Innovative Financing Options and the University Solar Deployment Process

May 17, 2017

Speakers & Agenda

- Speakers
  - Christopher Kent, Program Manager, EPA's Green Power Partnership
  - Myron Wilson, Deputy Chief Sustainability Officer, University of Utah
  - Nainan Desai, Assistant Director of Facilities Management, University of South Florida

- Agenda
  - Webinar logistics & introduction
  - Traditional financing options for solar
  - Innovative solutions to deploy solar
  - University of Utah
  - University of South Florida
  - Question & Answer Session

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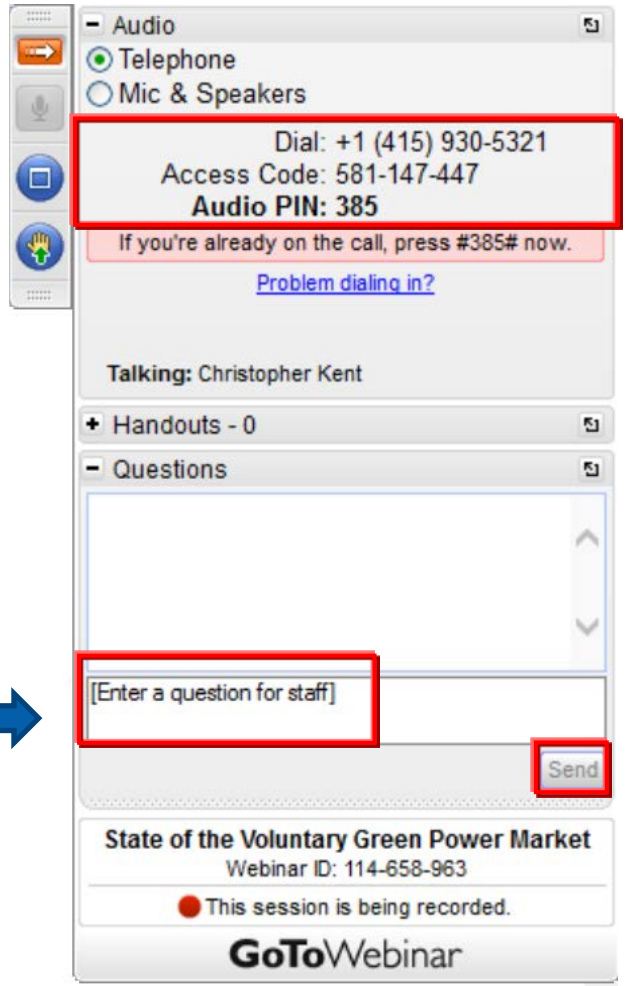
Webinar Logistics

Open and close your control panel



Audio is available via your computer's microphone and speakers (VoIP) or telephone:
+1 (562) 247-8422
ID: 930-859-126

Type in your questions here

Hit “send” to submit your questions

If you experience technical difficulties, please contact Grant Strauss at: Grant.Strauss@erg.com

Green Power Partnership Overview

- Summary
  - The U.S. EPA's Green Power Partnership is a voluntary program that encourages 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 procuring green power
  - Provide recognition platform for organizations using green power in the hope that others follow their lead
- 1,400+ Partners procure more than 41 billion kWh annually, equivalent to the annual electric use of nearly 3.8 million American homes.

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Higher Education Partners

Middlebury

Colby-Sawyer College

Southern New Hampshire University

Oklahoma State University

The Ohio State University

Northern Arizona University
Founded 1899

Syracuse University
Suos Cultores Scientia Coronat
Founded AD 1870

University of Washington

Drexel University

Babson

Iowa State University

The University of Tennessee Knoxville

American University
Washington, DC

University at Buffalo
The State University of New York

Boston Architectural College

Colby College
Lux Mentis Scientia

Bentley
www.bentley.edu

Carnegie Mellon University

University of Maryland
1856

1804
Ohio University

1789
Georgetown University

The University of Utah

Western Washington University

Emerson College
1880

Penn
University of Pennsylvania

Wellesley

University of Missouri

University of Colorado at Colorado Springs
UCCS

The University of Oklahoma

Northwestern University
1851

Wisconsin
University of Wisconsin-Madison

UNT
University of North Texas
Est. 1890

Bunker Hill Community College
imagine the possibilities

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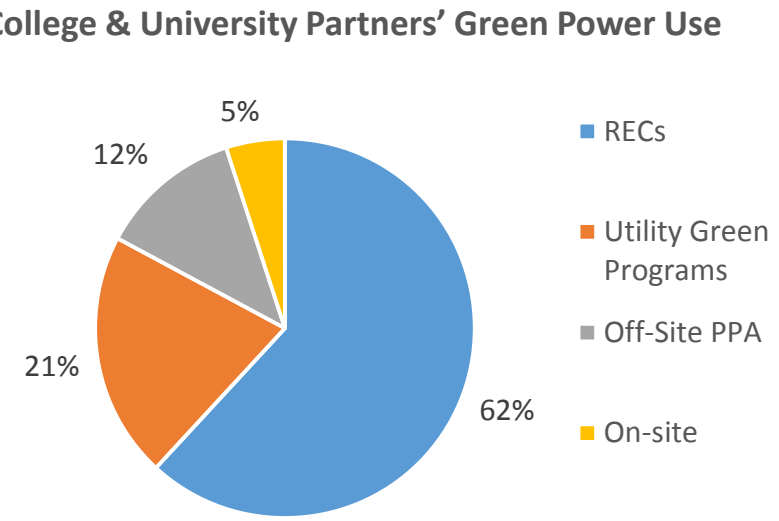
Current Status: Green Power in Higher Education



EPA's Green Power Partnership

- 138 College & University Partners
  - 71 have REC contracts
  - 53 have utility contacts
  - 116 on-site systems (163 million kWh, 90 owned, 26 on-site PPAs)
  - 10 have off-site PPAs
- College & University Partners Using Nearly 3.3 billion kWh
  - Equivalent to the annual electricity use of 298,000 average American homes

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Traditional Financing Options for Solar

- **Self-Financing**
  - **Cash purchases:** often least expensive option overall as no financing costs or solar finance company fees incurred
    - Upfront cost of PV system is significant and likely a barrier for many universities
    - University needs sufficient federal tax liability for full benefit of federal investment tax credit (ITC)
  - **Traditional self-financing:** provided by banks and credit unions and therefore likely the most available options (e.g., loans and mortgages)
    - Requires universities to have good credit and determine whether it can take full benefit of the federal ITC
- **Third-Party Financing**
  - **Power purchase agreements (PPAs):** solar array offsets university's electric bill, and developer sells power generated to university at fixed rate, typically lower than local utility
  - **Solar leases:** university signs contract with installer/developer and pays for use of solar system over specified period of time, rather than paying for generation ($/kWh)

Innovative Solutions to Deploy Solar

- Student Fees
- Alumni Donations
- Green Revolving Funds
- Class Gifts
- Collaborative Procurement
- REC Arbitrage
- Federal & State Incentives
- Endowment Investment
- Community Solar

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Innovative Solutions: Student Fees

- **Northern Arizona University**
  - Green Fund started with student support in 2010; collects $5 fee from every student per semester
  - Fund generates $210,000 a year and uses $10,000 for salary and operational expenses
  - In 2015, Fund began paying $100,000 a year until 2025 to support 562 kW solar array on parking garage
- **University of South Florida**
  - Student Green Energy Fund launched in 2011 to lead campus to carbon neutrality
  - Collects $1 student fee per credit hour
  - Fund is providing $1.4 million for a 1,200-panel solar array on its student center

Sources: https://nau.edu/Green-NAU/Green-Fund/About-Green-Fund/ and http://www.usf.edu/student-affairs/green-energy-fund/projects-in-progress/index.aspx

Innovative Solutions: Alumni Donations

- **Dixie State University**
  - An alum and co-owner of solar company is donating $10 million to renovate the football stadium and install a 1.5 MW solar system gradually through 2027

- **Methodist Theological School in Ohio**
  - 40-panel, 11 kW array was built in 2015
  - President invited donors to give to the project in the amount of $750 per panel, which fully funded the array

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Source: https://www.mtso.edu/alumni-friends/giving-to-mtso/buy-solar-panel/

Innovative Solutions: Green Revolving Fund

- **Agnes Scott College**
  - Green Revolving Fund created in 2012 from donations to help college undertake energy efficiency by revolving the cost savings from each project back into fund
  - Fund supported the purchase of a 6 kW solar array in 2015, to go along with four other campus solar arrays

- **University of Minnesota Duluth**
  - Money from Green Revolving Fund will be used in conjunction with $100,000 from Student Service Fees to install an 11 kW "Solar Pavilion" at Molasky Stadium
  - Creates opportunities for undergraduate research and hands-on experience with implementation of solar projects

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Sources: https://www.agnesscott.edu/sustainability/energy/green-revolving-fund.html
& https://umdsustain.wp.d.umn.edu/programs/green-revolving-fund/

Innovative Solutions: Class Gifts

- **University of Delaware:**
  - Class of 2009 raised a record $100,000 as its class gift to fund solar panels
  - Gift was determined through online balloting of 1,340 students
  - Gift was a continuation of the Class of 2008's carbon footprint project, as the solar panels will implement plans derived from the carbon footprint inventory
- **Pennsylvania State University:**
  - Class of 2015 voted to donate a solar array for its class gift
  - Aligns with University goal to reduce building energy use by 20 percent by 2024
  - Held a student competition to design the array

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Sources:
http://www1.udel.edu/udaily/2009/may/classgift053009.html & http://news.psu.edu/story/331519/2014/10/22/campus-life/class-2015-votes-green-solar-panel-array-chosen-gift-penn-state

Innovative Solutions: Collaborative Procurement

- **American University** (AU), **George Washington University** (GWU), and the **George Washington University Hospital** (GWUH)
  - Capital Partners Solar Project is a 20-year PPA orchestrated by CustomerFirst Renewables (CFR) and supplied by Duke Energy
  - 52 MW solar farm in North Carolina that generates 123 million kWh annually
  - At the time, was largest non-utility solar PPA in the U.S.
- **Massachusetts Institute of Technology** (MIT), **Boston Medical Center** (BMC), and **Post Office Square Redevelopment Corporation** (POS)
  - Summit Farms is a 25-year PPA also orchestrated by CFR, but supplied by Dominion
  - Will be a 60 MW solar array on farmland in North Carolina, generating about 146 million kWh annually
  - Largest renewable-energy project ever built in the U.S. through an alliance of diverse buyers

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Sources: https://mediarelations.gwu.edu/solar-project-bring-energy-three-dc-institutions & http://news.mit.edu/2016/mit-neutralize-17-percent-carbon-emissions-through-purchase-solar-energy-1019

Innovative Solutions: REC Arbitrage

- **National Aquarium**
  - Receives 100 percent of the electricity from a 4.3 MW solar array in Maryland
  - Receives replacement wind RECs in years 1-15
  - Receives SRECs from project in years 16-25
  - Innovative model stabilizes energy costs and brought a new, large-scale solar energy project online
  - By locating the project offsite, created a larger, more economical project with greater financial and environmental impact
  - Long-term PPA and Maryland's strong incentives for solar development combine to ensure financial viability of this project

Source: http://apps3.eere.energy.gov/greenpower/events/docs/0215_webinar_solar_power_claims.pptx

Innovative Solutions: Federal and State Incentives

- **University at Buffalo, the State University of New York**
  - "Solar Strand" was made possible by NY-Sun Initiative, which brought together and expands multiple solar incentive programs for spurring the state's solar economy
  - The 750 kW, 3,200-panel solar array serves as natural classroom for UB students and primary school students
- **University of Washington**
  - Three solar arrays to be installed in partnership with:
    - Seattle City Light's Green Up program, which is contributing $225,000
    - Washington State Department of Commerce's Solar Grant Program, which is matching the $225,000
  - Student research on combination of solar with advanced meters, communications equipment, a battery system, and control center

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Sources: http://www.buffalo.edu/news/releases/2012/04/13375.html & http://green.uw.edu/news/uw-and-seattle-city-light-partner-solar-testbed-installation

Innovative Solutions: Endowment Investment

- **Yale University**
  - The Yale University Endowment invested in the 51 MW Record Hill Wind project in Maine in 2011
  - Yale and other sponsors' investment of $12 million helped project secure a $102 million loan from the Department of Energy

Source: http://news.yale.edu/2011/03/03/endowment-invests-maine-wind-power-project

Q&A Session

- Green Power Partnership: www.epa.gov/greenpower
- Renewable Energy Project Development Toolbox: www.epa.gov/repowertoolbox

- More Questions?
  - Christopher Kent, EPA, kent.christopher@epa.gov
  - Myron Wilson, University of Utah myron.willson@sustainability.utah.edu
  - Nainan Desai, University of South Florida, ndesai@usf.edu

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