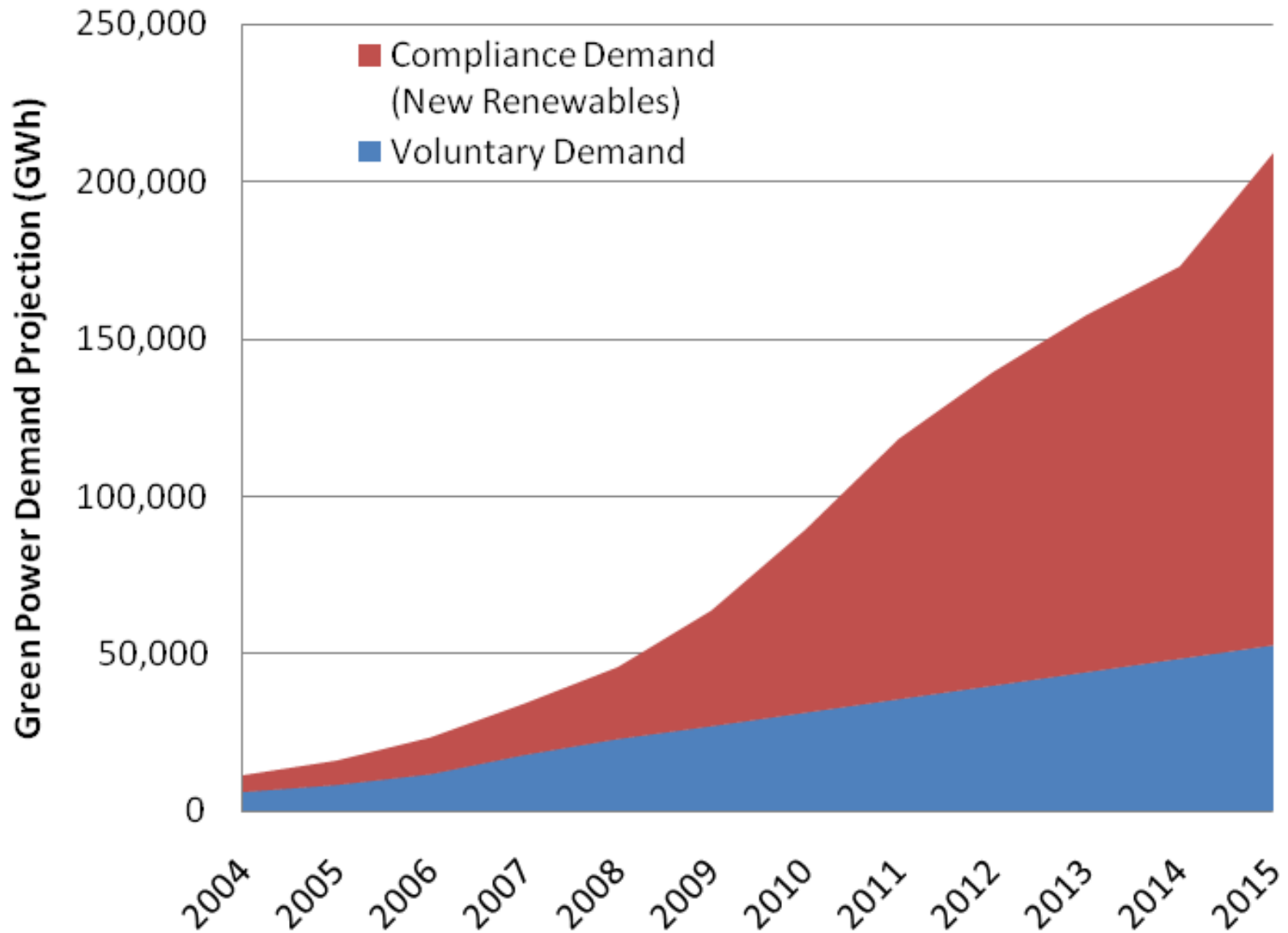
why

What is Driving Growth in Green Power Markets?

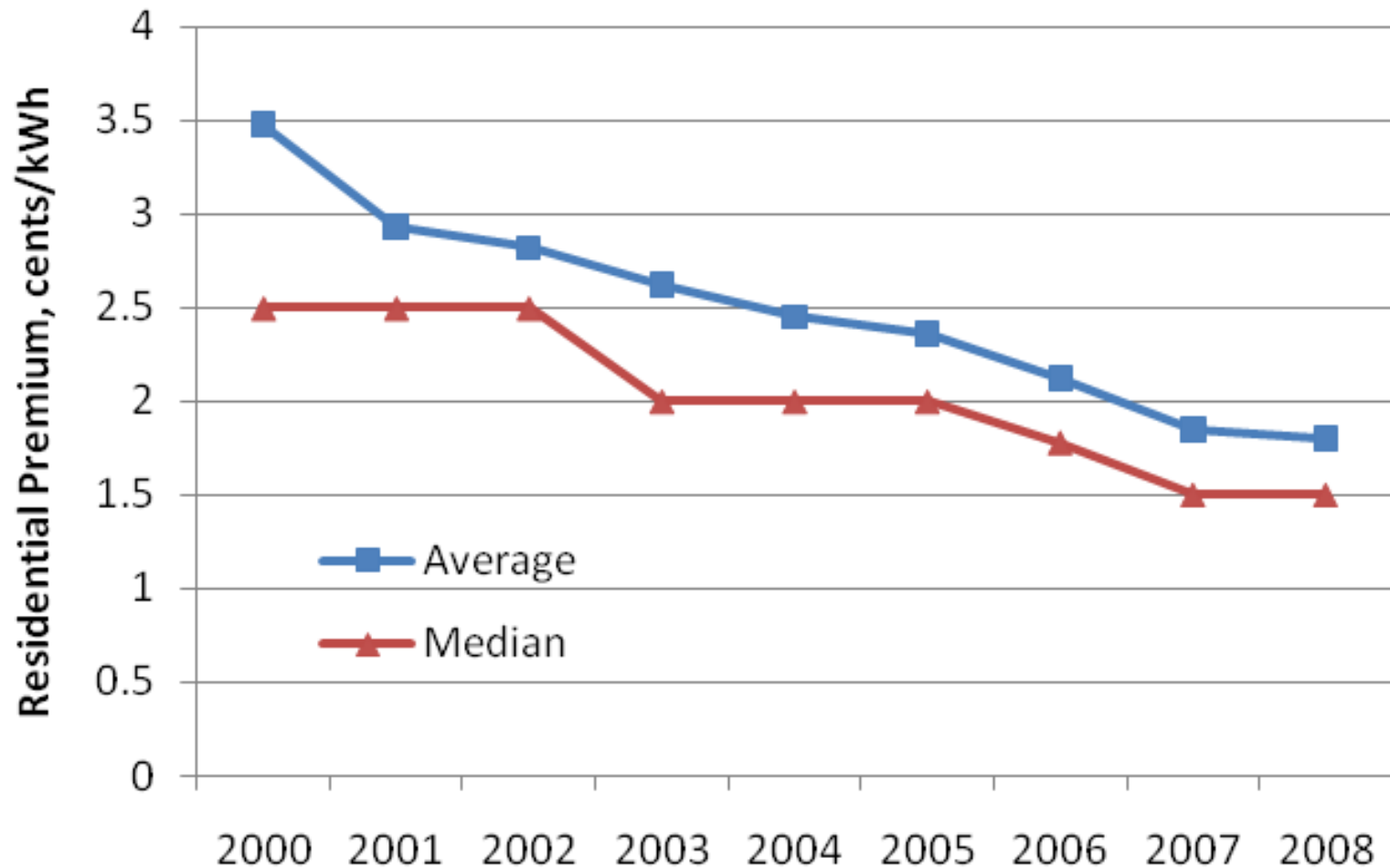
- Nonresidential interest
- Larger purchases by consumers
- Greater number of programs
- Price premiums dropping
- Consumer awareness increasing
- Utility/marketer partnerships

How Much

Relative Size of RPS and Voluntary Markets



Trend in Utility Green Power Premiums



What

Next

Some Key Issues Going Forward

- Treatment of voluntary market in cap-and-trade
 - Federal
 - Regional
- Will RPS policy affect demand for green power?
- Some regional supply constraints?
- Impact of financial crisis
- Is there a need for more market transparency?
- Centralized vs. distributed model
- Impact of carbon regulation on demand for green power and on voluntary markets
- Interaction with federal REC trading system/potential modifications to existing REC tracking systems to ease inter-regional trading?
- Interaction with carbon offset markets – compliance and voluntary

More Information

[Green Power Network](http://www.greenpower.energy.gov) web site

<http://www.greenpower.energy.gov>

Recent reports on voluntary market:

- *Green Pricing Program Marketing Expenditure Balance (2009)*
- *Green Power Marketing in the U.S.: A Status Report (12th Edition; 2009)*
- *Examination of the Regional Supply and Demand Balance for Renewable Electricity in the United States through 2015 (2009)*
- *Feed-in Tariff Policy: Design, Implementation, and RPS Policy Interactions (2009)*
- *Renewable Energy Price-Stability Benefits in Utility Green Power Programs (2008)*
- *Utility-Marketer Partnerships: An Effective Strategy for Marketing Green Power? (2006)*

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Utility Green Pricing

Green pricing is an optional service or tariff offered by utilities to customers in regulated electricity markets.

Green Power Marketing

Green power marketing refers to selling green power in competitive retail and wholesale electricity markets.

Renewable Energy Certificates

Renewable energy certificates represent the environmental attributes of electricity produced from renewable energy sources sold separately from commodity electricity.

State Policies

A number of states have enacted policies requiring fuel mix disclosure or net metering, or mandating that electricity suppliers provide green power options.

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Lead Story

Philly Airport Buys Wind Power

Philadelphia International Airport has entered into an agreement with PECO Energy to purchase 13 million kWh of wind energy each year for the next ...
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Can I Buy Green Power in My State?

To find out what green power options are available in your state, please click on the [map](#) to the left.

Eleventh National Renewable Energy Marketing Conference

Presentations from the Eleventh National Renewable Energy Marketing Conference held December 3-6, 2006 in San Francisco, CA.

Hot Off the Press

NEWS

- Gander Mountain Greens Electricity Use March 2007
- MGE to Expand Wind Power Program March 2007
- Connecticut College Ups Green Power Purchase March 2007
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FEATURES

TOP 10 Top Ten Utility Green Power Programs As of December 2005