



# Solar Utilization in Higher Education Networking & Information Sharing Group: Financial Issues Discussion

*EPA Green Power Partnership*



# Speakers and Agenda

- Speaker
  - James Critchfield, EPA Green Power Partnership
- Agenda
  - Background
  - Report out on top finance issue areas
  - Open discussion
  - Next Steps
  - Q&A

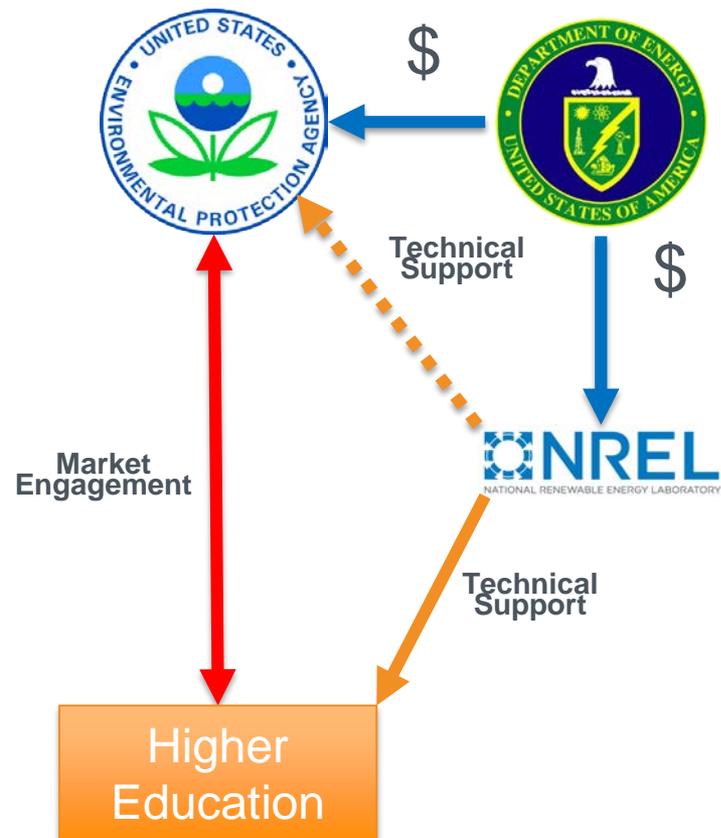


# HIGHER EDUCATION NETWORKING & INFORMATION SHARING GROUP



# Background

- This collaboration is born out of a joint effort between EPA, DOE and the National Renewable Energy Lab to focus on mid-scale solar opportunities
- Over this 18-month effort, EPA will seek to address specific financial, administrative and policy barriers encountered by individual institutions



# Objectives

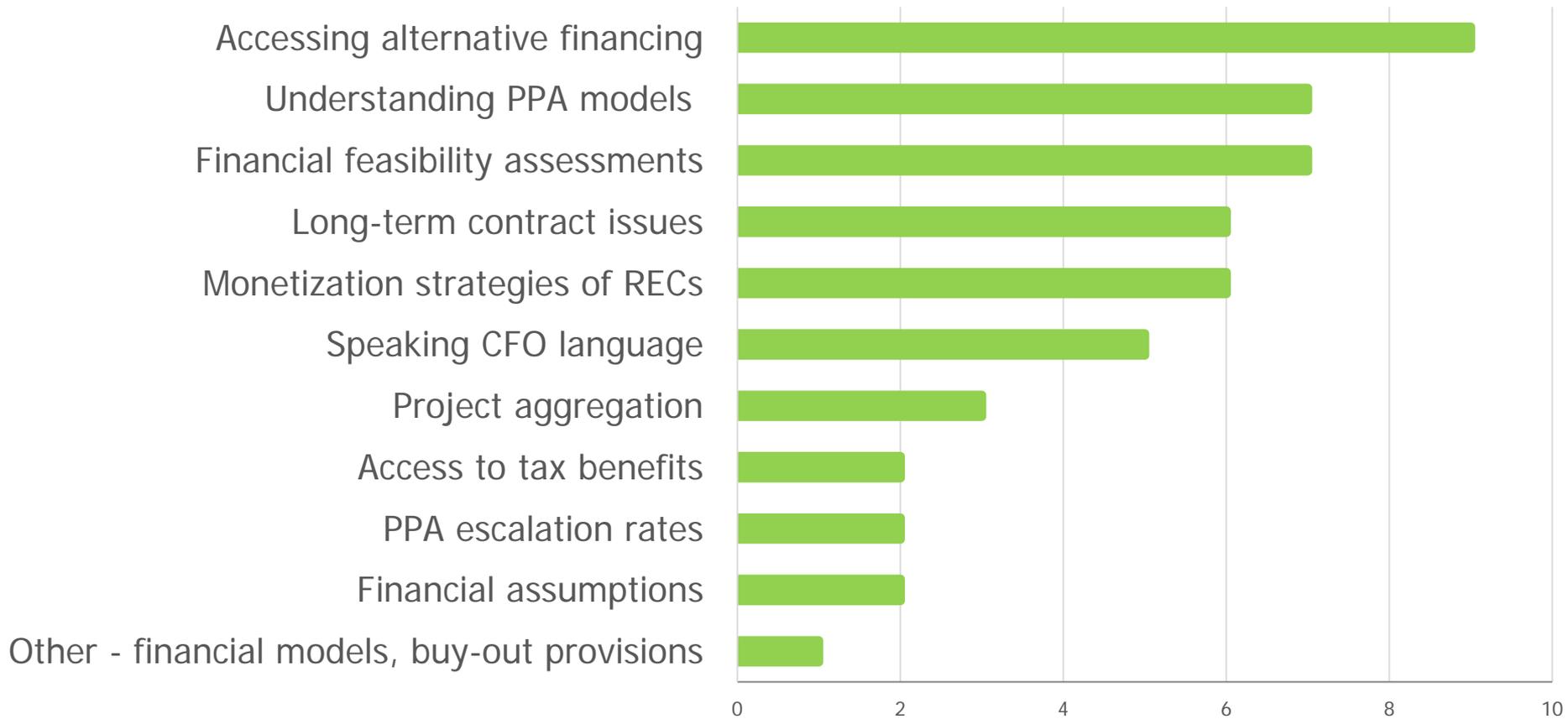
- EPA endeavors to:
  - Identify common project development barriers unique to on- and off-campus solar project opportunities
  - Validate solar development needs of individual institutions
  - Identify and discuss technical and non-technical solutions and exchange information related to individual experiences and practices
  - Deliver targeted solutions to higher education institutions nationally



# FINANCIAL ISSUE AREAS



# Financial Issues Identified During Kickoff Webinar



# Financial Issues by College/University

<b>Accessing alternative financing (endowment, alumni, student)</b>	<b>Understanding PPA models</b>	<b>Financial feasibility assessments</b>	<b>Long-term contract issues</b>
<ul style="list-style-type: none"> <li>• Arizona State U.</li> <li>• Auburn U.</li> <li>• Christopher Newport U.</li> <li>• Elon U.</li> <li>• Fairleigh Dickinson U.</li> <li>• Northern VA CC</li> <li>• Kennesaw State U.</li> <li>• UNC Charlotte</li> <li>• U. of Northern Iowa</li> </ul>	<ul style="list-style-type: none"> <li>• Arizona State U.</li> <li>• Auburn U.</li> <li>• Christopher Newport U.</li> <li>• Michigan State U.</li> <li>• Northern VA CC</li> <li>• Kennesaw State U.</li> <li>• UNC Charlotte</li> </ul>	<ul style="list-style-type: none"> <li>• Arizona State U.</li> <li>• Auburn U.</li> <li>• Christopher Newport U.</li> <li>• Elon U.</li> <li>• Fairleigh Dickinson U.</li> <li>• Kennesaw State U.</li> <li>• Michigan State U.</li> </ul>	<ul style="list-style-type: none"> <li>• Arizona State U.</li> <li>• Auburn U.</li> <li>• Christopher Newport U.</li> <li>• Kennesaw State U.</li> <li>• Northern VA CC</li> <li>• RIT</li> </ul>



# Financial Issues by College/University

Monetization strategies of RECs	Speaking CFO language	Project aggregation	Access to tax benefits
<ul style="list-style-type: none"> <li>• Arizona State U.</li> <li>• Christopher Newport U.</li> <li>• Elon University</li> <li>• Fairleigh Dickinson U.</li> <li>• Michigan State U.</li> <li>• UNC Charlotte</li> </ul>	<ul style="list-style-type: none"> <li>• Arizona State U.</li> <li>• Auburn U.</li> <li>• Fairleigh Dickinson U.</li> <li>• Northern VA CC</li> <li>• Purdue U.</li> </ul>	<ul style="list-style-type: none"> <li>• Arizona State U.</li> <li>• Elon U.</li> <li>• Michigan State U.</li> </ul>	<ul style="list-style-type: none"> <li>• Arizona State U.</li> <li>• U. of Northern Iowa</li> </ul>

# Financial Issues by College/University

PPA escalation rates	Financial assumptions	Other - financial modeling, buy-out provisions
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# Let's Discuss...

- For each topic, we want to hear about:
  - What specifically is holding your college or university back?
  - What types of resources would be most helpful:
    - Fact sheets, memos, templates, etc.?
  - Who should the solution be directed at as an audience:
    - You or someone else in your organization? President, CFO, facilities staff, etc.?

# Accessing Alternative Financing

- **Community Financing**

- University of Utah's U Community Solar offered members of the community chance to power their homes with solar energy.
- Option to transfer RECs to University.

- **Endowment Financing**

- Yale University Endowment includes donated funds to support study of the environment and have invested it in solar, wind, and biofuels.

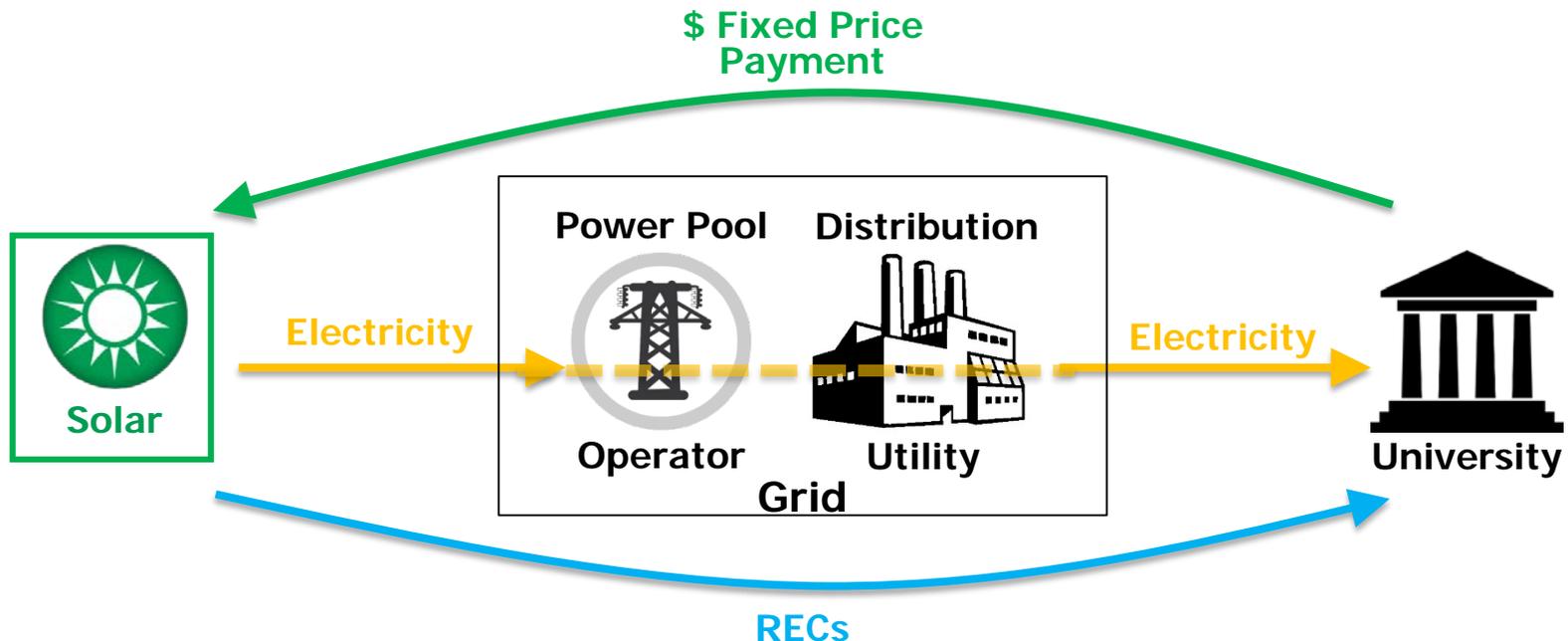
- **Carbon Charge / Fee**

- During this academic year, Yale University's Carbon Charge Pilot Project is testing feasibility on campus.
  - Looking at: market-based model, target-based model, investment model, and price signal approach.

# Understanding PPA models

## Physical PPA Model

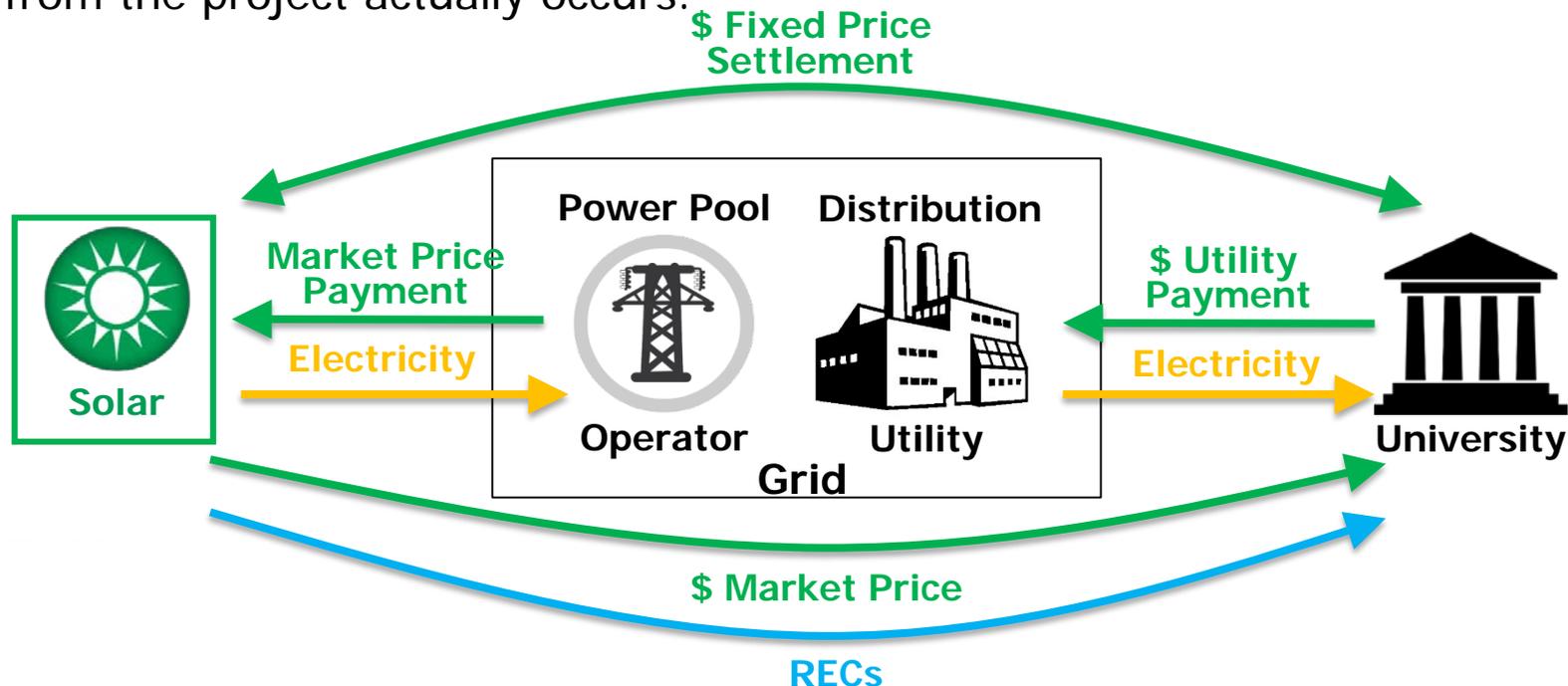
- Buyer pays a fixed price payment directly to the project. In exchange the project delivers the energy through the power pool and distribution utility directly to the buyer. RECs can be transacted contractually and may/may not convey to buyer.



# Understanding PPA models

## Financial/Virtual/Synthetic PPA Model

- Customer receives energy from the distribution utility but may make fixed (settlement) financial payments to the project based on the difference between the market to fixed price.
- Customer can receive the RECs contractually, but no physical delivery of energy from the project actually occurs.



# Additional PPA Issues

- PPA escalation rates
  - With a solar PPA, you pay a known cost per kWh for the duration of the solar PPA
  - Annual escalation of typically 0-3%.
  - 0% escalator means a higher monthly payment now, but the rate NEVER CHANGES
  - While a higher escalator means lower monthly payments now, but those rates increase a percentage every year.
- Long-term contract issues
  - Typically 10 to 25 years
  - Concerns about paying above market rates
  - However, many GPP partners do this:



<http://www3.epa.gov/greenpower/toplists/longtermcontract.htm>

# Additional PPA Issues

- Financial assumptions
  - Price fluctuations from utility rates
  - Value of RECs over time
  - Buy out versus continuing with the PPA
- Access to tax benefits
  - Usually developer receives any tax credits and incentives.
  - Developers are typically better positioned to utilize tax credits to reduce system costs.
    - For example, municipal hosts and other public entities with no taxable income would not otherwise be able to take advantage of the Investment Tax Credit.

# Financial Feasibility Assessments

- Available tools
  - System Advisor Model (SAM) - performance and financial model
  - REopt energy planning platform
- What types of materials would be helpful:
  - Instruction manual on how to conduct assessment
  - Training on how to use existing tools
- Target materials to:
  - You, CFO, sustainability manager?

# Monetization Strategies of RECs

- SREC markets
- REC arbitrage - on-site solar PV host sells system RECs and then buys RECs sourced from other green power resources.
  - Allows the site host to capture the financial benefits of solar RECs, while also making environmental claims.

# Speaking CFO Language

- CFOs are generally concerned with two things:
  - Cost - How decision will impact new revenue stream/cost incurred.
  - In line with mission - How lines up with mission critical projects and encouraging new student enrollment.
- Target materials to:
  - CFO - focused on solar and solar financing basics, or
  - Sustainability officer - focused on technical financial considerations
    - using financial metrics to describe investment value
    - capital investment planning
    - debt analysis
    - etc.

# Next Steps

- EPA will take your ideas and facilitate some solutions by
  - Convening future Networking and Information Sharing meetings
  - Developing case studies, white papers, trainings etc..
  - Launching an online project development portal in Fall 2016
- One upcoming webinar opportunity to address RFP, contract, and administrative issues on March 25<sup>th</sup>

# Smart and Sustainable Campuses Conference

- April 4-5th in Baltimore, MD
- EPA is holding 3-mini conference workshops
  - Will involve a deep dive into areas of finance and project economics; RFPs, contracts and administrative issues; and policy issues
  - Will build upon findings from Networking and Information Sharing group webinars
  - Unique learning opportunity
  - Each workshop will include expert technical speaker(s) and higher education perspectives, each providing a basic level of understanding on key topics to all attendees
- <http://smartandsustainable.umd.edu/register>



# Questions?

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