



# State of the Voluntary Green Power Market

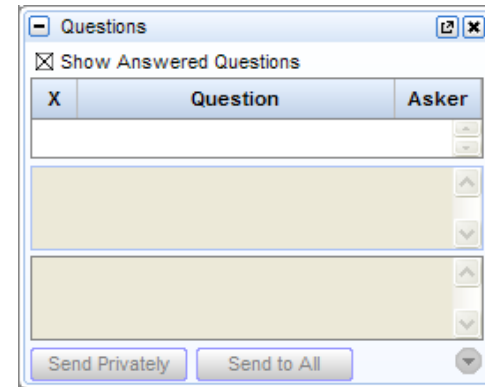
*James Critchfield, U.S. EPA*



Green Power Partnership Webinar  
January 27, 2015

# Webinar Logistics

- Attendees are muted to reduce background noise.
- Submit questions and comments in writing via the online control panel. ➡
- To minimize or maximize the control panel, click on the button at the top left of the tool bar.
- Post-webinar survey on this webinar and topics for future sessions.
- Presentations are posted to our website:  
[www.epa.gov/greenpower/events/27jan15\\_webinar.htm](http://www.epa.gov/greenpower/events/27jan15_webinar.htm)



# Speakers & Agenda

## Speakers

- James Critchfield, Director, U.S. EPA's Green Power Partnership
- Jenny Heeter, Renewable Energy Analyst, National Renewable Energy Laboratory

## Agenda

- Basics of Green Power
  - Resources, Markets, Why, and How
- Status and Trends in the U.S. Voluntary Green Power Market
- EPA's Green Power Partnership
  - Mission and Goals
  - Tools and Resources
  - Partner Statistics
- Question & Answer Session



# What is Green Power?



Biogas



Biomass



Wind



Solar



Low-Impact Small Hydro



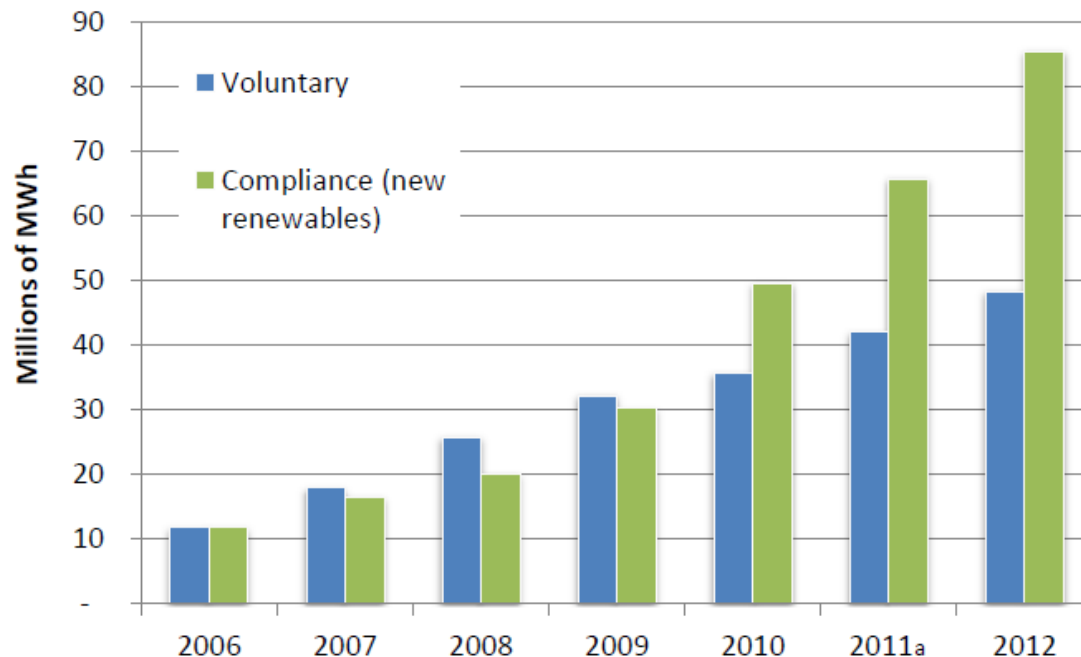
Geothermal



- Subset of renewable energy - representative of resources and technologies that offer the highest environmental benefit.
- Electricity generated from natural resources that replenish themselves over short periods of time, including the sun, wind, moving water, organic plant and waste material (biomass), and the Earth's heat (geothermal).
- Must be from "new" facilities placed into service within last 15 years.
- Must be from the "voluntary" market.

# Green Power Markets

- **Mandatory markets** exist because of policy decisions, such as state Renewable Portfolio Standards (RPS).
- **Voluntary markets** are driven by consumer preference.



Source: NREL 2013

# Green Power – Supply Options

## 1. Renewable Energy Certificates (RECs)

- The environmental “attributes” of electricity generated from renewable resources (1 REC = 1 MWh)
- Attributes are based on the generation technology type and age, geographic location, and time of generation
- Does not include the underlying electrons – “unbundled”



## 2. Utility Supplied Green Power Products

- Green power offered by utility suppliers that is generated from renewable sources
- Is a “bundled” product that includes both the RECs and underlying electrons



## 3. Power Purchase Agreement (PPA) for Renewables

- Usually a long-term contract to procure RECs and underlying electrons from a specific project

## 4. On-site Generation

- Install a renewable system on-site (e.g. solar panels, wind turbine)
- Produces both electricity and RECs from the on-site source
- Self-financed installation or third-party financed



# Green Power Partnership Overview

- Summary
  - The U.S. EPA's Green Power Partnership is a free, voluntary program that encourages organizations to use green power as a way to reduce the environmental impacts associated with conventional electricity use.
- Objectives
  - Reduce U.S. greenhouse gas emissions
  - Expand the voluntary green power market
  - Standardize green power procurement as part of best practice environmental management
  - Provide recognition platform for organizations using green power in the hope that others follow their lead
- Current Status
  - 1,300 Partners using 28 billion kWh of green power annually, equivalent to the annual carbon dioxide emissions from electricity use of more than three million average American homes.



# Partnership Requirements

- EPA supports Partners' procurement of green power by offering advice, technical support, tools and resources, and recognition.
- Partners agree to procure green power and provide an annual update.
- In return, EPA commits to:
  - Provide public recognition
  - Provide procurement and communications assistance, as requested
  - Provide a brief description of the Partner's green power use on EPA's website

	Partnership Benchmark	Leadership Benchmark
If your annual electricity use is:	You must, at minimum, use this much green power:	You must, at minimum, use this much green power:
Over 100,000,000 kWh	3% of your use	30% of your use
10,000,001-100,000,000 kWh	5% of your use	50% of your use
1,000,001-10,000,000 kWh	10% of your use	100% of your use
Under 1,000,000 kWh	20% of your use	N/A



# Program Resources for Procuring Green Power

## The Partnership Offers:

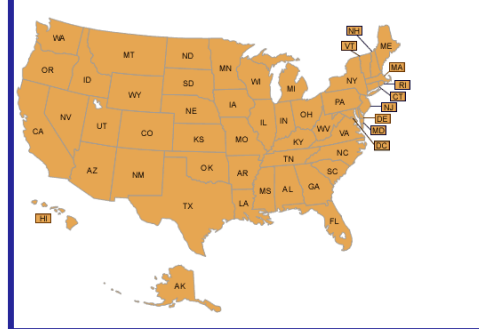
- Green Power Locator Tool
- Green Power Equivalency Calculator
- Guide to Purchasing Green Power
- Resource Library featuring example contracts and solicitations
- Webinars showcasing best practices
- Issue whitepapers

COMING SOON!



## Green Power Locator

Click on your state to find information about green power options available to you.



**EPA's Green Power Partnership**  
Renewable Energy Certificates

**What Are RECs?**  
REC's represent the environmental and other attributes associated with renewable electricity generation and are a component of all renewable electricity production. REC's are generated at the point of electricity generation. Recipients can utilize REC's based on the generation resource (e.g., wind, solar, geothermal), when the generation occurred, as well as the location of the renewable generation.

REC's provide key information about the generation of renewable electricity delivered to the utility grid. Since REC's represent only the environmental or other non-physical attributes of renewable electricity generation, they are not subject to double counting. The information contained by a REC allows buyers to make specific environmental claims about the electricity generated. REC's usually include the following critical attributes and information:

- The type of renewable resource producing the electricity
- The vintage of the REC, i.e., the date when it was created
- The vintage of the renewable generation, or the date when the generation took place
- The renewable generation's location
- The REC's eligibility for certification or verification by a third party
- The renewable generation's associated greenhouse gas emissions per unit of electricity

REC's are recognized as the "currency" of renewable electricity and green power markets. They can be bought and sold between multiple parties, and they allow claim owners to claim the renewable electricity was produced or used in the electricity demand that they own.

**A REC represents and conveys the environmental and other non-physical attributes of renewable electricity generation.**

**How Do RECs Work?**  
The traditional flow of electricity is a helpful in understanding how electricity is delivered across the utility grid, as well as how renewable electricity generation attributes are tracked and distributed throughout the system. Because the electricity produced from the different technologies and fuel sources are physically the same, it is important for individuals or organizations to track the type of generation technology to ensure they purchase the electricity for the specific their particular needs.

Renewably, federal, state and local governments are also using REC's as a flexible means to meet environmental goals for renewable energy generation. For example, many states allow utilities to use REC's to meet mandated renewable energy goals. Some renewable portfolio standards require that a percentage of a utility's electricity generation comes from renewable resources. Increasingly, individuals and organizations are also buying REC's to verify a number of other environmental and non-environmental goals:

- Avoid the carbon double counting associated with conventional electricity use
- Reduce some types of air pollution
- Hedge against future electricity price increases for energy and some utility products
- Serve as a brand differentiator
- Capture customer, investor, or stakeholder loyalty and confidence
- Create positive publicity and enhance public image
- The generation unit's location

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## Guide to Purchasing Green Power

Renewable Electricity, Renewable Energy Certificates, and On-Site Renewable Generation

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# EPA's Green Power Partnership: Helping You Leverage Your Green Power Use

- **Credible Benchmarks & GHG Quantification**

- Metrics for "How much green power is enough?"
- Definition of eligible renewables & products
- GHG reduction guidance and calculations

- **Planning & Implementation Resources**

- Green power locator
- Purchasing strategy guidance
- Marketing and communications support

- **Recognition**

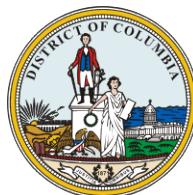
- Top Partner Lists
- Use of the Partner mark
- Green Power Leadership Awards
- Promotional opportunities

- **Best Practices & Innovation**

- Collaborative solar procurement
- New contract mechanisms



# EPA's 1,300 Green Power Partners



Metropolitan Pier and Exposition Authority  
Managing McCormick Place Complex and Navy Pier



# EPA's Top Partner Lists

## National Top 100

Released on January 26, 2015



The National Top 100 list represents the largest green power users within the Green Power Partnership. The combined green power usage of these Top 100 Partners amount to more than 23 billion kilowatt-hours annually, which represents nearly 83 percent of the green power commitments made by all EPA Green Power Partners.

### National Top 100

Top 30 Retail

Top 10 Federal Government

Top 30 College & University

Top 30 On-site Generation

Long-term Contracts

100% Green Power Users

Fortune 500® Partners

Top 30 Local Government

Top 30 Tech & Telecom

Top 30 K-12 Schools

### Dates to Remember

#### Top Partner List Data Deadlines

January 6, 2015

April 6, 2015

July 6, 2015

October 5, 2015

#### Top Partner List Update Schedule

January 26, 2015

April 27, 2015

July 27, 2015

October 26, 2015

Find out more about EPA's [Top Partner Lists](#)



Annual Green Power Usage (kWh)	GP % of Total Electricity Use*	Organization Type	Providers (listed in descending order by kWh supplied to Partner)	Green Power Resources
<b>1. Intel Corporation</b>				
3,102,050,000	100%	Technology & Telecom	Sterling Planet <sup>†</sup> , PNM, On-site Generation	Biogas, Biomass, Small-hydro, Solar, Wind
<b>2. Microsoft Corporation</b>				
2,488,172,313	100%	Technology & Telecom	Sterling Planet <sup>†</sup> , On-site Generation	Biogas, Biomass, Small-hydro, Solar, Wind
<b>3. Kohl's Department Stores</b>				
1,531,197,690	113%	Retail	Nexant <sup>†</sup> , Sterling Planet <sup>†</sup> , Renewable Choice Energy <sup>†</sup> , 3Degrees <sup>†</sup> , On-site Generation	Solar
<b>4. Google Inc.</b>				
737,364,727	32%	Technology & Telecom	NextEra Energy Resources <sup>†</sup> , On-site Generation, Grand River Dam Authority <sup>†</sup>	Biogas, Solar, Wind
<b>5. Wal-Mart Stores, Inc.</b>				
650,716,703	3%	Retail	Gexa Energy, On-site Generation, Bloom Energy <sup>†</sup> , Duke Energy, WM Renewable Energy, Green Power EMC <sup>†</sup>	Biogas, Solar, Wind

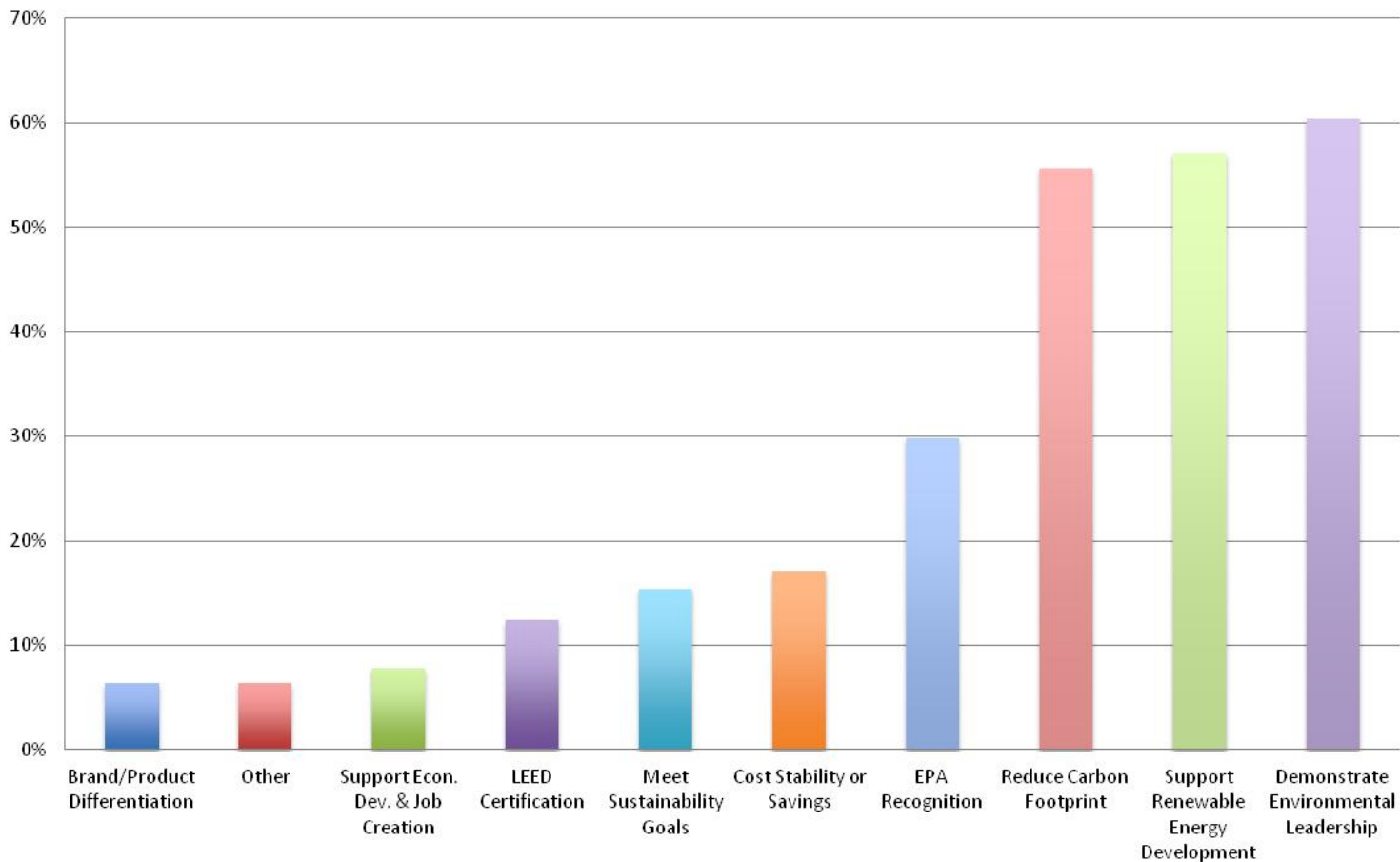
# 2014 Green Power Leadership Award Winners

- **Partner of the Year**
  - Apple Inc.
  - BD
  - Google Inc.
  - Oklahoma State University
- **Green Power Purchasing**
  - City of Beaverton, Oregon
  - City of Houston, Texas
  - Herman Miller, Inc.
  - June Key Delta Community Center
  - Philadelphia Insurance Companies
  - REI
  - Steelcase Inc.
  - Town of Peterborough, New Hampshire
- **On-site Generation**
  - City of Las Vegas, Nevada
  - City of Philadelphia, Pennsylvania
- **Sustained Excellence in Green Power**
  - Intel Corporation
  - Kohl's Department Stores
- **Green Power Community**
  - Medford, Oregon Community
  - Oak Ridge, Tennessee Community
- **Green Power Supplier of the Year**
  - 3Degrees
  - Portland General Electric
  - Renewable Energy Choice
  - Washington Gas Energy Services

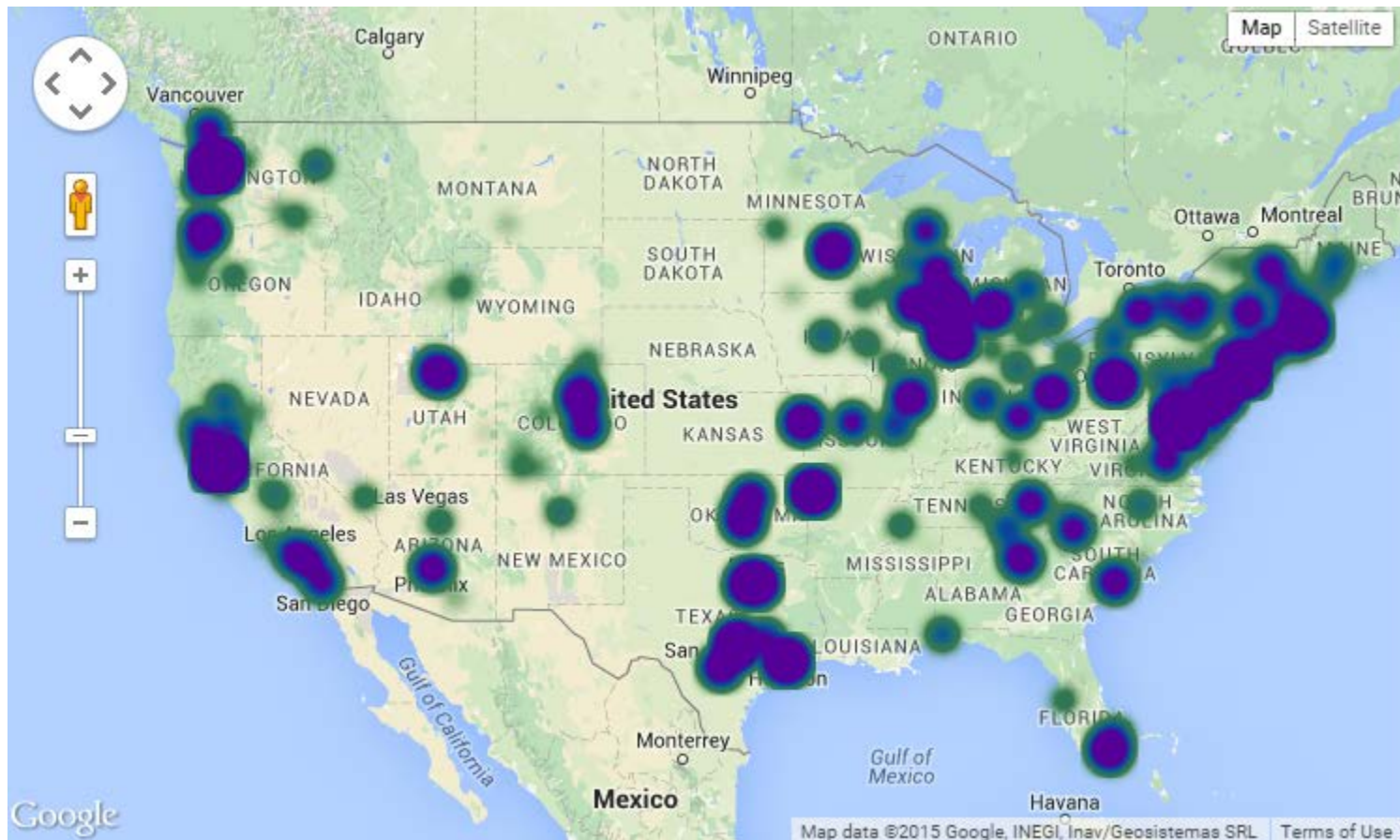


# GPP Summary Statistics: Why Partners Choose to Use Green Power

By The Numbers: Why Our Partners Use Green Power



# GPP Green Power Use Map



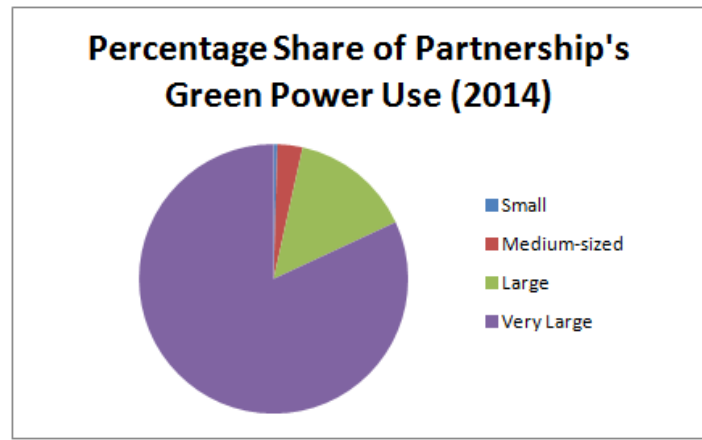
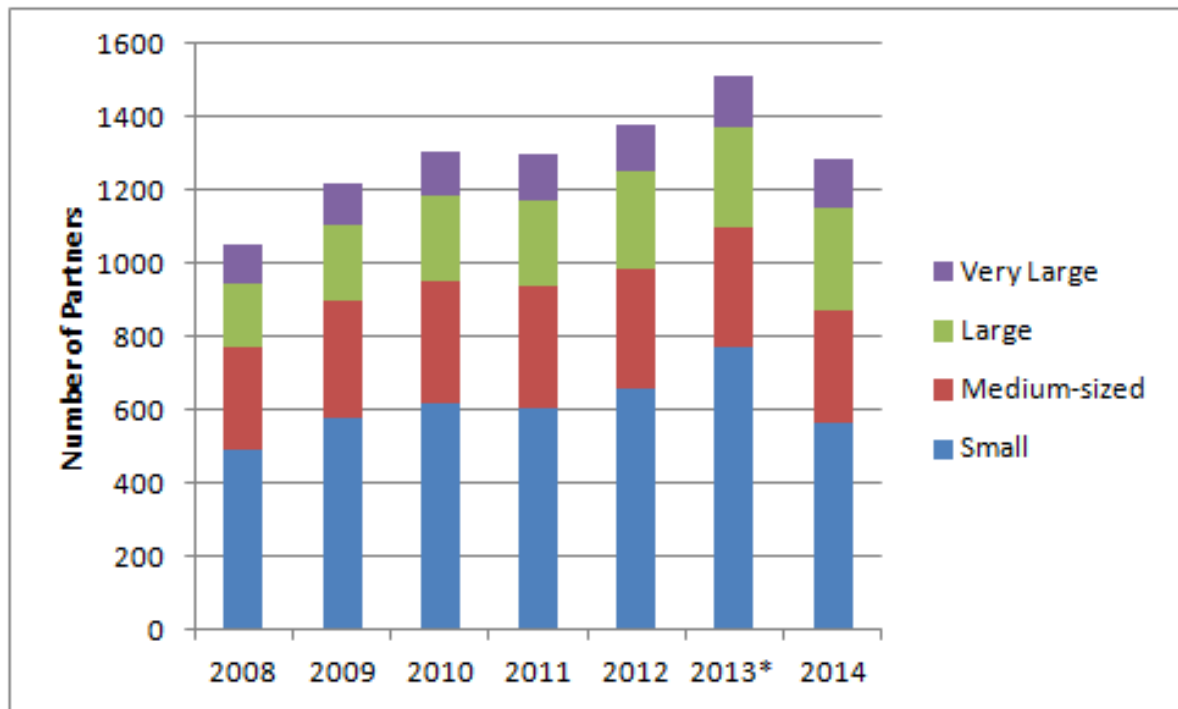
# GPP Summary Statistics 2014: Green Power Use by State and Industry

State	Green Power (kWh)	# of Partners
California	6,399,293,636	171
District of Columbia	3,510,327,622	73
Washington	2,415,669,732	42
Texas	2,295,772,119	69
Wisconsin	2,282,128,332	49
Oregon	2,201,427,837	60
New York	1,909,518,149	153
Pennsylvania	1,827,815,148	71
New Jersey	1,626,723,062	31
Illinois	1,622,156,376	46
Massachusetts	1,419,113,759	55
Maryland	990,765,819	85

Industry Sector	Green Power (kWh)	# of Partners
Tech & Telecom	7,712,356,356	73
Retail	3,329,864,273	76
Local Government	2,890,915,510	131
Higher Education	2,666,656,648	131
Federal Government	1,791,451,688	14
Banking & Financial Services	1,574,845,468	23
Consumer Products	955,070,799	58
Industrial Goods & Services	842,390,076	63
Health Care	653,417,026	32
Restaurants & Cafes	618,641,992	78
State Government	579,002,927	7
Real Estate	453,516,308	34

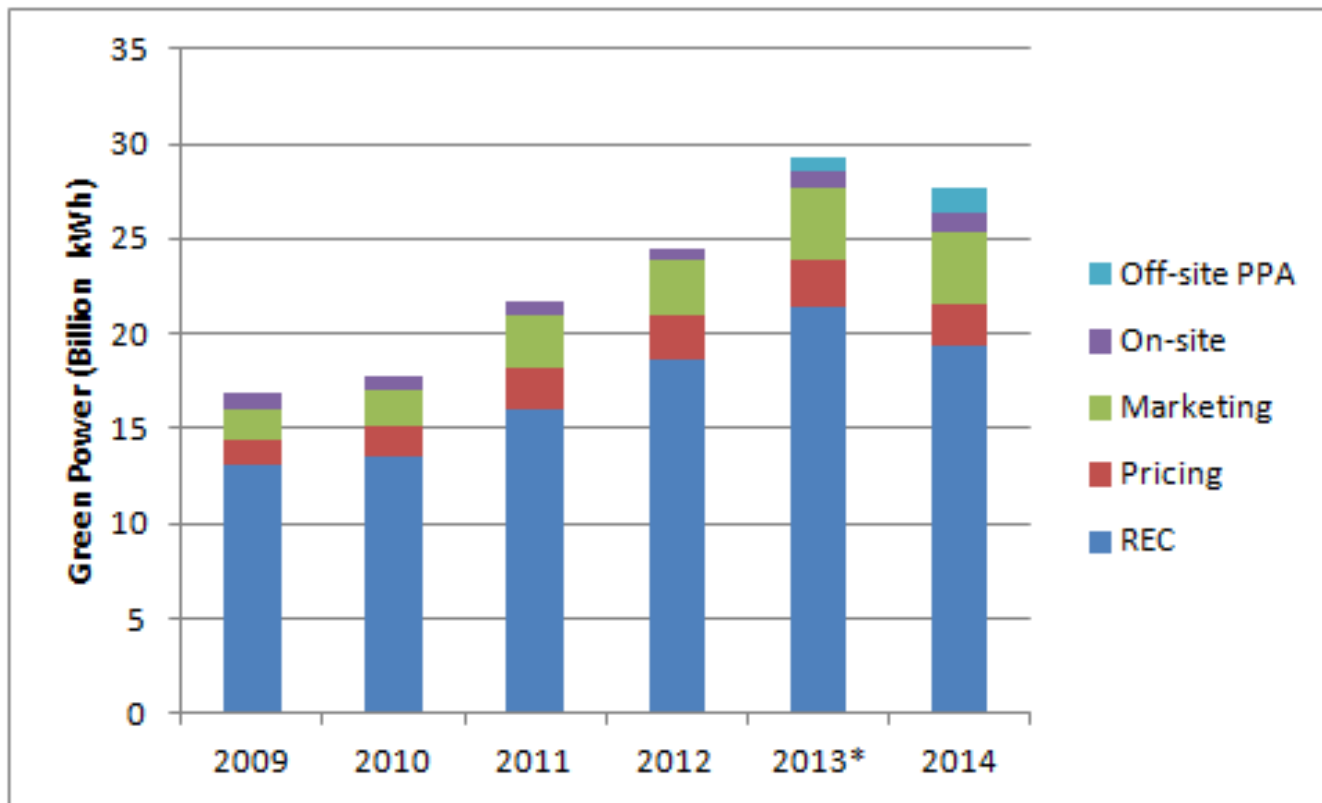


# GPP Summary Statistics 2014: Partners by Size

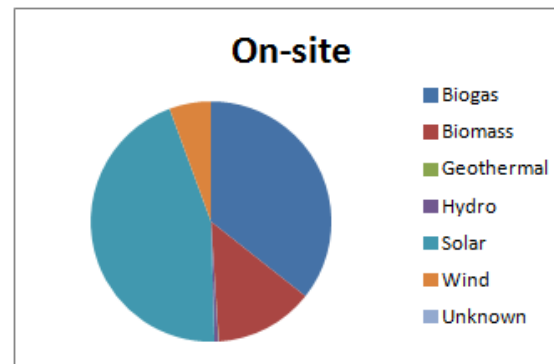
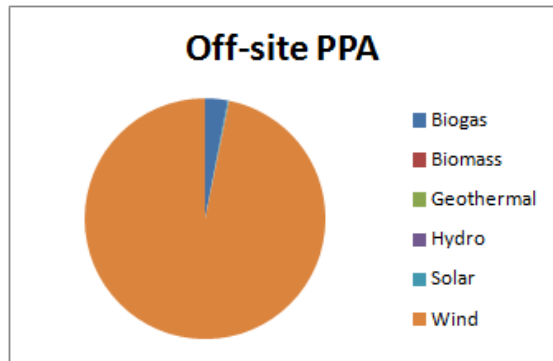
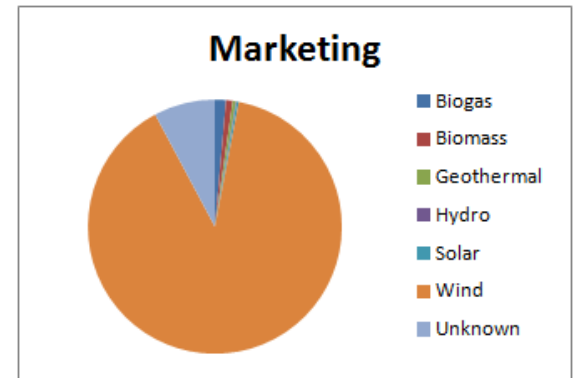
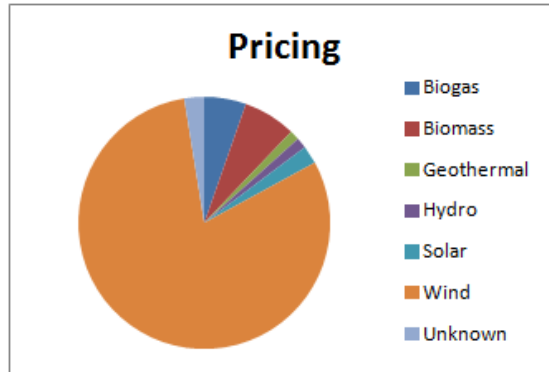
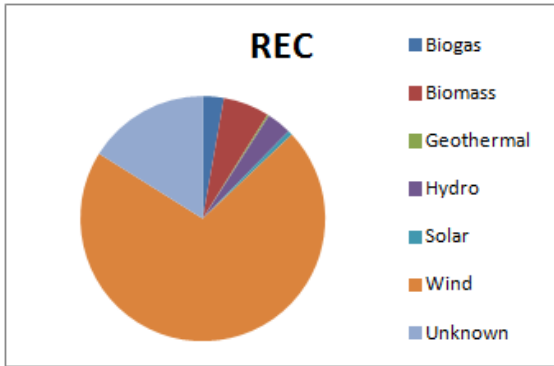


Partner Size Determined by Electricity Load:  
 Very Large (> 100 million kWh)  
 Large (10 – 100 million kWh)  
 Medium-sized (1 – 10 million kWh)  
 Small (< 1 million kWh)

# GPP Summary Statistics 2014: Annual Green Power Use by Product Type



# GPP Summary Statistics 2014: Resource Mix by Product Type



# GPP Summary Statistics 2014: Average Use

Partner Size	# Partners	Total GP (kWh/year)	Average % Green Power Use	Average kWh Use
Very Large (>100MM kWh)	134	22,697,568,914	37%	169,384,843
Large (10-100MM kWh)	278	2,711,683,221	51%	14,568,723
Medium (1-10MM kWh)	308	838,667,748	76%	2,722,947
Small (<1 MM kWh)	565	122,338,083	116%	216,528

Partner Size	% RECs	% Green Pricing	% Green Marketing	% Onsite	% Off-site PPA
Very Large (>100MM kWh)	69%	7%	14%	3%	6%
Large (10-100MM kWh)	71%	10%	14%	4%	0%
Medium (1-10MM kWh)	67%	10%	15%	8%	0%
Small (<1 MM kWh)	69%	12%	14%	5%	1%

# GPP Updates

- GPP Webinar series: [www.epa.gov/greenpower/events/index.htm](http://www.epa.gov/greenpower/events/index.htm)
- February 4 Webinar: Solar Power for K-12 Schools
- January 26: Quarterly Top Partner Rankings released: [www.epa.gov/greenpower/toplists/index.htm](http://www.epa.gov/greenpower/toplists/index.htm)
- Sign up for our monthly program updates and other GPP news on our website: [www.epa.gov/greenpower/contactus.htm](http://www.epa.gov/greenpower/contactus.htm)
- [GPP LinkedIn group](#): 500+ members



# More Information

- Basic Information

- Overview of the Green Power Partnership: [www.epa.gov/greenpower](http://www.epa.gov/greenpower)
- Full details of program requirements:  
[www.epa.gov/greenpower/documents/gpp\\_partnership\\_reqs.pdf](http://www.epa.gov/greenpower/documents/gpp_partnership_reqs.pdf)
- Green Power Locator:  
[www.epa.gov/greenpower/pubs/glocator.htm](http://www.epa.gov/greenpower/pubs/glocator.htm)

- More Questions?

- James Critchfield, EPA, 202.343.9442, [critchfield.james@epa.gov](mailto:critchfield.james@epa.gov)
- Anthony Amato, ERG, 781.674.7225, [anthony.amato@erg.com](mailto:anthony.amato@erg.com)

