



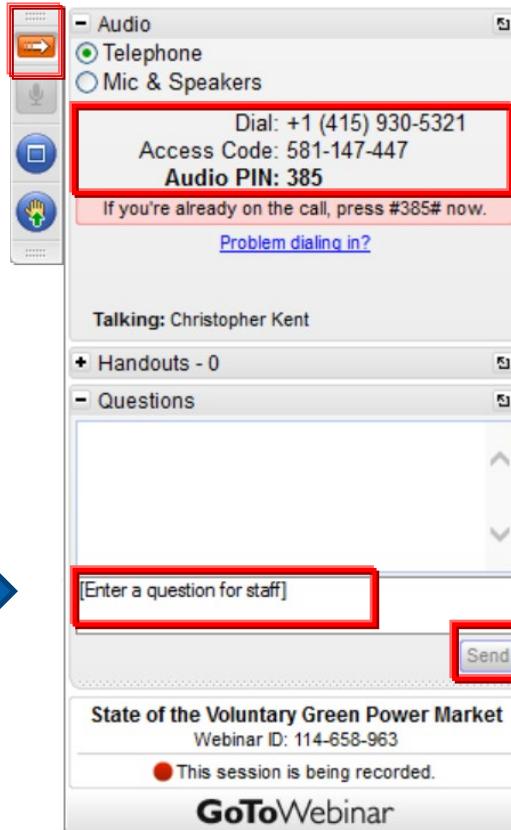
Webinar on the
Guide to Purchasing Green Power

**NEWLY
UPDATED!**

April 24, 2019

Webinar Logistics

Open and close
your control
panel



Audio is available your
computer's microphone
and speakers (VoIP) or
telephone:

**+1 (562) 247-8422
ID: 194-765-680**

Type in your
questions here



Hit "send" to submit
your questions

- If you experience technical difficulties, please contact Olivia Newport at: Olivia.Newport@erg.com



Speakers & Agenda

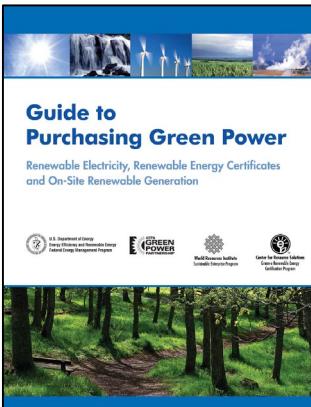
Speakers:

- Christopher Kent, Program Manager, U.S. EPA's Green Power Partnership
- James Critchfield, Director, U.S. EPA's Green Power Partnership
- Todd Jones, Director of Policy and Climate Change Programs, Center for Resource Solutions

Agenda

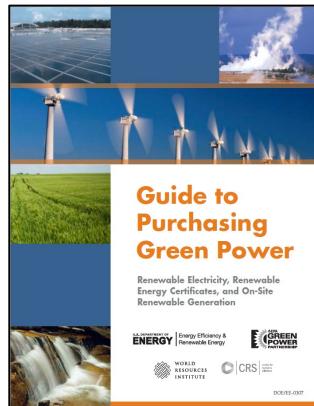
- Background on the Guide
- What is Green Power?
- Benefits, Costs, and Public Relations Considerations
- Green Power Product Options
- Selecting Options
- Goal setting and other organizational considerations
- Procurement planning and execution
- Capturing and Communicating Benefits
- Q&A

Background on the Guide

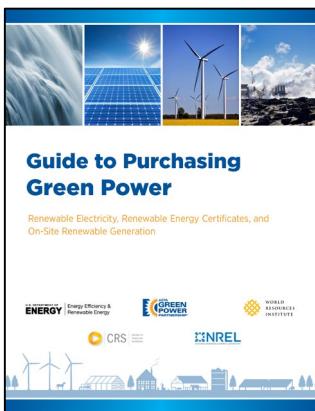


2004

- First published in 2004
 - Updated in 2010 & 2018
- Collaboration between:
 - Environmental Protection Agency
 - Department of Energy
 - World Resources Institute
 - Center for Resource Solutions
 - NREL (special appendix in 2010)
- Written for a non-residential audience that is either new to or relatively unfamiliar with buying green power



2010



2018



Guide's Table of Contents

1. [Summary](#)
2. [Introduction](#)
3. [Introducing Green Power](#)
4. [The Benefits and Costs of Green Power](#)
5. [Green Power Product Options](#)
6. [Using Organizational Goals to Guide Green Power Purchases](#)
7. [Contracting for Green Power](#)
8. [Planning a Self-Generation Renewable Project](#)
9. [Capturing the Benefits of the Purchase](#)
10. [Conclusion](#)
11. [Resources for Additional Information](#)
12. [Glossary](#)
13. [Appendix A. Green Power Considerations for Federal Agencies](#)
14. [Appendix B. Commercial Solar Financing Options](#)
15. [Appendix C. Purchasing Renewable Energy as a Residential Customer](#)

Download: <https://www.epa.gov/greenpower/guide-purchasing-green-power>

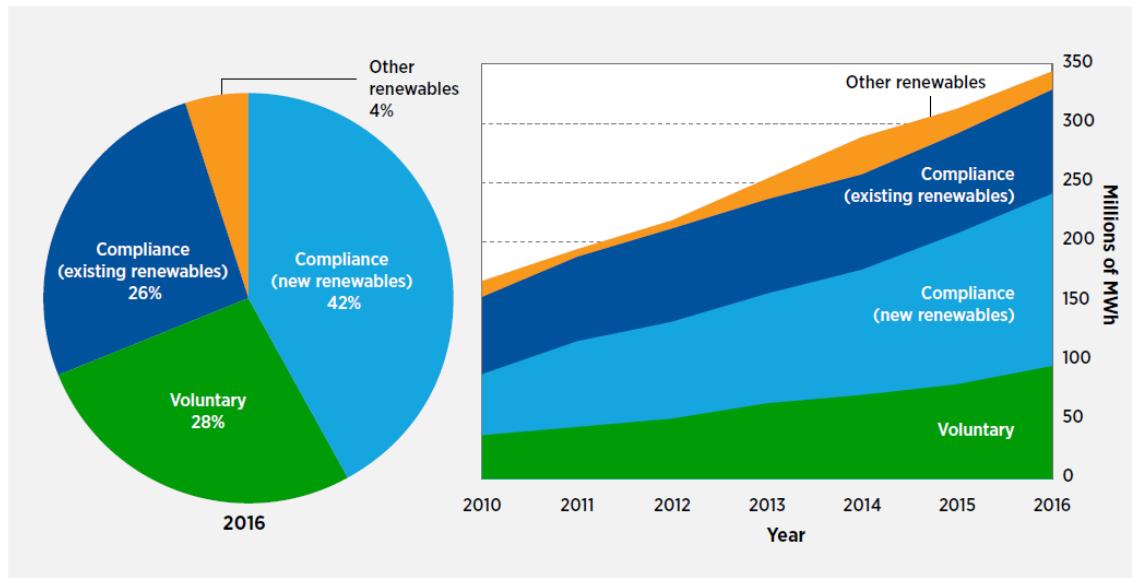


What is Green Power?

- Green Power is a term that describes:
 - A subset of renewable resources that are defined by the resources' environmental performance or profile
 - Green power generation that is purchased/used by consumers voluntarily, meaning that it is incremental to renewable electricity that is mandated through policy or otherwise available absent proactive voluntary procurement
- Consumer preference ultimately defines green power. If a consumer doesn't perceive that the resource offers an environmental benefit then few will voluntarily buy it
- Commonly accepted green power sources:
 - Solar
 - Wind
 - Geothermal
 - Biogas
 - Biomass (some forms of plant and waste material)
 - Low-impact hydropower resources
- Renewable energy sources not considered green power:
 - Large Hydropower (consumer concerns include fisheries, land use etc.)
 - Municipal solid waste (consumer concerns include air pollution and emissions etc.)
 - Biomass (consumer concerns around air pollution and resource sustainability etc.)

What is the Voluntary Market?

- The voluntary market is defined by consumer choice – a choice in preference for how one's electricity is generated to meet one's electricity demand
- The transformation of the electricity sector towards cleaner sources of electricity is occurring due to both mandated and voluntary action
 - State compliance mandates, such as renewable portfolio standards, require load serving entities (i.e., utilities) to provide a minimum percentage of electricity to all ratepayers from eligible renewable resources
 - Voluntary consumers can also choose to go beyond what is otherwise available to all consumers by buying green power



Note: Compliance (new renewables) represents the amount of voluntary sales driven by state programs or policies that require regulated entities to procure RECs from "new" projects, while compliance (existing renewables) are based on sales from existing renewables which account for 26%. Voluntary market sales represent over 27% of all U.S. non-hydro renewable energy sales in 2016. Other renewables include utility renewable energy purchasing beyond RPS requirements and on-site generation.

Source: NREL



Renewable Energy Certificates (RECs)

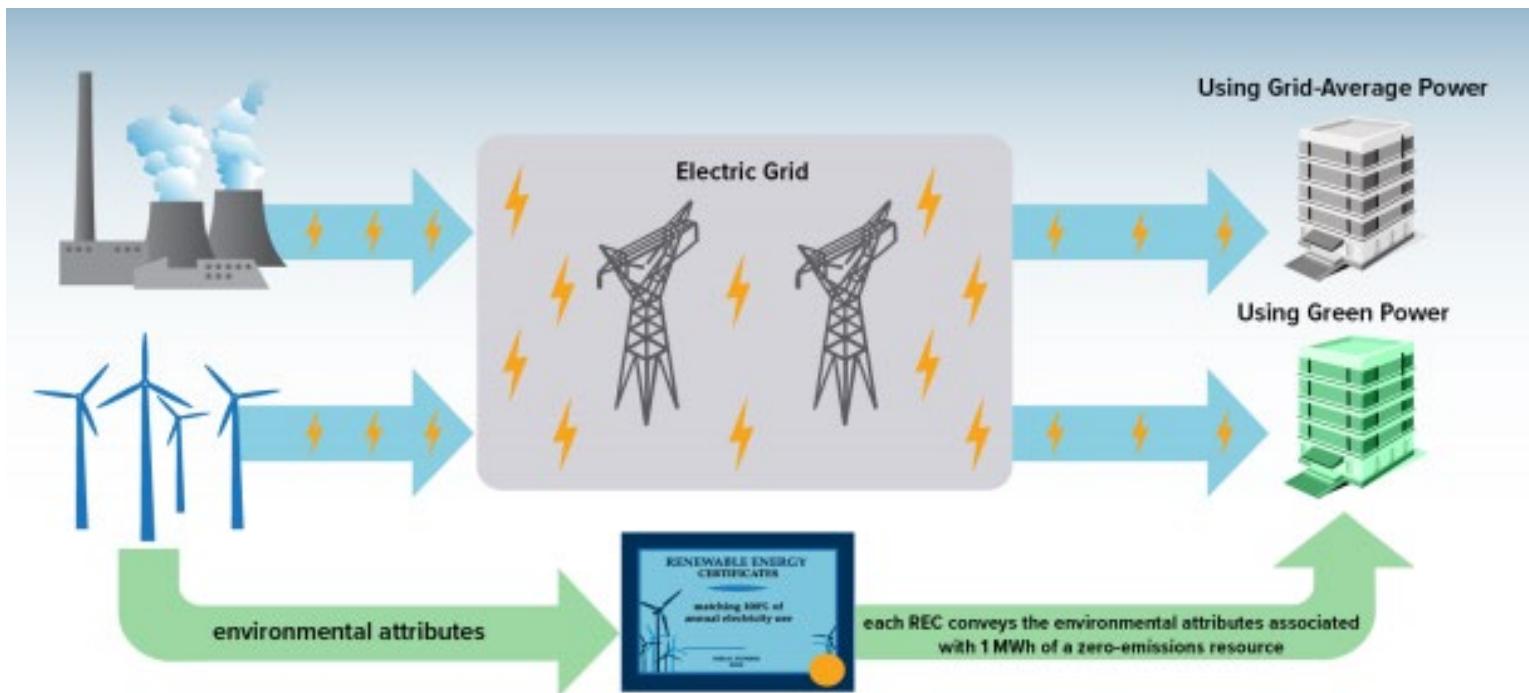
- The physical electricity we consume tells us nothing of its origin or the resource that generated it
- Market instruments, such as RECs, are used to quantify, identify, track and allocate sources of electricity generation across a shared grid
- RECs are used by both:
 - Regulated entities (i.e., utilities) to substantiate claims of compliance towards policy mandates, and
 - Non-regulated entities to substantiate claims of renewable electricity use towards voluntary goals
- A renewable energy certificate (REC) is a tradable market instrument that represents the generation of 1 megawatt-hour (MWh) of electricity from a renewable energy source
 - RECs embody the energy attributes of physical electricity and have legal standing in the market

Additional Resources:

US EPA REC Video: https://www.youtube.com/watch?v=_12VYXms6-c

Center for Resource Solutions REC Video: <https://www.youtube.com/watch?v=opJMrzNauFQ>

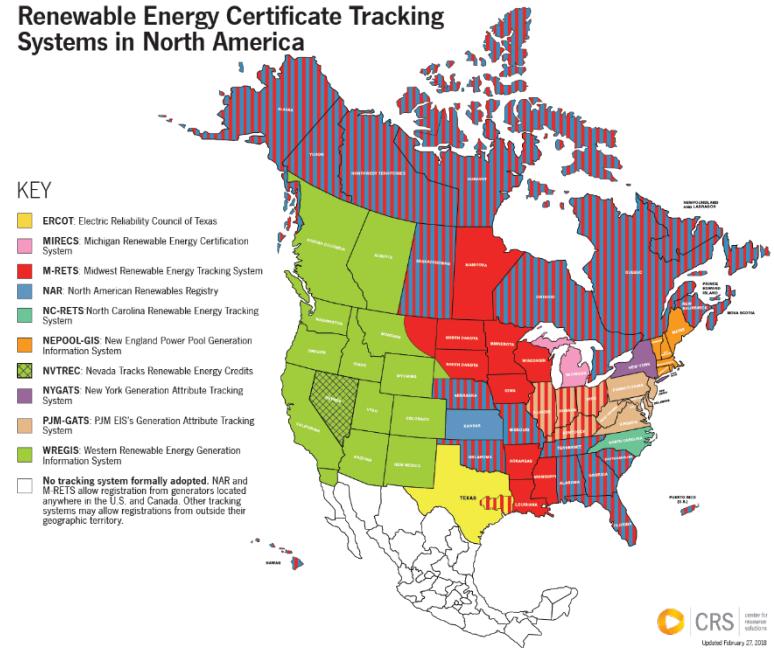
Renewable Energy Certificates (RECs)



Tracking Systems

- Tracking systems
 - Issue RECs based on verified generation from registered projects
 - Assign unique identification numbers to each REC to prevent double counting
 - Track ownership as RECs are sold and purchased
 - Track REC retirements as the RECs are claimed or used by the organizations that own them
- REC tracking systems, together with certification, facilitate and simplify the verification of green power purchases and claims for consumers
- Not all projects and their generation is registered, reported and issued RECs through tracking systems
 - Role of bilateral contracts in the market

Renewable Energy Certificate Tracking Systems in North America





Third-party Certification and Verification

- The voluntary green power market is shaped by the dynamics of supply and demand with little regulatory oversight
- Third-party certification of retail green power products:
 - Sets minimum quality standards for green power products.
 - Provides credibility and confirmation of the product's environmental value.
 - Allows customers to confidently state that the purchased green power product has met specific environmental and consumer protection standards.
- Verification ensures:
 - A traceable pathway back to a known generator.
 - No other consumers can lay claim to the attributes from the same mWh of generation.
 - Claims regarding environmental and non-energy benefits associated with the purchase are accurate.
- Retail green power products generally entails green power sold through utility green power programs, by competitive electricity suppliers or retail REC marketers
- REC tracking systems alone are not a suitable replacement for the third-party certification and verification process – i.e., REC tracking systems do not validate retail marketing claims of suppliers

Benefits of Green Power



Environmental Benefits

- Reduce organizational carbon footprint
- Reduce air pollution
- Reduce water environmental impacts



Economic Benefits

- Reduced costs of green power projects
- Manage electricity prices
- Mitigate fuel supply disruptions



Stakeholder Relations

- Meet organizational environmental objectives
- Increase brand credibility
- Demonstrate civic leadership
- Generate positive publicity
- Improve employee recruitment and retention
- Differentiate products or services

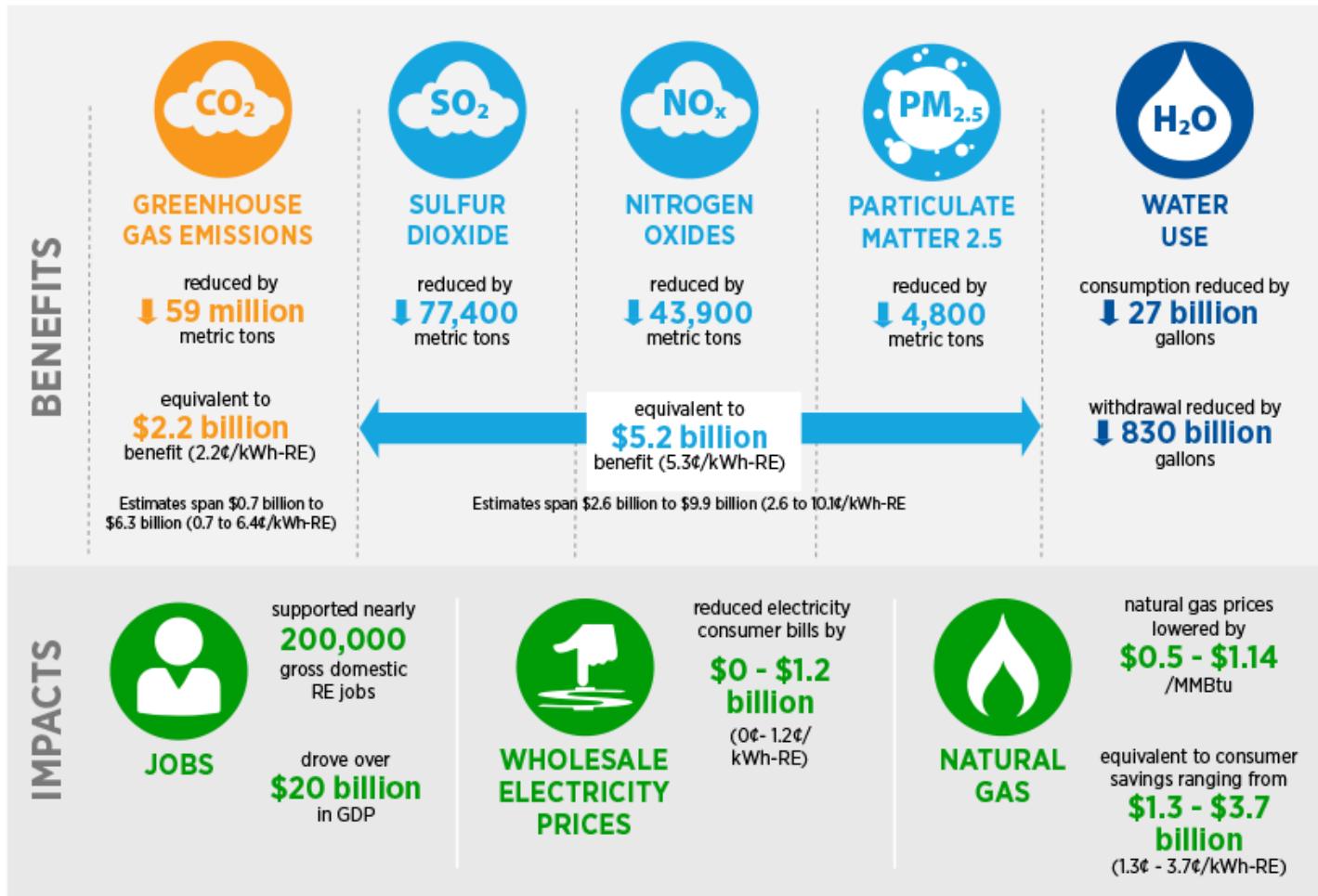


Development of Domestic Energy Resources

- Job creation
- Stimulate domestic economy

Environmental Benefits

Environmental Benefits and Impacts of New Renewable Electricity as Evaluated to Meet 2013 RPS Compliance⁶ (LBNL)

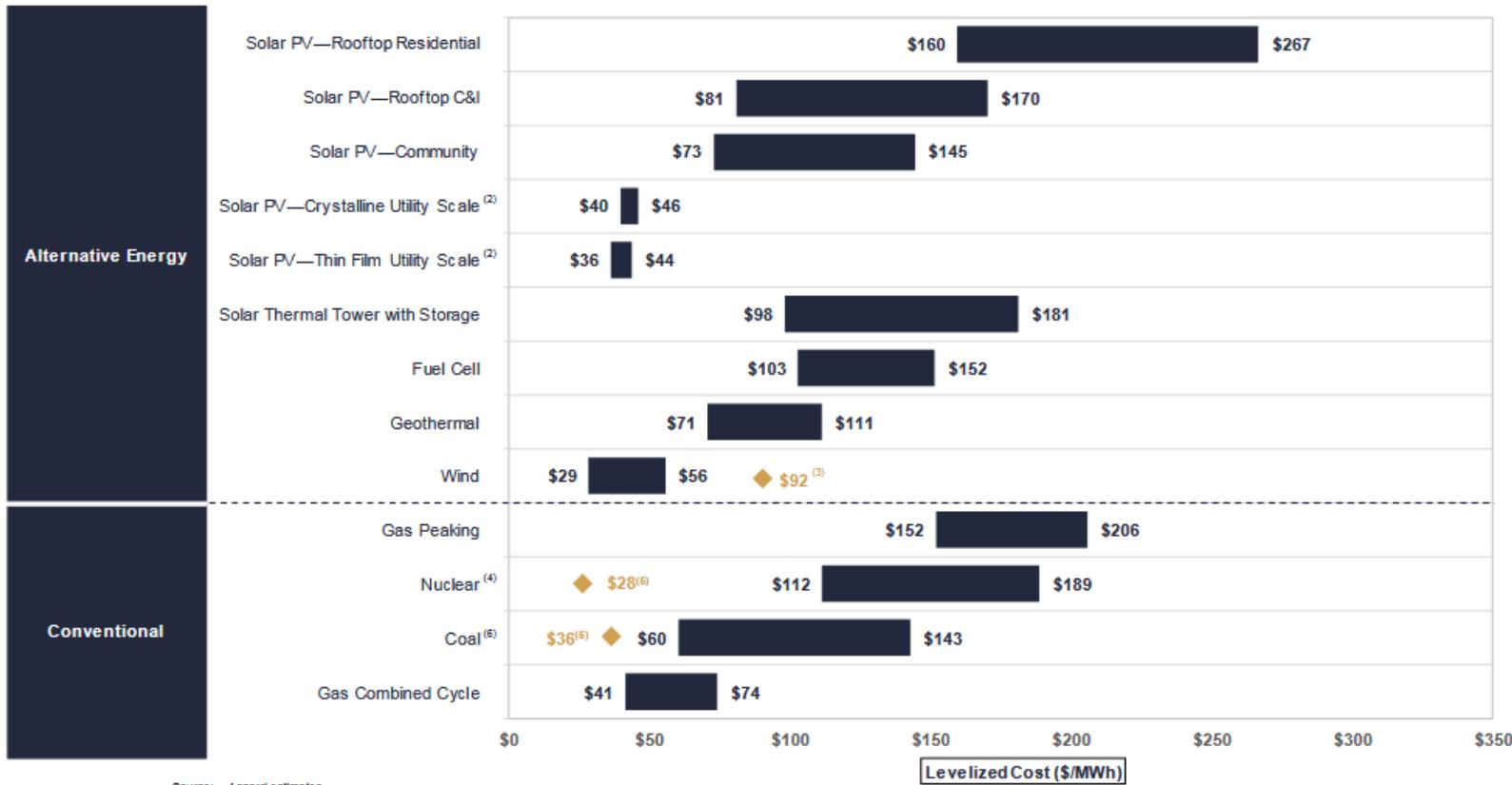


Note: This study evaluated a subset of the potential benefits and impacts of state RPS policies. We distinguish impacts from benefits because we do not estimate or claim any net social benefit from the impacts assessed here. We do not assess all potential benefits and impacts, for example land use and wildlife impacts, or job losses in the fossil industry. We also do not address the costs of state RPS programs, as that was the subject of an earlier study (Heeter et al. 2014).

Economic Benefits

Levelized Cost of Energy Comparison—Unsubsidized Analysis

Certain Alternative Energy generation technologies are cost-competitive with conventional generation technologies under certain circumstances⁽¹⁾

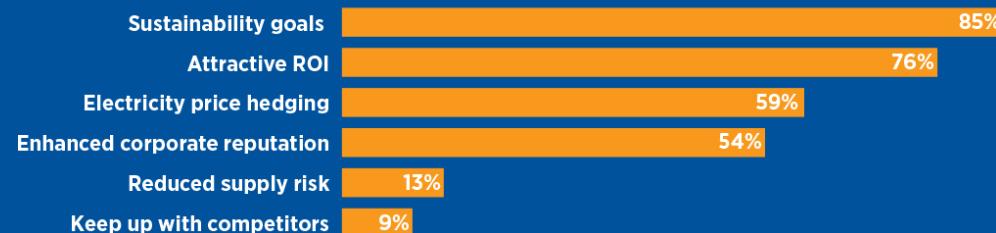


Source: Lazard estimates.

Stakeholder Relations

Corporate Motives to Pursue Renewables

A 2016 survey of corporate participants on motives to pursue renewables indicates that most companies view their renewable energy purchases as part of a larger commitment to meet corporate sustainability goals. The survey results for corporate motives are shown below:



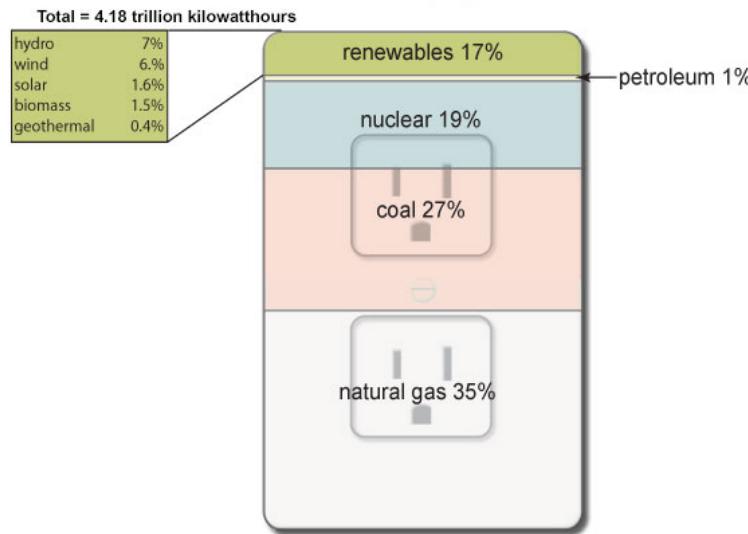
Source: O'Shaughnessy, E., Heeter, J., Liu, C., and Nobler, E. 2016. Status and trends in the U.S. voluntary green power market (2015 data). National Renewable Energy Laboratory. Retrieved from <https://www.nrel.gov/docs/fy17osti/67147.pdf>, p. 36, citing PWC study.

Why GPP Partners Use Green Power



Domestic Energy Market Benefits

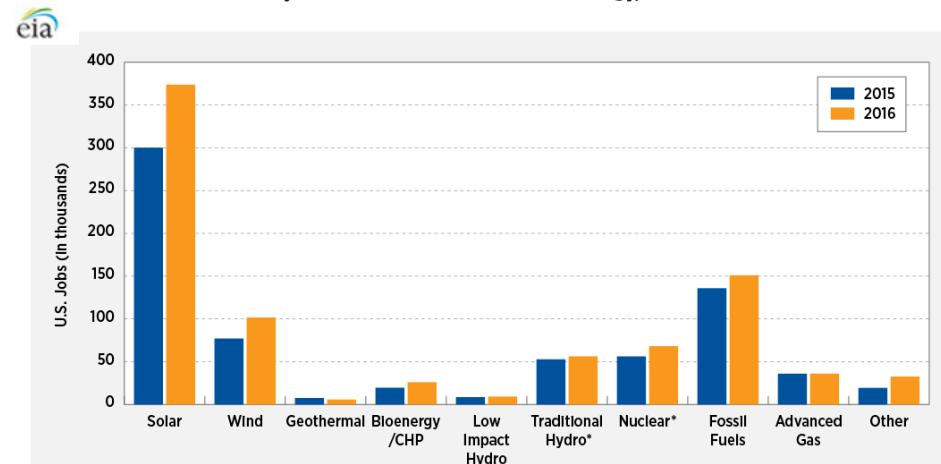
Sources of U.S. electricity generation, 2018



Note: Electricity generation from utility-scale facilities.

Source: U.S. Energy Information Administration, *Electric Power Monthly*, February 2019, preliminary data

U.S. Jobs by Electric Power Generation Technology, Q2 2015 to Q1 2016



*Note: Hydro and Nuclear increases due to resolving suppression errors in 2015.

*Note: The methodology was revised in 2016 to capture subcontractor employment in Nuclear and Traditional Hydro, employment totals are not reflective of growth year over year. Job figures in chart are only related to electric power generation and associated technologies.

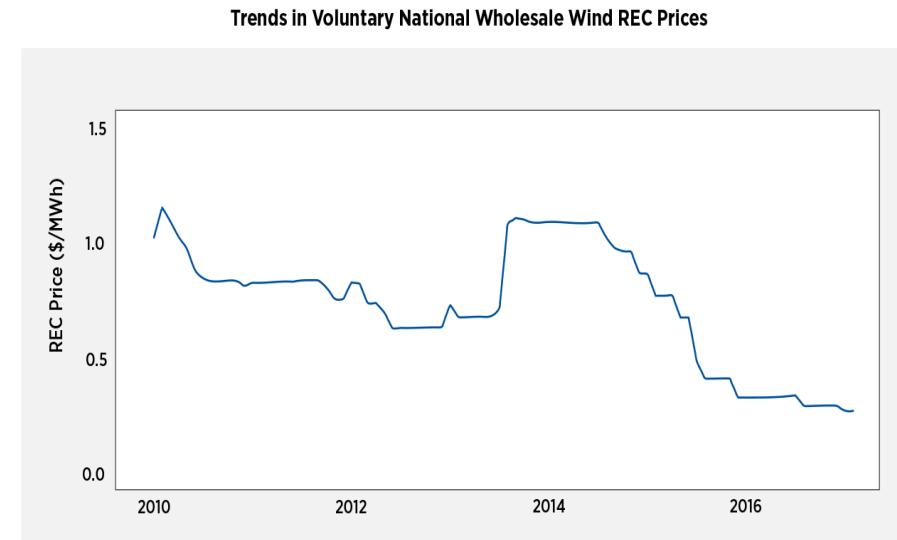
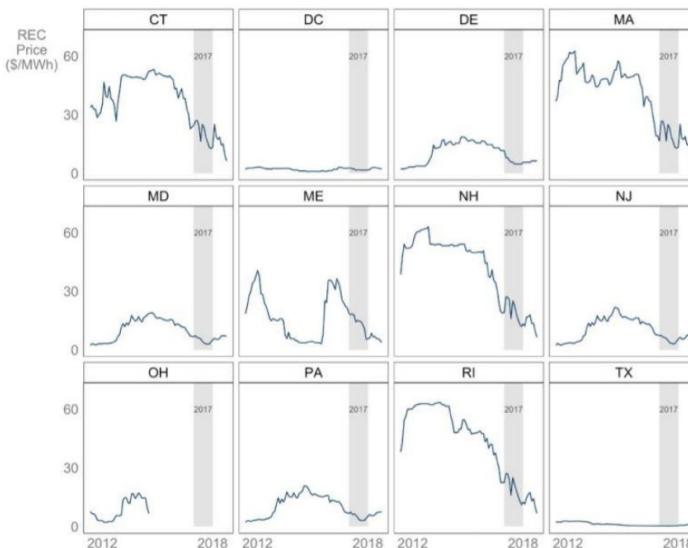


Factors that Affect the Cost of Green Power

- Green power product option
- Green power supplier (e.g., competitive bid or not)
- Renewable resource and technology type (e.g., wind, solar, hydro)
- Quantity of green power purchased
- Duration and terms of contract
- Available incentives for green power
- Location of the generator or consumer

Renewable Energy Certificate Prices

- RECs for compliance claims vs RECs for voluntary claims
- Several factors influence REC pricing:
 - Presence/absence of resource carve outs under RPS mandates
 - Presence/absence of alternative compliance payments under RPS mandates
 - Available REC supply relative to REC demand
 - Wholesale vs retail pricing
 - Supply option or type of consumer engagement





Contracting Challenges

- Access to green power supply is not uniform across the US
- The purchase process can be simple and very complex depending on your objectives and chosen supply option
- Have a clear understanding of what you want to accomplish
- Different supply options offer the consumer a range of different costs, benefits, opportunities and impacts
 - All green power supply options include RECs
- Buying and using green power can involve:
 - Conceptual challenges in describing what you have done
 - Questions from stakeholders around the credibility of what you have done
 - Question from stakeholders around the level of market impact your purchase has made