Solar 101:

What California Community Colleges Need to Know About "Going Solar"

2016 ACBO
Spring Conference
May 24, 2016

Procuring Solar PV Systems for Community Colleges

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Who I am

- CCLC's[1] Electricity Direct Access Program Manager since 2001.
- CCLC's Solar Program Manager since its inception in 2008.
- 28 years in energy policy, economics, procurement, and program development and management, focusing on energy efficiency and renewable energy for public sector clients, including advocating for clients before public utilities commissions.

[1] **"CCLC": Community College League of California**

CCLC Solar Program Projects to Date

- Barstow CCD – 0.9 MW (1 site)
- Coast CCD – 1.6 MW (2 sites)
- Desert CCD – 3.8 MW (1 site)
- Kern CCD – 1.1 MW (1 site)
- Ohlone CCD – 2.8 MW (2 sites)
- San Jose-Evergreen CCD – 1.5 MW (1 site)
- Sequoias CCD – 0.9 MW (2 sites)
- Shasta CCD – 1.1 MW (1 site)
- Solano CCD – 2.8 MW (3 sites)
- Southwestern CCD – 3.2 MW (1 site)
- West Valley-Mission CCD – 2.2 MW (2 sites)
- Yuba CCD – 2.8 MW (3 sites)

Why (or Why Not) Solar for Community Colleges?

- Done properly, it has generally become significantly cheaper than the alternative of buying all your electricity from either the utility for a Direct Access electricity provider.
- Purchasing your own solar PV system(s) through a competitive design-build RFP process can significantly reduce short-term and long-term electricity costs, even when having to borrow money or issue bonds.
- Solar PV's stable and predictable output also reduces electric cost *variability* over time and thereby protects District from utility rate shocks.
- Demonstrates the effective and wise use of money and resources.
- Provides educational opportunities and source of pride and civic responsibility for students and community.
- Helps to advance District and State energy policies.

Solar "Done Properly"

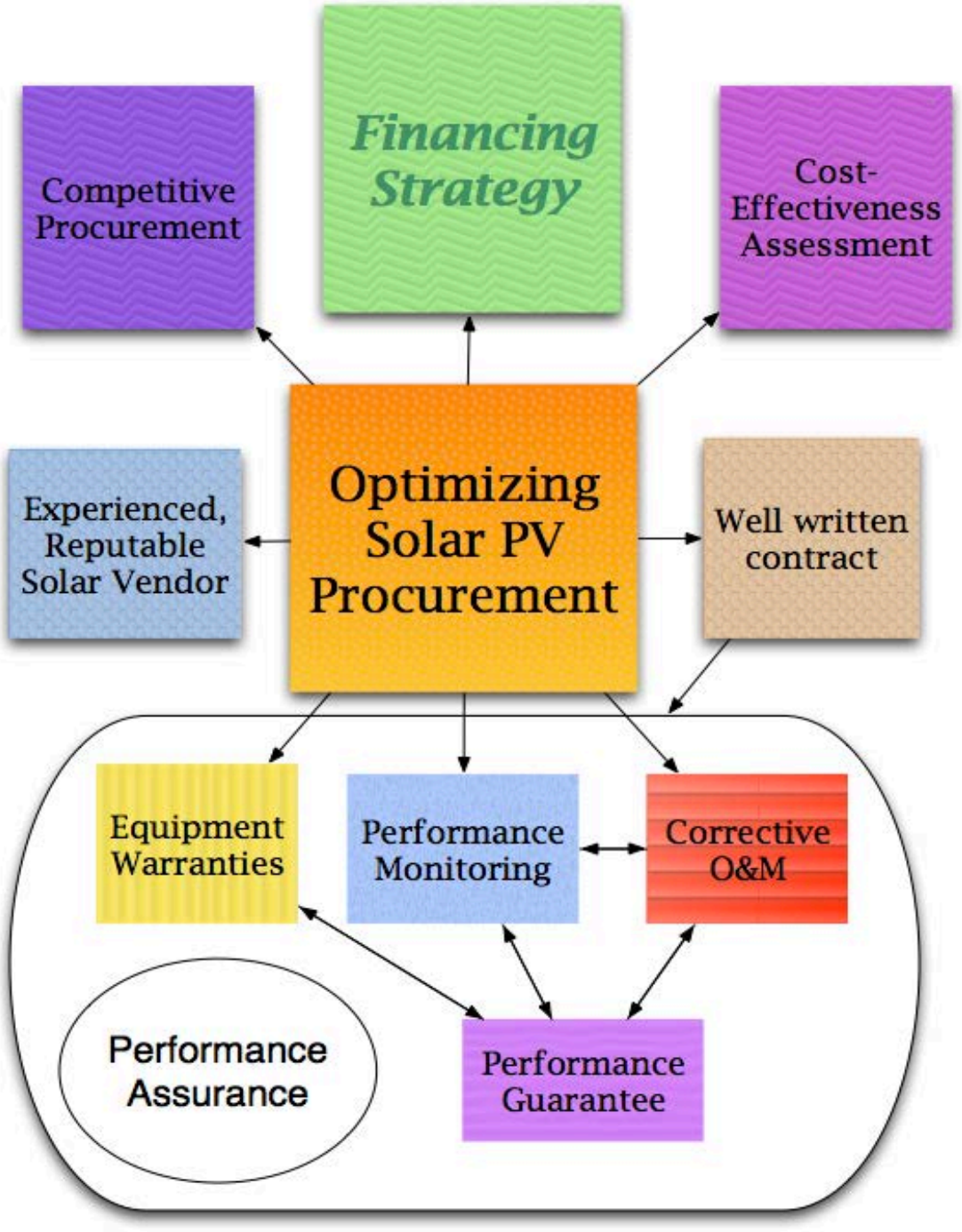
- **Procure competitively** using RFP process.
- Use **Design-Build** process (as opposed to Design-Bid-Build process).
- Be knowledgeable and smart about **utility tariffs**.
- **"Right-size"** your solar PV systems.
- Retain needed **legal and technical expertise**.
- If financing is required, scout for **solar subsidies** (e.g., CREBs).
- Secure strong, long-term (25 years) **O&M and performance monitoring** from selected vendor.
- Secure strong long-term (25 years) solar **production guarantee.**
  - 95-100% of expected production.
  - Minimal "wiggle room" for excusing underperformance.
- **Educate your board** throughout the entire process.

Creating the ***HIGHEST VALUE*** Solar System

(which is rarely the *LOWEST COST* System)

.... How?

- Solicit ***design-build*** proposals, using a rigorous, tightly integrated ***competitive*** procurement process.
- All of these factors are essential to maximize the value of your solar system.



Solar Energy for Community Colleges

College of the Sequoias
Christine Statton, CPA

COS Experience

- Visalia Campus Covered Parking:
  - 285 kW system
  - Averaging 30,000 kW hours production/month
  - Average savings $12,000 per month
- Tulare Campus Solar Farm (Tracker)
  - 633 kW system
  - Averaging 80,400 kW hours production/month
  - Average savings $32,000 per month

Financing Options

- California Energy Commission zero percent or low-interest loan
  - College of the Sequoias received a $3M loan with zero percent interest
  - Own the system hardware, recurring payment
- California Solar Incentives
  - COS - $150,000 per year for 5 years
- Cash/Local Bonds
  - One-time cost, own the system hardware
- Power Purchase Agreements
  - No up-front capital, hardware owned by 3rd party, payment per KWh consumed at pre-determined rate

Financing Options

- Public Financing Options
  - Clean Renewable Energy Bonds (CREB's)
  - Energy Efficiency and Conservation Block Grants (EECBG's)
- TELP (Tax Exempt Lease Program) or TEML (Tax Exempt Municipal Lease)
  - Zero or low upfront cost, hardware owned by 3rd party, recurring payment, higher % interest
- QZAB's – Qualified Zone Academy Bonds
  - Tax-exempt bonds or loans; 0% to 2% interest. For Colleges serving low income students, QZABs reduce the interest payments by giving financial institutions holding the bonds a tax credit in lieu of interest.
    - Usually requires an interested partner in the project

Legal and Consultant Input

- Experienced legal input is recommended
  - Especially for draft of solar project agreement prior to (if) utilizing an RFP
- Solar consultants are recommended (such as CCLC rep) to assist with detailed processes
- These are recommended whether outsourcing all aspects, or doing a DIY solar project.

Lessons Learned
Proposals & Assumptions

- Various Solar Proposals over the years:
  - Some companies assume 4% or higher escalators
  - Average price increase in Central California is 3% per year for last 30 years
  - Even a 3.25% or 3.5% escalator assumption might be too high
- Test the estimates and calculations/have your energy provider double check calculations
- Finance with the lowest interest % possible to glean true savings

Lessons Learned
Loan Payback and Cost Recovery

- COS presented the project cash flow analysis to the Board of Trustees numerous times. It showed a 20 year payback of the loan principal
- When loan documents were finalized, the CEC allowed for a 7 year payback period
  - This led to COS seeking an amended loan agreement, which is still being finalized
- Note – some financing options will only allow payback over the "cost recovery" period

Lessons Learned

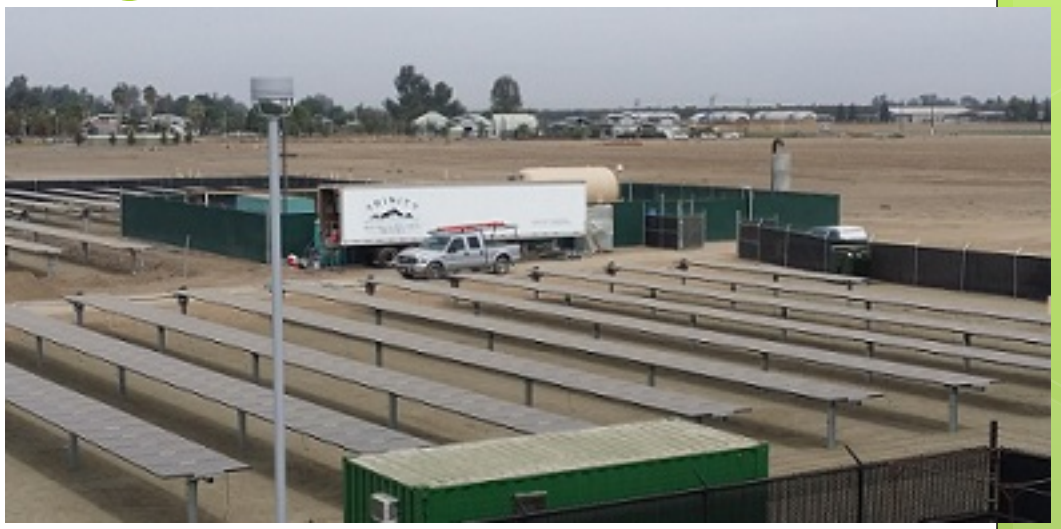
ADA Compliance

- Remember! Any solar covered parking structures added by your college will require a proportional amount of solar-covered handicap parking
- Remember! ADA compliant access will be required to/from the new solar covered parking structure to/from campus

Transformer location

- Remember! Plot out the location for your transformer at parking structure or solar farm *before* you advance too far in planning!

Tulare Tracking Solar Farm



Visalia Covered Parking Structure

Site Specific Considerations for Solar Projects

Kyle Kearney
Vice President of Project Development
Borrego Solar Systems

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Borrego Solar

- We work with entities across the public sector spectrum
  - Cities
  - Counties
  - School Districts
  - Water Districts
  - Community Colleges
  - Universities
  - Park Districts
  - Hospitals
  - Housing Authorities
  - Airports
- Experience making solar work for organizations of all sizes
- Consultative approach

Community College Experience

Barstow CCD	885 kW
Marin CCD	241 kW
College of the Sequoias CCD	917 kW
Kern CCD	1,100 kW
Peralta CCD	231 kW
Ohlone College	2,500 kW
San Diego CCD	2,800 kW
Sierra CCD	1,300 kW

Choosing a Site for Solar

- Ground mount
  - Usually the most cost effective
- Carports
  - Utilize parking lots
  - Provides shade and protection from elements
- Rooftops
  - Doesn't require giving up other space
- Existing onsite energy load
- Shading
  - Impact production
- Distance to Point of Interconnection
  - Closer the better

Considerations

- Roof warranty
  - Solar array life is 25-35 years
  - Coordinate timing of solar installation w/roof replacement
- Soil conditions
  - Unknown underground soil conditions can have a big impact on cost
- Tree removal
- ADA compliance
  - Construction can trigger compliance upgrades
  - Path of travel and equal access on carport projects
  - Specify existing compliance issues in RFP

Considerations

- Schedule requirements
  - Plan for 3-6 month construction schedule
  - Realistic schedule requirements
  - Site access and working hours
- Proximity to Students
  - Safety
  - Vandalism
  - Damage
- Utility upgrades
  - Identify upgrade costs early in process
  - Schedule and cost impacts

Managing a solar procurement

- Public procurement process timelines
- Public Solicitation vs Direct Procurement
- RFP management and evaluation
  - Internal resources vs Consultants
- 1 MW solar project typically takes between 6-9 months from contract execution to completion
- Early due diligence on project feasibility can prevent costly delays