SPRING 2020

Renewable Energy Foundations

An Introduction to Solar and Energy Storage Procurement

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Our Goals for the Session:

- Understand available incentives and financing methods;
- Learn how renewable energy can impact your bottom line;
- Discover which procurement methods are best and how to go about the process.

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Energy Education Series

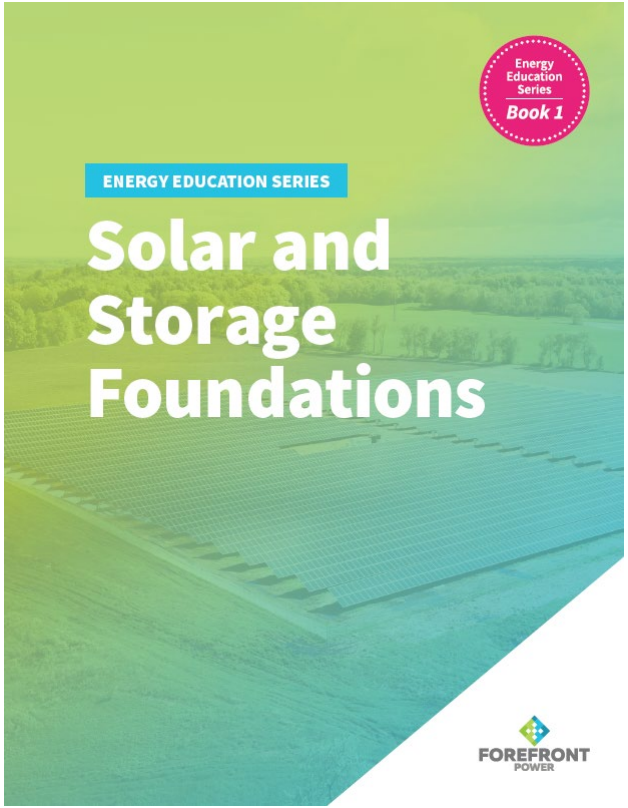
Follow along with our Energy Education Series “Solar and Storage Foundations”

Includes

- Worksheets
- Industry Research
- Resources

Available for download at

https://www.forefrontpower.com/energy-education-series-renewable-energy-foundations/



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Meet Your Facilitators

Brian Taylor

Advisor to school districts and community colleges across California, resulting in over 100 MW of capacity

Michael Rochman - SPURR

Manages a JPA that enables public entities to access the best pricing and terms for energy, lighting, and telecommunications

Madeline Milani

Focus on expanding renewable energy beyond energy savings by impacting the classroom and indirect stakeholders

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Agenda

Introductions

Today’s Market for Solar and Storage

Energy Procurement

Wrap Up

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Today’s Market

Brian Taylor, CA Public Sector

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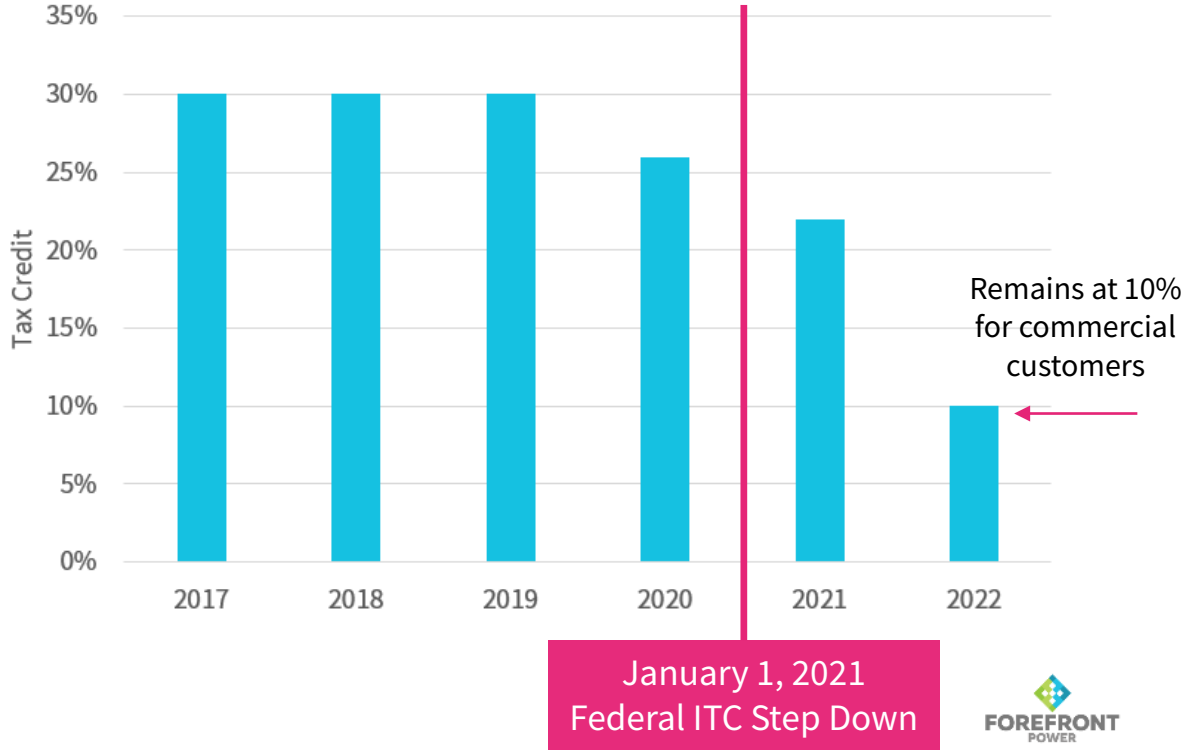
Federal ITC Stepdown Schedule

January 1, 2020

- ITC Step Down has already begun

“Procure/Secure”

- Safe harbor 26% ITC
- Construct System in 2021-2023



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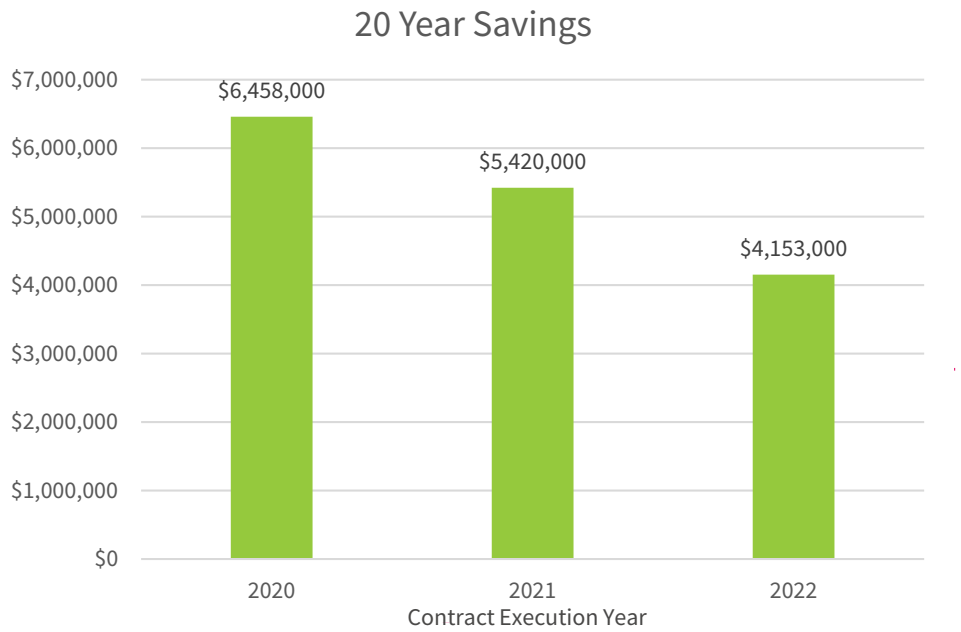
Tax Credit Impact on Savings

Sample Portfolio

- 3MW of Solar
- 90% Solar Energy Offset

ITC Impact

- $6.4m savings in 2019
- 13% savings reduction by 2021
- 26% savings reduction by 2022



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Net Energy Metering

NEM 1.0 – Past

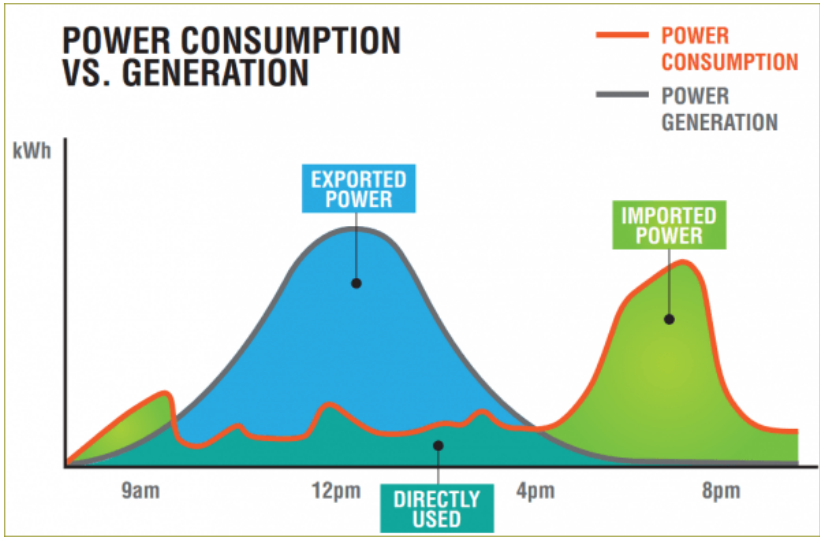
- Exported Energy Value: Full Retail Rate
- 2009 - 2016

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)



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NEM 3.0 - What to Expect?

Exported Solar Energy

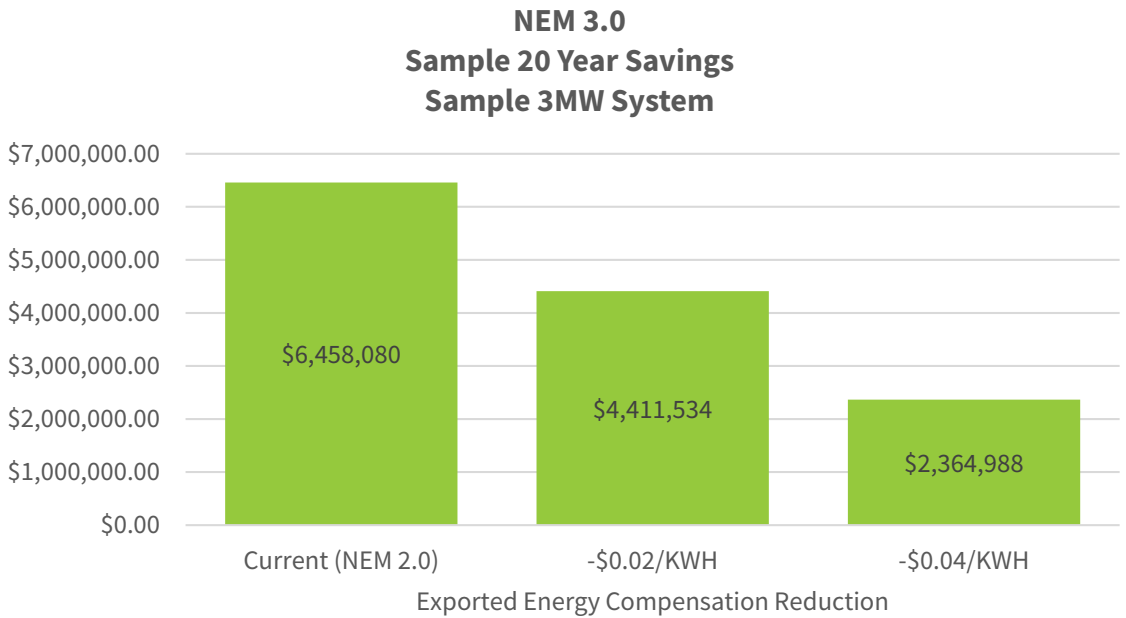
- "Energy Sent back to the grid"

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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Storage and Microgrids

Greater Cost Savings and Resiliency

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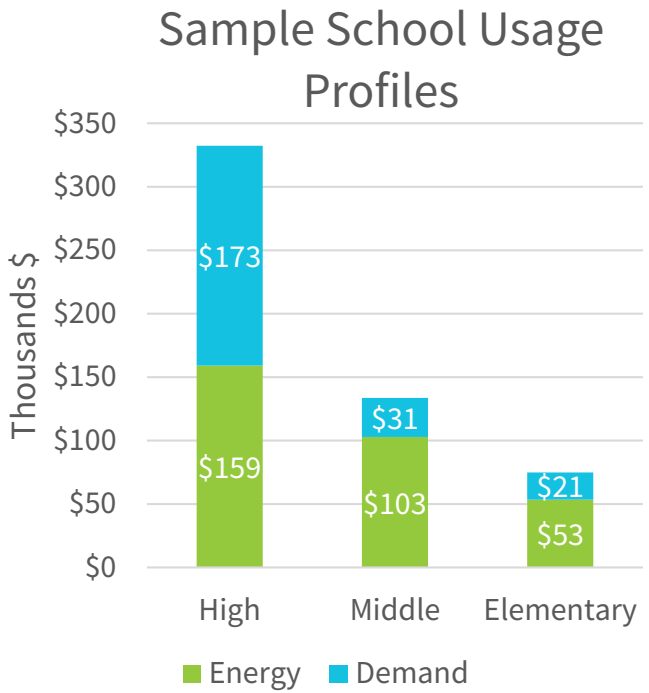
Demand Charges

Energy Storage solutions help lower costs by shaving **demand charges.**

Demand Charges:

- MEASURED IN KW
- PEAK USAGE DURING A BILLING PERIOD
- COST OF MAINTAINING CONSTANT SUPPLY OF ELECTRICITY



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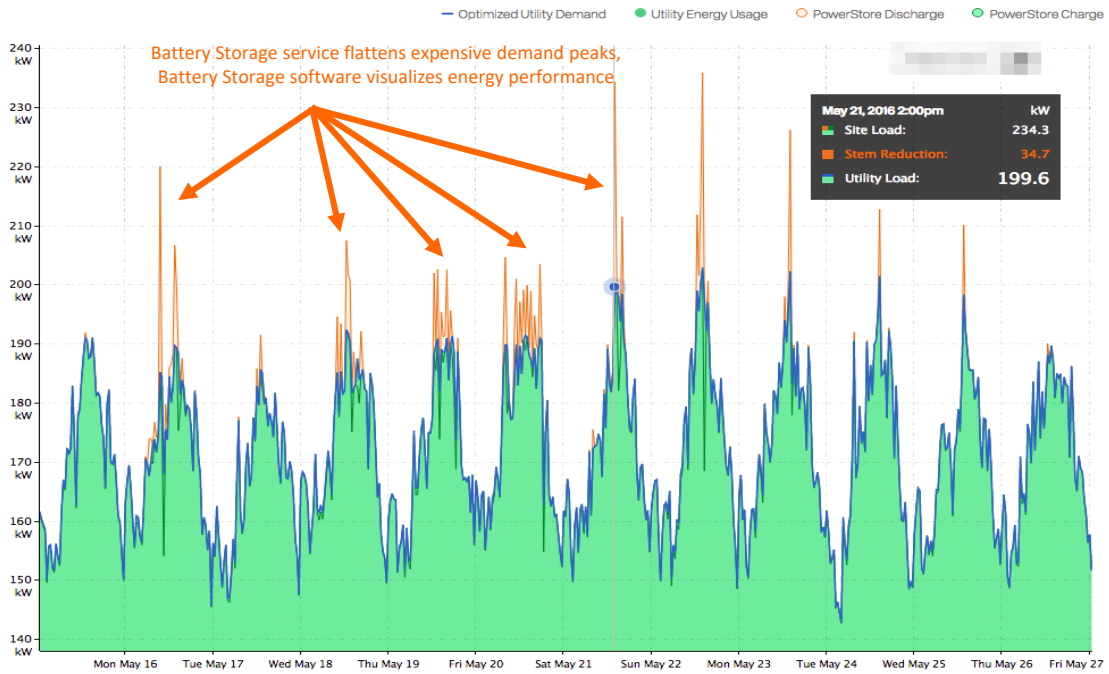
Demand Charge Savings

Intelligently discharge the battery to shave demand charges.



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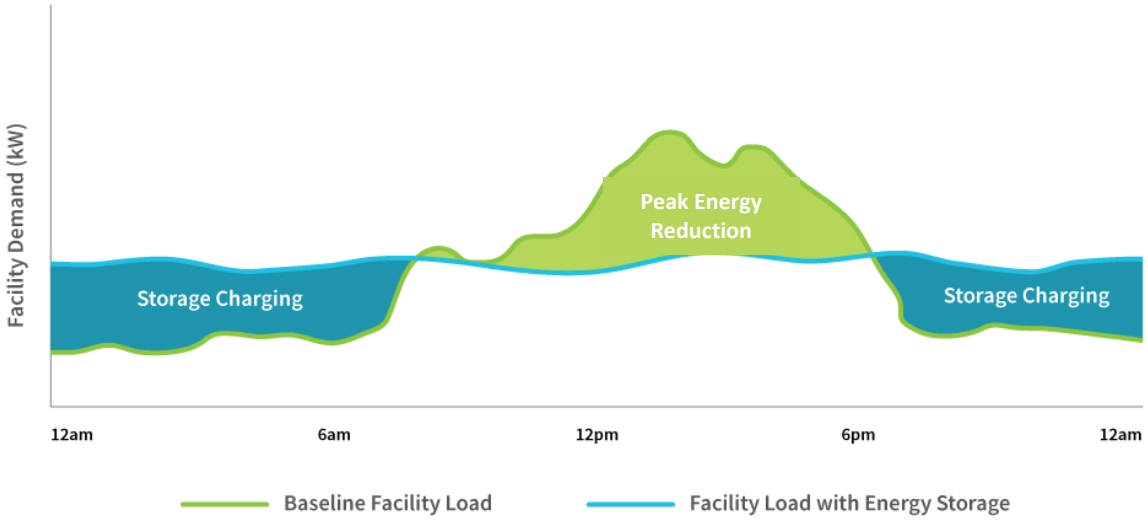
Energy Arbitrage

Tariff arbitrage is the practice of purchasing electricity from the electricity grid when it is cheap and storing it for later use when grid electricity is expensive.



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Incentives

Self-Generation Incentive Program (SGIP) provides rebates for qualifying distributed energy systems installed on the customer's side of the utility meter.

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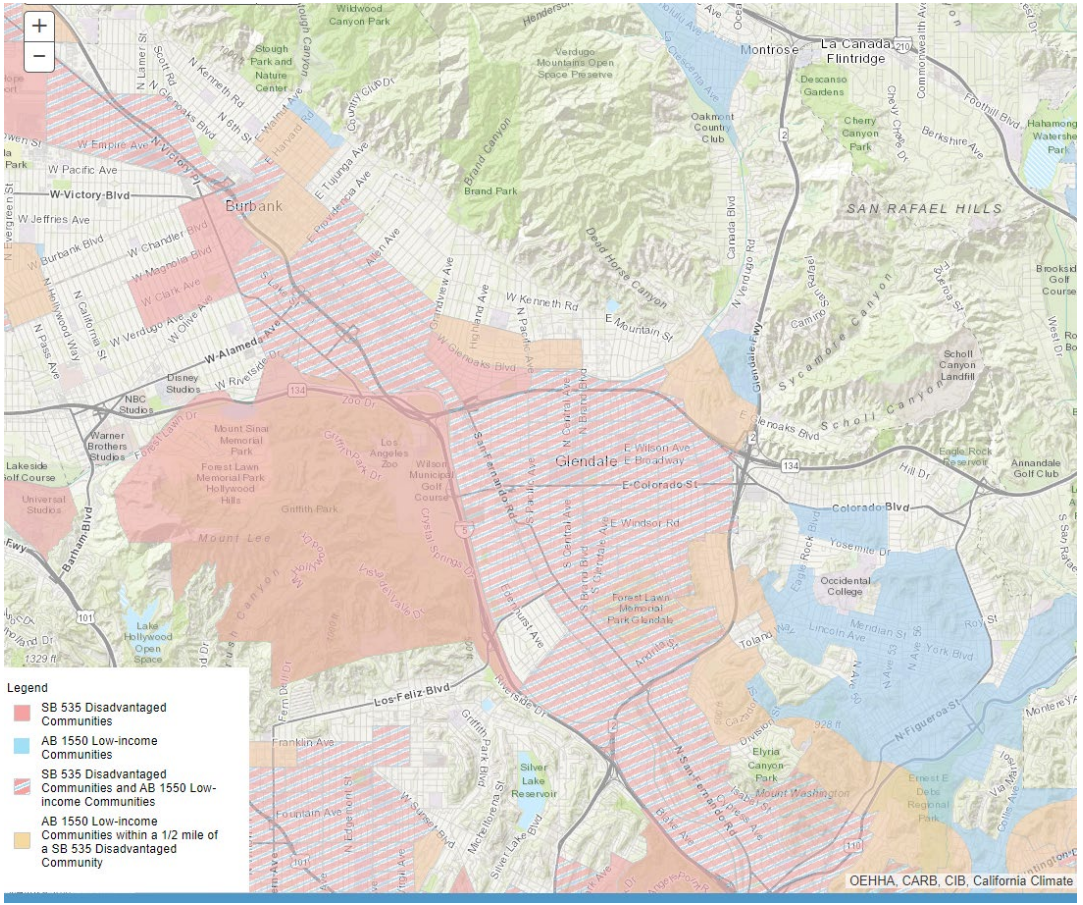
Storage

Disadvantaged Communities

- Increased incentives
- Almost “free battery”

Option S

- Storage Friendly Rate Tariff



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Resiliency with 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

Solar + Storage

Generator

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Site Selection

Let’s think about today’s market and apply it to your sites.

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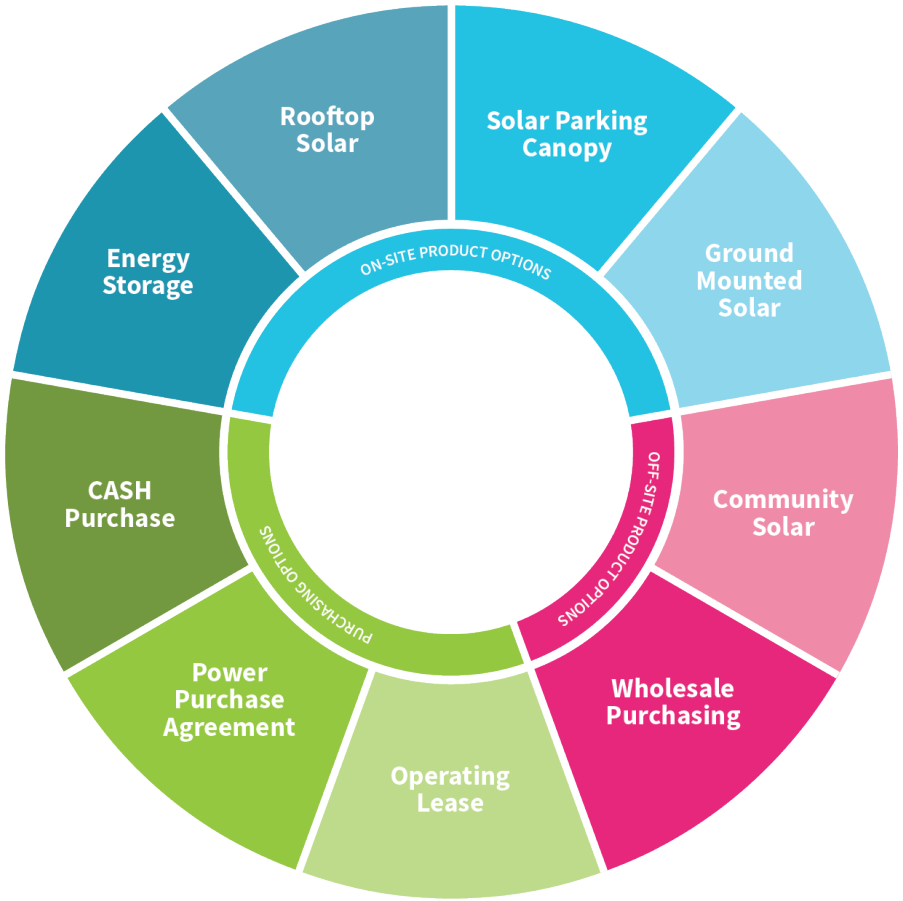
Finding the Right Fit



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Step 1: Product Options

Product Option	Description	Page in Guidebook
Rooftop Solar or Solar Parking Canopy	On-site PV requires **ample space and conditions**. In the case of rooftop solar, a new, sturdy roof is required. For a parking canopy, a large unobstructed parking lot is needed. Either solution allows you to **consume energy from a project directly** rather than having a bill credit. A **long-term commitment** is required. You can also **take advantage of net metering.**	34-35
Off-Site Solar	These solar solutions are good for those that have **limited space**. Ground –mount solar projects offer the benefits of on-site solar without the physical imposition. Off-site solar solutions, such as the ones below, offer the chance for **group participation, more flexibility, speedier deployment** and the **transfer of credits.**	38-41
CCA (Wholesale Purchasing)	A program that **allows cities and counties to buy and/or generate electricity** for residents and businesses within their areas. It is not a utility-regulated program.	40
Direct Access (Wholesale Purchasing)	A service that **allows certain customers to buy electricity directly from non-PG&E providers** known as electric service providers (ESPs).	40
Community Solar	When on-site solar isn't an option, community solar **offers the option to purchase a percentage of the output from a nearby ground mounted solar project** in the community.	38

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Step 2: Financing Options

Financing Options	Description	Page in Guidebook
Cash purchase	By directly purchasing solar energy at your location, **you own the full tax benefits and any additional local incentives** for the system. This is comparable to investing in a bond that provides great long-term dividends and earnings through your **decreased energy expenses for the full lifespan of the system**.	46
Operating Lease	The customer **makes regular payments to the provisioning bank and can claim the system for tax benefits**. The solution is used as collateral and at the end of a typical ten- to fifteen-year lease period, **the title for the solar installation transfers to the customer**.	47
Power Purchase Agreement	A financial agreement **with a developer who provides the design, permitting, financing**, and installation of either an on-site or off-site solar project **at no upfront cost. Electricity is sold to the customer at a low, fixed-cost.**	46

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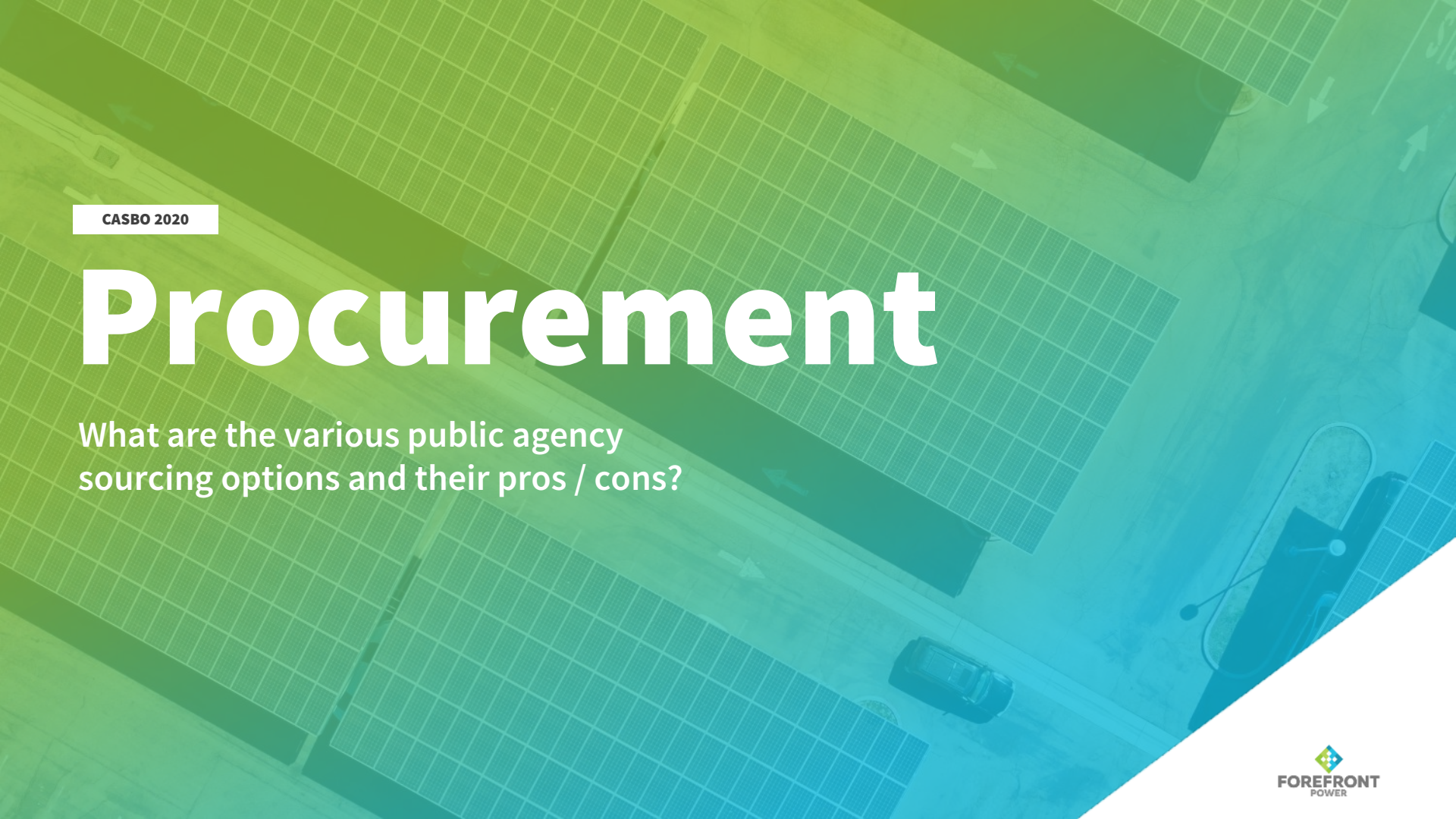
Procurement

What are the various public agency sourcing options and their pros / cons?



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Sourcing Options

Factor	Direct Quotation	DIY RFP	Consultant RFP	JPA RFP
Cost	✓	✗	✗	✓
Speed	✓	✗	✗	✓
Effort	✓	✗	✓	✓
Consistency	✗	✓	✓	✓
Comprehensiveness	✗	✓	✓	✓

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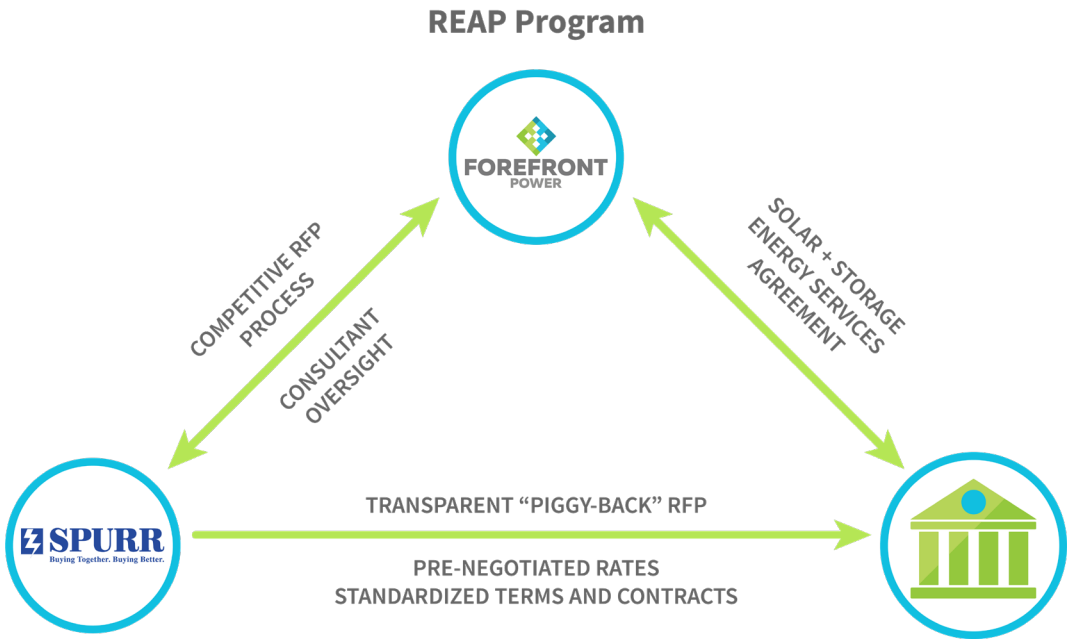
SPURR's REAP Program for Public Agencies

- State-wide RFP
- Solar, Storage, EV Charging
- Piggy-Back Procurement
- Standardized Pricing
- Pre-negotiated Terms
- Leverage GC 4217



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REAP Experience

- +30 Public Agencies
  - SCHOOL DISTRICTS
  - COMMUNITY COLLEGES
  - UNIVERSITIES
  - CITIES
  - COUNTIES
- +100 MW
  - SYSTEM SIZES: 70KW – 20MW
- +200 Projects
  - CANOPY
  - GROUND MOUNT
  - ROOF MOUNT
  - DSA / NON-DSA

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Best Practices

- Be upfront with expectations
- Structure a reasonable timeline
- Define the scope
- Anticipate energy efficiency
- Integrate with master plan
- Define assumptions
- Keep it short and simple

Things to Avoid

- Comparing Apples & Oranges
- Impersonal process
- Overly-extensive requirements
- “Controlling the proposal”
- Deferring to consultants on everything

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Wrap Up

Use the groundwork from today to continue your path.

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Additional Resources

- National Renewable Energy Library (NREL) – “Procuring Solar Energy”
- U.S. EPA – “Guide to Purchasing Green Power”
- U.S. Department of Energy – “How-To Guide for Energy-Performance-Based Procurement”
- ForeFront Power Energy Education Series

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Thank You!

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