Solar Financing

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Solar Financing Options – Public Entities

Cash Purchase
- No recurring payments
  - One-time cost
  - Hardware owned by you
  - Cost-free energy for system lifetime

Power Purchase Agreement (PPA)
- No upfront investment
  - No capital cost
  - Hardware owned by a third party
  - Payments for kilowatt-hour produced
  - Energy rate locked for 20–30 years
  - Financing cost subsidized by tax incentives

Lease/Loan
- Fixed lease payment
  - Zero or low up-front cost
  - Hardware owned by you
  - Lease payment for hardware and energy
  - Lease/Loan duration, up to 15–20 years

Public Financing
- For public entities with unique benefits
  - Special incentives
  - Tax-exempt leases
  - Government subsidized loans

The Solar ITC 101

The Federal Business Energy Investment Tax Credit

Developed to incentivize development of renewable energy sources

The credit, which is applied to a taxpayer’s Federal income tax liability, is equal to a percentage of the eligible equipment cost, currently 30% for 2019 projects

The Federal Business Energy Investment Tax Credit

SCHEDULED TO DECLINE TO 10% BY 2024

Cost of Renewable Energy System

Max ITC Credit Through 2019

Reduction in Tax Bill

$3,000,000 \times 30\% = $900,000

A dollar-for-dollar tax reduction in the federal income taxes that an organization would otherwise owe. The ITC can not exceed the amount an organization owes in Federal Taxes.
How tax-exempt organizations can capture ITC Savings

ITC is eligible for business paying federal tax
How can tax-exempt organizations claim the highest ITC benefits before it expires?

YES! You can!

Power Purchase Agreements (PPAs) enable tax exempt organizations to capture savings

Methods of Solar Acquisition

Solar Host Customer

Lender

SunPower

Tax-Equity

PPA Provider

PPA Provider (SunPower or Third-Party)

Tax-Equity

Tax-Equity

Tax-Equity

Other

PPA

(PURCHASE OF OUTPUT)

SALE & LEASEBACK

PARTNERSHIP

Owner

Owner

Owner

Owner

Cash

(MI-
CHASE OF SYSTEM)

LEASE

(USE OF SYSTEM)

PROJECT FINANCE

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Solar Energy Acquisitions Considerations

I. Ownership: "Green", at potentially Lowest Cost
   - Performance Risk, Tax Appetite, Investment Capital, on B/S

II. Direct Lease: Low Cost without Tax Appetite
    - Performance Risk, on B/S

III. PPA: Avoids Performance Risk, Capital Lite, Off B/S
     - More Expensive

Solar + Storage
Integration of Storage with Solar is becoming standard

- Pairing Storage with Solar can increase savings, "hardens" the energy supply and makes the system more adaptable to changing energy market conditions
  - 35% of SunPower pipeline projects include Storage with an upward trend

- Primary Storage Value Drivers:
  - Demand Charge Management (peak shaving)
  - Energy Shifting (energy arbitrage)
  - Self consumption (reducing solar exports)
  - Local incentives for Storage (SGIP, SMART, NYSUN)

- Storage is eligible for ITC if “integrated” with Solar – to decrease cost of Solar + Storage

- Contracting methods for Solar + Storage financing are evolving to account for:
  - Tax requirements
  - Operation and performance
[Case Study]

Contra Costa County Solar-Plus-Storage Project

Overview

System information

- **Solar 3.7MW + Storage 1.5MW/3MWh**
- Offset approximately 68% electricity use
- Save $16.5 million in energy costs over 25 years

**Total Sites: 10**
1 in Richmond, 7 in Martinez, 2 in Antioch

Estimated first-year energy production: **6,162,643 kWh**

Solar energy generated is enough to:
- Power 760 homes with electricity for one year
- 10.6 million passenger vehicle driven miles
- Carbon absorbed by 5,129 acres of U.S. forests annually

and is expected to offset greenhouse gas emissions equal to:

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HOW IT WORKS: Demand Charge Management + Energy Arbitrage

1. Storage discharges to hold down demand before solar ramps up
2. System charges mid day when energy is cheaper ($0.10/kWh)
3. Discharges to virtually eliminate energy usage during the peak period ($0.30/kWh)
4. Storage continues to discharge after the peak period to keep demand down into the evening

$33,000 Annual Energy Savings
- 638 kWh shifted (1,000 kWh x 85% RTE x 75% discharge)
- $0.20 / kWh price difference
- 260 weekdays / year with Peak Period

+ $67,000 Additional Demand Savings
- All Hours Demand Charge Rate: $20/kW
- 380 kW solar + storage reduction x $20 = $5,600 / month

$100,000 Total Annual Savings

Contra Costa County Solar-Plus-Storage Project

Primary Storage Value Drivers

Main Drivers for integrating storage with solar
- Demand Charge Management (Peak Shaving)
- Energy Shifting (Energy Arbitrage)

Local incentives for Storage
- Self Generation Incentive Program (SGIP) Step 2 @ $290/kWh of installed storage capacity
- Option S – a new storage friendly rate that increases customer savings for PG&E customers

30% Solar Investment Tax Credit
- Safe Harboring PV modules for 30% ITC for both solar and storage
## Contra Costa County Solar-Plus-Storage Project

### Economics

<table>
<thead>
<tr>
<th>Location</th>
<th>Contra Costa County, CA</th>
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<tbody>
<tr>
<td><strong>Utility Info</strong></td>
<td>PG&amp;E</td>
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<table>
<thead>
<tr>
<th>Utility Rate Tariff</th>
<th>Business as Usual</th>
<th>Solar Only</th>
<th>Solar + Storage</th>
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<tr>
<td>E-19 Secondary</td>
<td>E-19S Option R</td>
<td>E-19S Option S</td>
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<tr>
<td>1215 kW(dc)</td>
<td>1215 kW(dc)</td>
<td>1,500 kW / 3,000kWh</td>
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<tr>
<th>Solar Installation Size</th>
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<td>1,500 kW / 3,000kWh</td>
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<thead>
<tr>
<th>Annual Demand Charges</th>
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<td>$137,443</td>
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<td>$277,710</td>
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<th>Total Bill Savings</th>
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### Thank You