A vertical strip on the left side of the slide shows a close-up of solar panels under a blue sky.

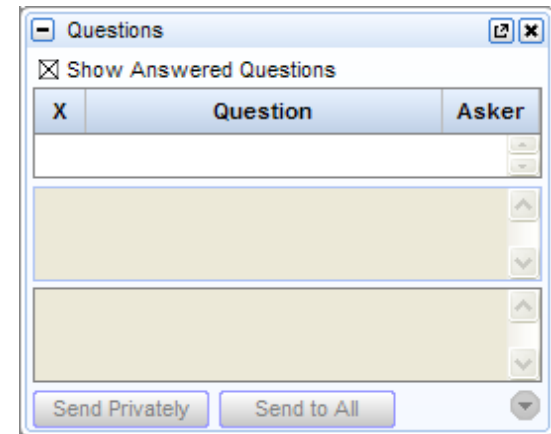
Understanding Renewable Energy Certificates (RECs) and the Green Power Procurement Process



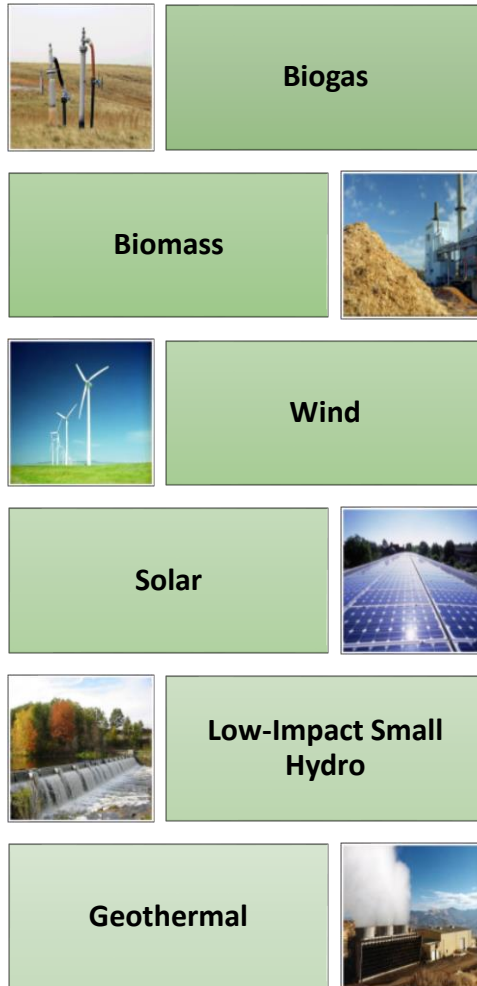
U.S. EPA Green Power Partnership
James Critchfield, Director
April 15, 2015

Webinar Logistics

- Attendees are muted to reduce background noise.
- Submit questions 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 EPA's GPP website:
http://epa.gov/greenpower/events/15apr15_webinar.htm



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 or those that have been repowered
- Must be of the “voluntary” market
 - Incremental to or Above-and-beyond compliance market requirements (e.g., cannot be used for regulatory requirements)



What is a Renewable Energy Certificate (REC)?

- A Renewable Energy Certificate (REC) is the legal instrument that conveys to its owner, the right to claim the associated environmental attributes of its generating resource
 - In essence a REC represents the “renewableness” of the power
- A REC is created for every megawatt-hour of renewable electricity generated and delivered to the utility grid
- A REC generally includes the following information:
 - Type of renewable resource
 - Location of renewable resource
 - Date stamp or vintage of generation
 - Emissions profile of the generating resource
 - Unique identification number



Why are RECs important?

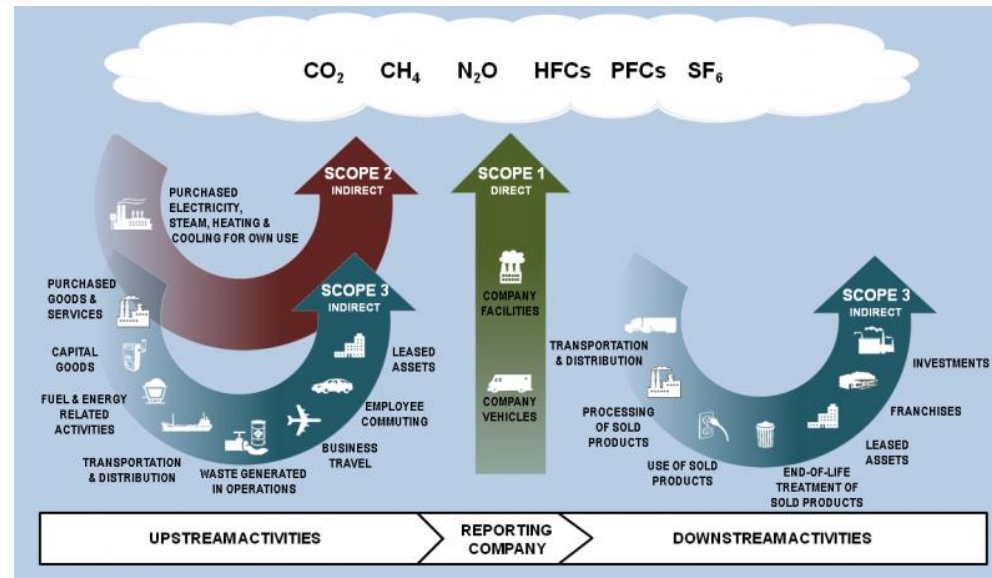
- RECs are the currency of renewable energy markets
 - Both compliance & voluntary markets
 - Allow access to, allocate, and claim use of renewable generation on a shared grid
- Influence electricity market dynamics by allowing the expression and aggregation of consumer preferences for specific forms of electricity generated from renewables
 - REC procurement reduces available REC supply sending a demand signal to the market to develop more supply
- Incent new renewable energy project development
 - Voluntary users can qualify their preference for specific renewable technologies
 - States can spur development through mandated programs (SREC programs)
- Instrument through which renewable energy and environmental claims are substantiated
 - Why do you buy green power?
 - What are you wanting to claim?
- Tool used for meeting corporate goals for greenhouse gas reporting as well as for state policy mandates under Renewable Energy Portfolio (RPS) standards

A vertical image on the left side of the slide shows several white wind turbines in a green field under a blue sky with light clouds. The turbines are positioned at different heights, creating a sense of depth.

Green Power Supply

- Your choices:
 - Buy unbundled RECs
 - Buy a green power product from an electricity service provider (bundled REC product)
 - Own, operate, generate and consume green power from an onsite project (with RECs)
 - Buy green power through a power purchase agreement (with RECs) with an onsite project
 - Buy green power through a power purchase agreement (with RECs) with an offsite project
- All green power supply options involve RECs
 - A REC generated from an onsite project is no different than a REC generated from an offsite project
 - Buying RECs alone may be the only reasonable option in some situations
 - National footprint
 - Leased space situations
 - Poor market conditions for developing projects
- Electricity use from a renewable resource in the absence of owning the associated RECs is not considered renewable electricity (referred to as “null power”) and has the same environment profile as the residual grid electricity mix – RECs make it renewable!

RECs and environmental claims



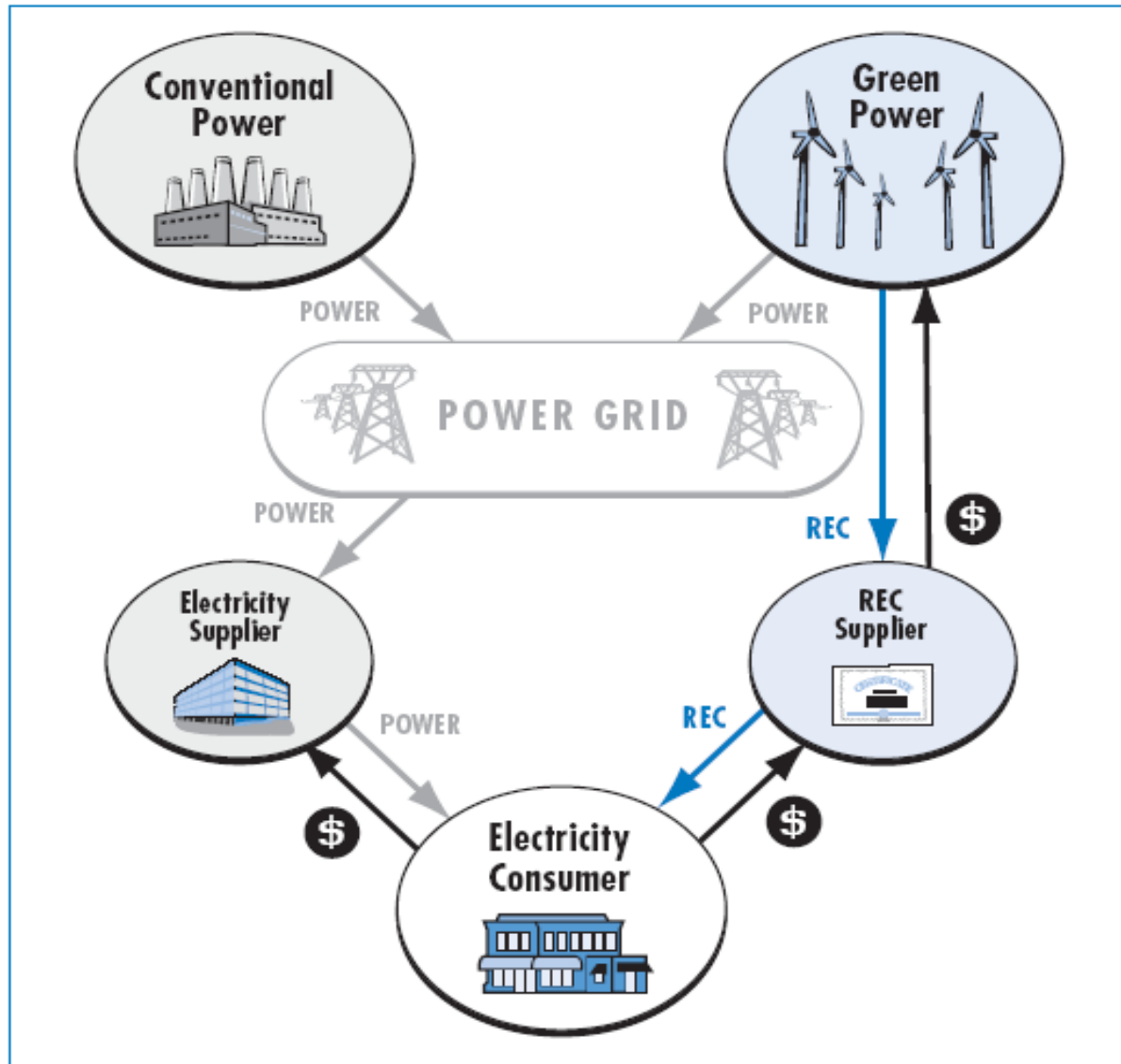
- REC ownership allows you to claim that you are using renewable electricity
 - Once a claim is made, the RECs are retired
- REC ownership signifies that your electricity was generated by a zero emissions resource
- REC ownership does not represent a direct emissions reduction or an avoided emission claim. RECs and not offsets!
- Substantiation of your claims is necessary (See FTC's Green Guides and the National Association of Attorneys General Guidance)



Do RECs deliver clean renewable electricity?

- Electricity on the grid does not flow like water through a hose
- Don't think of electricity (the electrons) as either clean or dirty. On a shared grid, electricity looks the same no matter its source
- The relative cleanliness of your electricity has to be evaluated at the point of generation to see how the generator impacts the environment
 - Air pollution and greenhouse gas emissions are emitted at the point of generation for every megawatt-hour produced by conventional fossil fuel-based power plants
 - Renewable resources don't emit anything as a consequence of generating electricity
 - Air pollution cannot be delivered through the grid
- RECs contractually deliver ownership of renewable energy when the electrons you receive do not tell you anything about the way your power was generated

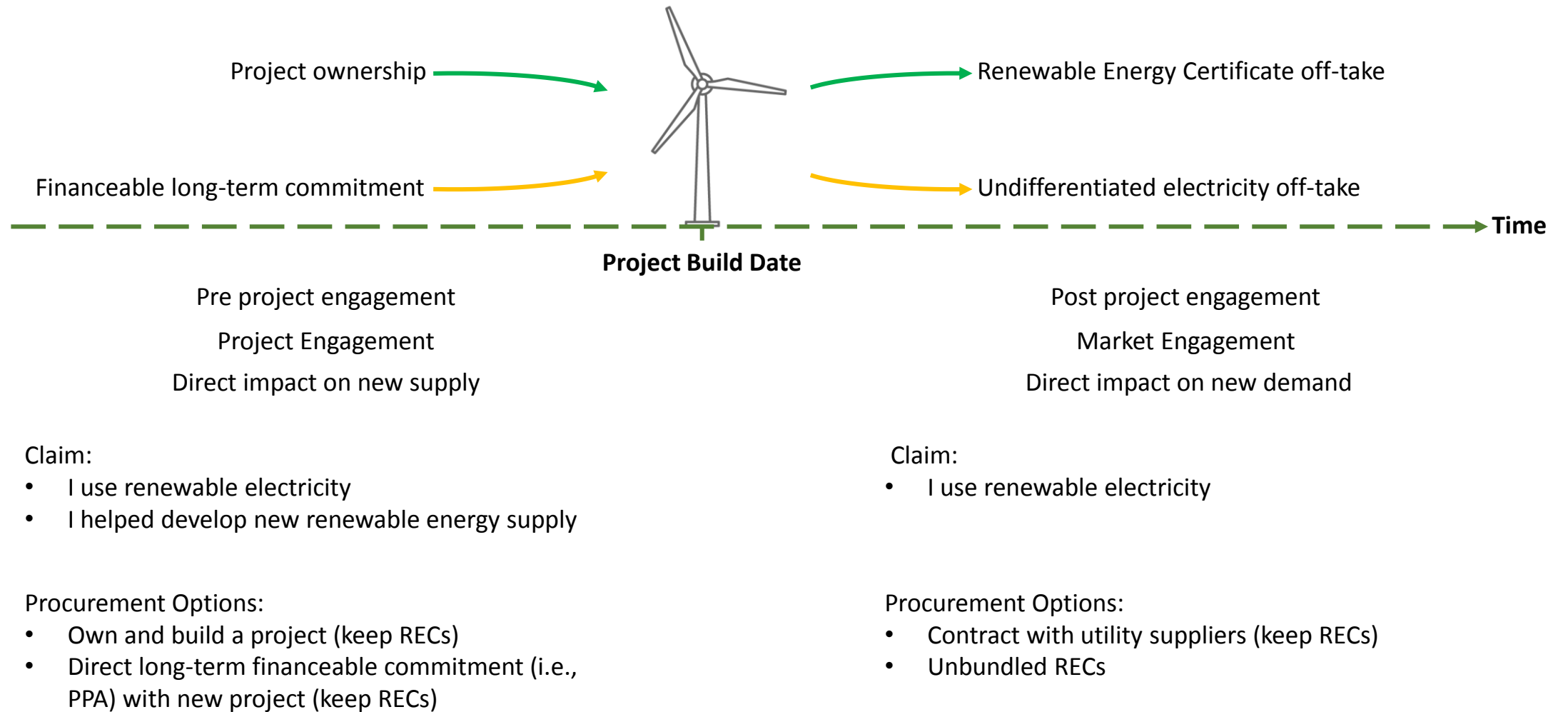
Physical Grid vs Contractual Pathways



REC Video



When and how you engage a project affects the claims you can make





Options for increasing one's impact through Green Power

- Buy more
- Buy long-term
- Buy from yet to be built projects
- Take an equity position in new projects (off-site)
- Own or host on-site projects

A vertical strip on the left side of the slide shows a close-up of solar panels under a clear blue sky. The panels are dark with a grid pattern of silver lines.

Procurement and Best Practices

1. Determine scope of entity to be covered (facility, organization-wide, etc)
2. Determining your electricity use (owned and leased operations)
3. Determine time period you want to cover with REC purchase and what the REC vintage needs to be
4. Determine the quality and content of your green power purchase
5. Buy a third-party certified and verified product
6. Identify and research green power providers
7. Reach out to numerous providers for quotes or issue RFP
8. Purchase and announce your green power use to stakeholders

Note: The above process is focused on the procurement of unbundled RECs

Procurement Process and Best Practices

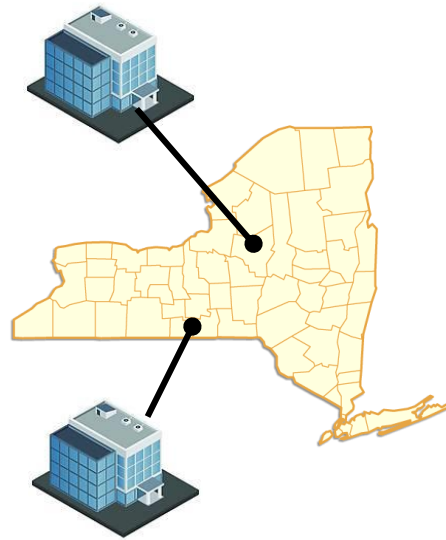
- Determine the scope of entity to be covered (facility, group of facilities, organization-wide, etc.)

Single Facility (i.e. HQ)



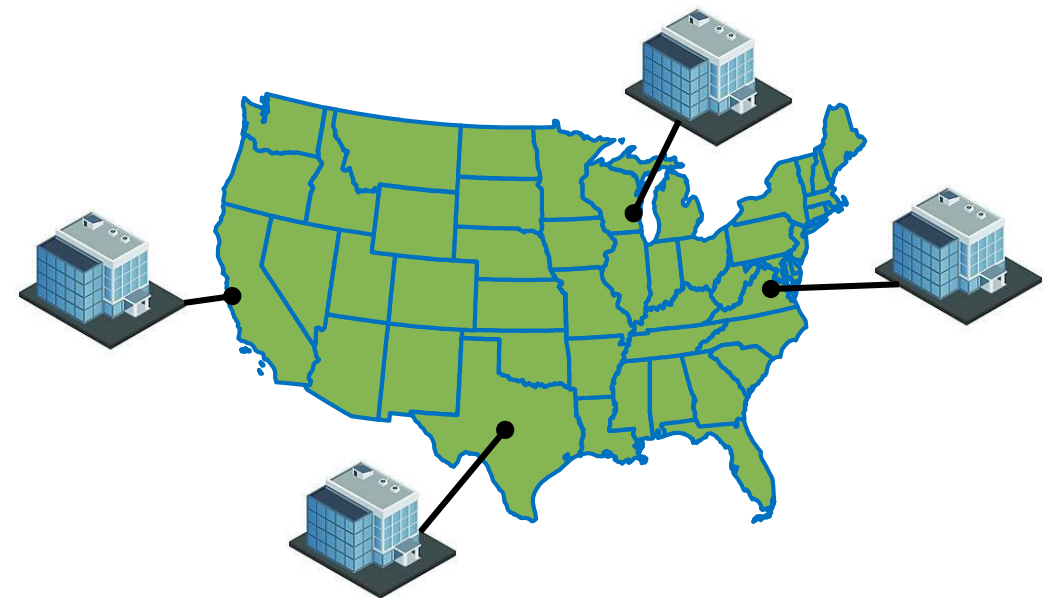
Scope of electricity use:
2 million kWh per year

Group of Facilities (i.e. New York operations)



Scope of electricity use:
4 million kWh per year


Building Portfolio (i.e. U.S. operations)

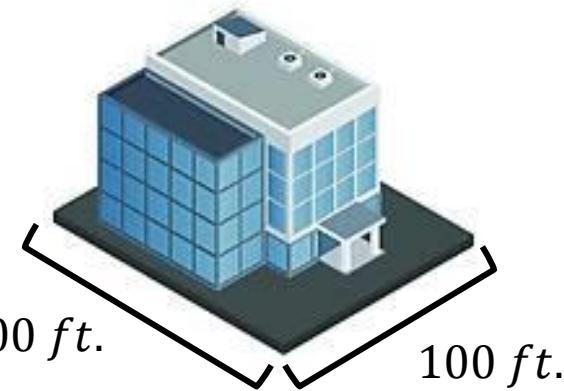


Scope of electricity use:
8 million kWh per year

Procurement Process and Best Practices

- Determine your electricity use at your given scope
 - Look at your utility bills or contact your power provider(s)
 - If leasing office space, base your energy use on 14.9 kWh/sq ft

| Your electric statement | | Account number: 11111-11111 | | | | |
|---|--------------|--|----------------------------|-----------------|---------------------------|--------------------|
| For: Oct 05 2009 to Nov 03 2009 (29 days) | | Statement date: Nov 03 2009 | | | | |
| Customer name: JANE CUSTOMER | | Next meter reading: Dec 04 2009 | | | | |
| Service address: 111 NW 9TH ST | | | | | | |
| Amount of your last bill | Payments (-) | Additional activity (+ or -) | Balance before new charges | New charges (=) | Total amount you owe (+=) | Pay Charges due by |
| 0.00 | 0.00 | 0.00 | 0.00 | 610.08 | \$610.08 | Nov 24 2009 |
| Meter reading - Meter #12333 | | | | | | |
| Current reading | 10000 | Balance before new charges | | \$3.00 | | |
| Previous reading | - 05505 | | | | | |
| kWh used | 4095 | New charges (Rate: GSD-1 GENERAL SERVICE DEMAND) | | | | |
| Demand reading | 19.22 | Electric service amount | 484.84** | | | |
| Demand kW | 19 | Storm charge | 8.71 | | | |
| Energy usage | Last Year | Franchise charge | 30.24 | | | |
| | Year | Utility tax | 33.15 | | | |
| kWh this month | 4224 | Florida sales tax | 37.40 | | | |
| Service days | 31 | Discretionary sales surtax | 5.34 | | | |
| kWh per day | 136 | Total new charges | \$610.08 | | | |
| **The electric service amount includes the following charges: | | Total amount you owe \$610.08 | | | | |
| Customer charge: | \$33.10 | * Payment received after November 24, 2009 is considered LATE; a late payment charge of 0% will apply and your account may be subject to an adjusted deposit billing. | | | | |
| Fuel: | \$260.38 | | | | | |
| (\$0.063580 per kWh) | | | | | | |
| Non-fuel: | \$63.31 | | | | | |
| (\$0.015635 per kWh) | | | | | | |
| Demand: | \$127.87 | | | | | |
| (\$6.73 per kW) | | | | | | |
|  Florida Power & Light Company PO Box 025575 Miami, FL 33102 | | Please have your account number ready when contacting FPL. Customer service: (305) 442-0388 Outside Florida: 1-800-226-3545 To report power outages: 1-800-ADUPTAGE (488-6243) Hearing/ speech impaired: 711 (Relay Service) Online at: www.FPL.com | | | | |
| Print date: Oct 29, 2009 | | | | | | |



$$200 \text{ ft.} \times 100 \text{ ft.} \times 4 \text{ stories} = 80,000 \text{ sq. ft.}$$

$$80,000 \text{ sq. ft.} \times 14.9 \text{ kWh per sq. ft.} = 1,192,000 \text{ kWh per year}$$



Procurement Process and Best Practices

- Determine the time period you want to cover with a REC purchase
 - Fiscal year vs Calendar year vs 12-month period
 - Retrospective vs Prospective
- Consider your green power delivery schedule
 - Quarterly, Bi-annually, Annual, with/with out a true-up
 - Prospective buying generally involves an end of year “true-up” to accurately match your green power purchase with your actually energy use
- Ensure the simultaneity of the relative vintage of your green power generation with the operating period of your electricity consumption



Procurement Process and Best Practices

- Determine the quality and content of your green power purchase
 - What resource type do you want?
 - What geographical origin do you want your purchase sourced from?
 - How long a procurement commitment do you want to make?
 - What type of supplier/vendor do you want?
 - What other special attributes you are interested in prescribing?
 - Project specific RECs
 - Solar sourced from K-12 grade schools
 - Wind sourced from farmers
- REC price is a function of supply and demand which varies by factors such as resource type, geography, and length of commitment

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Procurement and Best Practices

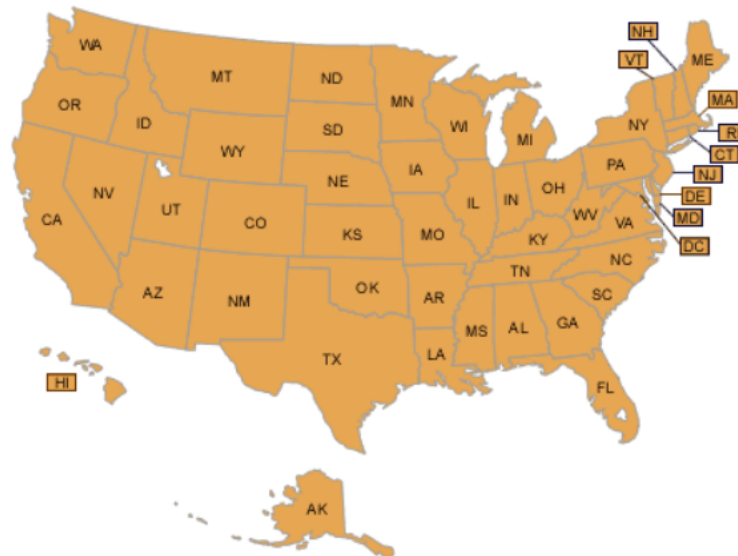
- Buy a third-party certified and verified product
 - Buying certified and verified green power products is a [consumer best-practice](#)
 - Certification answers the question "Does this product meet acceptable standards for quality?"
 - Certified products meet widely accepted consumer and environmental standards
 - Certification ensures the quality of a green power product, but also validates the product's environmental attributes
 - Certification includes standards of conduct for ethical behavior, including marketing claims by suppliers, and requires regular reporting to monitor these claims
 - Verification answers the question "How do I know I'm getting what I pay for?"
 - Third-party certification usually carries a requirement for independent verification to document that the amount of green power generated equals the amount of green power sold to customers
 - Third-party independent auditors verify that the green power behind the product was produced and placed on the utility grid and helps verify the product's environmental benefit
 - Verification serves as a form of buyer protection against deception or fraud

Procurement and Best Practices

- Identify, research and contact green power providers

Green Power Locator

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



Publications & Resources

- [Partnership Documents](#)
- [Tools & Calculators](#)
- [Resource Library](#)
- [Green Power Incentives](#)
- [Glossary](#)
- [Related Links](#)
- [Communications Support](#)
- [Green Power Partner Mark](#)


Or, select your state from the drop-down menu, or the list below.

Alabama

Procurement and Best Practices

- Purchase and announce your green power use to stakeholders

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

Houston is already known as the energy capital of the world, but we are committed to becoming the alternative energy capital of the world as well. Purchasing green power reduces the environmental impacts of electricity use, decreases the cost of renewable power over time and supports the development of new renewable generation.
— Mayor Annise Parker, City of Houston

Usage figures are based on annualized Partner contract amounts (kilowatt-hours), not calendar year totals. These rankings are updated on a quarterly schedule. Find out how your organization can partner with EPA today! To view a top partner list, select from the chart below:

- 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

| 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 |
|------------------------------------|--------------------------------|----------------------|--|---|
| 1. Intel Corporation | | | | |
| 3,102,050,000 | 100% | Technology & Telecom | Sterling Planet®, PNM, On-site Generation | Biogas, Biomass, Small-hydro, Solar, Wind |
| 2. Microsoft Corporation | | | | |
| 2,488,172,313 | 100% | Technology & Telecom | Sterling Planet®, On-site Generation | Biogas, Biomass, Small-hydro, Solar, Wind |
| 3. Kohl's Department Stores | | | | |
| 1,531,197,690 | 113% | Retail | Nexant®, Sterling Planet®, Renewable Choice Energy®, 3Degrees®, On-site Generation | Solar |

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

"Our renewable purchase is just one part of a multi-faceted approach to protect the environment, and one that we hope spurs additional development and demand for renewable energy." – Marty Sedler, Intel, Director, Global Utilities and Infrastructure


"Green power purchases are an effective and important way we can implement renewable energy sources to reduce our carbon footprint. As an EPA Sustained Excellence Award winner, we have increased our purchases company-wide, achieving 100 percent green power in 2010, 2011 and 2012. We are pleased to have extended this commitment through 2015." - Ken Bonning, Kohl's Department Stores

Green NAU

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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 from 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 wWh 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."

A vertical image on the left side of the slide shows several white wind turbines in a green field under a blue sky with light clouds. The turbines are positioned at different heights and angles, creating a sense of depth.

Summary

- RECs are the currency of renewable energy markets
- RECs are legal instrument that allows one to claim to be using renewable electricity
 - Claims of using renewable electricity must be substantiated
- RECs are inherent in all green power procurements; from unbundled RECs to investing in your own RE project
 - You must retain the RECs associated with onsite projects in order to claim to be using renewable electricity
- RECs are used by organizations as a tool to reduce their carbon footprint (scope 2 emissions)
- RECs are not offsets – different instruments for different applications and claims
- Green power purchases can be customized based on several criteria (i.e., resource, geography, supplier, term etc.)
- Organizations are looking beyond basic renewable electricity claims to also using their procurement to directly build new projects
- EPA recommends buying certified and verified green power products as a best practice

A vertical strip on the left side of the slide shows a close-up of wind turbines in a green field under a blue sky with light clouds. The turbines are white and their blades are partially visible.

For more information

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