Higher Education Solar Development: RFPs and Contract Issues

Smart and Sustainable Campuses
Conference
April 5, 2016



Speakers and Agenda

Speakers

- James Critchfield, EPA Green Power Partnership
- Jonathan Whelan, Optony, Inc.
- Merrill Kramer, Sullivan & Worcester
- Dennis Carlberg, Boston University

Agenda

- Introduction to Green Power Partnership
- Background on today's workshop
- RFPs and Contract Issues Presentations
- Boston University Experiences
- Brief Survey Request
- Questions and Answer Session

EPA GREEN POWER PARTNERSHIP



Green Power Partnership Overview

Summary

The U.S. EPA's Green Power Partnership (GPP) is a free, voluntary program that encourages organizations to use green power as a way to reduce the environmental impacts associated with conventional electricity use.

Objectives

- Reduce emissions and air pollution associated with conventional electricity use
- Expand the voluntary green power market
- Standardize green power procurement as part of best practice environmental management
- Provide recognition platform for organizations using green power in the hope that others follow their lead

Current Status

 1,300 Partners using more than 31 billion kWh of green power annually, equivalent to the electricity use of more than three million average American homes.



Partner Snapshot















































Current Status

- EPA's Green Power Partnership
 - 134 College and University Partners
 - 81 REC contracts
 - 62 Utility supply contracts
 - 86 onsite solar systems (35,554,856 kWh, 77 owned, 9 through PPAs)
 - 13 off-site PPAs
 - Green power use totaling nearly 2.7 billion kWh
 - Equates to nearly 4% of the voluntary green power market (8.5% of the green power used by Green Power Partners)
 - Equivalent to the annual electricity use of 245,000 average American homes



WHY FOCUS ON SOLAR IN HIGHER EDUCATION



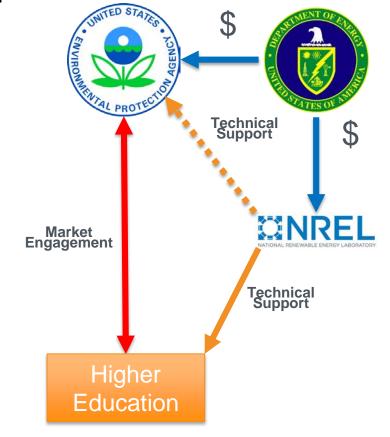
Why Higher Education?

- Higher Education offers great potential:
 - Homogenous cohort of identifiable stakeholders
 - Long time and respected pillars of local communities
 - Long-term view on energy and sustainability issues
 - Public commitments of nearly 700 College and University Presidents to do more related to climate and RE
 - Clearly identifiable set of financing options including, third-party ownership, revolving loan funds, endowments, student funded initiatives etc.
 - Tie-ins to educational mission; training tomorrow's leaders regarding sustainability and renewable energy issues and opportunities
 - Natural inter-institutional competitive spirit in the areas of academia and college sports can be extended to and leveraged into solar energy use



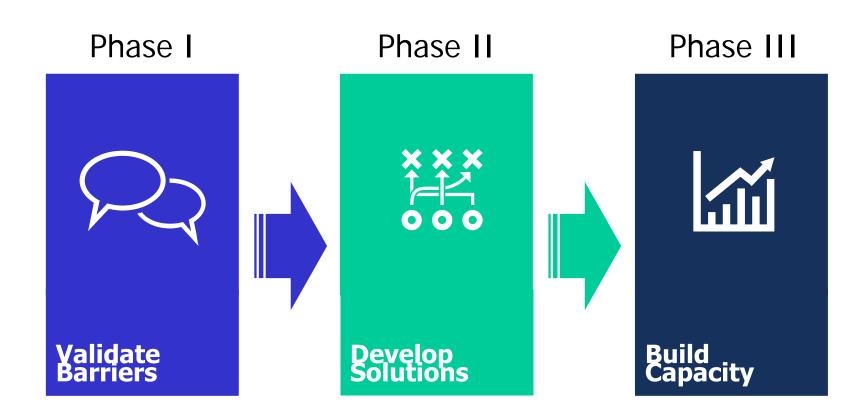
Federal Focus

- Collaboration is born out of a joint effort between EPA, DOE and the National Renewable Energy Lab to focus on mid-scale solar opportunities
- EPA role is to convene stakeholders, facilitate networking opportunities and disseminate both new and existing resources in an effort to address market barriers
- The National Renewable Energy Laboratory (NREL), funded through a DOE SETO SUNLAMP award, will provide technical support to EPA on tools and resources development, engagement and deployment activities undertaken through this initiative





EPA's 18-month Approach





Today's Objectives

- Discuss and identify common project development barriers unique to on- and off-campus solar project opportunities at institutions of higher education
- Validate solar development needs of individual attendees
- Exchange information related to individual experiences and practices
- Identify, discuss and provide technical and non-technical solutions to common barriers



Down the Road

- EPA will disseminate solutions, tools, and resources to stakeholders on specific barriers or issue areas over next 18months
 - Online Resource Directory
 - Basic information and guidance
 - Trainings
 - Templates
 - Case Studies
 - Tools





Smart and Sustainable Campuses Conference U.S. EPA / NREL

RFP Process and Management
April 2016
Jonathan Whelan - Optony Inc.



About Optony Inc.

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

Optony has been involved in over 3GW of project activity globally.

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.





Award Winning
Pubic Sector Project



Award Winning
Pubic Sector Project



Multiple Grant-Winner for Solar Market Transformation



Green Strategy: Solar Roadmap



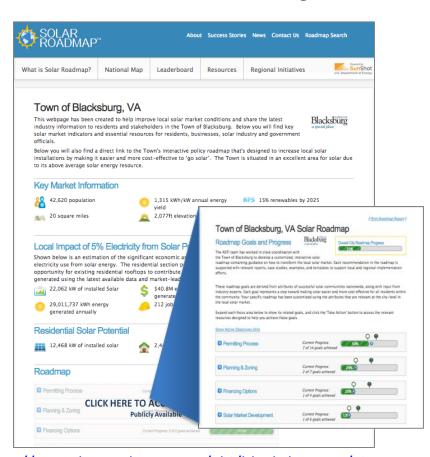
www.solarroadmap.com

Centralized Project Solar Information Hub



http://my.solarroadmap.com/ahj/smp-icv/view

Best Practice Policies & Programs



http://my.solarroadmap.com/ahj/blacksburg-va/view



What is an RFP?

RFP = Request for Proposals

Formal bid document(s) to ask vendors to provide proposals for desired projects.

- Identifies project: scope-of-work, location(s), goals
- Required by many public agencies (federal, state, local)
 - Transparency, accountability
- Creates competitive process for evaluating options
- Process focused on specifically what is sought
- Enables direct comparison of alternatives
 - Well-defined scope-of-work allows for apples-to-apples comparison among proposals



Identify Project

Feasibility Assessment and/or Project Engineering



- Determine what type of project you seek (solar only, renewable energy broadly, batteries, etc.); goals
- Identify what physical locations are available
- For PV (photovoltaic/solar) projects: How much energy do you need? Where can this be installed? What construction hurdles and opportunities exist?
- O What is the project budget? Financial incentives?
- Who? Staff / NREL / Independent consultant
 - O NREL: http://www.nrel.gov/tech_deployment/tools_universities.html



Feasibility Assessment Checklist

- Portfolio approach to site evaluation
- On-site survey
- Structural & electrical evaluation
- Construction concerns and design considerations
- Utility rate evaluation
- Review of funding and incentive options
- Levelized Cost of Energy (LCOE) financial analysis
- Benchmark comparison of pricing & trends





Why Feasibility Assessments?

- o Determine:
 - How much solar you need
 - Where the solar can be installed
 - Portfolio approach to site evaluation
- Enable focused RFP for proposers to address
- Improve ability to make apples-to-apples comparisons
- Help ensure that you're asking for what you really need
- Inform decision-making in budgeting process
- Locate key facility information that will be helpful for RFP proposers
 - Geotech/soils, roof info, electrical, underground utilities, future plans



After Feasibility Assessments:

- o Determine:
 - What sites / electrical meters to pursue
 - Eliminate sites with too many hurdles or uncertainties
 - What financing mechanism to use
 - Cash purchase, Ioan, Power Purchase Agreement, Any/All
 - Key contract terms
 - Ownership structure, removal, REC ownership, construction timeline
 - Desired auxiliary scope/benefits
 - Batteries, curriculum enhancement, local labor, shade structures, re-roofing, re-striping



Develop RFP Packet (if applicable, state requirements):

- Project background and goals
- Logistics
 - Point-of-contact, due dates, RFP schedule
- Site data
 - Information from feasibility assessments
- Required proposal content / format
 - May include standardized pricing forms, template contracts, and/or other forms
- Evaluation criteria
 - Vendor experience, references, pricing, designs, components, approach, auxiliary benefits
- Examples: http://my.solarroadmap.com/solarresourcelibrary?keyword=rfp&focus_area=16&energy_type=1



RFP Issuance

 Post on website, share with industry publications/organizations, alert vendors directly

Pre-bid Meeting / Webinar

Mandatory/optional

Site Walks

- Mandatory/optional
- Vendor considerations: installation locations, shading, roof/ground slope,
 soil conditions, construction access, staging areas, electrical equipment

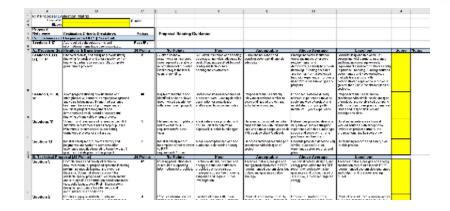
Addenda

Clarify and respond to questions, adjust RFP schedule

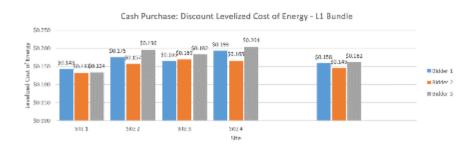


Proposal Review

- Check for completeness
- Review minimum qualifications
- Score proposals based on evaluation matrix (RFP eval criteria)
- Interviews / Clarifications
 - Mandatory/optional
 - Best and final pricing, best offer
- Notify winners and losers, shortlist
- Start contract negotiations



- Pricing scores should be based on Levelized Cost of Energy (LCOE)
- Evaluate proposals individually, then compare





What are common administrative barriers?

- Identification of suitable sites
 - Communicate across department heads to understand operational plans and concerns
- Misalignment of institutional goals
 - Ensure that environmental, financial, operational, educational, and aesthetic priorities are considered
- Not enough information for vendors to provide effective proposals
 - Good feasibility assessment, provide structural and electrical info, understand financial options
- State law requirements for procurement
 - Follow state requirements for procurement and contracting—consider attaching your standard contracting conditions to RFP



Collaborative Procurement: Silicon Valley-REP



Included 43 sites

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

Multiple Site Types:

- Carports
- Rooftops
- Ground mounted

Largest multi-agency effort at the time

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

LESSONS:

Aggregated purchase discounts 12%+
Reduced admin and transactions costs 50%+
Better negotiated contract terms & conditions
Best Practices Guide for Collaborative Procurement

Silicon Valley: https://www.solarroadmap.com/regional-initiatives/sv-rep/

Alameda County: http://www.acgov.org/rrep/



Case Study: College Collaborative Procurement

Council of Independent Colleges in Virginia

DOE Solar Market Pathways Grantee

17 Private Colleges are Collaborating

- 38MW of solar PV put to bid
- Includes 30+ metered sites
- 7 different utility territories
- System sizes 20 2,000 kW

Lessons Learned

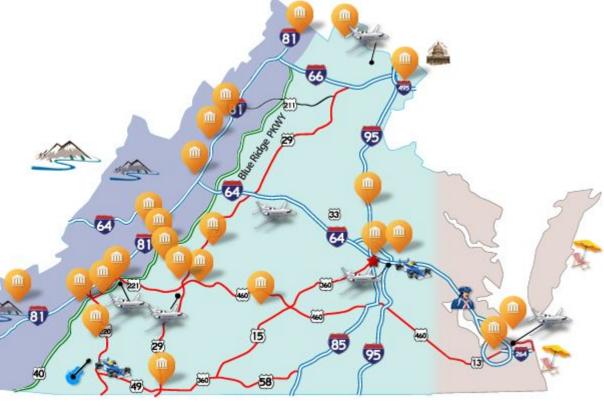
- Can bring big players to previously inactive markets
- Solar Master Plans show value of setting clear goals up front
- Utility engagement is very helpful

Diverse Procurement Options

- Direct purchase + PPA
- Behind the meter + remote
- Land leases

Learn more:

http://my.solarroadmap.com/ahj/smp-icv/view



Contact:

Jonathan Whelan Optony Inc.

jonathan.whelan@optonyusa.com (415) 450-7032



Smart and Sustainable Campus Conference

Solar Project Development – RFP and Contracting Issues





Merrill L. Kramer
Chair, Sustainable Energy Practice
Sullivan & Worcester, LLP

April 5, 2016



Smart and Sustainable Campus Conference

Solar Project Development – RFP and Contracting Issues





Merrill L. Kramer
Chair, Sustainable Energy Practice
Sullivan & Worcester, LLP

April 5, 2016



Sullivan & Worcester LLP

- Global law firm Boston, New York, Washington, D.C., London and Tel Aviv
- Leading Energy Project Development and Finance Firm
- Advised Fortune 200 companies Over 100 energy projects representing \$30 billion in capital
- Board of Directors of residential PV solar company and largest ethanol company on West Coast
- Represent universities and colleges on energy and other matters



College & University Representations







Northeastern University









Solar Project Sequence

- 1. Preliminary Feasibility Study
- 2. Preliminary Design and Engineering Agreement
- 3. Request for Proposals (RFP)
- 4. Contract Negotiation
- 5. Contract Approval and Execution
- 6. Financing
- 7. Construction
- 8. Commercial Operation



Solar Development Contracts Key Objectives:

- Negotiating key contracts to get the Project built:
 - Meeting owner's specifications
 - On time
 - At a Fixed Price
- Fundamental Strategy Allocate risks to the party best able to manage them
- Good set of contracts achieves these objectives by putting as much responsibility as possible on contract counterparties



Project Risks

- Financing
- Construction Risks
- Operating Risks
- Cost Overruns
- Delay/Completion Risk
- Changing Regulatory Framework
 - Shifting structure and value of project



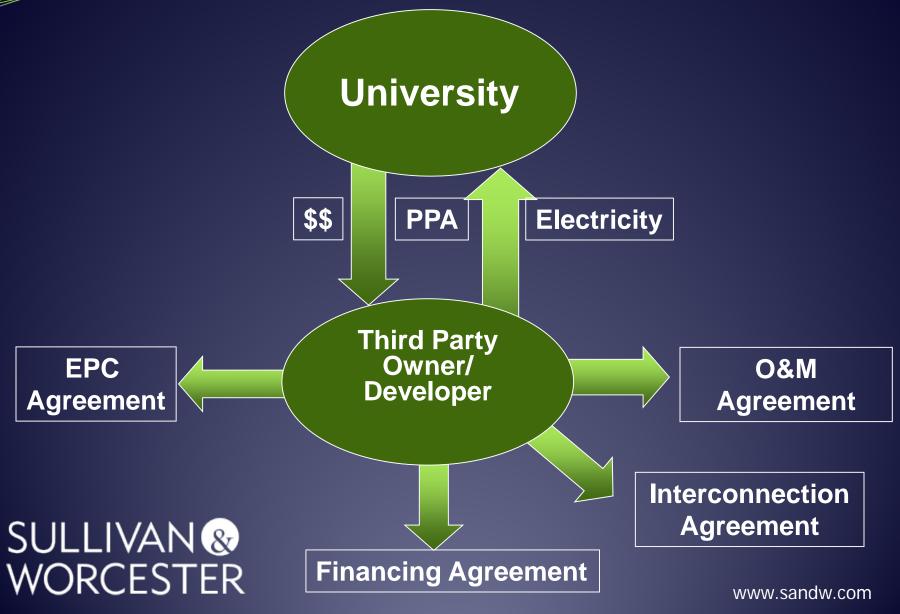
What are the Key Contracts?

- Power Purchase Agreement (PPA)
- Engineering Procurement & Construction Agreement (EPC)
- Operation & Maintenance Agreement (O&M)
- Interconnection Agreement
- Credit/Finance Facility
- Guaranty

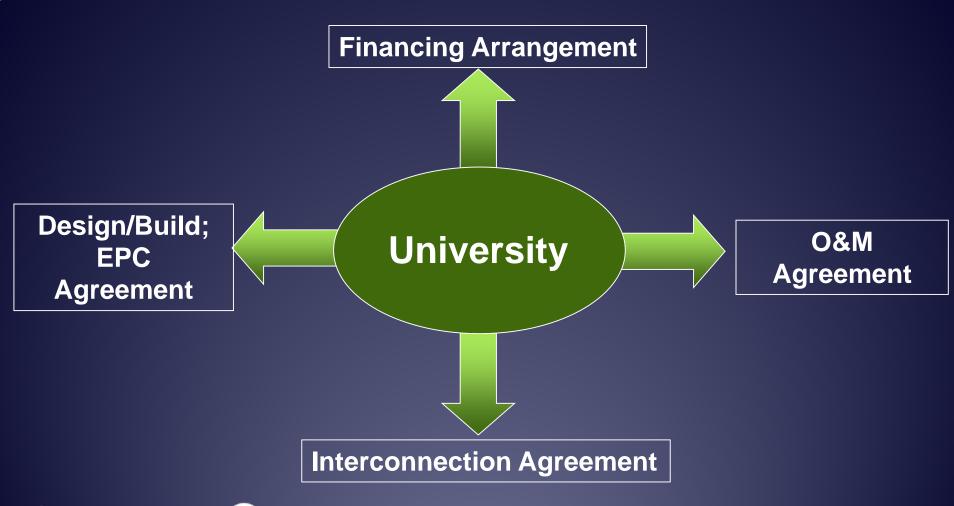




Third Party Ownership Contract Structure



Self-Owned Contract Structure





Power Purchase Agreement

- PPA provides fixed long-term energy price certainty and protection against rising energy costs
- University commits to buy or sell renewable energy
 - For a specified term (e.g., 20 years)
 - At a fixed or indexed price
 - With a guaranteed performance level



PPA Key Terms

Term

Duration longer than term of permanent financing

• Purchase and Sale

- Amounts of Capacity, Energy and Ancillary services to be bought and sold
- Environmental Attributes
 - Agreement should clearly state whether electricity is being sold with or without environmental attributes

Pricing

- Fixed or indexed
- Escalator
- Sufficient to cover Fixed/VariableCosts
- Minimum Debt Service Coverage Ratio

Conditions Precedent

- Financial Commitment/Closing
- Regulatory Approvals



PPA Key Terms (cont'd)

- Conditions Subsequent
 - Milestones
 - Financial Closing
 - Commencement of Construction
 - Commercial Operation
- Performance
 - Efficiency (Heat Rate)
 - Production
 - O&M
- Taxes/Changes in Law
- Testing/Performance Requirements/Penalties
- Performance Security

PPA Key Terms (Con't)

- Dispute Resolution
- Default and Termination
 - Typical Events of Default
 - Missed Deadlines
 - Bankruptcy/Insolvency
 - Extreme Deficient Performance
 - Breach of Material Obligations
- Cure Rights
- Interconnection/System Upgrades
- Indemnification
- Limit on Consequential Damages
- Assignment
- Option to Purchase
- Regulation

Engineering Procurement & Construction Contract

Contract between Project Owner/Developer and Builder Covers:

- Engineering and design
- Construction and construction management
- Procurement of equipment and materials
- Provision of construction labor and personnel
- Permitting
- Start-up, testing and initial operation
- Training of Owner/Operator personnel

EPC- Key Contract Elements

- Price
- Scope of Work
 - Wrapped vs. Unwrapped
- Schedule Guarantees
- Performance Guarantees
- Limits on Liability
- Technology
- Permitting
- Optimizing Risk Allocation
 - Turnkey v. Owner Construct
 - Schedule & Performance Guarantees
 - Credit Support





EPC- Payment Provisions

- Payment
 - Payable in installments based upon:
 - Milestones
 - Percentage completion
 - Absence of material breach
 - Provision of lien waivers
 - Change Orders
 - Retainage



Guarantees and Credit Enhancements

- Enables University to understand counterparty's ability to perform and pay liquidated damages
- Parent guarantees given where principal obligor is entity of unknown or insufficient credit standing or capability
- Performance bonds or letters of credit also used to mitigate performance risk
- Manufacturer Warranty:
 - Machinery, equipment and materials are free from defective workmanship and comply with specifications in scope document
- EPC Warranty for Workmanship and Performance
 - Typically for one year from Substantial Completion
 - Depends on technology



Operation and Maintenance Agreement

- Long term agreement to service and manage project
- Allocates operation risk to the contractor
 - Equipment maintenance and upkeep
 - Inverter replacement
 - Insurance
 - Labor and staffing
 - Extended warranty agreements



Interconnection Agreement

- Negotiation with the utility, additional infrastructure or studies may be required
- Developer/Owner Risk
 - Network upgrades
 - Transmission Interface Constraints
 - Negotiation of interconnection/transmission services agreement
 - Construction of interconnection facilities



Common Mistakes

- Premature Exclusivity
- Insufficient Contingency
- Ambiguous Scope
- Not Considering Financing Alternatives: Power Purchase Agreement Versus Ownership
- Not Factoring in Operation and MaintenanceCosts
- Not Conducting a Competitive Process



FACTOID I

NUMBER OF NEWS ARTICLES IN WHICH *EITHER*THE PHRASE "SUSTAINABLE ENERGY" OR "CLEAN
ENERGY" APPEARS

1975 0

2000 93

2015 28,044



FACTOID II

NUMBER OF NEWS ARTICLES IN WHICH THE WORD "CHILL" APPEARS

1975 125

2000 2,114

2015 123,437



THANK YOU! Questions?



Merrill L. Kramer Sullivan & Worcester LLP mkramer@sandw.com 202-775-1224





Sustainability @ BU It's what you do.

EPA Green Power Partnership Boston University Case Study

> Smart & Sustainable Campuses April 5, 2016









The Market

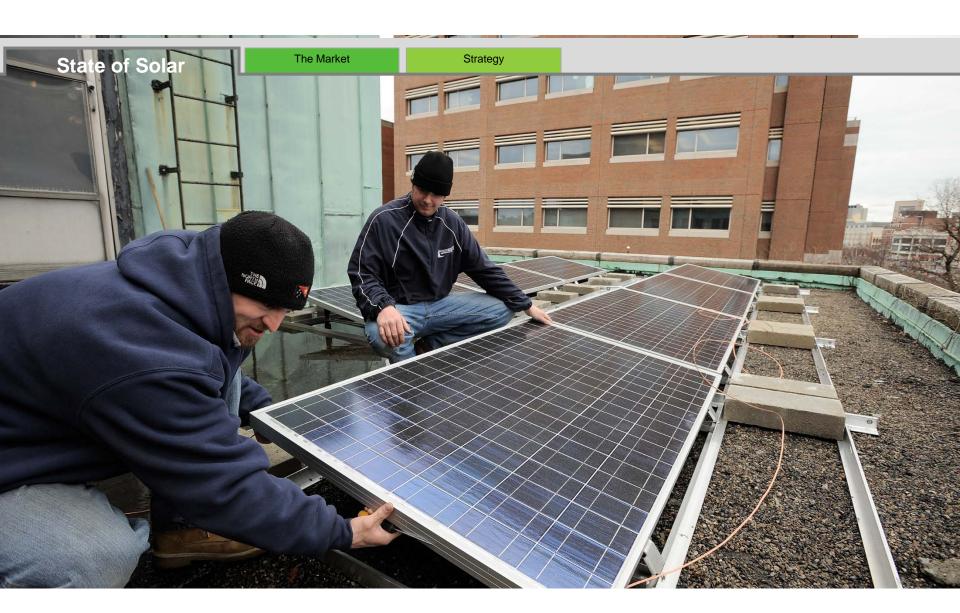
Strategy

Top 15 Universities

	Institution	Green Power Usage	
1	University of Pennsylvania	200,000,000	4000/ of Domond
2	Georgetown University	152,370,500	100% of Demand
3	The Ohio State University	130,241,123	
4	Northwestern University	122,014,800	
5	University of Oklahoma	120,839,000	
6	Carnegie Mellon University	119,013,466	
7	Oklahoma State University	101,339,001	50% of Demand
8	Drexel University	96,678,000	
9	University of Tennessee, Knoxville	91,372,000	d
10	University of Wisconsin	69,391,998	
11	University of Maryland	65,089,825	
12	The City University of New York	64,000,000	
13	University of Utah	63,590,010	
14	Ohio University	60,140,500	30% of Demand
15	University of Missouri	56,315,885	0070 Of Domand

Source: <u>EPA</u> 2/2016



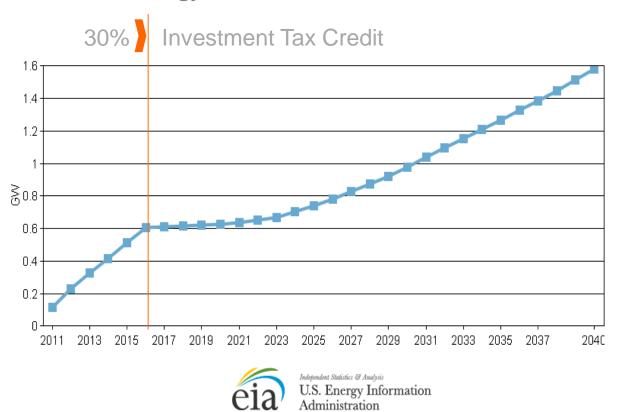




The Market

Strategy

Renewable Energy



Generating Capacity for Solar PV in the Northeast

Source: US EIA



The Market

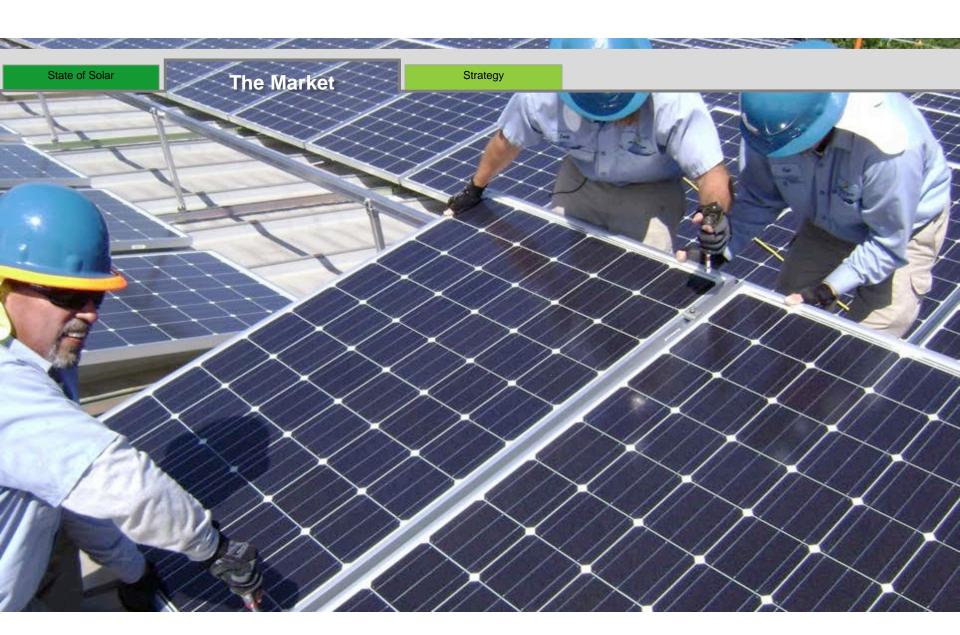
Strategy

Boston Properties



\$1580 savings/week







The Market

Strategy

Considerations



Financial Model

- Build/Own/Maintain
- Power Purchase Agreement (PPA)



The Market

Strategy

Considerations



Financial Model

- Build/Own/Maintain
- Power Purchase Agreement (PPA)

Benefits:

- No Upfront Cost
- Potential for Immediate Savings
- Buy the Power
- Long Term Agreement
- Enable Project Financing



The Market

Strategy

Considerations



Financial Model

- Build/Own/Maintain
- Power Purchase Agreement (PPA)
- Initial Cost/kWh
- Escalation Rate
- Price Floor
- Buyout Schedule
- Risk



The Market

Strategy

Considerations



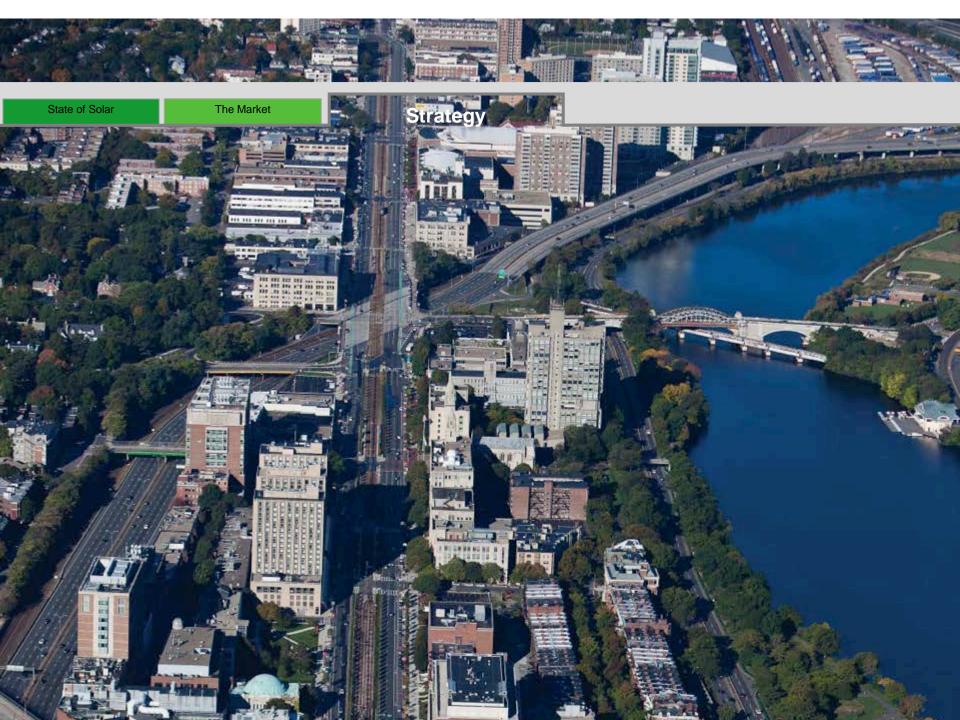
Renewables On Site

- Solar
- Wind

Renewables Off Site

- Inside MA
- Inside NE
- Outside NE





The Market

Strategy

Drivers



- Reduce Annual Elect. Costs
- 2. Reduce Exposure to Price Volatility
- 3. Retain Renewable Energy Credits
 - Where possible
- **4.** Maximize Value through Aggregation
- Provide Curriculum & Research Ops
- **6.** Additionality
- 7. Integration



The Market

Strategy

Timeline



2009 - 2014



State of Solar The Market Strategy Timeline 2015 2015 2016 2014 AASHE Green Ribbon Commission Collaboration Host Large Scale Renewables Workshop **GRC** Meeting Host REPN Meeting Launch GRC Renewable Energy Prize **REPN Call REPN Call** Launch GRC Renewable Energy Purchasing Network **GRC** Meeting



State of Solar The Market Strategy Timeline 2015 2015 2016 2014 AASHE Green Ribbon Commission Collaboration Host Large Scale Renewables Workshop **GRC** Meeting Host REPN Meeting Launch GRC Renewable Energy Prize **REPN Call REPN Call** Launch GRC Renewable Energy Purchasing Network **GRC** Meeting



State of Solar The Market Strategy Timeline 2015 2014 2015 2016 AASHE Education/Stakeholder Engagement NECSC, CFR **Boston Properties Site Visit** SSCC, Altenex **GRC** Workshop Peers, ERG/EPA GPP **SVP Operations VP Real Estate & Operations** Boston Properties, Blue Wave **AVP FM&P AVP Operations** Mass DOER, Peers, NexAmp **ED Finance & Administration** Industry Connections, GRC Members, NREL **AASHE**



The Market

Strategy

Timeline

AASHE

2014 | 2015

2015

2016

Green Ribbon Commission Collaboration

Education/Stakeholder Engagement

MED

RFP DEV RFP

CRC



10

































State of Solar The Market Strategy **Timeline** 2014 2015 2015 2016 AASHE RFP DEV Offsite **Project**





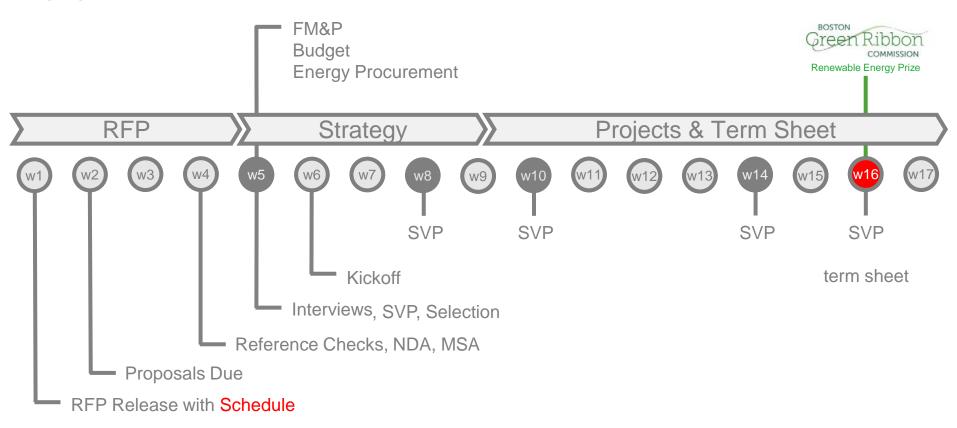
State of Solar The Market Strategy **Timeline** 2014 2015 2015 2016 AASHE RFP DEV Offsite **Project**



The Market

Strategy

Timeline





The Market

Strategy

Clean Energy Initiative



Efficiency



1 MW



1 - 2 MW



Offsite



Sustainability @ BU It's what you do.

Thank you



sustainability@bu.edu





Q&A DISCUSSION



Questions?

Contact:

James Critchfield EPA's Green Power Partnership

<u>critchfield.james@epa.gov</u>

202-343-9442

