



EPA Green Power Partnership  
Clean Energy Collaborative Procurement Initiative  
Metropolitan Washington DC  
*For Private Universities & Colleges*

March 2011



[www.epa.gov/cecp](http://www.epa.gov/cecp)



# Program Discussion Agenda

- Program Mission Statement
- Collaboration Approach
- Regional Benefits
- Program Model and Timeline
- Higher Education Examples
- Financing Option Discussion
- Case Study and Site Bundling Approach
- Getting Started

# Metro DC Clean Energy Collaborative Procurement Initiative Overview

- Launched by EPA's Green Power Partnership
  - Based on successful Silicon Valley collaborative model
  - Government partners including Federal, Local, Military, Higher Education
  - Focused on agencies in the greater Metropolitan Washington DC Area



## Mission:

To develop an effective and collaborative platform for deploying clean energy (predominately solar PV) across multiple government and educational organizations for maximum impact on installed solar systems, the local economy, and regional environment.

# Demonstrated Collaboration Benefits

- Achieve Strategic Sustainability Plans faster by working together
- Aggregation yields greater market interest and better pricing (10% - 15%)
- Working together yields lower project risks with higher returns
- Dramatically reduce transactions costs and administrative effort (50% - 75%)
- Demonstrate leadership nationally, regionally and locally
- Very few mandatory Federal/Local programs reduce long-term costs, but...
  - Renewable energy can generate savings, when managed properly
- Strategic planning demands a comprehensive approach, but...
  - Need to shorten the long learning curve on new technologies

# Metro DC Collaboration Model



Enable Regional Collaboration, Communication & Support

**Independent Solar Project Expertise - Optony**

**Lead Agency – Fed-Civilian/Fed-Military/Higher Ed/Local Agencies**

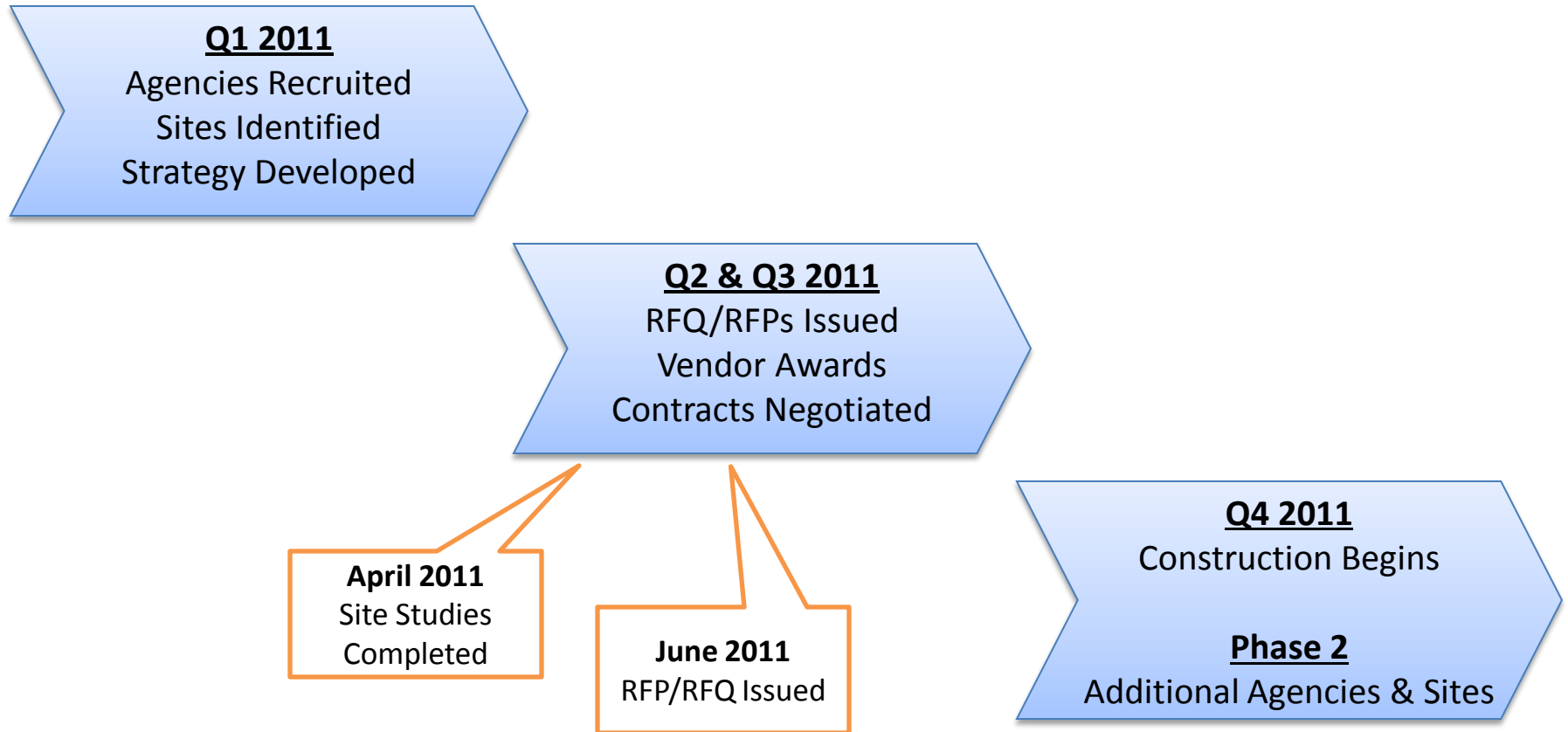
**+ Participating Agencies**

## **Phase 1**

*# Sites & # MW  
Create Jobs  
Economic Growth  
Energy Savings  
GHG Reductions*

**Private Sector  
Resources, Projects, Financing**

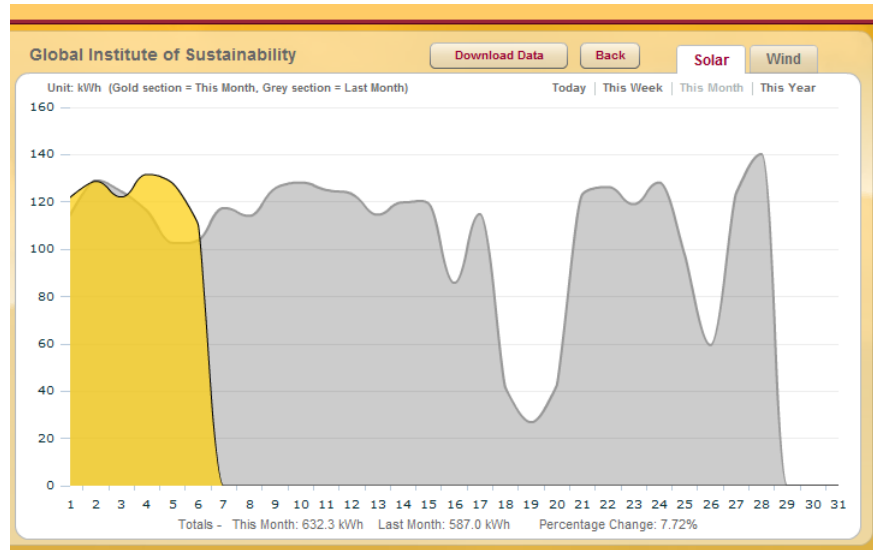
# Project Timeline



# Opportunities for Educational Curriculum Integration

<b>Technical</b>	Engineering – ME, EE, CE System Design & Construction Electronics & Component Design
<b>Basic Science</b>	Physics & Chemistry Astronomy Earth Science & Weather
<b>Public Policy</b>	Federal, International, NGO State & Local Policy Energy & Common Pool Resources
<b>Economics</b>	Taxation and incentives Financial and economic forecasting Business models & GDP impact
<b>Environment</b>	Global and local environment Energy sustainability Societal impact & solutions

# University Example - ASU

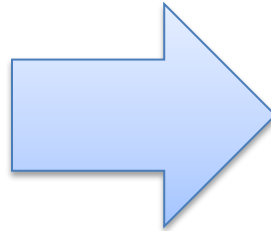




# Financing Choices Impact Project Design & Outcome

## Financing Structures

- **Direct Purchase**
- **Power Purchase Agreement**
- **Equipment Lease**
- **Bond/Loan Financing**
- Enhanced Use Lease
- Utility Financing
- Energy Service Contract



## Major Impact On:

- Performance Risk
- Up-Front Costs
- Long-Term Returns
- Procurement Process
- System Design
- Project Benefits
- Operations & Maintenance

# Direct Purchase

- **Ownership**
  - Customer owns, operates, and maintains the system
  - Owner has full responsibility for performance
  - Maintenance contracts and performance guarantees can be purchased
- **Capital Costs**
  - Full cost of system due at delivery (some interim payments may be required)
  - May be partially offset by rebates & incentives
- **Financial Benefits**
  - Long-term savings generally the highest with direct purchase
  - Customer retains Solar Renewable Energy Credits (SREC)
  - Customer receives federal, state, and local incentives and rebates
  - Non-taxable organizations cannot capture any tax benefits
  - Very low operating costs, effectively capping electricity costs for 25 years

# Power Purchase Agreement

## ○ **Ownership**

- PPA, LLC owns, operates, and maintains the system
- PPA receives all federal, state and local incentives, rebates and tax benefits
- System output is the responsibility of PPA, but Customer must buy ALL power produced

## ○ **Capital Costs**

- No up-front capital costs

## ○ **Financial Benefits**

- Fixed price per kWh with known annual escalation (2% to 5%) over 20 years
- Savings are generally very low in the early but increase over time
- PPA or Customer owns Solar Renewable Energy Credits (SREC), based on contract
- System sizing must be carefully evaluated and Performance Guarantees should be included
- Payback periods can be quite short because there is no initial capital costs
- Customer can purchase the system at the end of the PPA term for FMV

# Equipment Lease

## ○ **Ownership**

- Leasing company (bank) owns the system
- Fixed monthly payments for 7-15 years
- Leasing company takes available federal tax benefits
- Customer has full responsibility for performance
- Maintenance contracts and performance guarantees can be included

## ○ **Capital Costs**

- No up-front capital costs
- May be some transaction costs

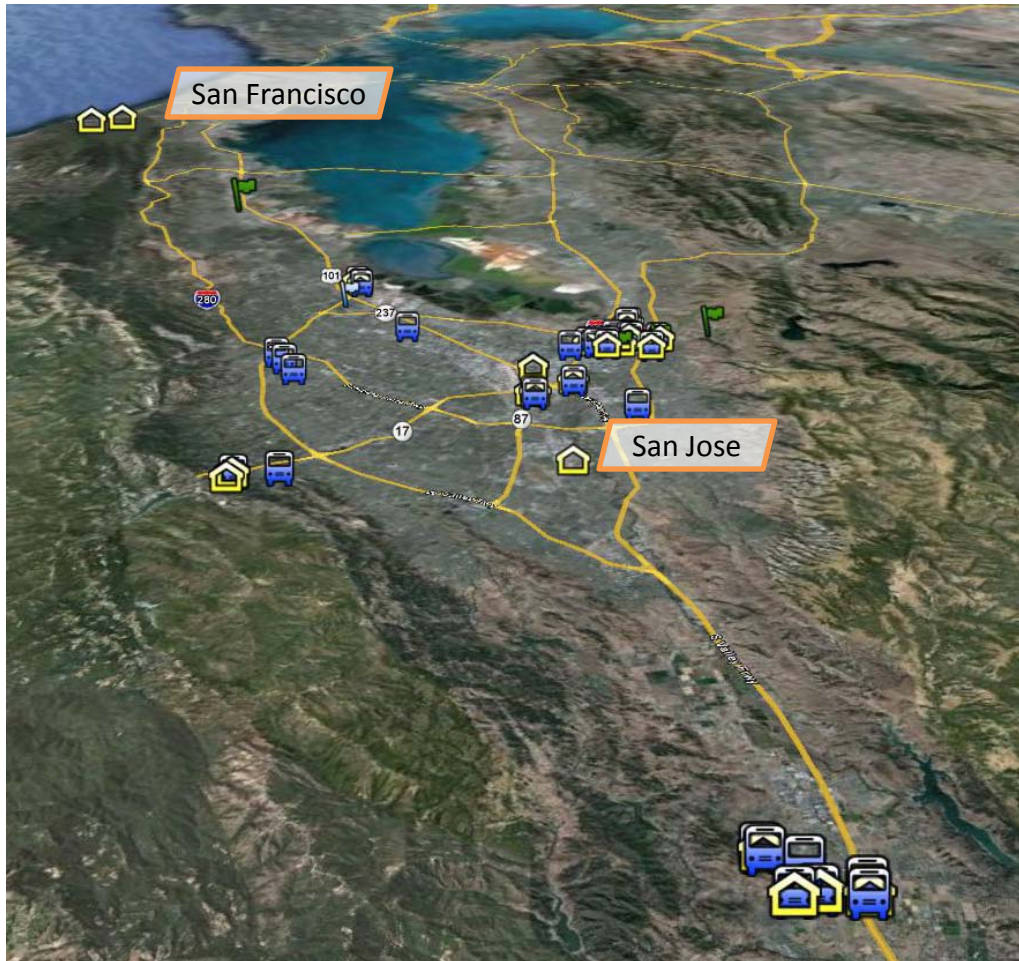
## ○ **Financial Benefits**

- Lease term saving generally minimal, but then very high once purchased
- End of lease buy-out for FMV or about 20% of initial value
- Customer generally retains Solar Renewable Energy Credits (SREC)
- Customer receives state, and local incentives and rebates

# Loan & Bond Financing

- **Ownership**
  - Customer owns the system, but finances with Bank or through agency bonds
  - Fixed monthly payments for 10-20 years
  - Customer has full responsibility for performance
  - Maintenance contracts and performance guarantees can be included
- **Capital Costs**
  - Capital costs are financed, but must review debt capacity
  - Transaction costs can be significant for bonding
- **Financial Benefits**
  - Savings can be minimal in the early years, but then increase over time
  - System is fully owned at the end of the finance term
  - Customer retains Solar Renewable Energy Credits (SREC)
  - Customer receives federal, state, and local incentives and rebates
  - Non-taxable organizations cannot capture any tax benefits

# Silicon Valley Regional Solar Project Overview



Includes 70 sites

- Collaboration across 9 jurisdictions
- 14.4MW of combined solar PV

Multiple Site Types:

- Carports
- Rooftops
- Ground mounted

Largest multi-agency effort to date

- County of Santa Clara
- 6 Cities
- 2 Special Districts

LESSONS: Aggregated effort yields volume discounts, lower administrative and transactions costs, along with better qualified vendors and projects.

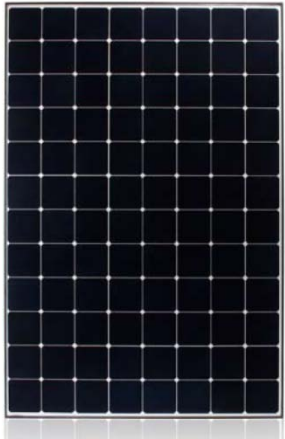
# Metro DC Area Regional Benefits - TBD

## *EXAMPLE from Silicon Valley, CA...*

- *Reliable cost of electricity over 20 year term, escalation rates 2%-4%*
- *Volume & competitive pricing yielded 10-14% cost reductions*
- *Electricity consumption completely offset for 25% of sites*
- *Projected to generate \$70M+ in local economic activity and 300+ jobs*
- *Over \$30M in Federal tax benefits captured via PPA (ITC + Depreciation)*
- *Demonstrated leadership with large number of installations*
- *Capture long-term REC benefits with future potential for resale*

# Clean Energy Technology Examples

## Solar Photovoltaic (PV) Modules



## Solar Hot Water



## Wind Turbines



## Fuel Cells





# Strategic Bundling Approach

- Thorough review of individual site characteristics
  - Look for potential sizing issues and opportunities
- Consider site-specific and agency-level constraints
  - Incentive structures, financing options, contracting requirements, procurement process
- Bundling sites by installation type, host facility, size and other attributes
  - Make bundles attractive to qualified integrators
- Incorporate solar market input
  - Capabilities, economies of scale
  - Avoid deal-breakers found in many other projects
- Consider total size (MW) and number of sites per bundle
  - Some bundles can be too small or too large
  - Evaluate other renewable (non-PV) options

# Getting Started

- Identify sites across your organization for potential solar development
- Recruit other departments and agencies to aggregate sites and combine efforts
- Define goals, constraints and success factors
- Determine financing and contracting requirements and options
- Utilize internal and external expertise to assess sites and tailor procurement effort
- Convene stakeholders to review plans and build support for the initiative!



# Defining Solar Energy For Project Sponsors

## 6 Ways to Maximize Solar Project Impact:

- Leadership & Economic Development
- GHG Reductions
- Design Integration
- Return on Investment
- Total Energy Offset
- Total Savings



*Team must agree on prioritization of these competing goals to be successful*

# Solar Site Feasibility Checklist

- Independent solar expertise
- On-site survey & meetings
- Enhanced sizing evaluation
- Structural & Electrical evaluation
- LCOE Financial analysis
- Funding and incentive options
- Current pricing & trends
- Technical risk assessment
- World-class tools & methods

# Solar Done Right...

## Recent Project Example

- 3 Sites (out of 5) Selected
- 2.1 MW Solar Capacity
- 20-year PPA
- \$2.7M Savings over 20 years
- 1.8 Million VMT Reduction



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## ABOUT EPA'S GREEN POWER PARTNERSHIP

The Green Power Partnership is a voluntary program that supports the organizational procurement of green power by offering expert advice, technical support, tools and resources. Partnering with EPA can help your organization lower the transaction costs of buying green power, reduce its carbon footprint, and communicate its leadership to key stakeholders. [www.epa.gov/greenpower](http://www.epa.gov/greenpower)

### Credible Benchmarks

Metric for "How much green power is enough?"

Definition of eligible renewables

### Planning & Implementation Resources

Green power locator

Purchasing guidance

Marketing and communications support

Environmental benefits calculator

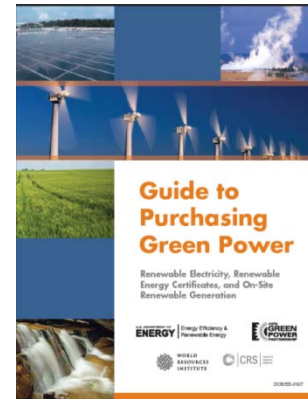
### Recognition

Top Partner Lists

Green Power Leadership Awards

Promotional opportunities

Use of the Partner logo



## ABOUT OPTONY INC.

Optony develops and deploys solar best practices across the entire solar project lifecycle for government agencies, schools and commercial organizations.

Working with clients across all phases of solar projects creates deep insight into true performance drivers which is used to reduce costs and improve performance at any stage in the process.

[www.optony.com](http://www.optony.com)

*Optony Inc. is a contractor to the  
U.S. Environmental Protection Agency*

