



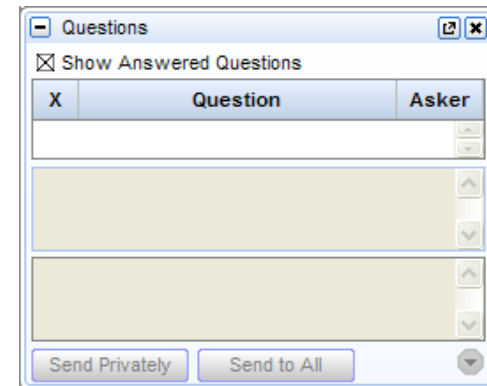
# State of the Voluntary Green Power Market



Green Power Partnership Webinar  
January 27, 2016

# 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:  
[http://www3.epa.gov/greenpower/events/27jan16\\_webinar.htm](http://www3.epa.gov/greenpower/events/27jan16_webinar.htm)



# Speakers and Agenda

- Speakers

- Christopher Kent, Marketing, U.S. EPA's Green Power Partnership
- Eric O'Shaughnessy, Renewable Energy Analyst, National Renewable Energy Laboratory

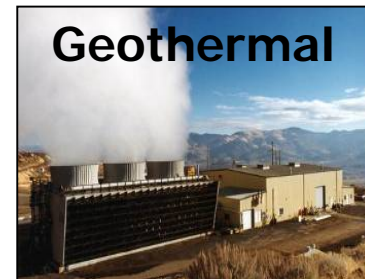
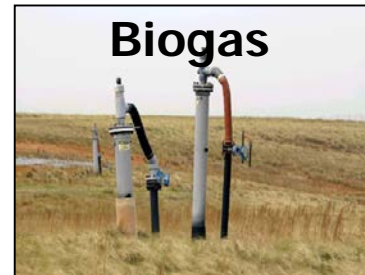
- Agenda

- Basics of Green Power
- Introduction to Green Power Partnership
  - Mission and Goals
  - Tools and Resources
  - Program Data Summary
- Status and Trends in U.S. voluntary green power markets
- Questions and Answer session



# What is Green Power?

- 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.



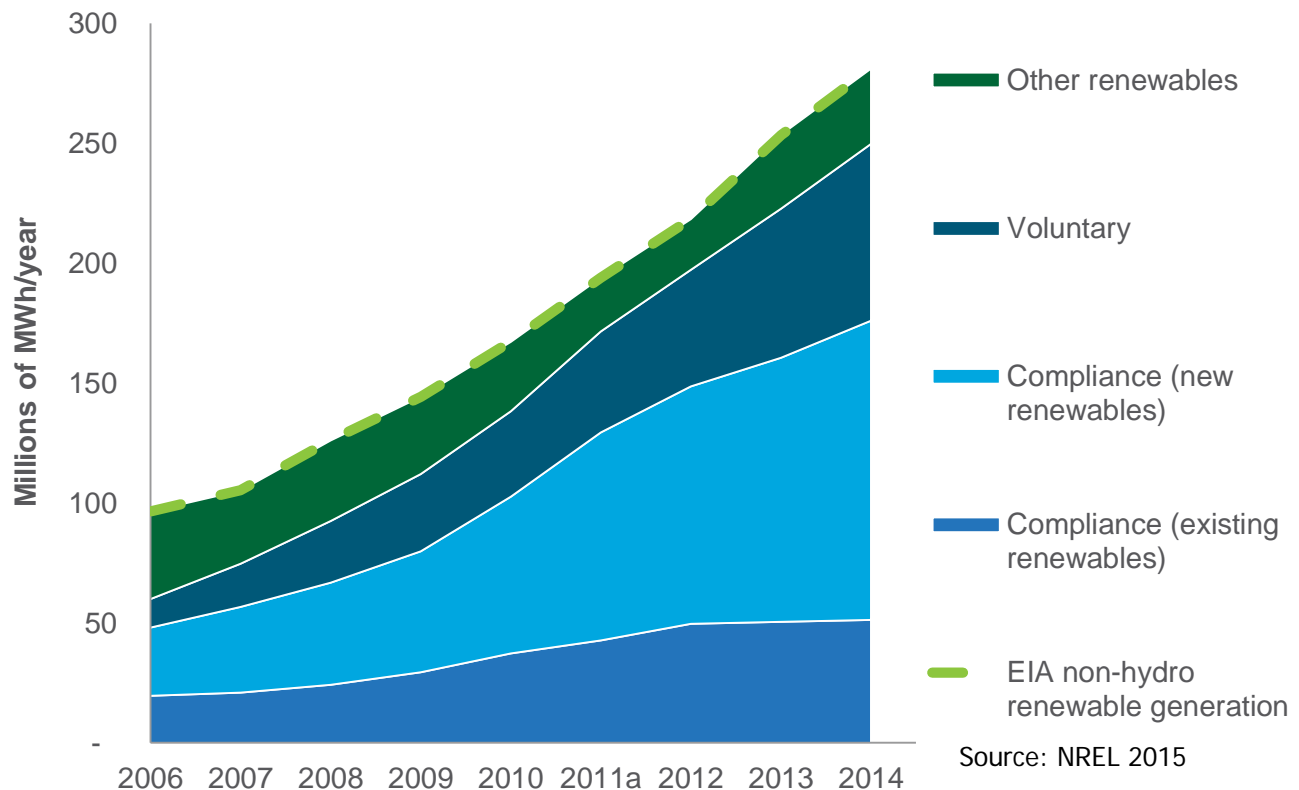
# Green Power – Product Options

- 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”
- Green Power Electricity 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
- Power Purchase Agreement (PPA) for Renewables
  - Usually a long-term contract to procure RECs and underlying electrons from a specific project
- 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 via a third-party PPA



# Green Power Markets

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



# 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
- 1,300 Partners using >30 billion kWh annually, equivalent to the annual electricity use of more than 2.8 million American homes



# Value Proposition to Companies

- Environmental
  - Addresses indirect GHG emissions (Scope 2 emissions)
- Potential Electricity Cost Savings and/or Stability
  - Reduce exposure to fossil fuel price volatility
- Economic Development
  - Job creation
  - Local/regional economic growth
- Demonstrate Leadership
  - Enhance image
  - Differentiate products/services
  - Improve employee morale/attract and retain talent



*As a health care provider, we have an obligation to operate in a manner that supports health in our communities and reduces our environmental footprint. By renewing and expanding this wind power purchase agreement, Kaiser Permanente is increasing its investments in cleaner energy. It's the right thing to do for our communities, and it makes good business sense.*

*- Ramé Hemstreet, Kaiser Permanente*





# 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

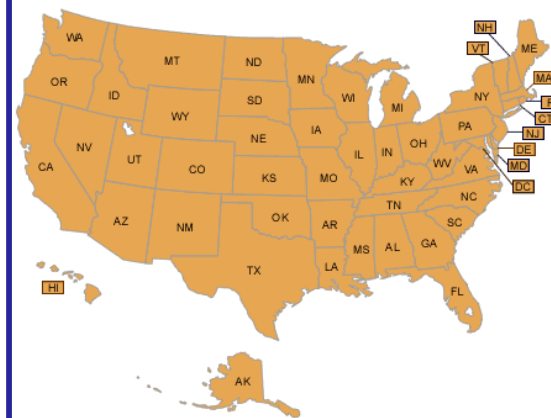
# Program Resources for Procuring Green Power

## The Partnership Offers:

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

## 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?**  
RECs represent the environmental and other non-power attributes of renewable electricity generation and are a component of all renewable electricity products. RECs are measured in megawatt-hours (MWh) and are created at the point of electricity generation. Buyers can select RECs based on the generation source (e.g., wind, solar, geothermal), when the generation occurred, as well as the location of the renewable generation.

RECs provide key information about the generation of renewable electricity delivered to the utility grid. Since RECs represent only the environmental or non-power attributes of renewable electricity generation, they are not subject to electricity delivery constraints. The information conveyed by a REC allows buyers to make specific environmental claims about how their electricity is produced. RECs usually include the following primary 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 generator was built
- The renewable generator's location
- The REC's eligibility for certification or renewable portfolio compliance
- The renewable generator's associated greenhouse gas emissions (if any)

RECs are increasingly seen as the "currency" of renewable electricity and green power markets. They can be bought and sold between multiple parties, and they allow their owners to claim that renewable electricity was produced to meet the electricity demand they create.

**A REC represents and conveys the environmental and other non-power attributes of one megawatt-hour of renewable electricity generation.**

**How Do RECs Work?**  
To understand how RECs work, it is helpful to understand how electricity is delivered across the utility grid, as well as what makes renewable electricity generation attractive to individuals and organizations alike.

Within the United States, electricity demand is met by various types of generation technologies and fuel resources. These electricity generation fuel resources meet the utility grid for delivery to consumers through a complex network of wires and distribution infrastructure. Because the distances produced from the different technologies and fuel resources are physically the same, it is impossible for individuals or organizations to know what type of generation technology or resource produced the electricity that reaches their particular facility.

- Avoid the carbon dioxide (CO<sub>2</sub>) emissions associated with conventional electricity use
- Reduce some types of air pollution
- Helping offset future electricity price increases for onsite and some utility products
- Serve as a brand differentiator
- Generate customer, investor, or stakeholder loyalty and employee pride
- Create positive publicity and enhance public image
- Demonstrate civic leadership

**Guide to Purchasing Green Power**

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

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy | GREEN POWER PARTNERSHIP

WORLD RESOURCES INSTITUTE | CRS

NOVEMBER 2007

# 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



# Examples of Outreach

## Videos



Motorola Wins EPA Award and Launches New Eco-Friend.  
by MotorolaMediaCenter

In 2009, the U.S. EPA honored Motorola with a Green Power Leadership Award

YouTube

2:31 / 4:55 360p

## Banners



The U.S. Environmental Protection Agency congratulates Datapipe, Inc. for purchasing 100% wind power and helping to reduce greenhouse gas emissions from the power sector.

**GREEN POWER—ENERGIZING BUSINESS**

**DATAPIPE**  
Managed IT Services

## Intel Tops EPA's List of Green Power Partners



## Websites

**Green NAU**

Home About Contact Events

Student Worker Position at Institute for Sustainable Energy Solutions

**EPA RECOGNIZES NORTHERN ARIZONA UNIVERSITY FOR LEADING GREEN POWER USE**

### Northern Arizona University reduces carbon footprint with green power use

Northern Arizona University has officially been purchasing Green Power for one year and has received recognition from the U.S. Environmental Protection Agency for joining their Green Power Partnership. Northern Arizona University is using more than 8 million kilowatt-hours (kWh) of green power this year, which is enough green power to meet 13 percent of the organization's electricity use. Northern Arizona University is buying a combination of renewable energy certificates (RECs) and utility green power products from Arizona Public Service and Renewable Choice Energy. In addition, Northern Arizona University is generating green power from on-site renewable energy systems, including their 163 mWh solar field. This demonstrates a proactive choice to switch away from traditional sources of electricity generation and support cleaner renewable energy alternatives.

"This is a huge honor and we are proud to be recognized by the U.S. Environmental Protection Agency," said John Morris, Assistant Vice President of Facility Services, "Using green power helps our organization become more sustainable and is an essential choice in reducing fossil fuel pollution and mitigating climate risk."

**THE ONLY**  
professional haircare company on the EPA's Top 20 On-Site Generation list.

AND THAT'S NOT ALL.  
JOICO...

MANUFACTURES WITH ON-SITE WIND POWER.  
The wind turbine at Joico's manufacturing plant generates enough clean, renewable energy to meet more than 50% of our energy needs.

VOLUNTARILY OFFSETS CARBON DIOXIDE (CO2) EMISSIONS.  
We will continue to invest in carbon offset projects to reduce our footprint.

WILL UTILIZE A HYBRID BIOPLASTIC PACKAGING.  
The new hair cream pump is made from 100% post-consumer recycled plastic.

JOICO  
THE ART OF BEING GREEN

Learn more about what Joico is doing to help you beautifully responsibly.

## Print Advertisements

Green is in our Nature.

### TD Bank is committed to environmental responsibility.

TD Bank is the largest US-based bank to go carbon neutral and the first company to have a North American, closed-loop recycling system which diverts 1,500 metric tons of paper from landfills to the production of recycled paper. In addition, we purchase renewable energy credits for 100 percent of the electricity used by our operations from Maine to Florida.

TD Bank is committed to building environmentally-friendly buildings, and this year, we are building the first "net-zero energy" bank location in the US in Ft. Lauderdale, Florida. To learn more about these and our other green initiatives, visit [www.tdbank.com/green](http://www.tdbank.com/green).

America's Most Convenient Bank®

# EPA's 1,300+ Green Power Partners



# Map of EPA's Green Power Partners



# EPA's Top Partner Lists

## National Top 100

Released on January 25, 2016



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 26 billion kilowatt-hours annually, which represents more than 84 percent of the green power commitments made by all EPA Green Power Partners.

- National Top 100
- 100% Green Power Users
- Top 30 Retail
- Fortune 500® Partners
- Top 10 Federal Government
- Top 30 Local Government
- Top 30 College & University
- Top 30 Tech & Telecom
- Top 30 On-site Generation
- Top 30 K-12 Schools
- Long-term Contracts
- Green Power Communities

### Dates to Remember

#### Top Partner List Data Deadlines

- January 6, 2016
- April 5, 2016
- July 6, 2016
- October 4, 2016

#### Partner List Update Schedule

- January 25, 2016
- April 25, 2016
- July 25, 2016
- October 24, 2016



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>				
3,107,050,000	100%	Technology & Telecom	3Degrees <sup>1</sup> , Renewable Choice Energy <sup>2</sup> , On-site Generation, PNM	Solar, Wind
<b>2. Microsoft Corporation</b>				
2,699,210,000	100%	Technology & Telecom	Sterling Planet <sup>3</sup> , Renewable Choice Energy <sup>2</sup> , Enbridge Energy <sup>4</sup> , On-site Generation	Biogas, Biomass, Solar, Wind
<b>3. Kohl's Department Stores</b>				
1,429,749,630	104%	Retail	3Degrees <sup>1</sup> , Renewable Choice Energy <sup>2</sup> , On-site Generation	Solar
<b>4. Cisco Systems, Inc.</b>				
1,085,086,742	97%	Technology & Telecom	3Degrees <sup>1</sup> , Sterling Planet <sup>3</sup> , Austin Energy <sup>5</sup> , On-site Generation	Solar, Wind
<b>5. Apple Inc.</b>				
1,021,607,000	100%	Technology & Telecom	3 Phases Renewables <sup>6</sup> , On-site Generation, Constellation, Public Service Company of Colorado <sup>7</sup> , Noble Americas Energy Solutions <sup>8</sup> , Salt River Project <sup>9</sup> , NC GreenPower <sup>10</sup> , Iberdrola Renewables <sup>11</sup> , Austin Energy <sup>5</sup> , NV Energy <sup>12</sup> , 3Degrees <sup>1</sup> , Sacramento Municipal Utility District <sup>13</sup> , Sterling Planet <sup>3</sup> , Silicon Valley Power <sup>14</sup> , Xcel Energy <sup>15</sup> , GDF Suez Energy Resources NA <sup>16</sup> , Homefield Energy <sup>17</sup> , Renewable Choice Energy <sup>2</sup> , Community Energy <sup>18</sup> , Sonoco Products Company <sup>19</sup> , Dominion Virginia Power <sup>20</sup> , City of Palo Alto Utilities <sup>21</sup> , Louisville Gas & Electric Company <sup>22</sup> , CPS Energy <sup>23</sup> , Tampa Electric <sup>24</sup> , PNM <sup>25</sup> , City of Naperville <sup>26</sup> , Avista Utilities <sup>27</sup> , Huntsville Utilities <sup>28</sup> , Memphis Light, Gas and Water <sup>29</sup> , Indianapolis Power & Light <sup>30</sup> , Omaha Public Power District <sup>31</sup> , Central Electric Cooperative, Nashville Electric Service <sup>32</sup> , Knoxville Utilities Board <sup>33</sup> , NSTAR <sup>34</sup>	Biogas, Biomass, Geothermal, Small-hydro, Solar, Wind
<b>6. City of Houston, TX</b>				
951,799,375	80%	Govt. (Local, Municipal)	Reliant Energy <sup>35</sup> , On-site Generation	Solar, Wind
<b>7. Google Inc.</b>				
879,152,664	34%	Technology & Telecom	NextEra Energy Resources <sup>36</sup> , Grand River Dam Authority <sup>37</sup> , On-site Generation	Biogas, Solar, Wind

# 2015 Green Power Leadership Award Winners

- **Green Power Purchasing**

Ahold USA

Crossroads School for Arts & Sciences

Government of the District of Columbia  
(Washington, DC)

H&M

Hypertherm Inc.

Kaiser Permanente/California, Colorado,  
Northwest, and Mid-Atlantic Regions

Northwestern University

Saunders Hotel Group

State Street Corporation

Traditional Medicinals

Ulster County, New York

- **Partner of the Year**

Apple Inc.

Microsoft Corporation

National Hockey League

Phipps Conservatory and Botanical Gardens

Tucson Unified School District

- **Sustained Excellence in Green Power**

Intel Corporation

Kohl's Department Stores

TD Bank

- **On-site Generation**

City of Hayward, California/Water Pollution Control  
Facility

General Motors/GMVM Ft. Wayne

New Belgium Brewing Company

- **Green Power Supplier of the Year**

3Degrees

Renewable Choice Energy

Silicon Valley Power





# Top Green Power Use by State

STATE	TOTAL GREEN POWER USE (kWh)	AVERAGE GREEN POWER USE (kWh)	# OF PARTNERS
CALIFORNIA	8,024,366,973	38,578,687	208
WASHINGTON	3,679,183,333	59,341,667	62
DISTRICT OF COL	3,594,727,179	47,299,042	76
TEXAS	2,661,124,698	34,116,983	78
OREGON	2,520,736,358	33,167,584	76
NEW YORK	2,199,690,053	20,367,500	108
WISCONSIN	2,061,763,890	34,945,151	59
ILLINOIS	1,866,976,676	36,607,386	51
PENNSYLVANIA	1,832,968,539	27,772,251	66
NEW JERSEY	1,531,020,428	51,034,014	30

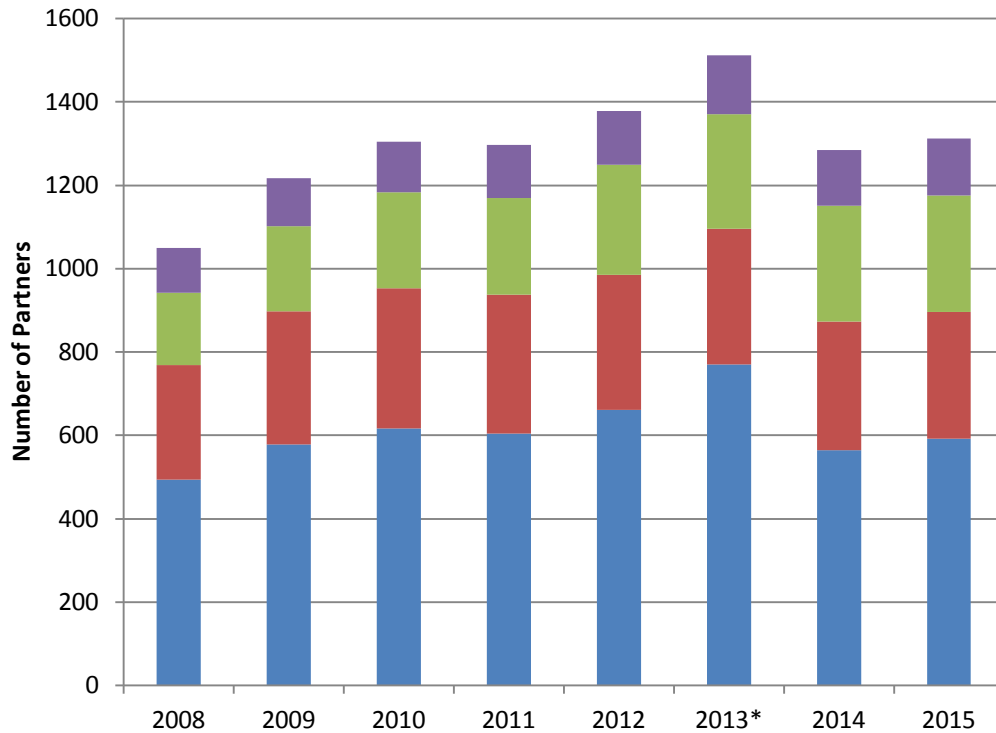


# Top Green Power Use by Industry

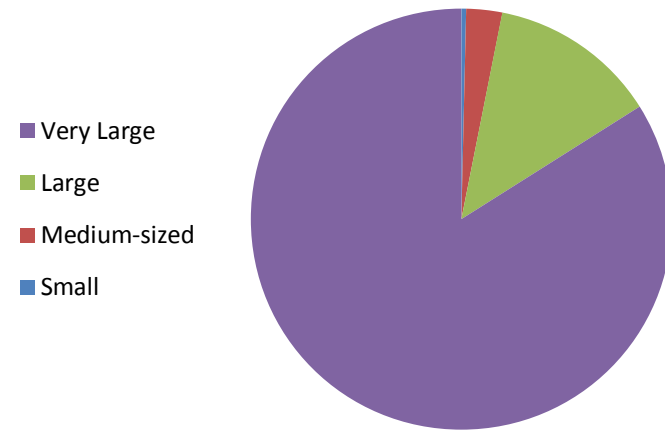
INDUSTRY	TOTAL GREEN POWER USE (kWh)	AVERAGE GREEN POWER USE (kWh)	# OF PARTNERS
TECH & TELECOM	10,020,210,669	159,050,963	63
LOCAL GOVT	3,521,267,415	24,797,658	142
HIGHER ED	2,668,646,300	20,217,017	132
RETAIL	2,250,527,497	28,852,917	78
FED GOVT	1,803,330,547	128,809,325	14
BANK & FINANCE	1,546,828,552	67,253,415	23
FOOD & BEVERAGE	1,327,006,051	27,645,959	48
CONSUMER PRODUCT	1,001,024,542	15,167,039	66
INDUSTRIAL GOODS	898,240,451	21,386,677	42
HEALTHCARE	750,314,865	22,068,084	34



# Number of Partners over time



Percentage Share of Partnership's Green Power Use (2015)



Partner Size Determined by Electricity Load:

Very Large ( > 100 million kWh)

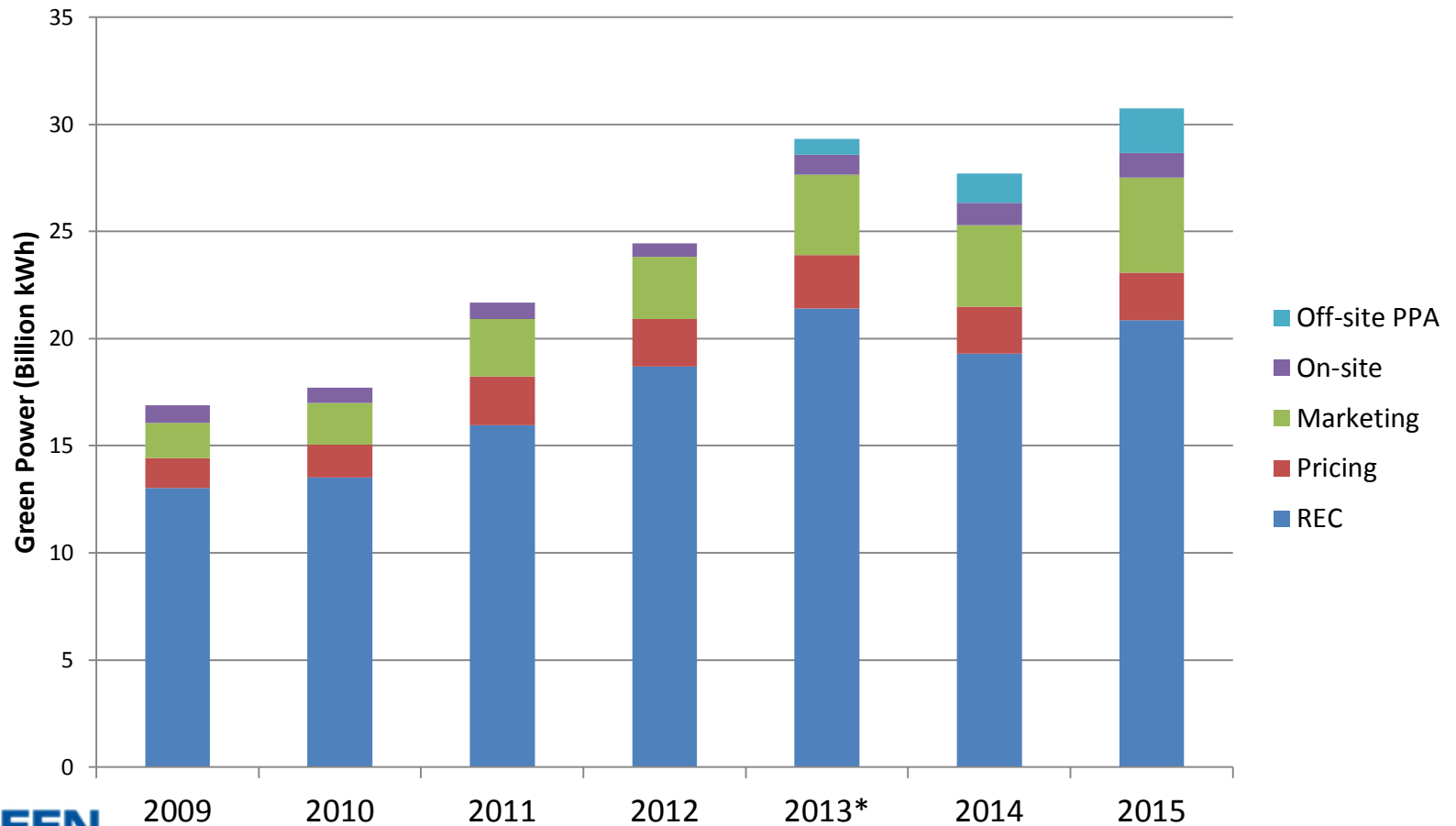
Large ( 10 – 100 million kWh)

Medium ( 1 – 10 million kWh)

Small ( < 1 million kWh)

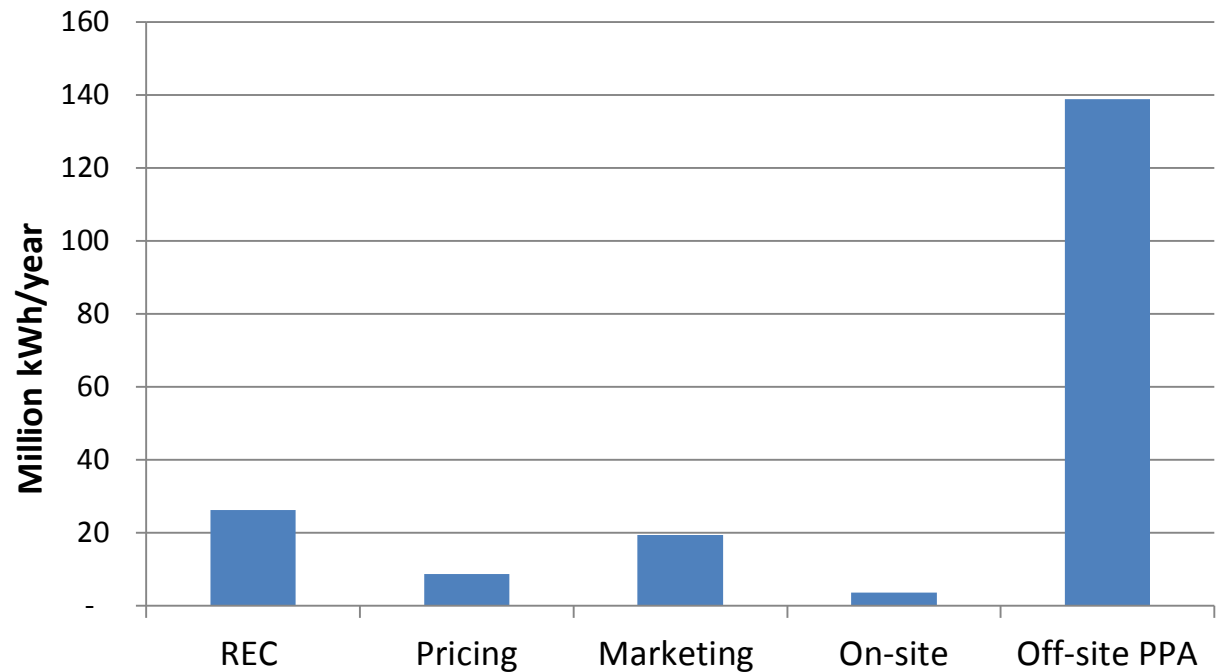


# Program kWh by Product over time



# Average Green Power Use by Product Type (2015)

- Demonstrates the importance of Offsite PPAs and RECs in current market
- On-site is compelling, but poses scale challenges



# GPP Updates

- GPP Webinar series: [www.epa.gov/greenpower/events/index.htm](http://www.epa.gov/greenpower/events/index.htm)
- Next Quarterly Top Partner Rankings released: April 25  
[www.epa.gov/greenpower/toplists/index.htm](http://www.epa.gov/greenpower/toplists/index.htm)
- Green Power Leadership Awards will be presented at the 2016 Renewable Energy Markets Conference location TBD
- 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](#): 600+ 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/gplocator.htm](http://www.epa.gov/greenpower/pubs/gplocator.htm)
- More Questions?
  - Christopher Kent, EPA, 202.343.9046, [kent.chrisotpher@epa.gov](mailto:kent.chrisotpher@epa.gov)
  - Anthony Amato, ERG, 781.674.7225, [anthony.amato@erg.com](mailto:anthony.amato@erg.com)

