



Voluntary Renewable Energy Markets 101 Motivations, Claims, & Standards

Renewable Energy Markets Conference 2016

October 16, 2016





Green Power Partnership Overview

- **Summary**
 - The U.S. EPA's Green Power Partnership is a **voluntary** program that encourages US based organizations to use green power.
- **Objectives**
 - Reduce U.S. greenhouse gas emissions
 - Expand the voluntary green power market
 - Standardize green power procurement as part of best practice environmental management
- **Program Activities**
 - Provide technical assistance and tools on how to procure green power
 - Provide recognition platform for organizations using green power in the hope that others follow their lead
- +1,400 Partners are purchasing >35 B kWh annually



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

- **Capture Favorable Media Attention**

"Purchasing green power helps our organization become more sustainable while also sending a message to others that supporting clean sources of electricity is a sound business decision and an important choice to help fight climate change."
- *Jodi Shapiro, VP, Environment, Health and Safety, Motorola.*



Partnership Offerings & Benefits

- **Benchmarks**

- Definition of eligible renewables
 - Metric for “How much green power?”

- **Resources**

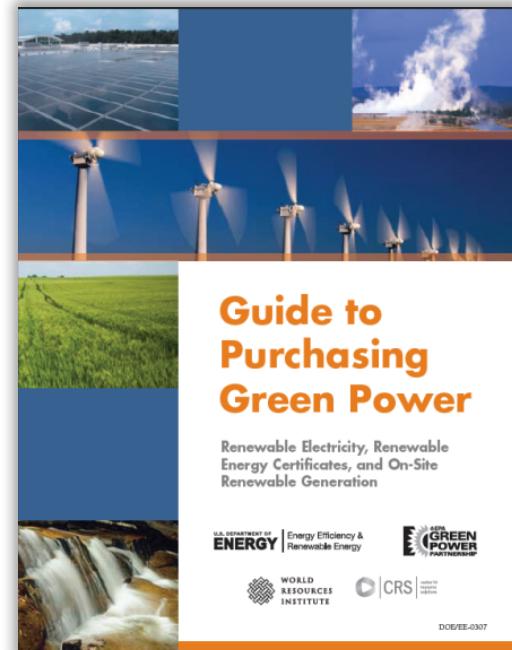
- Purchasing guidance
 - Marketing and communications support
 - Informational webinars

- **Recognition**

- Top Partner Lists
 - Green Power Leadership Awards
 - Use of the Partner logo

- **Best Practices and Innovation**

- On-Site Solar Resource Directory
 - Project Matching Initiative





Recognition opportunities

- Top Partners Lists – updated quarterly
 - National Top 50 100% Green Power Users
 - Top 20 Retail Fortune 500® Partners
 - Top 10 Federal Government Top 20 Local Government
 - Top 20 College & University Top 20 Tech & Telecom
 - Top 20 On-site Generation Top 20 K-12 Schools
 - Long-term Contracts Green Power Communities
- College & University Green Power Challenge
- Green Power Leadership Awards

Green Power Partnership National Top 100

Released on July 25, 2016

NATIONAL TOP 100

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 nearly 30 billion kilowatt-hours annually, which represents more than 83 percent of the green power commitments made by all EPA Green Power Partners.

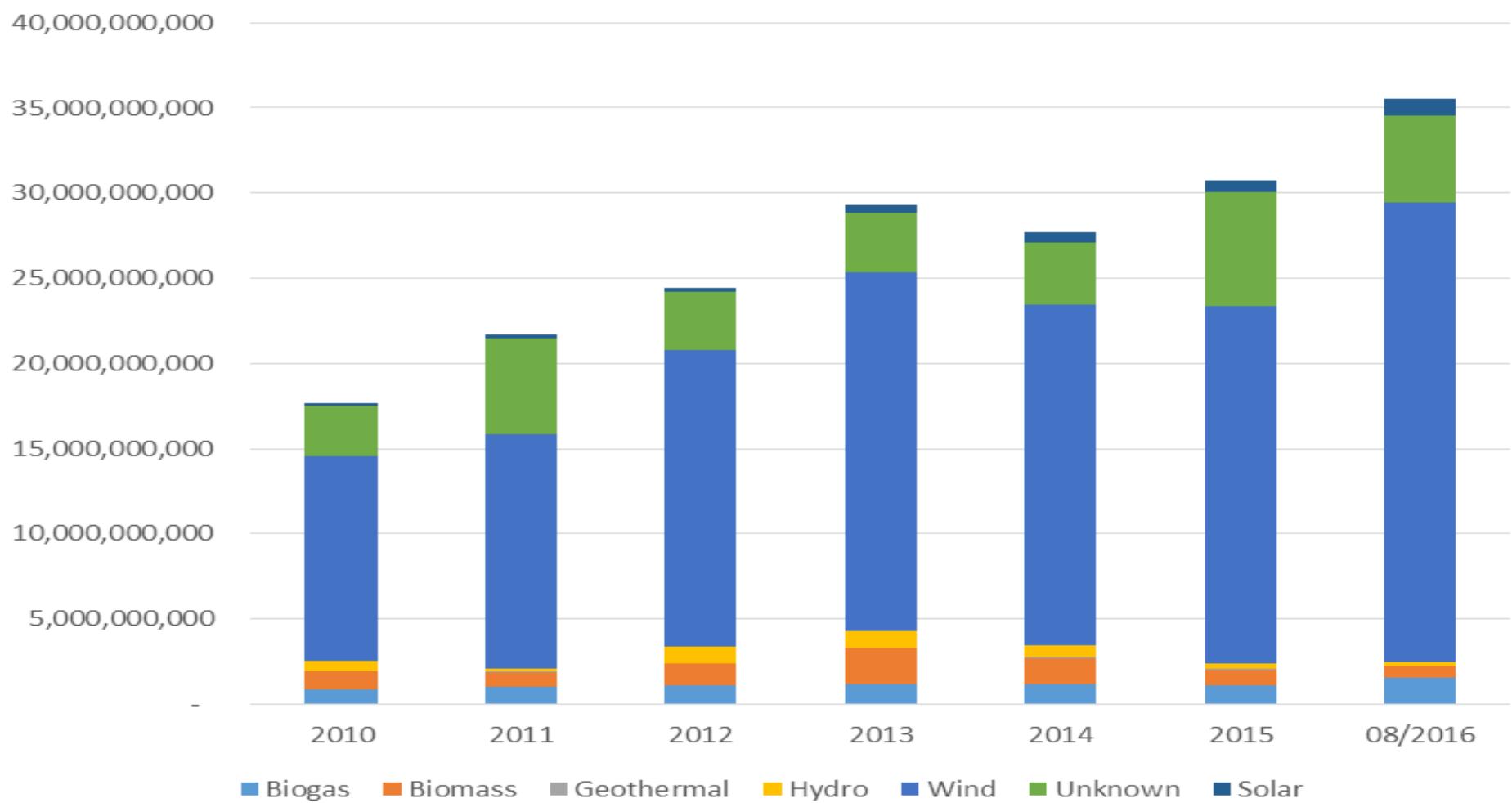
	Green Power Usage (kWh)	Total Electricity Use*	Type	descending order by kWh supplied to partner	Power Resources
1. Intel Corporation	3,419,967,843	100%	Technology & Telecom	Renewable Choice Energy®, 3Degrees®, On-site Generation, FNN	Biomass, Geothermal, Small hydro, Solar, Wind
2. Microsoft Corporation	2,699,210,000	100%	Technology & Telecom	Sterling Planet®, Renewable Choice Energy®, Enbridge LLC®, On-site Generation	BioGas, Biomass, Solar, Wind
3. Kohl's Department Stores	1,430,381,349	109%	Retail	3Degrees®, Carbon Solutions Group®, Renewable Choice Energy®, On-site Generation	Solar, Wind
4. Cisco Systems, Inc.	1,085,086,742	97%	Technology & Telecom	3Degrees®, Sterling Planet®, Austin Energy®, On-site Generation	Solar, Wind
5. Google Inc.	1,061,619,944	36%	Technology & Telecom	NextEra Energy Resources®, Grand River Dam Authority®, MidAmerican Energy®, On-site Generation	BioGas, Solar, Wind
6. Starbucks (company-owned cafe retail stores)	970,920,339	100%	Restaurants & Cafes	3Degrees®	Wind
7. City of Houston, TX	951,799,375	80%	Govt. (Local, Municipal)	Relliant Energy®, On-site Generation	Solar, Wind
8. Apple Inc.	830,617,000	100%	Technology & Telecom	3 Phases Renewables®, On-site Generation, NC GreenPower®, Iberdrola Renewables®, 3Degrees®, Shandong Electric Power Company®, Origin Climate®, Silicon Valley Power®, Sacramento Municipal Utility District®, NV Energy®, Homefield Energy, CFE Energy	BioGas, Biomass, Geothermal, Small hydro, Solar, Wind



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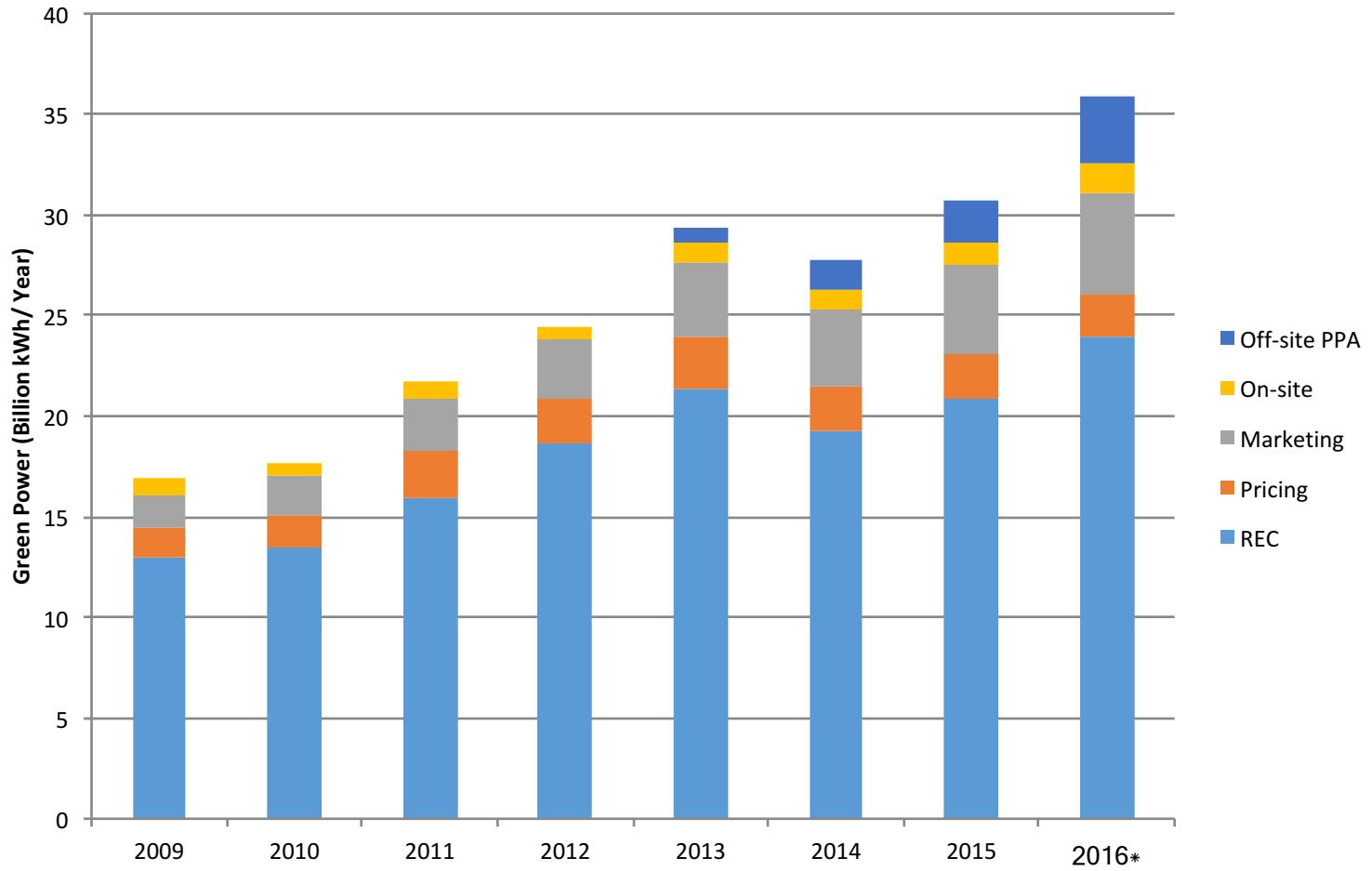


Green Power Use by resource type (kWh)





Partners' Green Power Use By Product Type





Partner Motivations

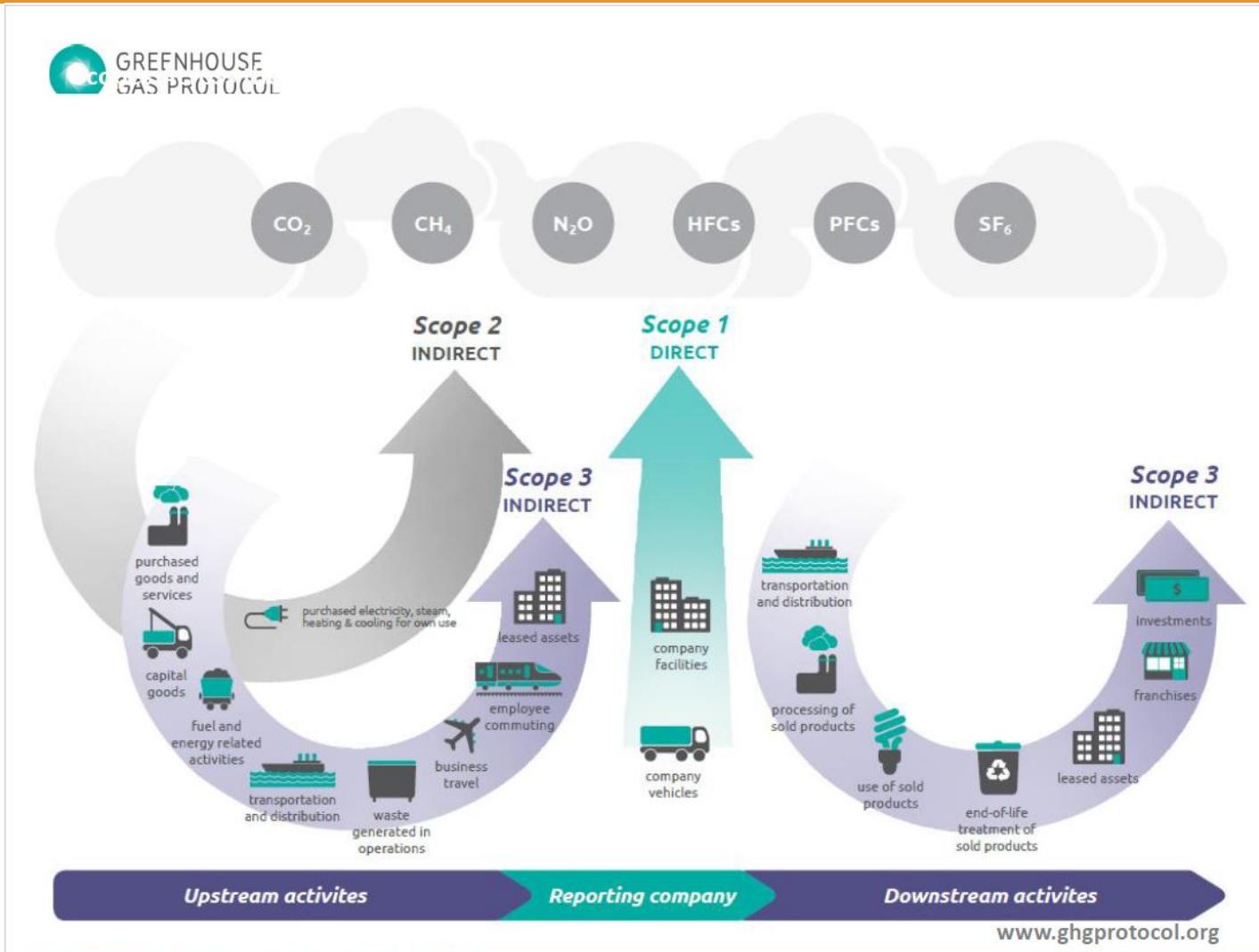
- Range from basic desires to strategic goals
- Basic motivations:
 - Be a market leader
 - Do the right thing
 - Make an impact
- Strategic motivations:
 - Plans to be a more socially responsible organization
 - Seeks to reduce a corporate greenhouse gas (GHG) inventory
 - Desires to differentiate products or services
 - Reduce electricity costs and/or stabilize electricity costs



Example: Corporate GHG Accounting

- Many organizations are accounting for the GHG emissions related to their operations and doing business
- Purchased electricity is often a big source of GHGs
- Renewable electricity is one way to reduce the carbon footprint associated with purchased electricity

GHG Accounting





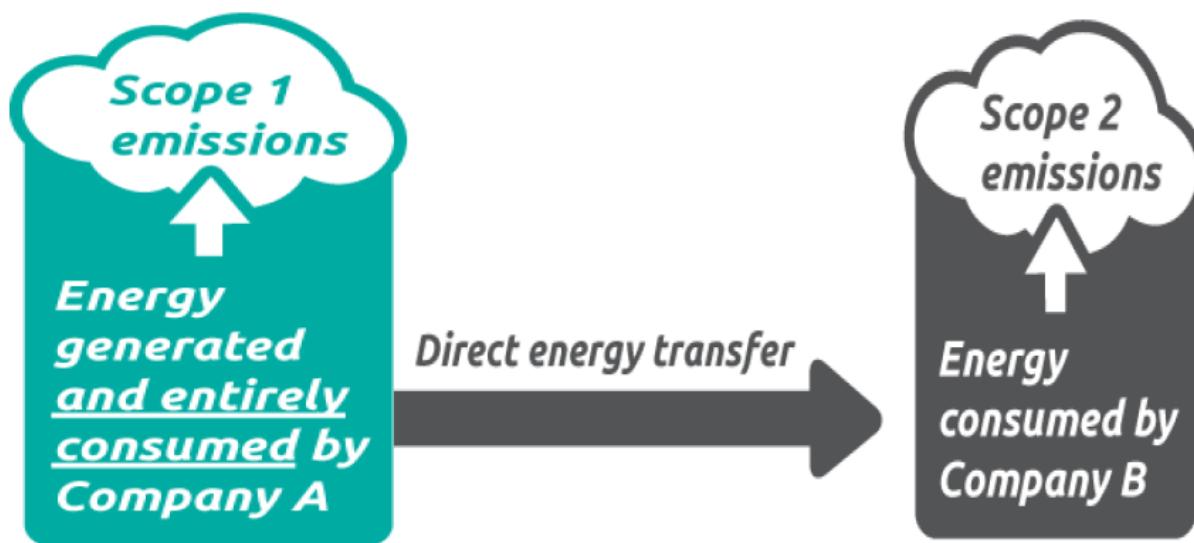
Scope 1 vs Scope 2



GREENHOUSE
GAS PROTOCOL

If the consumed
electricity comes from
owned/operated
equipment

If the consumed electricity
comes from a direct-line
transfer





Acquiring Green Power

- **Unbundled Renewable Energy Certificates (RECs)**
 - Attributes are based on the generation technology type and age, geographic location, and time of generation
 - Does not include the underlying electrons – “unbundled”
- **Utility Supplied Green Power Products**
 - Green power offered by utility suppliers generated from renewable sources
 - “Bundled” product that includes both the RECs and underlying electrons
- **Self Generation**
 - Install a self-owned renewable system (e.g. solar panels, wind turbine)
 - Produces both electricity and RECs from the on-site source
- **Virtual Net-metering / Community Solar**
 - Allows utility customers to share the electricity output from a single power project, typically in proportion to their ownership of the shared system.
- **Power Purchase Agreement (PPA) for Renewables**
 - Usually a long-term contract to procure RECs and underlying electrons from a specific project, can be signed pre- or post-project development
 - Can be from onsite or offsite project
 - PPA can be “physical” or “virtual”





REC Video



https://www.youtube.com/watch?v=_12VYXms6-c



Renewable Energy Certificate as an Instrument

- A Renewable Energy Certificate is the legal instrument that conveys to its owner, the right to claim the associated environmental attributes of its generating resource.
- A REC is created for every Megawatt-hour of renewable electricity generated and delivered to the utility grid
- RECs allow one to monetize the renewable attributes and can be sold separately from the underlying power
- REC contracts give the buyer the exclusive rights to the renewable and environmental values of renewable electricity
 - RECs are the mechanism used to track the emissions benefits and environmental attributes of renewable electricity
 - RECs can be formally recognized by bilateral contracts and tracking systems



REC value

- Currency of renewable energy markets – both compliance and voluntary
 - Allow access to, allocate, and claim use of renewable generation on a shared grid
- Inherent in all green power procurements; from unbundled RECs to investing in your own RE project
 - Green power purchases can be customized based on several criteria (i.e., resource, geography, supplier, term etc.)
 - You must retain the RECs associated with onsite projects in order to claim to be using renewable electricity
- They are not offsets – different instruments, different applications and claims
- EPA recommends buying certified and verified green power products as a best practice



Why are RECs important?

- Instrument through which renewable energy and environmental claims are substantiated
- Tool used for meeting corporate goals for greenhouse gas reporting as well as for state policy mandates under Renewable Energy Portfolio (RPS) standards
 - They are used by organizations as a tool to reduce their scope 2 emissions
- 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 renewables
 - States can spur development through mandated programs (SREC programs)



RECs Are Not Offsets

Don't confuse RECs with carbon offsets

RECs

- RECs are the environmental benefits of 1 MWh (1,000 kWh) of renewable electricity
- RECs can reduce GHG emissions associated with purchasing and using electricity
- GHG claims pertain to purchased electricity only

Offsets

- Offset is a metric ton of GHG emissions reduced or avoided
- Offsets can offset an organization's GHG emissions
- GHG claims pertain to GHG reductions achieved by the offset project



Selling RECs to make the project economical

- Consider a REC arbitrage
 - Monetize the RECs from the onsite system into the local market to meet the required project economics
 - Use some of the value of the monetized RECs to seek and buy lower cost replacement RECs to offer your organizations a renewable electricity claim and lower your carbon footprint
- REC price varies based on many factors (supply, demand, location, resource type, size of purchase, timing, market application)
- Arbitrage still changes your claims – slightly!
- Why is there such a price disparity between RECs used for state compliance claims verses RECs used for voluntary claims?
 - Price distortion is due to Alternative Compliance Payments placed on regulated entities



Making Environmental Claims

- Explain green power & the environmental benefits
 - Public has limited understanding of green power and its benefits
 - Provide simple information about the difference you will make
 - Ensure that you have retained the contractual rights to make claims
- Make your message transparent and tangible
- A simple, safe claim
 - I use renewable electricity from a zero emissions resource
- Focus on GHG emission claims, rather than clean air benefits
 - Environmental regulations for SO₂ and NO_x complicate those claims



Types of Partner Claims

- Purchaser claims
 - Powered in part or wholly by renewable electricity
 - Reducing our emissions associated with purchased electricity
 - Supporting renewable energy
- Generator claims
 - Generates renewable electricity
 - Produces zero or low emissions electricity



Direct or Express Claims

- FTC Example: A toy manufacturer places solar panels on the roof of its plant to generate power, and advertises that its plant is “100% solar-powered.” The manufacturer, however, sells renewable energy certificates based on the renewable attributes of all the power it generates. Even if the manufacturer uses the electricity generated by the solar panels, it has, by selling renewable energy certificates, transferred the right to characterize that electricity as renewable.
- The manufacturer’s claim is therefore deceptive.



Implied Claims

- A toy manufacturer places solar panels on the roof of its plant to generate power....
- It also would be deceptive for this manufacturer to advertise that it “hosts” a renewable power facility because reasonable consumers likely interpret this claim to mean that the manufacturer uses renewable energy.



Implied Claims, continued

- A university issues a press release about its recent power purchase agreement for a on-campus, 1 MW solar array
- Press release highlights:
 - University's goal of achieving carbon neutrality by 2030
 - University's new purchase of fixed price electricity from the on-campus solar facility.
- Both claims are technically accurate.
- However, reasonable consumer would interpret as the university is using solar to reduce its carbon footprint.



Determining REC Ownership

- Review power purchase agreement (PPA) contracts, interconnection and net-metering agreements, state and utility incentives, and other solar contracts.
- Look for “renewable energy certificates”, “renewable energy credits”, “environmental attributes”, “green tags”, or similar.
- Solar Energy Industries Association’s Solar Business Code
 - Guiding Principles
 - 5.12: Renewable Energy Certificate (“REC”) ownership is a Material Term in a solar contract, regardless of ownership structure (e.g., purchase, lease, power purchase agreement).
 - 5.14: Many Consumers are unfamiliar with RECs and their characteristics.... The Company must take steps to educate its Consumer about RECs, including providing ...: Guidelines for Renewable Energy Claims: Guidance for Consumers and Electricity Providers, Center for Resource Solutions (Feb. 26, 2015) [<http://resource-solutions.org/site/wp-content/uploads/2015/07/Guidelines-for-Renewable-Energy-Claims.pdf>]



Determining REC Ownership

Environmental Attributes and Environmental Incentives.

Unless otherwise specified on Exhibit 1, Seller is the owner of all Environmental Attributes and Environmental Incentives and is entitled to the benefit of all Tax Credits, and Purchaser's purchase of electricity under this Agreement does not include Environmental Attributes, Environmental Incentives or the right to Tax Credits or any other attributes of ownership and operation of the System, all of which shall be retained by Seller. Purchaser shall cooperate with Seller in obtaining, securing and transferring all Environmental Attributes and Environmental Incentives and the benefit of all Tax Credits, including by using the electric energy generated by the System in a manner necessary to qualify for such available Environmental Attributes, Environmental Incentives and Tax Credits. Purchaser shall not be obligated to incur any out-of-pocket costs or expenses in connection with such actions unless reimbursed by Seller. If any Environmental Incentives are paid directly to Purchaser, Purchaser shall immediately pay such amounts over to Seller. To avoid any conflicts with fair trade rules regarding claims of solar or renewable energy use, Purchaser, if engaged in commerce and/or trade, shall submit to Seller for approval any press releases regarding Purchaser's use of solar or renewable energy and shall not submit for publication any such releases without the written approval of Seller. Approval shall not be unreasonably withheld, and Seller's review and approval shall be made in a timely manner to permit Purchaser's timely publication.

"Environmental Attributes" means any and all credits, benefits, emissions reductions, offsets, and allowances, howsoever entitled, attributable to the System, the production of electrical energy from the System and its displacement of conventional energy generation, including (a) any avoided emissions of pollutants to the air, soil or water such as sulfur oxides (SO_x), nitrogen oxides (NO_x), carbon monoxide (CO) and other pollutants; (b) any avoided emissions of carbon dioxide (CO₂), methane (CH₄), nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride and other greenhouse gases (GHGs) that have been determined by the United Nations Intergovernmental Panel on Climate Change, or otherwise by law, to contribute to the actual or potential threat of altering the Earth's climate by trapping heat in the atmosphere; and (c) the reporting rights related to these avoided emissions, such as Green Tag Reporting Rights and Renewable Energy Credits. Green Tag Reporting Rights are the right of a party to report the ownership of accumulated Green Tags in compliance with federal or state law, if applicable, and to a federal or state agency or any other party, and include Green Tag Reporting Rights accruing under Section 1605(b) of The Energy Policy Act of 1992 and any present or future federal, state, or local law, regulation or bill, and international or foreign emissions trading program. Environmental Attributes do not include Environmental Incentives and Tax Credits. Purchaser and Seller shall file all tax returns in a manner consistent with this Section 5. Without limiting the generality of the foregoing, Environmental Attributes include carbon trading credits, renewable energy credits or certificates, emissions reduction credits, emissions allowances, green tags tradable renewable credits and Green-e® products.



Potential Consequences of Deceptive Claims

- Legal: Federal Trade Commission and state attorney general offices
- Contractual & Financial: Breach of contract
- Brand & Reputation: Issuance of clarifying statement
- Renewable Energy Market: Double “use” claim on the same renewable electricity
- GHG Accounting: Double accounting for same zero emission resource



INTERACTIVE WORKSHOP

CLAIMS



Scenario 1

- Scenario 1: Company has onsite solar system and owns associated RECs.



Scenario 1 – Appropriate claims and emissions statement

- Scenario 1: Company has onsite solar system and owns associated RECs.
 - We are using solar power
 - Our solar panels are reducing our carbon footprint
 - We are powered by solar energy
 - Our electricity comes from solar panels
- Apply the zero emissions rate conveyed by the REC to your purchased electricity consumption under Scope 2



Scenario 2

- Scenario 2: Company has onsite solar system but does not own associated RECs.



Scenario 2– Appropriate claims and emissions statement

- Scenario 2: Company has onsite solar system but does not own associated RECs.
 - We generate solar energy but sell it to another party
 - Our solar panels are helping to reduce our energy costs and generate revenue through the sale of the RECs
 - We are not using solar power but our solar system is helping to green the grid
- Apply grid average emissions rate or grid residual mix



Scenario 3

- Scenario 3: Company has onsite solar and does not own associated Solar RECs, but purchases wind RECs equal to 100% of power needs.



Scenario 3– Appropriate claims and emissions statement

- Scenario 3: Company has onsite solar and does not own associated Solar RECs, but purchases wind RECs equal to 100% of power needs.
 - We generate solar energy but sell the RECs to another party. However, we purchase 100% wind power and have zero scope 2 emissions.
- Apply zero emissions rate from the replacement wind RECs but not claim it to be of solar origin.



Scenario 4

- Scenario 4: Company signed up for all of their electricity needs from their utility green pricing program.
 - **A.** Utility in regulated market offers green pricing program to customers.
 - **B.** Retail electricity provider in deregulated electricity market offers renewable energy option to customers.
 - **C.** Retail marketer in deregulated electricity markets offers Renewable Energy Certificates (RECs) to its electricity customers.



Scenario 4b – Appropriate marketing claims about retail products

- **Retail products**
 - Utility Green Pricing Programs, Competitive Renewable Electricity Products, REC Products
- **Make accurate claims about REC content.** All marketing statements *must* be broader, or match, the type of RECs retired.
 - Our renewable energy program is 100% California-generated solar energy. (CA solar RECs retired)
 - Our REC product is composed of 50% national wind RECs, and 50% NY wind RECs. ($\frac{1}{2}$ nationally-sourced wind RECs and $\frac{1}{2}$ NY-sourced wind RECs retired)
- **Make accurate emissions claims.** Customers can purchase retail products sourced from wind, solar, hydropower, and geothermal renewable energy facilities, and use “zero-emissions electricity” in their home.
 - Your carbon footprint associated with electricity consumption is zero because of your purchase of wind RECs.



Scenario 4a – Best practices and marketing claims for retail products

- **Retail products**
 - Utility Green Pricing Programs, Competitive Renewable Electricity Products, REC Products
- **Substantiate your sale.** For all offerings, RECs must be retired on behalf of the purchases made by the customers of the seller.
- **Disclosure to customer.** Sellers should accurately disclose in marketing claims, and prior to purchase:
 - Renewable energy resource type (% wind, % solar, etc)
 - Generation location
 - What is being sold, such as renewable energy (electricity + RECs), or only RECs (no electricity)
 - We are selling you 100% wind energy sourced from Washington.
 - We are selling you 100% wind RECs sourced nationally. This product does not include electricity.



Scenario 5

- Scenario 5: University signs a physical PPA to offtake production from 10 MW of wind power (and associated RECs) with a yet-to-be developed off-site 100 MW system. Nine other institutions have similar 10 MW PPA agreements. and because of this PPA, the project is now being built.



Scenario 5– Appropriate claims and emissions statement

- Scenario 5: Company is getting some of its power through the PPA and the associated RECs. Their off-take represents 10% of the output. Their engagement helped get this project built.
 - We are using solar power
 - We helped develop new renewable energy supply
- Apply the zero emissions rate conveyed by the REC to your purchased electricity consumption under Scope 2



Scenario 6

- Scenario 6: Solar develop builds 20-MW community solar project on a university's campus. The university participates in the community solar program and offtakes the production (and RECs) from 5 MW.



Scenario 6– Appropriate claims and emissions statement

- Scenario 8: University has a Community solar project on site. They offtake a quarter of the production (and RECs).
 - We are using solar power
 - Our engagement with a community solar project reduces our carbon footprint
 - X% of our electricity comes from solar panels
- Apply the zero emissions rate conveyed by the REC to the percentage of your purchased electricity consumption under Scope 2



Scenario 7

- Scenario 7: Company signs a 20-year physical PPA with a new off-site system, but per agreement the developer owns RECs for the first 5 years and company will receive replacement nationally sourced wind RECs. For years 5-20 the company will own RECs.



Scenario 7– Appropriate claims and emissions statement

- Scenario 7: Company signs a 20-year physical PPA with a new off-site system, but per agreement the developer owns RECs for the first 5 years and company will receive replacement nationally sourced wind RECs. For years 5-20 the company will own RECs.
 - **For Year 1 – 5:** We generate solar energy but do not keep the RECs. However, we purchase 100% wind power and have zero scope 2 emissions.
- Apply zero emissions rate from the replacement wind RECs but not claim it to be of solar origin.
 - **For year 5 – 20:**
 - We are using solar power /powered by solar energy
 - Our solar panels reduce our carbon footprint
 - Our electricity comes from solar panels
- Apply the zero emissions rate conveyed by the REC to your purchased electricity consumption under Scope 2



Claims: Best Practices

- If you are claiming to use solar electricity, ensure you either own, or have exclusive contractual rights to, the RECs associated with the solar electricity you are claiming to use.
- If you don't own the RECs associated with your onsite system, don't make public claims about using renewable electricity.
- Avoid making unqualified claims. Be specific and clearly define RECs and who owns them in any public communication.
- Avoid making implied claims.
- Ask for communications assistance from industry experts and key stakeholders.
- Ensure individuals throughout your organizations understand importance of accurate claims and have multiple stakeholders review communications materials.



Claims: Additional Resources

- Visit Green Power Partnerships' Claims web page:
 - <https://www.epa.gov/greenpower/making-environmental-claims>
- Center for Resource Solutions (CRS) REC claims and ownership
 - <http://resource-solutions.org/learn/rec-claims-and-ownership>
- National Association of Attorneys General (NAAG)
Environmental Marketing Guidelines for Electricity
 - http://apps3.eere.energy.gov/greenpower/buying/pdfs/naag_0100.pdf
- Vermont Attorney General's Office
Guidance for Third-Party Solar Projects
 - <http://ago.vermont.gov/assets/files/PressReleases/Consumer/Guidance%20on%20Solar%20Market%20ing.pdf>
- RE100
Making credible renewable energy usage claims
 - <http://media.virbcdn.com/files/62/53dc80177b9cc962-RE100CREDIBLECLAIMS.pdf>



Market Standards & Guidance

- **U.S. EPA**
 - Green Power Partnership minimum purchase requirements
- **U.S. FTC revised Green Guides on marketing claims**
- **WRI/WBCSD GHG accounting standards**
- **Third-party certification/verification**
 - Certification is a best practice for voluntary REC markets
 - While certification is not mandatory or necessary for REC generation, the standards used by REC certifiers set expectations for both the compliance and voluntary REC markets



Support for Buyers and Sellers

- US EPA's Green Power Partnership
- US DOE's Green Power Network
 - Current information on green power providers, products, consumer protection issues, & policies affecting green power markets
- Center for Resource Solutions
 - Green-e Energy for sellers
 - Green-e Marketplace for purchasers
- Tracking systems
 - Tracking systems provide a basis for creating, managing, and retiring RECs, ensuring that each REC is counted only once



Q & A



"There are no stupid questions, so let's also agree there are no stupid answers."



Renewable Energy Markets 2016

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