

SCV Water – Photovoltaic Assets: Performance Review

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SCV WATER

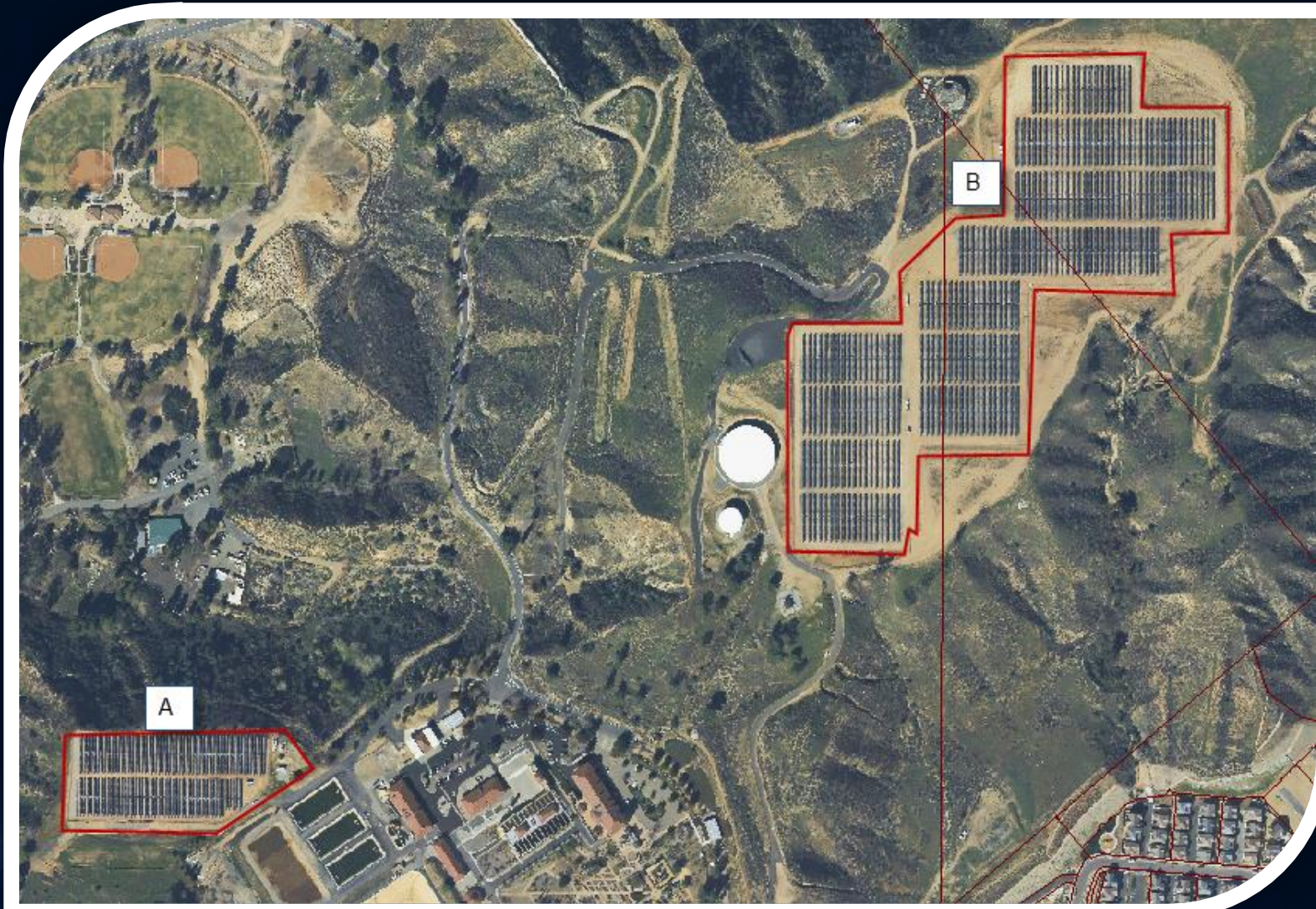
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**SCV Water – Water Resources &
Watershed Committee**
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SCV Water - Photovoltaic Assets: Performance Review

- Overview of SCV Water's Photovoltaic (PV) Assets
- Review of PV Performance
- Discussion on Corrective Maintenance
- Review Operations/Maintenance and Preventative Maintenance
- Overview of Additional Economic Benefits
- Next Steps
- Questions and Answers

Overview of PV Assets – Gladbach Treatment Plant Array(s)



Phase 1 Castaic 1 “Lower Field”

Start: 2011
Size: .951 MW
Prod: 2,218 MWh

Phase 2 Castaic 2 “Upper Field”

Start: 2013
Size: 3.5 MW
Prod: 9,266 MWh

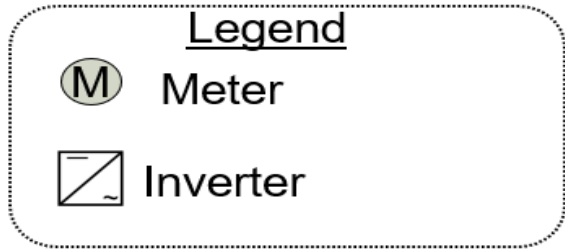
Overview of PV Assets – Pine Street Rooftop



**Pine Street
Rooftop**

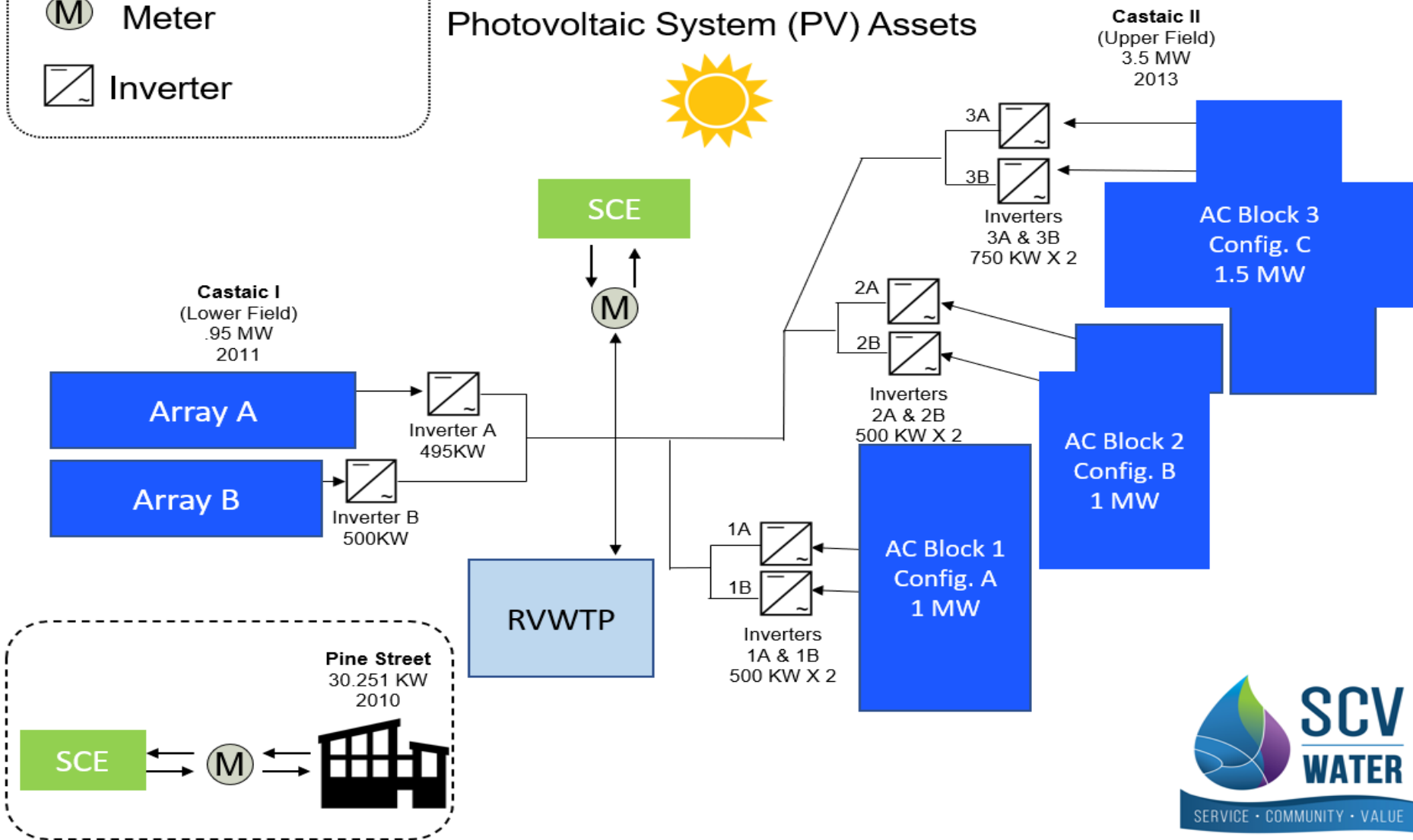
Start: 2010
Size: 30.25 kW
MW Prod: ~52 MWh

Overview of PV Assets



SCV Water

Photovoltaic System (PV) Assets



Overview of PV Assets – General Information and PPA



Smith, P. (2014) SCVnews.com

Rate Considerations and Impacts

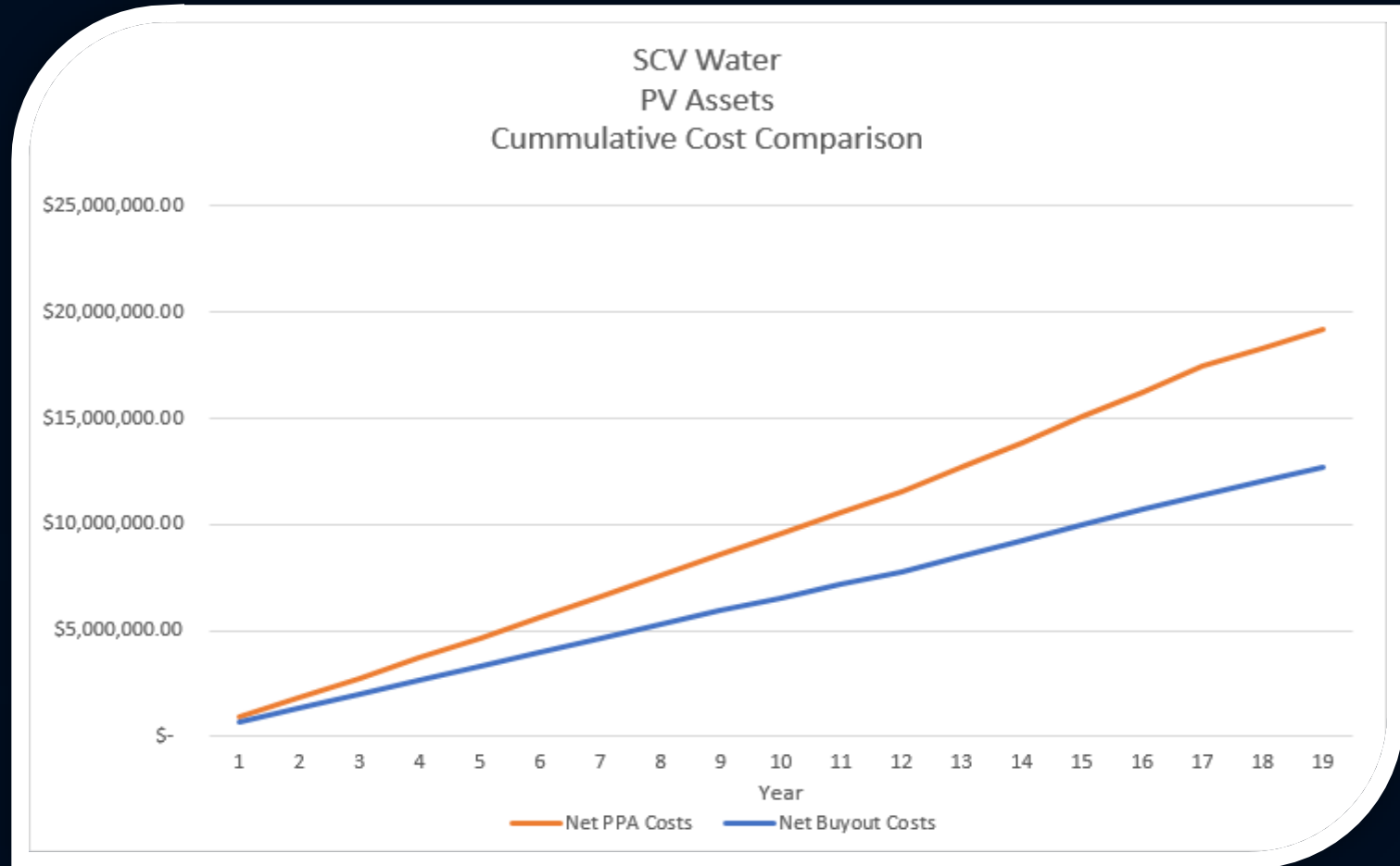
- Phase 1 and 2 Commissioned via Power Purchase Agreements with SunPower
- Phase 1 (A) Interconnected via SCE's NEM Program.
- Phase 2 (B) Interconnected and A & B re-configured to SCE's RES-BCT program.
- CPUC Authorized IOUs (SCE) to shift time-of-use peak period to evening.
- TOU shift "strands" benefits & impacts short and long-term value of PPA.
- SCV Water (collaboration effort) awarded indifference payment of \$1.8 million.

Cost Analysis – PPA v. Purchase (2021)

Comparison Analysis Results

- **PPA (RES-BCT)**
 - Initial Cost: \$0
 - \$/kWh: \$.13 to .19
 - Projected Cost: \$30.1 Million
 - Net Cost: \$19.1 Million
- **PPA Buyout (RES-BCT)**
 - Initial Cost: \$15.467 Million
 - \$/kWh: \$.719
 - Projected Cost: \$19.94 Million
 - Net Cost : \$14.12 Million

Difference: \$4.991 Million (26%)

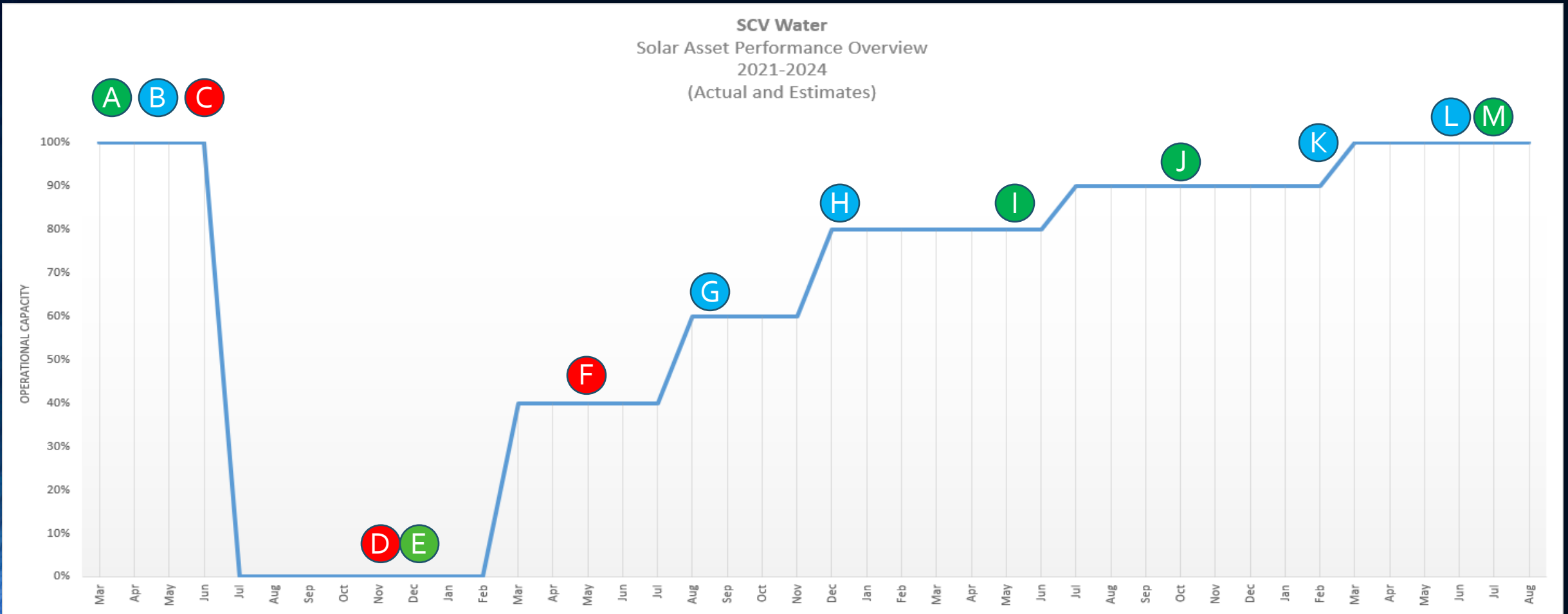


Overview of PV Assets – System Purchase & Transition

- Purchased March 2021
- Operations and Preventative Maintenance Agreement with SunPower & NovaSource
- Wind Damage Repairs (50% Cost-Share with Goldman Sachs Renewable Power)
- Inverter and Tracker Issues in Upper Field
- Thermal Event July 2021 – November 2021
- Fuse Failure – November 2021 – March 2022
- Monitoring System Outages – December 2021 – May 2022



Review of PV Performance – OM/PM & CM Timeline



- A. PV System Purchase B. OM/PM with SunPower/NovaSource C. Thermal Event D. Fuse Failure
 E. Wind Damage Repairs Complete F. SunPower Monitoring Failures G. OM/PM with TerraVerde Energy, Inc.
 H. 80% Operation Return I. New Monitoring System J. Erosion Damage Repairs K. RES-BCT Correction
 L. REC Contract M. Panel Washing

Review of Performance – Economic Benefits

2022-2023 Fiscal Year Solar Performance Executive Summary

I. RES-BCT Financial Performance

Metric	Projection	Actual	Percentage
RES-BCT Credits Generated	\$540,756	\$498,348	92%
REC Sales ¹	\$111,784	\$0	0%
Asset Management Fees	(\$183,312)	(\$119,000)	65%
Other Maintenance Expenses	(\$64,384)	(\$47,198)	73%
Net Savings	\$404,844	\$332,150	82%

2023-2024 Fiscal Year Solar Performance Executive Summary

I. RES-BCT Financial Performance

Metric	Projection	Actual	Percentage
RES-BCT Credits Generated	\$554,193	\$955,259	172%
REC Sales ¹	\$112,337	\$0	0%
Asset Management Fees	(\$188,811)	(\$123,165)	65%
Other Maintenance Expenses	(\$65,979)	(\$136,016)	206%
Net Savings	\$411,740	\$696,078	169%

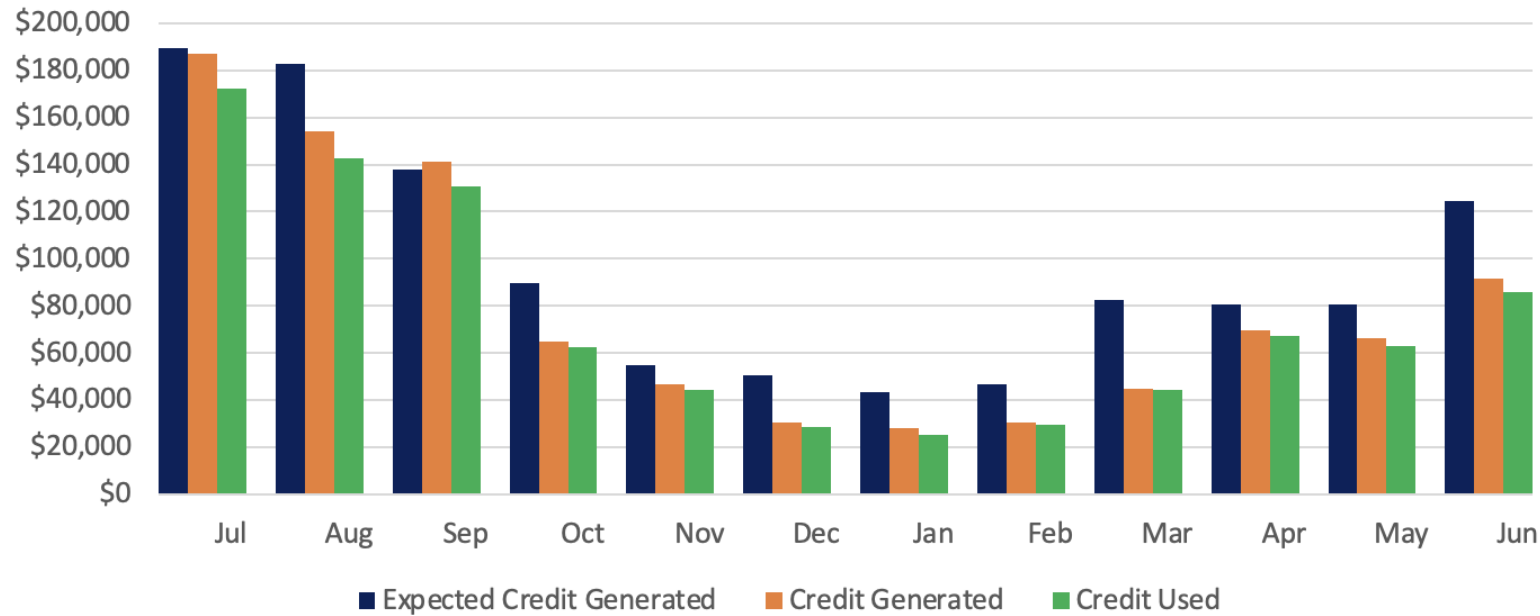
II. Technical Performance

Metric	Projection (kWh)	Actual (kWh)	Percentage
Solar Energy Production	10,325,538	8,444,313	82%

- FY 23-24 actual RES-BCT credits (\$/kWh) higher than forecasted
- REC Sales Expected in FY 24-25
- Other Maintenance Expenses higher than expected due to FY 22-23 corrective maintenance invoice coming in FY 23-24 (Monitoring Equipment Overhaul)
- On-going solar production issues and communication challenges.
- Up from ~17% and unreliable communications in FY 22-23

Additional Benefits – RES-BCT Management

RES-BCT Credit Generated Relative to Expectation: 82.8%
RES-BCT Credit Used Relative to Credit Generated: 93.5%



- Expected Credit Generation based on usage and expected solar generation
- TerraVerde audits RES-BCT data from SCE for the 30 associated accounts
- TerraVerde recently worked with SCV Water Staff and SCE to revise allocation percentages and allow excess credits to be properly absorbed

Economic Benefits – Actual v. Forecasted

SCV Water
Photovoltaic Assets
Economic Performance (Actual v. Forecasted)
2021-2024



Cost Statistics Fiscal Years 22-24

Actual = \$2,216,096.99

PPA = \$2,777,063.00
Forecast = \$2,268,476.53

Diff. v. PPA = \$560,966.21
Difference (%) = 20.1%

Diff. v. Forecast = \$52,379.55
Difference (%) = 2.3%

Note:

1. Assumes 20% Operational Capacity in FY 22

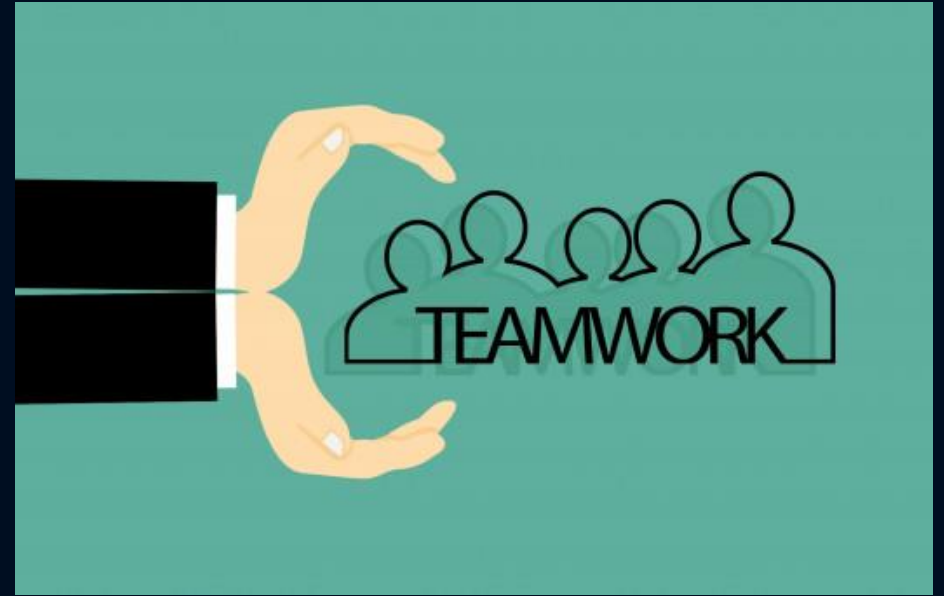
Additional Benefits – Renewable Energy Certificate Program

- Renewable Energy Certificate (REC) = 1 MWh of electricity generated from a renewable source
- Environmental attributes owned by SCV Water and can be monetized
- TerraVerde Energy Inc., completed WREGIS registration and confirmed reporting (QRE) services for the PV systems
- SCV Water in 3-Year Agreement to sell RECs at \$11.50 per REC
- Annual revenue from REC sales estimated to be ~\$120,000 per year*



System Management – OM/PM, CM, and Collaborative Management Team (CMT)

- TerraVerde Energy, Inc.
 - OM/PM Asset Management
 - Corrective Maintenance
 - RES-BCT Auditing
 - REC Auctioning
- Collaborative Management Team (CMT)
 - Sustainability, Treatment, Buildings and Grounds, Administration
 - Meets Monthly
 - Reviews System, Monitoring, Facilities, and Economics
 - Coordinates Activities
 - Communicates Issues and Needs



Next Steps

- Continue CMT and OM/PM & CM Implementation
- Conduct Troubleshooting to Improve Access to Monitoring System
- Replace Chiller Unit
- Improve Road Access to Upper Field
- Battery Project & Charging Station Configuration Assessment
- Inverter Replacement Research & Planning
- Conduct Additional PV Optimization Research
- Research Additional Renewable Energy Project Opportunities





Questions & Answers

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