



# **Green Power & GHG Accounting**

Developing a Greenhouse Gas Management Strategy:  
Workshop for Federal Agencies and Intergovernmental Organizations

January 2008



# Overview

- *Green Power & Renewable Energy*
- *GHG Accounting for Green Power*
- *Federal Requirements*
- *Green Power Partnership*
- *Voluntary Green Power Products*



# Key Points

- **Green Power is an effective way to reduce the environmental impacts of electricity use**
- **Green Power  $\neq$  Renewable Energy**
- **For GHG goal tracking, green power may be used to adjust indirect electricity emissions**

# Green Power & Renewable Energy

- **Green Power is Renewable Energy, *but* Renewable Energy is not always Green Power**
- **EPA's Green Power Criteria:**
  - Renewable energy sources only
  - Zero GHG emissions (biogenic carbon is OK)
  - Lower environmental impacts than that of conventional power generation
  - Facility built after green power market began (1997)
- **Green Power = wind, solar, geothermal, biogas, biomass and low-impact hydro**



# Green Power & GHG Accounting

- **The indirect emissions associated with purchased electricity will often comprise a very significant portion of an organization's GHG inventory**
- **Organizations can reduce or adjust indirect emissions by:**
  - Energy efficiency projects / on-site green power
  - Green power purchases

# Green Power Value Proposition

- **Addresses major source of climate risk**
- **Less need for imported fuels**
- **Deploys quickly & scales up easily**
  - Provides flexible mechanism for meeting carbon goals
- **Delivers high-impact/low-cost value**
  - Marketing value can exceed energy/environmental value
- **Translates well to the public, employees & mgmt**
  - Typically doesn't require extensive technical explanation
- **Continues to capture favorable media attention**
- **Carries stronger biz case with price stability**



# Federal Goals for Renewable Energy

- **Energy Policy Act (EPACT) of 2005 directs the federal government to increase its renewable energy use, with a goal of using**
  - 3 percent or more in fiscal years 2007 through 2009,
  - 5 percent or more in fiscal years 2010 through 2012,
  - 7.5 percent or more by 2013
- **Renewable Energy = solar, wind, biomass, landfill gas, ocean, geothermal, municipal solid waste, or new hydro capacity**



# Green Power Market

- **The voluntary green power market is over 10 yrs old**
  - >85% of green power products are comprised of new renewables
  - >80% of voluntary market sales are third-party certified and verified
- **RECs and non-residential sales drive market growth and support additional renewable energy capacity**
  - At the end of 2006, green power sales represented a capacity equivalent of about 3,500 MW, with more than 3,000 MW from new resources
- **With RECs and on-site options, there are no longer any geographic limitations to buying green power**



# Top 10 Federal Partners

- 1. U.S. Air Force – 457,500,000 kWh 4%**
- 2. U.S. EPA – 299,331,375 kWh 100%**
- 3. U.S. Department of Energy – 157,964,000 kWh 3%**
- 4. U.S. Department of Veterans Affairs – 90,000,000 kWh 3%**
- 5. U.S. GSA / Region 2 – 78,930,000 kWh 34%**
- 6. U.S. Army / Fort Lewis – 41,891,000 kWh 18%**
- 7. U.S. Army / Fort Carson – 40,000,000 kWh 29%**
- 8. U.S. NPS / Statue of Liberty & Ellis Island – 9,414,000 kWh 100%**
- 9. U.S. Internal Revenue Service – 7,000,000 kWh 3%**
- 10. U.S. Dept. of Agriculture / HQ Complex – 6,520,000 kWh 15%**



# **EPA Green Power Partnership**

- **A voluntary climate program helping to increase the use of green power among leading U.S. organizations**
- **Organizations are encouraged to purchase green power to reduce the greenhouse gas intensity of the electricity sector**
  - EPA works with leading organizations, including Fortune 500 companies, local, state, and federal government agencies, manufacturers and retailers, as well as colleges and universities
  - 800+ EPA Partners are purchasing over 12 billions of kilowatt-hours of green power and avoiding the generation of approximately sixteen billion pounds of carbon dioxide annually
- **EPA's Green Power Partnership works together with the Federal Energy Management Program (FEMP)**

# EPA Offers Partners

## ■ **Credibility**

- Eligible renewables defined
- Green power purchasing benchmarks

## ■ **Technical & Marketing Information**

- *Guide to Buying Green Power* and procurement guidance
- Environmental impact calculations
- Green Power Locator

## ■ **Recognition**

- Top 25 Partner List
- Green Power Challenges
- Green Power Leadership Awards
- Promotional opportunities & use of the Partnership Logo

# Purchasing Requirements

Annual Electricity Use (MWh) *	Minimum Purchase Requirements**	Leadership Club Requirements
> 100,000	2%	20%
100,000 to 10,001	3%	30%
10,000 to 1,001	6%	60%
< 1,000	10%	N/A

Note: A Partner must meet the purchase requirements for all of its U.S. facilities to be in the Leadership Club.

\*Customers with annual load less than 1,001 MWh are not eligible for the Green Power Leadership Club. EPA will recognize Partners separately who fall in this size category and purchase 100% green power.

\*\*The Leadership Club purchase requirement must be met with “new” renewables.



# Green Power Product Options

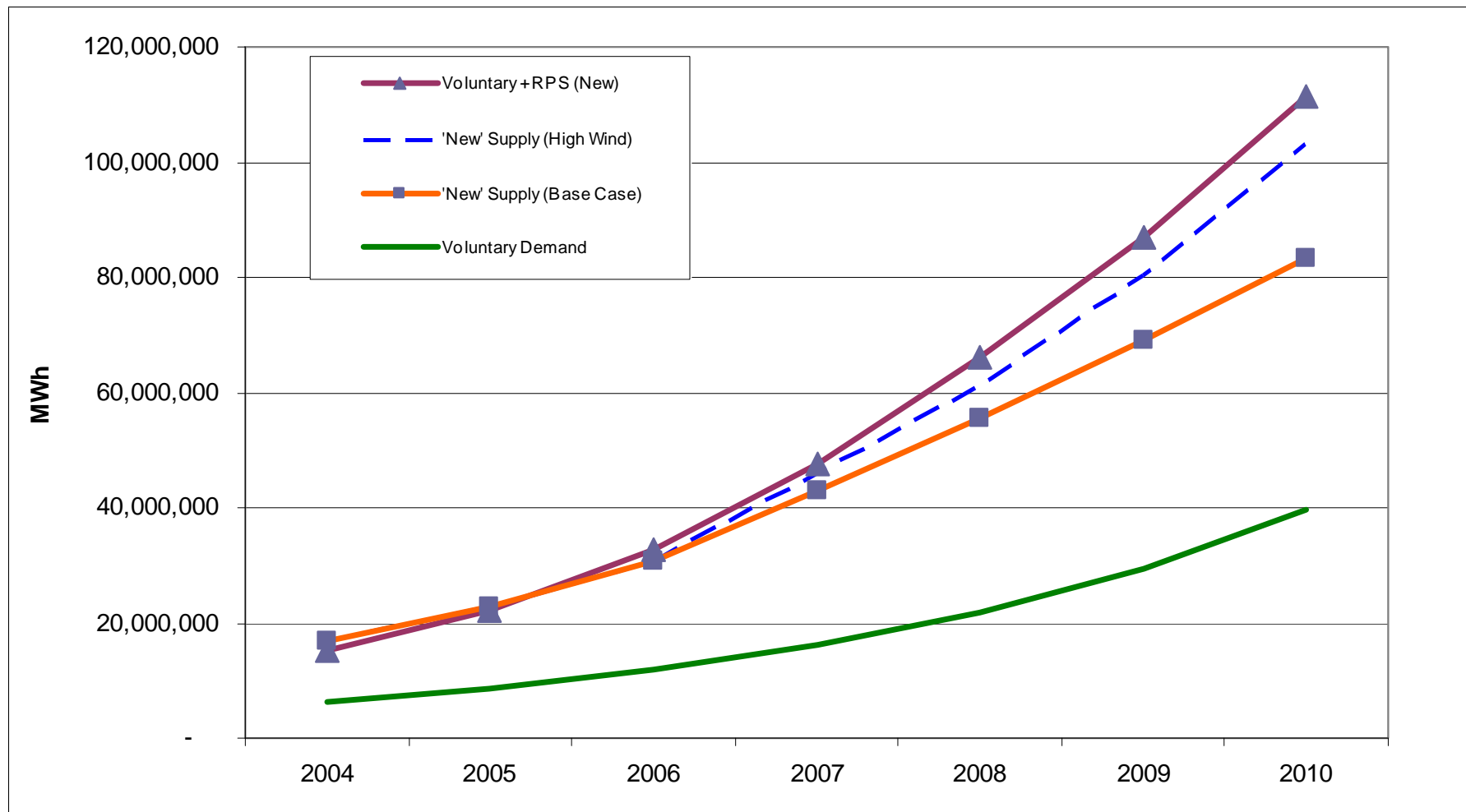
- Green Power Electricity Products
  - Buy electricity from utility green pricing programs or green power retail marketers that is all, or partially, generated from renewable sources
- Renewable Energy Certificates (REC)
  - Buy only the environmental “attributes” associated with the electricity generated (1 REC = 1 MWh)
- On-site Generation
  - Install renewable energy system on-site (e.g. solar panels, wind turbines)



# Renewable Energy Certificates

- Represent the attributes of electricity generated from renewable sources
  - Provide proof that 1 MWh has been generated and describes key characteristics of the power including: facility type & age, geographic location, and time of generation
  - Can be unbundled & traded separately from commodity electricity
- Are increasingly the currency of renewable energy markets
  - Used to supply products to consumers as well as demonstrate compliance with regulatory requirements, such as an RPS
  - Allow consumers to make limited environmental benefit statements

# Estimated and Projected Supply and Demand for Renewable Electricity



Swezey, B., J. Aabakken and L. Bird. 2007. *A Preliminary Examination of the Supply and Demand Balance for Renewable Electricity*. National Renewable Energy Laboratory, October.



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