Workshop 2: Economics and Financing for Commercial/Industrial Solar Projects

Commercial Acceleration of Solar Energy in Silicon Valley (CASE-SV)

Moderator: Eileen Hays, Optony

September 23, 2014

2:00-3:00PM PT

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Agenda

Welcome and CASE-SV Overview (5 min)

Eileen Hays, Project Manager for Optony

Don Bray, SEEDZ Executive Director for Joint Venture

Commercial Solar Financing and Economics (25 min)

Featured Speaker: Ben Foster, Senior VP for Optony

Case Study: New Resource Bank Solar Loans and Financing (20 min)

Featured Speaker: Skyler Webster, VP Commercial Lending for NRB

Q&A (10 min)

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Program Sponsors

American Solar Transformation Initiative

Goal to reduce the total installed costs of solar PV and increase deployment across the US by partnering with 200+ local governments, utilities, and regional organizations to improve their solar markets.

- Created and led by **Optony**, funded by the US DOE
- More information at **www.SolarRoadmap.com/case-sv**

Powered by SunShot
U.S. Department of Energy

Smart Energy Enterprise Development Zone (SEEDZ) Initiative

Unites key stakeholders in building the smart energy network of the future: reliable, high quality, affordable, and sustainable power.

- Created and led by **Joint Venture Silicon Valley**
- More information at **www.JointVenture.org/seedz**

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Commercial Acceleration of Solar Energy (CASE-SV) Initiative

Support accelerated deployment of solar PV energy for commercial facilities in Silicon Valley with an aggregated purchasing program.

Target: Advance solar energy by at least 5 MW, and/or 10 commercial sites in Silicon Valley by Q3 2015

Key stakeholders: Business leaders, Municipalities, and Regional organizations.

Solar purchase options

- Onsite Systems
  - Direct purchase
  - Power purchase agreements
- Offsite Options
  - Remote solar projects
  - Regionally-sourced solar renewable energy credits

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What is the rationale for a CASE-SV program?

Why are businesses and property owners participating?

- Offset high energy consumption and escalating costs
- Achieve clean energy commitments
- Demonstrate community leadership
- Leverage CASE-SV team, resources and regional solution providers

Why now?

- Federal 30% Investment Tax Credit to sunset Q4 2016
- State Net Metering rules and rates will change in 2017
- Average PV installation costs are at an all time low
- Recognition programs from EPA and JVSV

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Featured Speaker

Ben Foster, Senior VP

Optony, Inc.

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CASE-SV Webinar Series

Solar Project Economic and Financing

September 23, 2014

Agenda

- Solar project economic evaluation overview
- Electricity rate schedule comparisons under Net Metering
- Solar power cost-offset opportunities
- Comparison of major on-site financing options
- Description of off-site options as an alternative

What drives realization of solar value?

- Robust technology with long-life components
  - Low total cost of ownership and price stability for 25 years
  - Properly designed PV system
  - Energy usage offset with expected facility load profile
- Offset of Electricity Costs
  - Net Energy Metering
  - Solar-friendly Time-of-Use rate schedule
- Financial incentives and programs
  - Production rebates and incentives
  - Solar renewable energy credits
  - Tax incentives (even useful for tax-exempt entities)
  - Attractive financing options
- Alternative energy rate schedules
  - Feed-in Tariff
  - NEMA/NEMV/RES-BCT
  - Over-production credit (AB 920)

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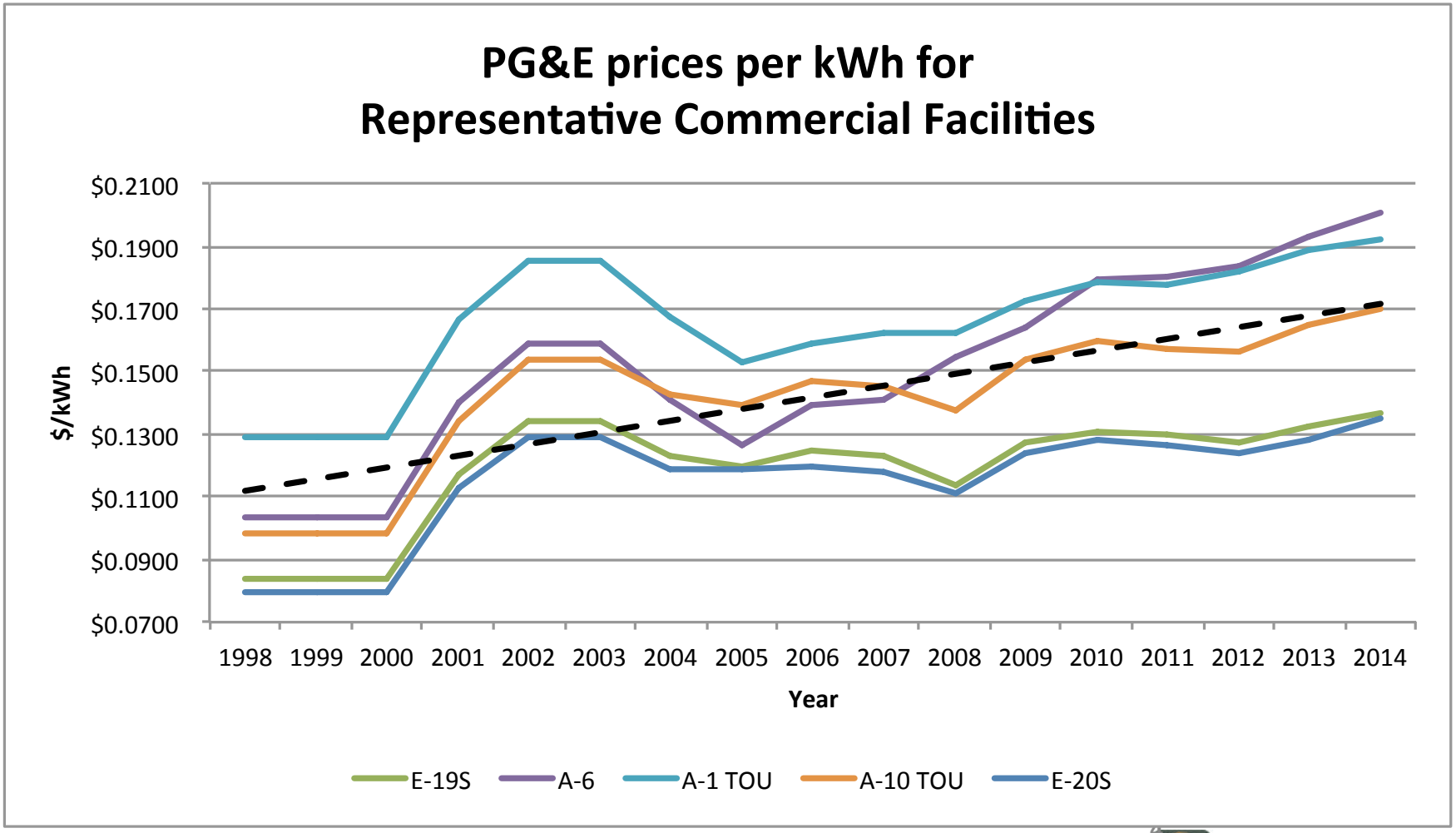
Solar Power Offsets Increasing Electricity Prices



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Net Energy Metering (NEM)

- Utility credits for export energy at same rate as they charge
  - Best economics for solar
  - Capped at 1 MW-AC per meter
  - Allows solar customers to take advantage of Time-of-Use (TOU) rates
- A-6 PG&E rate schedule: "solar-friendly"
  - Site/meter demand must remain below 500 kW
  - No demand charges
  - Peak summer rate on A-6: ~$0.56/kWh
  - Off-Peak summer rate on A-6: ~$0.14/kWh
  - For every summer peak kWh exported to grid, you build credit for 4 off-peak kWh
  - With this valuation, annual energy offset of ~65-85% can lead to attractive project economics (typically)

HOWEVER:
Changes underway in 2017

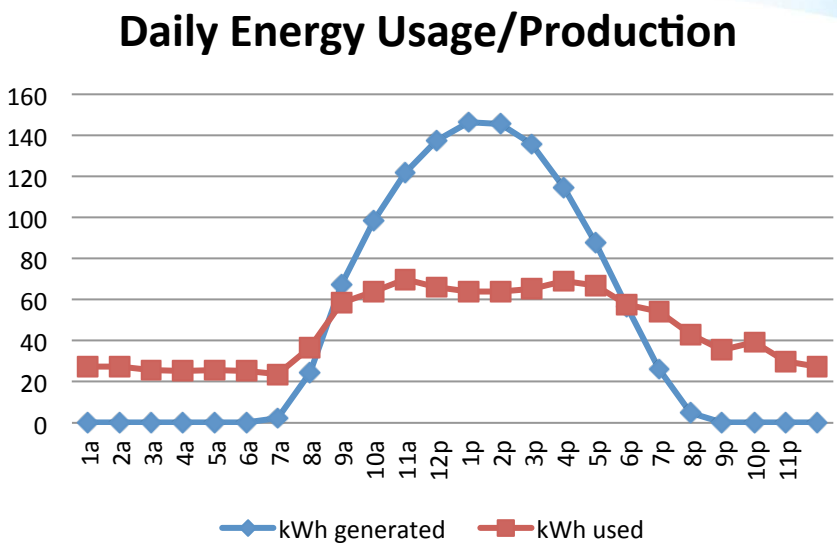
Electricity Load Analysis with Solar

- Optimal Energy Offset depends on Load Profile
  - » Schools use little energy during summer, so export a lot of Peak Summer energy

    => often need a lower offset
  - » Public safety buildings have relatively high usage during Off-Peak times, so relatively low Peak usage

    => often need a lower offset
  - » Office buildings often have most usage during Peak and Part-Peak times, with little usage during Off-Peak times

    => little opportunity for export, so often need a higher offset



Energy (kWh)	Peak	Part-Peak	Off-Peak	$
Usage	387	432	275	329
Generation	689	456	24	447
Net	**(302)**	**(24)**	**251**	**118**

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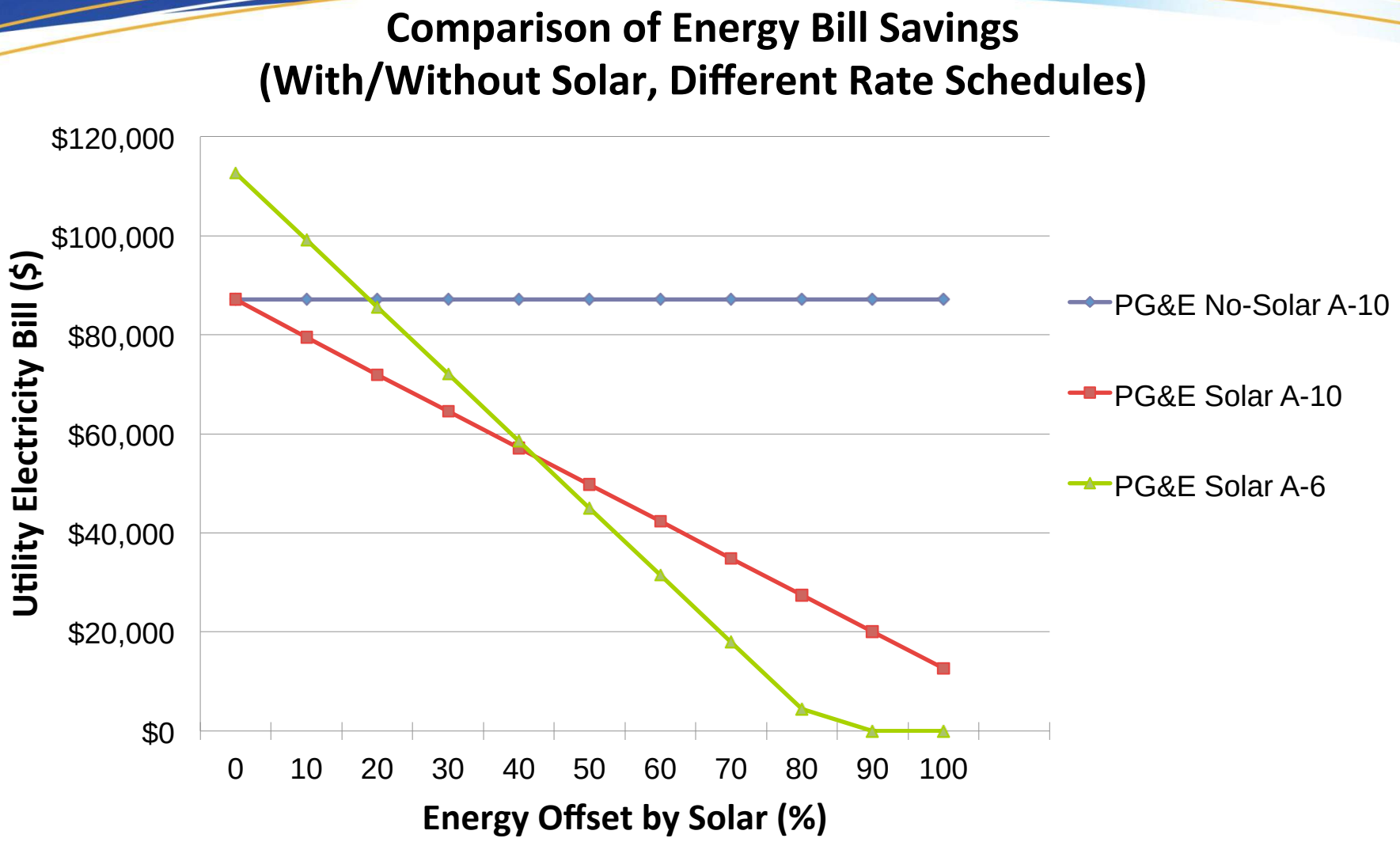
Rate Schedule Change: A-10 to A-6



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Other Cost Offsets

- Rebates
  - » California Solar Initiative (CSI) – **Budget Allocated**
  - » Dollar amount based upon measured system performance paid over 5 years

- Tax benefits
  - » Investment Tax Credit (ITC)
    - 30% until end of 2016; 10% afterwards
  - » Accelerated Bonus Depreciation
    - 50% Depreciation in Year 1 (until end of 2013)
  - » Can be used directly only by taxable entities

- Solar Renewable Energy Credits (SREC)
  - » Highly valuable in some markets (Northeast), but minimal value in CA

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Other Production Revenue Options

- Feed-in Tariffs: Utility pays fixed rate per kWh for contract term
  - Currently, no PG&E FiT except for Water Treatment Plants
  - Marin Energy Authority does offer FiT ~$0.13/kWh

- Remote/Virtual/Aggregated Net Metering (RES-BCT/NEMA/NEMV)
  - Generating facility offsets facility use, then all energy exports are credited to Benefiting Accounts on different meters
  - Meters must be on adjacent properties or multiple meters on one property
  - Credits are only accrued at Generation Component of rate, not full retail which includes Transmission and Distribution.
  - In most cases, a low PPA rate or installed costs needed to show savings

Financing Changes Project Expectations

Financing Structures

- Direct Purchase
- Power Purchase Agreement
- Equipment Leasing
- Bond Financing
- Enhanced Use Lease
- Utility Financing
- Energy Service Contract

Changes Project:

- Performance Risk
- Up-Front Costs
- Long-Term Returns
- Procurement Process
- System Design
- Project Benefits
- Operations & Maintenance

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Major Financing Option Comparison

	Direct Purchase	PPA	Lease/Loan
Ownership	•Customer owns, operates, and maintains the system •Owner has full responsibility for performance •Maintenance contracts and performance guarantees can be purchased	•PPA, LLC owns, operates, and maintains the system •PPA receives all federal, state and local incentives, rebates and tax benefits •System output is the responsibility of PPA, but Customer must buy ALL power produced	•Leasing company (bank) owns the system •Fixed monthly payments for 7-15 years •Leasing company takes available federal tax benefits, or uses tax-exempt lease structure •Customer has full responsibility for performance •Maintenance contracts and performance guarantees can be included
Capital Costs	•Full cost of system due at delivery •May be partially offset by rebates & incentives	•No up-front capital costs for buyer •Legal services can be expensive	•Usually no up-front capital costs •May be some transaction costs
Financial Benefits	•Long-term savings begin immediately and may be the highest with direct purchase •Customer retains Solar Renewable Energy Credits (SREC) •Customer receives federal, state, and local incentives and rebates •However, non-taxable organizations cannot capture any tax benefits •Very low operating costs, effectively capping electricity costs for 25 years	•Fixed price per kWh with annual escalation (0% to 4%) over 20 years •Savings are generally very low in the early years but increase •PPA or Customer owns Solar Renewable Energy Credits (SREC), based on contract •System sizing must be carefully evaluated and Performance Guarantees should be included •Payback periods can be quite short – there is no initial capital •Can purchase the system at the end of the PPA term for FMV	•Lease term saving generally minimal, but then very high once purchased •End of lease buy-out for FMV or 10-20% of initial value •Customer generally retains Solar Renewable Energy Credits (SREC) •Customer generally receives state and local incentives and rebates

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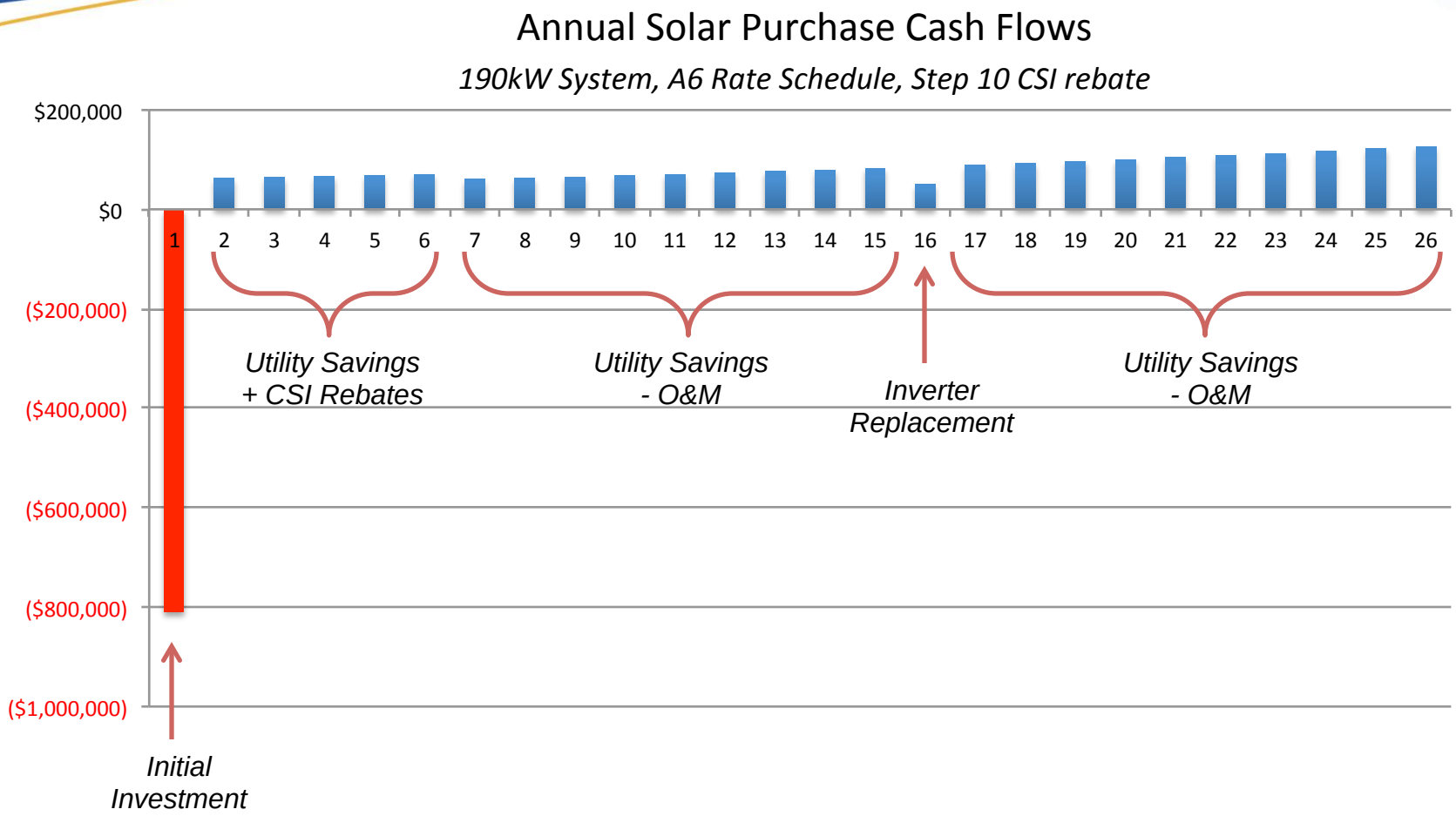
Solar Purchase Cash Flow Example*



** Not an actual project site, but representative of the potential cash flows from a solar lease. All costs, benefits, terms, conditions, and cash flows may vary.*

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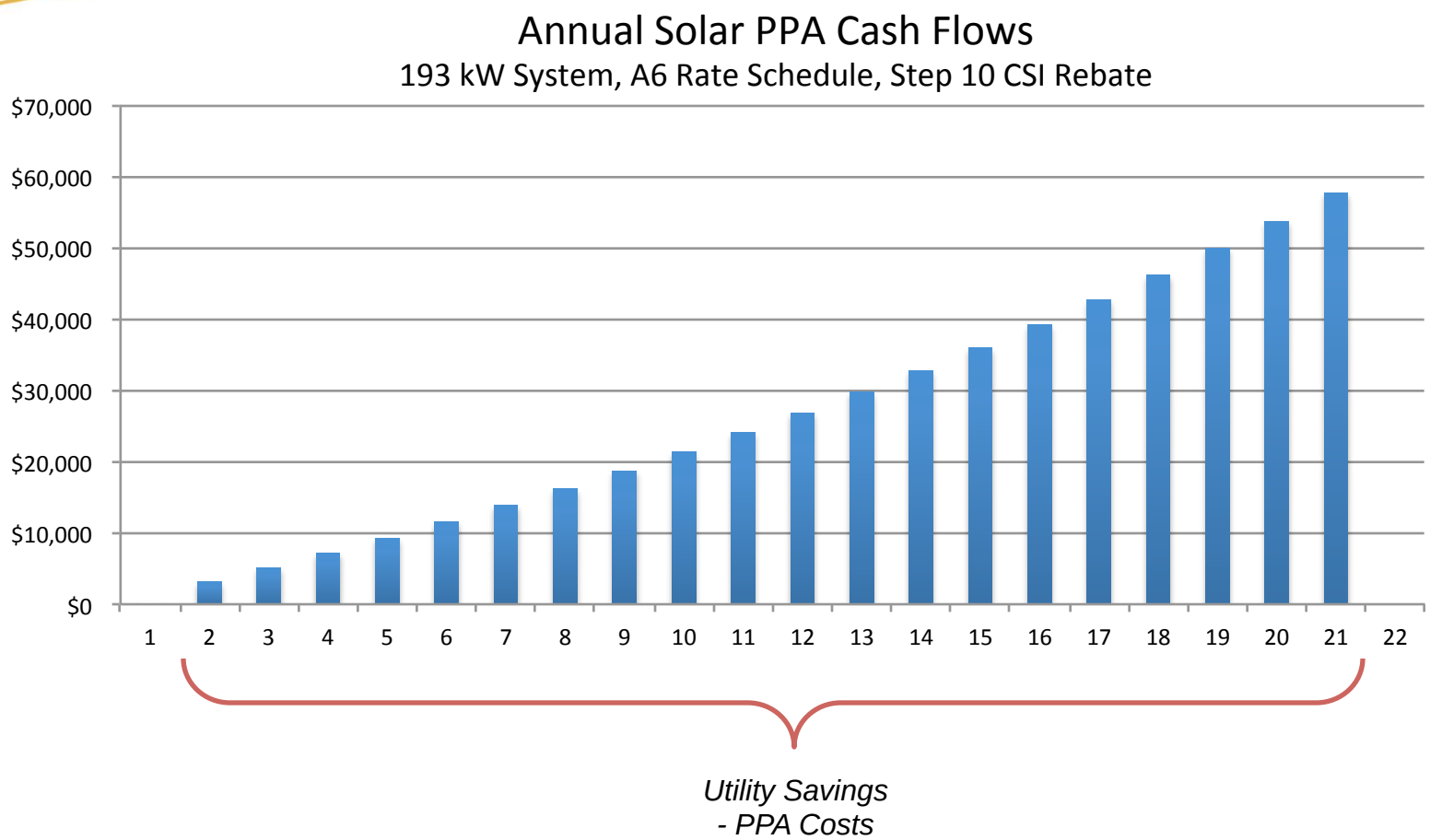
Solar PPA Cash Flow Example*



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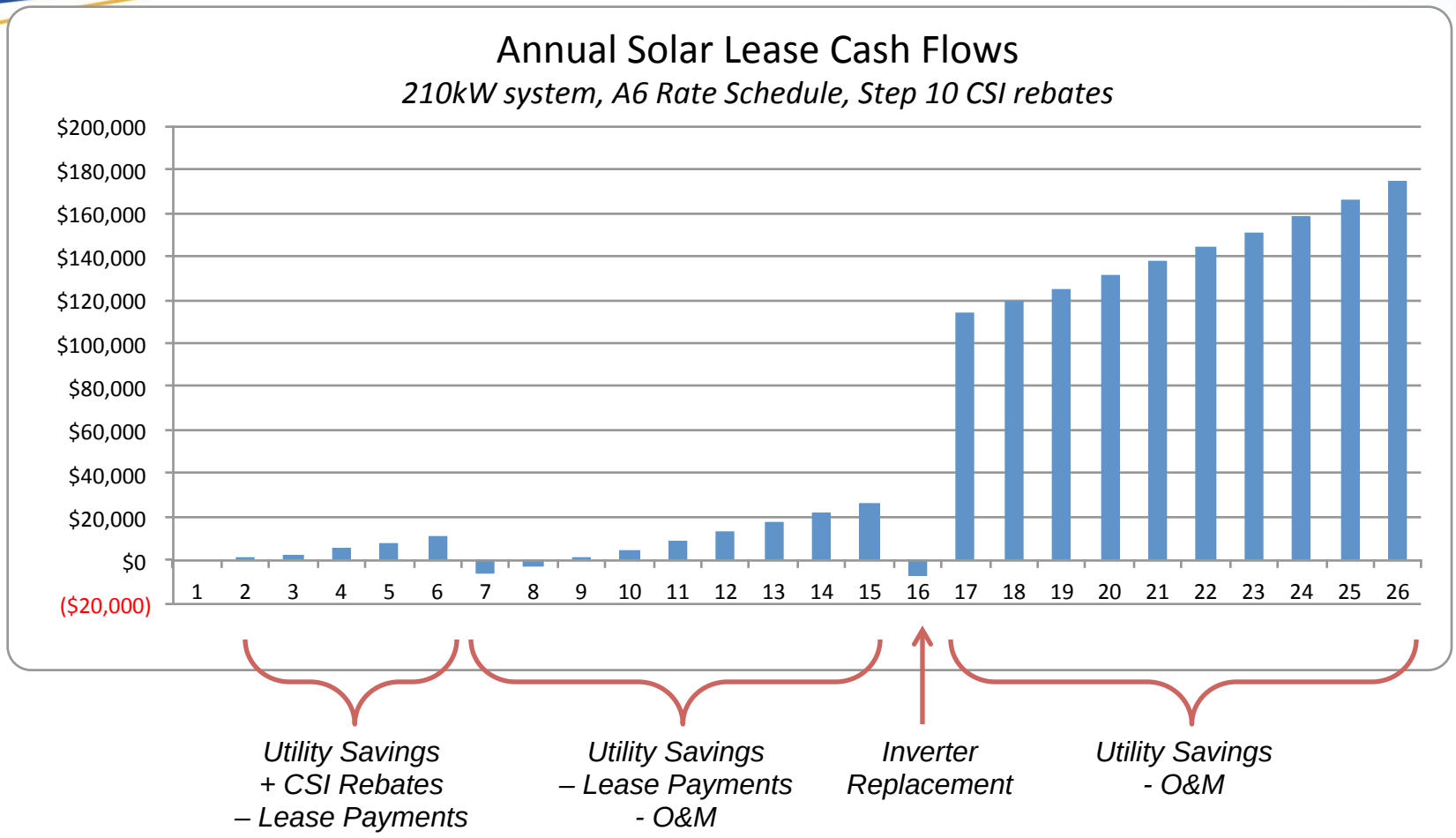
Solar Equipment Lease Cash Flow Example*



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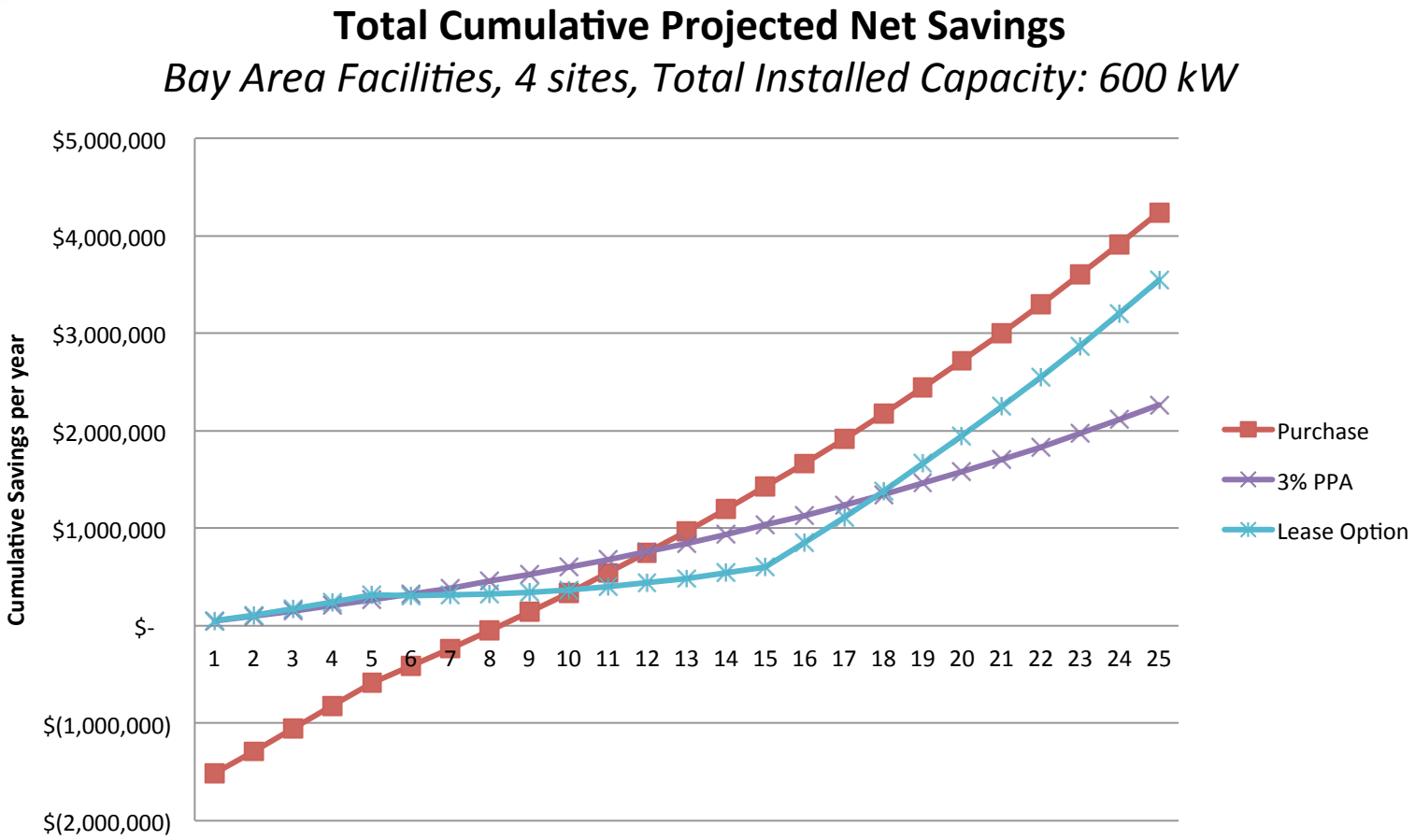
Cash Flows Comparison



** Not actual project sites, but representative of the potential cash flows from various solar financing options. All costs, benefits, terms, conditions, and cash flows may vary.*

Offsite Options Comparison

	Green Power Purchase	Solar RECs	Shared Solar
Source	•Operational Clean Energy Project •Offered by Existing Utility Company •Examples: PGE, Palo Alto Utilities	•Operational Solar Project •Solar System Owner •Third Party Broker	•Remote, operational solar project •"Community Solar" project owner •Not widely available in CA (legal issues)
Costs	•Incremental cost per kWh used •$0.02 - $0.03/kWh estimated in CA	•Fixed cost for SRECs purchased •$0.01 - $0.02/kWh estimated in CA	•Negotiated rate for a PPA •Purchase a fixed output volume •Offset on-site purchases, may reduce overall electricity costs •(Requires state approval and utility programs for this to be available)
Terms & Benefits	•Can purchase for annual commitments •Available in fixed percentages of usage: typically 50% and 100% •Billed through utility directly •Achieve green power goals immediately	•Can purchase for fixed annual volume of kWh/SREC offset •Purchase for 1-5 year contracts •Achieve green power goals immediately •Can direct to specific projects	•Must make long-term commitment •Can yield net energy savings •Directly-sourced solar power •Achieve full or partial offset for energy use •Can move/sell power later (potentially)

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Featured Speaker

Skyler Webster, VP – Commercial Lending
New Resource Bank

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Solar Financing

CASE-SV

September 23, 2014

by

Skyler Webster
VP, Commercial Lending
New Resource Bank

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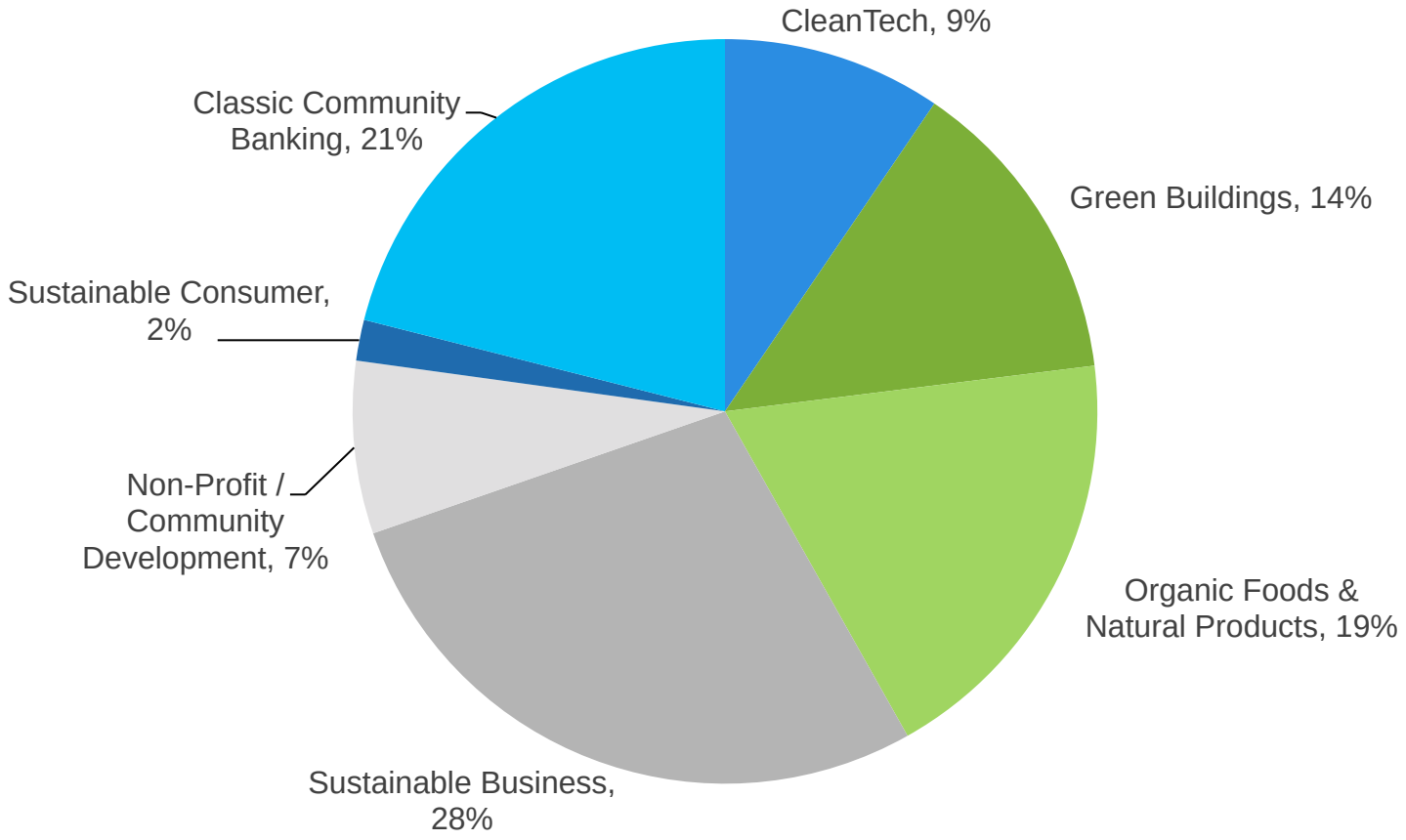
Agenda

- Types of commercial bank loans used to finance solar projects
- Pros and Cons of each loan type
- Loan structure and pricing
- Assessing and mitigating risks (from Bank's perspective)

About New Resource Bank

- Founded in 2006 to promote sustainability and support businesses in the community that share our values
- More than $200M in assets, located in the financial district of SF
- B-Corp (triple bottom line – People, Planet and Profit)
- Commitment to our depositors and shareholders to promote sustainability through our lending practices

Target Markets



Commercial Real Estate Loan

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Refinance real estate using cash out to finance solar

- PROS:
  - ITC Benefit (30% of project costs)
  - Depreciation Benefit (accelerated over 6-years)
  - Longer Repayment Term (up to 25-years)
- CONS:
  - Upfront capital outlay
  - Must own building
  - Equity subject to changing market conditions

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Loan Structure (Commercial Real Estate)

- Loan Amount: $1 - $6 million
- Terms: Up to 25-years
- Rate: 4.25% – 5.00%
- DSCR: 1.25x (NOI/Debt Service Obligations)
- LTV: 60% - 70%
- Loan Fee: 1.00% (of loan amount)
- Guarantees: Personal Guarantees of Principal(s)

Commercial Equipment Loan

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Business loan used to finance purchase of solar

- PROS:
  - ITC Benefit (30% of project costs)
  - Depreciation Benefit (accelerated over 6-years)
- CONS:
  - Upfront capital outlay
  - Shorter repayment than CRE loan

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Loan Structure (Equipment Loan)

- Loan Amount: $1 - $4 million
- Terms: Up to 7-years
- Rate: 6.00% – 7.00%
- DSCR: 1.25x (EBITDA/Debt Service Obligations)
- D/TNW: 3.00x – 4.00x (Max)
- Loan Fee: 1.00% (of loan amount)
- Guarantees: Personal Guarantees of Principal(s)

Solar PPA / Lease (Most Common)

Developer owns solar asset and enters into long-term Lease/PPA with off taker

- PROS:
  - No upfront capital outlay
  - Fixed energy prices during the term of the PPA
  - No ongoing maintenance costs
- CONS:
  - No ITC Benefit (30% of project cost)
  - No Depreciation Benefits (accelerated over 6-years)

Loan Structure (PPA / Lease)

- Amount: $1- $4 million
- Terms: Up to 10-years
- Rate: 6.00% - 7.00%
- DSCR: 1.35x (EBITDA/Debt Service Obligations)
- Equity: 25% - 35%
- Loan Payment Reserve: 6-12 months of P&I payments
- Fees: 1.50%
- Other Fees (Legal/IER) ~ $20K

Financing Considerations: Construction Risk

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- ***Can the improvements be built for the cost estimated?***
- ***Can the contractor complete the project correctly, on time, and on budget?***

- **<u>Mitigated by:</u>**
  - Experienced, credit worthy Contractor
  - Performance Bond
  - Site Inspections during construction

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Financing Considerations: Performance Risk

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- ***Can the system produce the anticipated amount of energy over the duration of the financing term?***

- Mitigated by:
  - Independent Engineering Review (Optony)
  - Performance Insurance
  - Quality components with strong warrantees

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Financing Considerations: Loan Repayment Risk

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- ***Will cash flow generated from the PPA / Lease be enough to service loan payments?***
- ***Is the off taker creditworthy?***
- ***What happens in a default scenario?***

- Mitigated by:
  - Investment grade off taker
  - Loan payment reserve
  - Assignment to PPA and solar assets
  - Credit enhancements: OBR, Gov't Guarantees

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Questions?

Next steps

Visit www.solarroadmap.com/case-sv

or

Setup an individual consultation call for your site:

Eileen Hays, CASE-SV Project Manager

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(408) 567-9216

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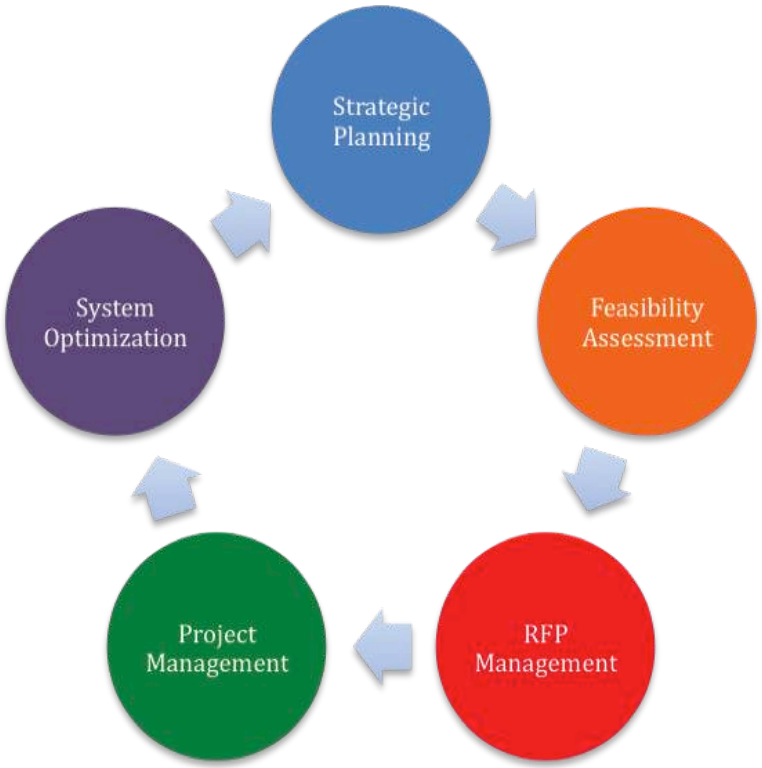
About Optony

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



"Optony's consulting service is a must-have for any organization considering an investment in solar. Based on Optony's comprehensive analysis and recommendations, we now have a low-risk, high-return solar strategy."

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