Simplifying Solar and Storage Procurement with SPURR – Part II
Presented by ForeFront Power + CASBO
Featuring

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- Best in Class Development Group
- California Public Sector Leader
- SPURR REAP Winner
- 'A' Rated Parent Company: Mitsui & Co

Kevin Flanagan
Program Manager, SPURR

- Established 1989
- Joint Powers Authority (JPA) focused on reducing utility costs.
- Buying Consortium of 200+ USDs & CCDs
- Aggregated Procurement
Overview

▪ Incentive Outlook – Impact of Reduced ITC and NEM 3.0

▪ Realistic Solar & Storage Savings Analysis

▪ Energy Storage Systems

▪ Microgrids Made Simple
Questions

- What utility territory are you in?

- Looking at Solar? Storage? Have either?

- Are you on Direct Access or a Community Choice Aggregator?

- Is increased sustainability a priority from your Board or greater community?
Incentive Outlook

2020+
Federal ITC Stepdown Schedule

- **January 1, 2020**
  - ITC Step Down
  - 4 months to go

- “Procure/Secure”
  - Safe harbor 30% ITC
  - Construct System in 2020-2023

Remains at 10% for commercial and utility customers
Tax Credit Impact on Savings

- **Sample Portfolio**
  - 3MW of Solar
  - 80% Solar Energy Offset

- **ITC Impact**
  - $6.4m savings in 2019
  - 13% savings reduction by 2020
  - 26% savings reduction by 2021
Net Energy Metering

- **NEM 1.0 - Past**
  - Exported Energy Value: Full Retail Rate
  - 2009 - 2016

- **NEM 2.0 - Current**
  - Exported Energy: Full Retail $0.02/kWh
  - 2016 - 2021 (est)

- **NEM 3.0 - Future**
  - Exported Energy Value: ???
  - Proceedings Open
  - Starts ~2021 (est)
NEM 3.0 - What to Expect?

- Exported Solar Energy
  - “Energy Sent back to the grid”

- NEM 2.0 – Current:
  - Full Retail Rate - $0.02/KWH
  - “Non-Bypassable Charges”
  - Save $6.4 million

- NEM 3.0 – Future ???
  - Guesses for Exported Energy Compensation
    - -$0.02/KWH
    - -$0.04/KWH
  - 30%-65% Reduction in Savings

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NEM 3.0 Sample 20 Year Savings Sample 3MW System

- Current (NEM 2.0): $6,458,080
- -$0.02/KWH: $4,411,534
- -$0.04/KWH: $2,364,988

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Exported Energy Compensation Reduction
Solar Savings Analysis
What to consider when looking at solar opportunities
Utility Escalation Assumptions

- **Most Significant Factor in Savings Analysis**

- **Conservative vs Aggressive**
  - SPURR / FFP: Conservative
  - 2.5% - 3.0%  
    - Historically Validated  
    - 30 Years of Data
  - 4%-6%  
    - Less Conservative  
    - 1.75x to 3x greater savings projected
TOU Changes

TOU 1.0

TOU 2.0
TOU 2.0 Savings Impact

Sample TOU 2.0 Impact

Key Highlights:
- 15% Swing in Y1 Savings
- Critical:
  - Granular Savings Analysis using 15-minute Interval Data

Avoided Cost:
- $0.118/KWH
- $0.134/KWH

$336,964

Avoided Cost:
$1,496,463
$149,828
$880,750
$217,136
$880,750
$2,527,041
$2,744,177

Utility Bill
PPA Bill
Savings
Solar Time Horizon

- **20 Years**
  - CPUC – Net Energy Metering
  - Full Retail Rate Compensation

- **After Year 21 - ???**
  - Unknown Exported Energy Compensation

- **Conclusion**
  - Agreements longer than 20 years = Risk
  - After Year 21 = Unknown

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<th>Time Horizon</th>
<th>Sample 2MW Portfolio</th>
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<tr>
<td>20 Years</td>
<td>$3,341,880</td>
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Energy Storage
Demand Charges

- Demand Charges:
  - Measured in KW
  - Peak usage during a billing period
  - Cost of maintaining constant supply of electricity

- Energy Charges:
  - Measured in kWh
  - Total Electricity Consumed
  - Cost of all kWh consumed
Sample School Usage Profiles

SAMPLE SCHOOL DEMAND PROFILES

Max Demand

$350
$300
$250
$200
$150
$100
$50
$0

Thousands $

High School
Middle School
Elementary School

Sample School Demand Profiles

Demand Charges

High
Middle
Elementary

$173
$159
$153

$103
$101
$90

$53
$50
$47

$21
$20
$11

$0
$50
$100
$150
$200
$250
$300
$350

Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
**Energy Storage Solutions**

PowerStore service flattens expensive demand peaks, PowerScope software visualizes energy performance.

**Demand Charge Savings**
Intelligently discharge the battery to shave demand charges.

**Energy Arbitrage**
Buy Low / Sell High
Microgrids
Normal Operations

Solar + Storage

School Facility – All Loads

Utility Energy Supply
Power Outage

Solar + Storage

School Facility

Solar shuts down for safety in a power outage

Public Safety Power Shutoff
Microgrid Mode

Solar + Storage

School Facility – Critical Loads

Generator (Diesel or Natural Gas)

Public Safety Power Shutoff
Microgrids

**Opportunities**
- Resiliency
- Reduce Operational Risk
- Energy Expense Savings
- Sustainability Leadership
- Islanding Controller Packages

**Challenges**
- Critical Load Analysis
  - Identify Critical Loads
  - Retrofit & Isolate Circuits
- Additional Solar Project Scope
  - On-Site Generator
  - Microgrid Technology

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Solar + Storage

Generator (Diesel or Natural Gas)
Q&A