



Preliminary Solar PV & Battery Storage Project Overview

June 24, 2021

San Mateo-Foster City School District

Agenda

Project Details

Solar Photovoltaic (PV) Design Options

Site Selection

Financing Options

Preliminary Findings

Battery Energy Storage System (BESS) Considerations

Key Takeaways



Project and Study Details

Feasibility Study Scope

Solar PV + Battery Energy Storage

- 26 District sites
 - Includes CNC Kitchen, M&O and District Office
- Solar PV and BESS systems
- Three financing scenarios
 - \$10-11M Measure T bond funding
 - Power Purchase Agreement PPA
 - Tax-Exempt Municipal Lease

Project Goals

Identify a project portfolio that:

- Fits within Measure T budget
- Reduces operational costs
- Optimizes financial returns
- Moves the District toward aspirational Zero Net Energy (ZNE) goals

Solar PV Design Options

Three solar panel mounting options

- Shade Structures
- Parking Canopies
- Rooftop

Site #	Site Name	Shade Structures	Carport Canopy	Rooftop
1	Audubon		✓	✓
2	Bayside Academy	✓		
3	Beach Park		✓	✓
4	Borel	✓		✓
5	Brewer Island	✓	✓	
6	Child Nutrition Center			✓
7	College Park	✓	✓	
8	Fiesta Gardens	✓	✓	
9	Foster City	✓	✓	
10	Laurel	✓		
11	LEAD	✓		
12	North Shoreview		✓	✓
13	Parkside	✓		
14	SMFC District		✓	✓
15	Sunnybrae		✓	
16	Turnbull	✓	✓	

Solar PV Design Options



Shade Structure
Example

Solar PV Design Options

Carport Example



Solar PV Design Options

Rooftop Examples



Site Selection

Recommended Sites

Criteria

- Available Measure T Funds
- Maximum General Fund Savings
- Available Area for solar PV installation

Site #	Site Name	Building Type
1	Audubon	Elementary
2	Bayside Academy	K-8
3	Beach Park	Elementary
4	Borel	Middle
5	Brewer Island	Elementary
6	Child Nutrition Center	Kitchen
7	College Park	
8	Fiesta Gardens	Elementary
9	Foster City	Elementary
10	Laurel	Elementary
11	LEAD	Elementary
12	North Shoreview	K-8
13	Parkside	K-8
14	SMFC District	District Office
15	Sunnybrae	Elementary
16	Turnbull	Pre-School

Financing Options



Cash Purchase
with Measure T GO
Bonds

- **Best Financial Performance** of all Financing types
- All energy cost savings (minus M&O) go to General Fund
- ~\$11M Solar PV Project Cost

District owns and maintains the system; requires a separate M&O Contract



Power Purchase
Agreement
(PPA)

- (Almost) **No upfront cost** to District
- Third-party finances, constructs, owns and operates the system
- **District buys all electricity** produced at contracted price **for 20-25 years**

Incentives are well aligned – if the system does not perform, the PPA owner does not get paid



Tax-Exempt Municipal
Lease (TEML)

- Some upfront costs for structuring the lease contract
- **District pays lease payments whether the systems perform or not**
- **Lowest financial performance** of three financing options (~4.5% interest rate)

District must pay financing and lease payment costs and maintain the system, which requires a separate M&O Contract; District owns systems at end of lease

Preliminary Project Findings

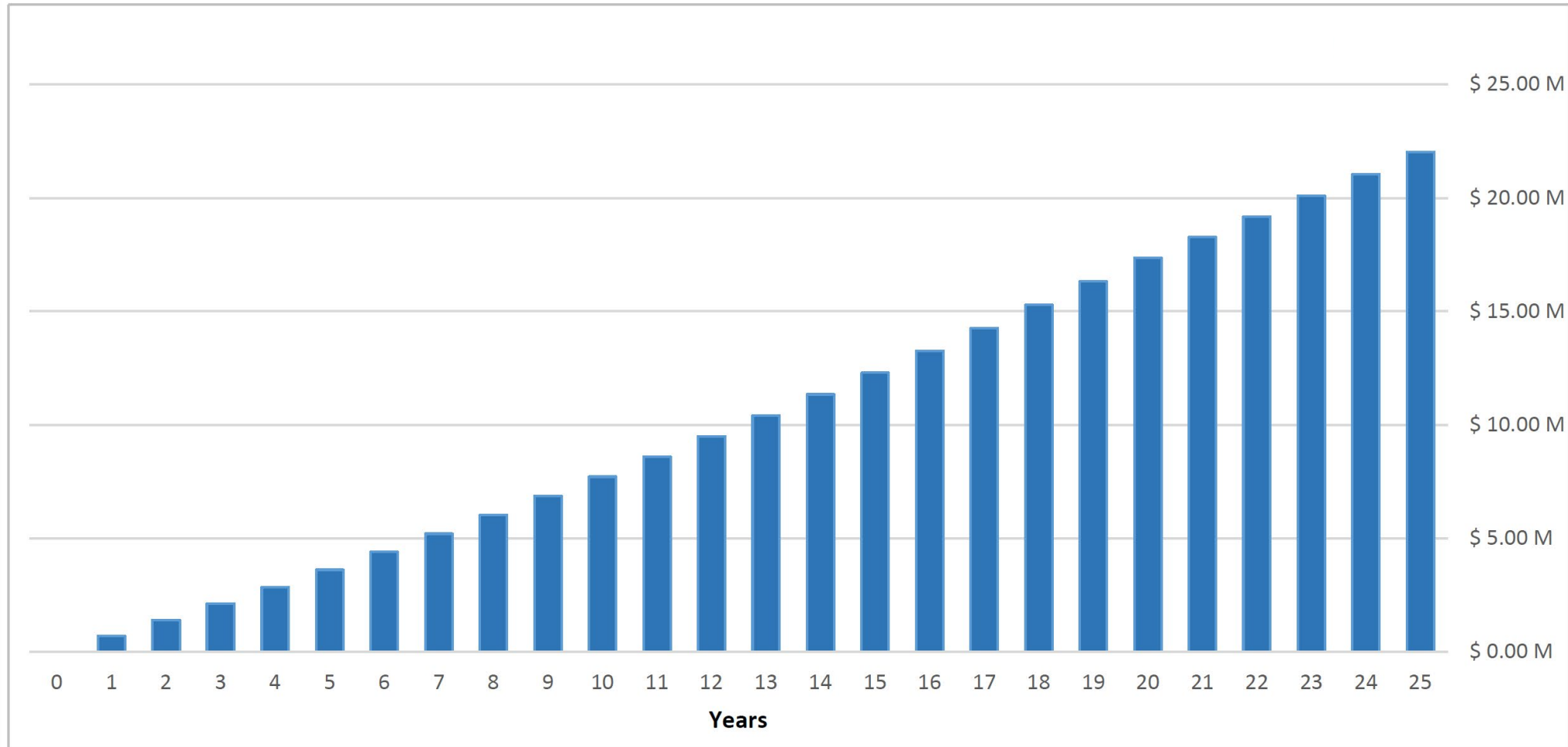
Metric	Measure T Cash Purchase
Number of Sites	16
Solar PV Size, Portfolio	~2.5 MW
Financing Option	Measure T GO bond
Estimated Installed System Cost*	\$11.1M
25-year Net General Fund Savings to District	\$22.0M
25-year NPV Savings (2.5% Discount Rate)	\$15.9M
Simple Payback	15 years

* Measure T GO bond funds paid for by District taxpayers.



Cumulative Project Cash Flow

Anticipated District General Fund Savings from Measure T Cash Purchase Financing

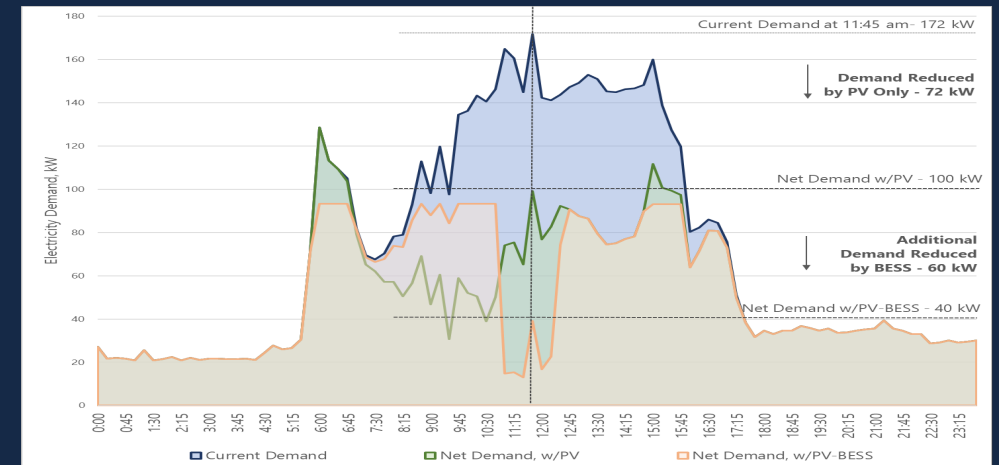


Battery Energy Storage Systems (BESS)

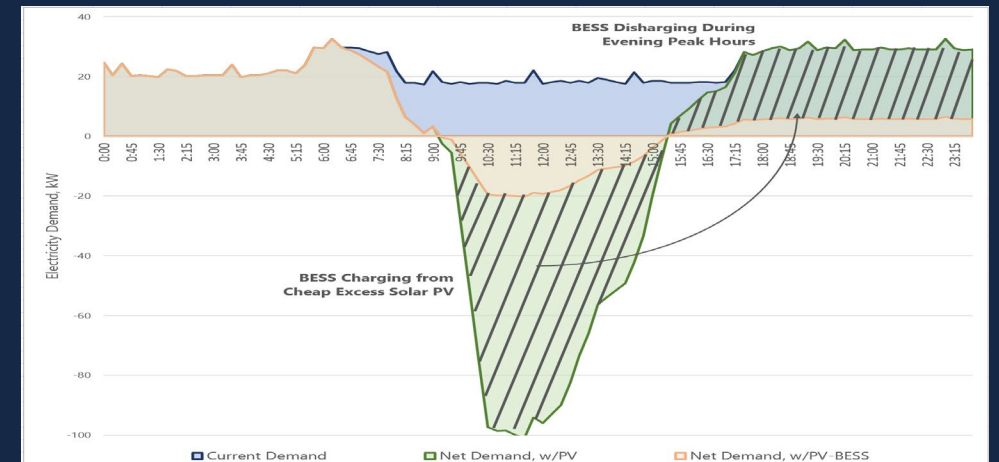
BESS systems produce negligible savings for this project

- Current BESS value streams
 - Demand reduction
 - Energy arbitrage
- Current PV tariffs are not beneficial for BESS
- Market issues for small BESS
 - Market somewhat unstable for <250kWh systems
 - Market instability causing high prices

Demand Reduction



Energy Arbitrage



Key Takeaways

1. Project Portfolio is financially and physically viable

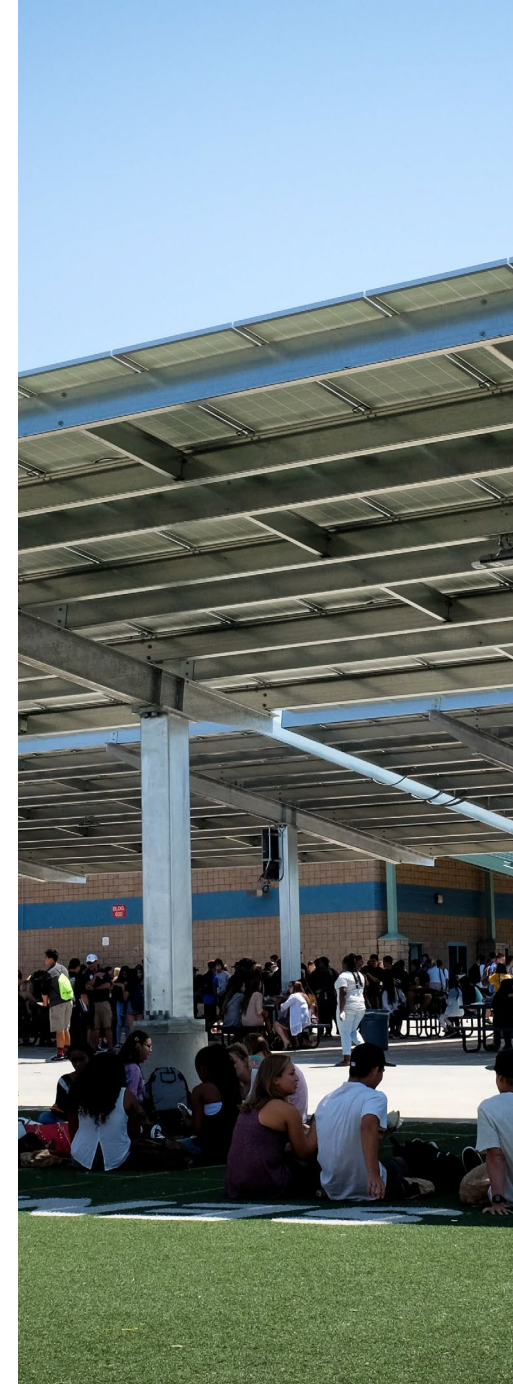
- 16 District sites
- ~\$11M budget
- Offsets 75% of portfolio's adjusted energy consumption

2. Measure T bond funding outperforms other financing

- All energy savings go to General Fund, minus M&O costs

3. Primarily carport canopies and shade structures with a few select rooftop systems

- Rooftop systems can be cheaper, but permitting and roof condition requirements make rooftop systems difficult for public schools



Key Takeaways

4. Net Energy Metering (NEM) 2.0 ending January 2022

- NEM 3.0 will negatively impact solar PV financial performance
- PG&E interconnection applications should be submitted by November 2021 to ensure grandfathering of NEM 2.0 for project

5. BESS systems produce negligible savings with current PG&E tariffs

- BESS could be used in conjunction with solar PV systems to provide resiliency to electrical grid outages
- Resiliency requires critical load analysis/isolation and adds significant project costs



Next Step

Investment Grade Feasibility Study (IGFS)

- Integrate facility master planning
 - HVAC upgrades
 - Lighting, energy efficiency
 - Demographics
- Conduct site visits to refine assumptions
- Refine conceptual designs
- Tariff modeling optimization
 - Maximize returns with PG&E and CCA tariffs
- Detailed financial modeling
 - Sensitivity analysis
 - Probability projections for each financing type
- IGFS Final Report

Milestone	Timeline
IGFS analysis and report	June – August 2021
IGFS findings presentation	August – September 2021



THANK YOU

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