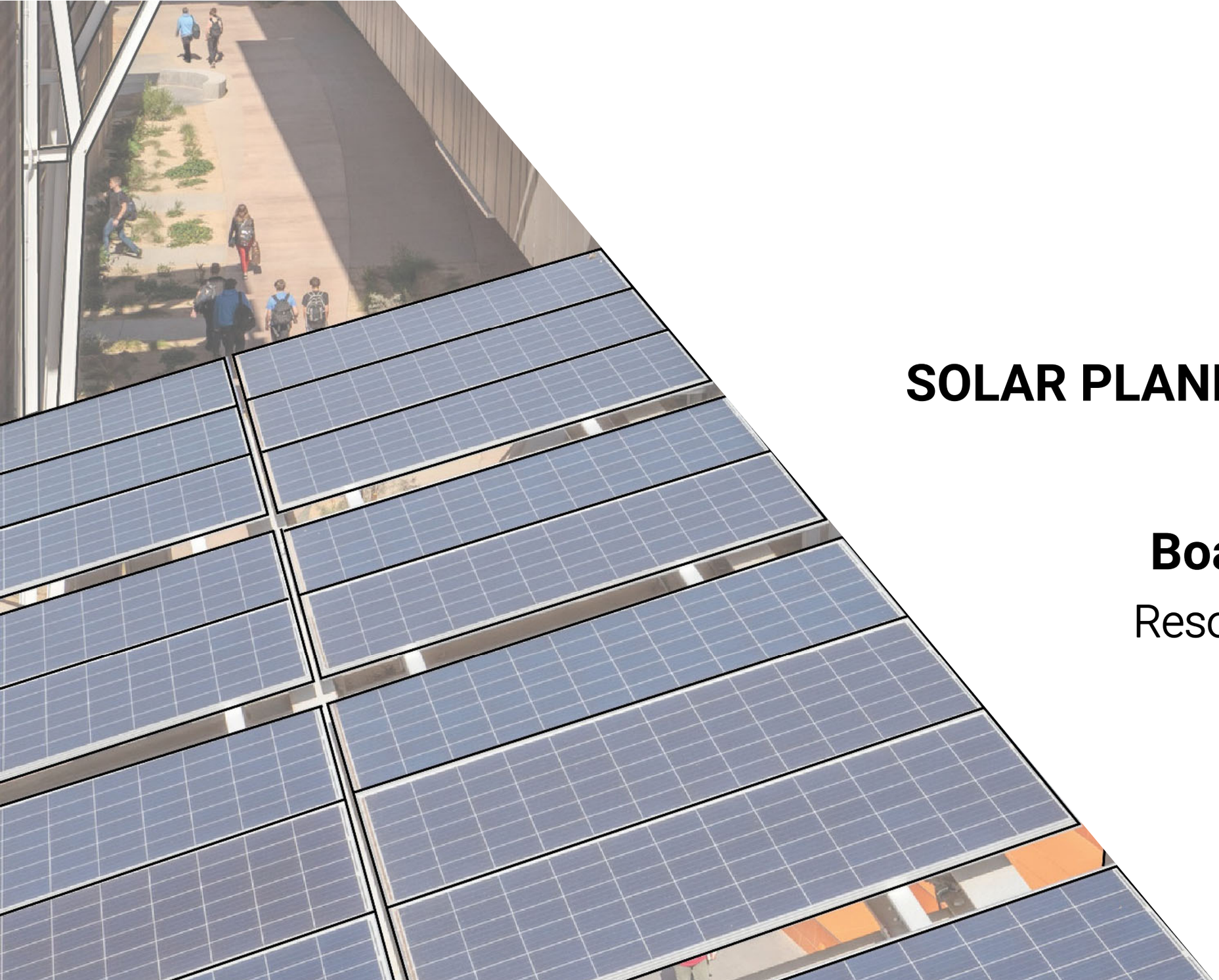


RCCD
RIVERSIDE COMMUNITY COLLEGE DISTRICT

SOLAR PLANNING FUNDING OPTIONS

Board of Trustees

Resources Committee

February 2, 2021

DLR Group
Architecture Engineering Planning Interiors

AGENDA

1 INTRODUCTION

2 GOALS AND OBJECTIVES

3 FINANCIAL OPTIONS EXAMPLE

4 FINANCIAL SUMMARY

5 RECOMMENDATION & STRATEGIES

Goals and Objectives

- ❑ Identified feasible locations of **solar PV arrays** and **battery storage** systems
- ❑ Set renewable goals of **100%**, **50%** and **25%** energy offset
- ❑ Discussed the **positive** environmental and social impact to the community
- ❑ This presentation will discuss a detailed funding options:
  - Analysis
  - Risk factors
  - Assumptions
  - 25-year cash-flow

Renewable Delivery Method Options

Purchase to **Own** “loan finance”

- Traditional project delivery
- Cost of financing drives analysis
- Less expensive life-cycle cost
- District responsible for construction and O&M
- More flexibility in future modifications
- Control over construction cost and quality

Power Purchase **Agreements** “PPA”

- Traditional solar delivery
- PPA rate drives analysis
- Third parties typically have better buying power
- Third party responsible for construction and O&M
- Contractual terms offer restrictions and penalties
- PPA provider takes lead on construction and procurement of equipment

Renewable Delivery Option

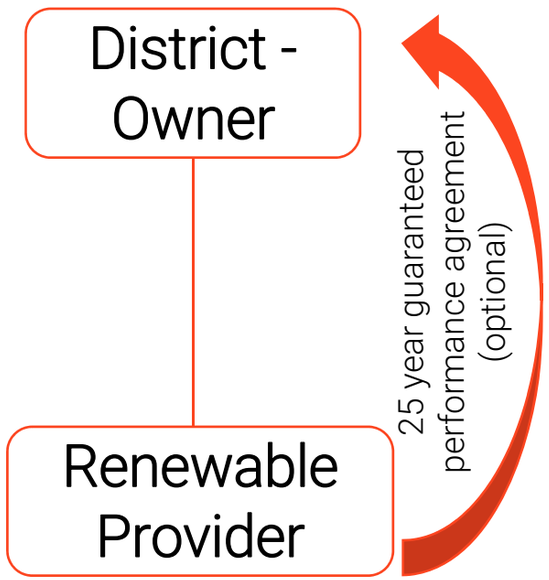
Purchase to Own (loan)

<u>RCCD:</u>

- Owns
- Finances
- Operates
- Maintains

<u>RCCD Contractor:</u>

- Designs
- Builds
- Permits
- Guarantees Performance- (optional and requires O&M agreement)



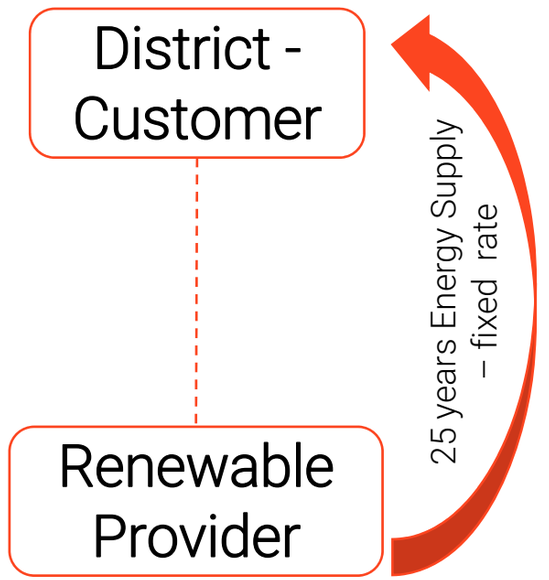
Power Purchase Agreement

<u>RCCD:</u>

- Provides Long-Term Ground Lease

<u>PPA Provider:</u>

- Owns
- Finances
- Designs
- Builds
- Permits
- Guarantees Performance
- Operates
- Maintains



Financial Analysis Assumptions

First year performance	Predicted energy generation from the solar array in the first year of operation
Solar performance degradation	Expected reduction in performance from the solar modules – 0.5% annually
First year cost avoidance	Expected funds not used to purchase electricity due to the installation of renewables
Operation & Maintenance costs	Annual cost expected to operate and maintain renewable assets
Interest rate	Cost of loan assumed in the analysis – 3%
Term	Length of the analysis (life-span of solar)– 25 years
Utility escalation	Factor used to escalate utility costs – 2.5% annual
Life Cycle	Anticipated for solar/battery system– 25 years Anticipated for inverter/battery cells - 12-14 years

Renewables Estimated Costs

Cost of Solar & Battery System

- Roof-top $2.75/W
- Carport $3.75/W
- Canopy $4.25/W
- Ground mount $2.95/W
- Battery Storage $1.50/W

Cost of Operation & Maintenance

- Solar $12.5/kW
- Battery $7.5/kW
- 1.5% annual escalation

PPA

- $0.12+/kWhr rate for electricity
- PPA terms are typically 25 years
- 0% annual escalation

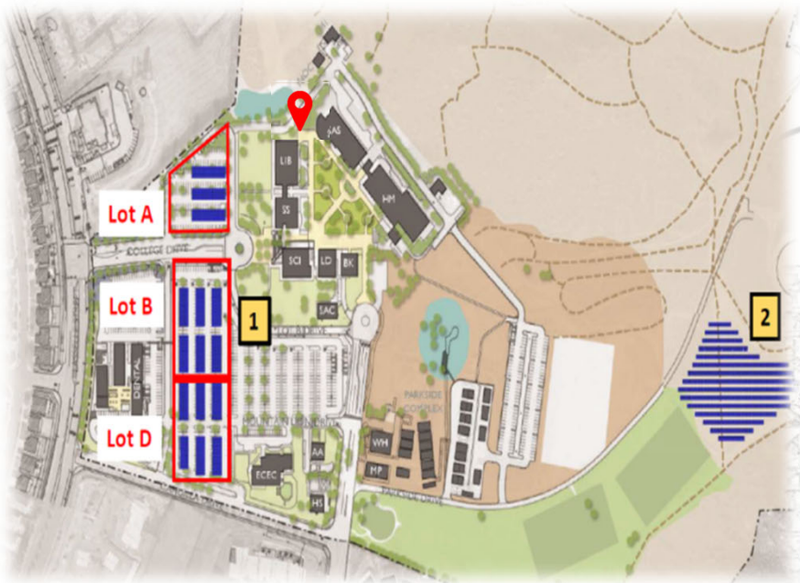
Loan Finance

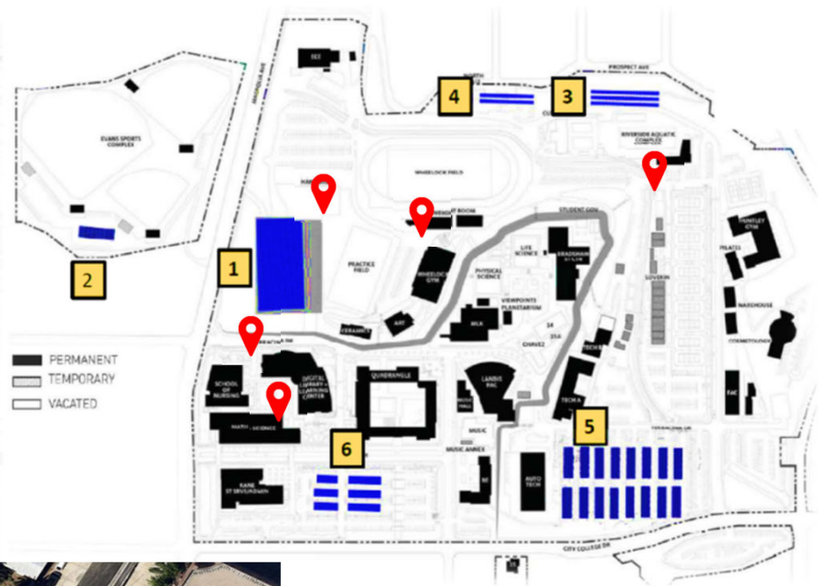
- Interest rate is estimated at 3%
- Loan terms are generally 25 years

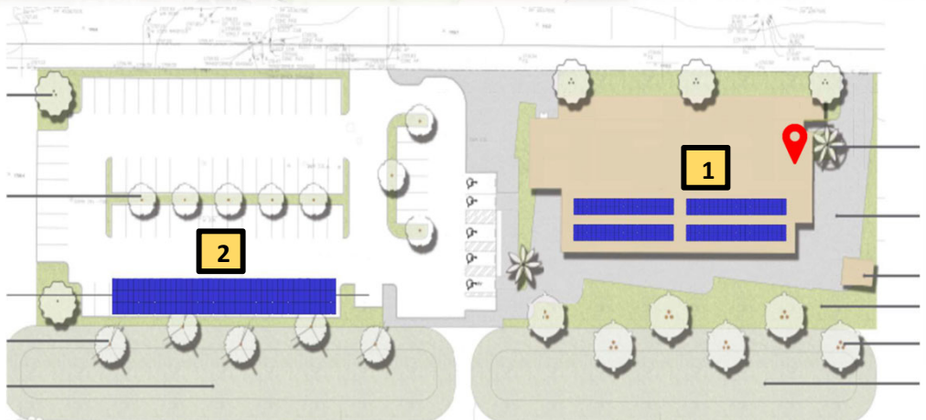
Incentive

- Solar = not available
- Battery = not factored

Districtwide Renewable Projects







100% Energy Offset = (9.75 mW)
50% Energy Offset = (7.73 mW)
25% Energy Offset = (5.54 mW)

Battery Energy Storage System

Solar Arrays

Financial Summaries - All Sites

LOAN FINANCE OPTION– (SOLAR + BATTERY)

Site/Campus	100% Option		50% Option		25% Option	
	Project Budget	25-Y cashflow	Project Budget	25-Y cashflow	Project Budget	25-Y cashflow
Moreno Valley College	$6,964,259	($795,011)	$3,886,061	$561,572	$2,283,343	$1,267,901
Ben Clark Training Center	$510,334	$99,179	$510,334	$99,179	$510,334	$99,179
Norco College	$6,727,375	$1,977,762	$3,776,223	$617,440	$2,321,237	$805,214
Riverside City College ★	$13,891,703	$2,640,497	$13,891,703	$2,670,497	$9,172,556	$2,752,308
Downtown	$1,402,550	$179,139	$1,402,550	$179,139	$1,402,550	$179,139
Total	$29,496,221	**$4,131,566**	$23,466,871	**$4,127,827**	$15,690,020	**$5,103,741**

POWER PURCHASE AGREEMENT – SOLAR + BATTERY)

Site/Campus	100% Option		50% Option		25% Option	
	Project Budget	25-Y cashflow	Project Budget	25-Y cashflow	Project Budget	25-Y cashflow
Moreno Valley College	$6,964,259	($1,994,121)	$3,886,061	($174,680)	$2,283,343	$157,105
Ben Clark Training Center	$510,334	$90,434	$510,334	$90,434	$510,334	$90,434
Norco College	$6,727,375	($6,122,141)	$3,776,223	($3,684,109)	$2,321,237	($2,750,814)
Riverside City College ★	$13,891,703	($13,804,800)	$13,891,703	($13,804,800)	$9,172,556	($9,698,589)
Downtown	$1,402,550	($1,102,206)	$1,402,550	($1,102,206)	$1,402,550	($1,102,206)
Total	$29,496,221	**($22,932,835)**	$23,466,871	**($18,675,362)**	$15,690,020	**($13,304,071)**

★ Riverside City College max. renewable capacity is 42%

Loan Finance Cash Flow Example – Year 1

50% Renewable Energy – All Sites

Electricity Utility Cost without Solar

Cost of Consumption	$1,441,280
Cost of Demand	$1,078,009
Misc./Taxes	$448,723
Total Electricity Utility Costs **without** Solar (A)	**$2,968,012**

Electricity Utility Cost with Solar

Total Electricity Utility Costs without Solar	$2,968,012
Less, Savings from Solar Implementation	($1,264,272)
Net Electricity Utility Costs with Solar	$1,703,740
Plus, Loan Payments	$1,347,652
Plus, Operations and Maintenance	$83,805
Total Electricity Utility Cost with Solar (B)	**$3,135,197**
Amount of Additional Budget Required Year 1 (A-B)	**($167,186)**

Capacity Building – Potential additional costs and opportunities such as personnel for solar maintenance and management; educational internships; workforce training.

Loan Finance Cash Flow

50% Renewable Energy – All Sites

	A	B	C	D	E	F = (C+D+E)	G	H= (F-A)+B+G	J = (F-H)
Year	Cost avoidance	Loan Payment	Cost of Consumption	Cost of Demand	misc & taxes	Total Electric Cost w/o	Solar + BESS O&M Costs	Total Electric Cost w / solar	Difference
1	$ 1,264,272	$1,347,652	$ 1,441,280	$ 1,078,009	$ 448,723	$ 2,968,013	$ 83,805	$ 3,135,199	$ (167,186)
2	$ 1,291,453	$1,347,652	$ 1,477,312	$ 1,104,960	$ 366,180	$ 2,948,452	$ 85,062	$ 3,089,714	$ (141,261)
3	$ 1,319,227	$1,347,652	$ 1,514,245	$ 1,132,584	$ 375,335	$ 3,022,164	$ 86,338	$ 3,136,928	$ (114,764)
4	$ 1,347,605	$1,347,652	$ 1,552,101	$ 1,160,898	$ 384,718	$ 3,097,718	$ 87,633	$ 3,185,399	$ (87,681)
5	$ 1,376,600	$1,347,652	$ 1,590,904	$ 1,189,921	$ 394,336	$ 3,175,161	$ 88,948	$ 3,235,160	$ (60,000)
6	$ 1,406,228	$1,347,652	$ 1,630,676	$ 1,219,669	$ 404,195	$ 3,254,540	$ 90,282	$ 3,286,246	$ (31,706)
7	$ 1,436,501	$1,347,652	$ 1,671,443	$ 1,250,160	$ 414,299	$ 3,335,903	$ 91,636	$ 3,338,691	$ (2,788)
8	$ 1,467,434	$1,347,652	$ 1,713,229	$ 1,281,414	$ 424,657	$ 3,419,301	$ 93,011	$ 3,392,530	$ 26,771
9	$ 1,499,041	$1,347,652	$ 1,756,060	$ 1,313,450	$ 435,273	$ 3,504,783	$ 94,406	$ 3,447,800	$ 56,983
10	$ 1,531,338	$1,347,652	$ 1,799,962	$ 1,346,286	$ 446,155	$ 3,592,403	$ 95,822	$ 3,504,540	$ 87,863
11	$ 1,564,338	$1,347,652	$ 1,844,961	$ 1,379,943	$ 457,309	$ 3,682,213	$ 97,259	$ 3,562,786	$ 119,427
12	$ 1,598,059	$1,347,652	$ 1,891,085	$ 1,414,442	$ 468,742	$ 3,774,268	$ 98,718	$ 3,622,579	$ 151,689
13	$ 1,632,516	$1,347,652	$ 1,938,362	$ 1,449,803	$ 480,460	$ 3,868,625	$ 907,396	$ 4,491,157	$ (622,532) ★
14	$ 1,667,725	$1,347,652	$ 1,986,821	$ 1,486,048	$ 492,472	$ 3,965,340	$ 113,810	$ 3,759,078	$ 206,263
15	$ 1,703,703	$1,347,652	$ 2,036,491	$ 1,523,199	$ 504,784	$ 4,064,474	$ 115,517	$ 3,823,940	$ 240,534
16	$ 1,740,467	$1,347,652	$ 2,087,404	$ 1,561,279	$ 517,403	$ 4,166,086	$ 117,250	$ 3,890,521	$ 275,565
17	$ 1,778,034	$1,347,652	$ 2,139,589	$ 1,600,311	$ 530,338	$ 4,270,238	$ 119,009	$ 3,958,865	$ 311,373
18	$ 1,816,422	$1,347,652	$ 2,193,078	$ 1,640,319	$ 543,597	$ 4,376,994	$ 120,794	$ 4,029,018	$ 347,976
19	$ 1,855,650	$1,347,652	$ 2,247,905	$ 1,681,327	$ 557,187	$ 4,486,419	$ 122,606	$ 4,101,027	$ 385,391
20	$ 1,895,735	$1,347,652	$ 2,304,103	$ 1,723,360	$ 571,116	$ 4,598,579	$ 124,445	$ 4,174,942	$ 423,637
21	$ 1,936,697	$1,347,652	$ 2,361,706	$ 1,766,444	$ 585,394	$ 4,713,544	$ 126,311	$ 4,250,811	$ 462,733
22	$ 1,978,555	$1,347,652	$ 2,420,748	$ 1,810,605	$ 600,029	$ 4,831,382	$ 128,206	$ 4,328,686	$ 502,696
23	$ 2,021,329	$1,347,652	$ 2,481,267	$ 1,855,870	$ 615,030	$ 4,952,167	$ 130,129	$ 4,408,620	$ 543,547
24	$ 2,065,039	$1,347,652	$ 2,543,299	$ 1,902,267	$ 630,406	$ 5,075,971	$ 132,081	$ 4,490,665	$ 585,306
25	$ 2,109,707	$1,347,652	$ 2,606,881	$ 1,949,824	$ 646,166	$ 5,202,870	$ 134,062	$ 4,574,878	$ 627,992
									$ 4,127,827

★ Major equipment replacement in year 13

50% Renewable Energy Observations

- ❑ Purchase to own “loan finance option” is feasible and provides a positive cashflow over 25-year term
- ❑ Loan amount is the total project budget “hard and soft” costs
- ❑ Total cost of electricity with renewables includes the annual “loan payment” plus annual “O&M costs” for solar + battery systems
- ❑ Saving in annual electricity bills offsets the total cost of electricity with renewables and provides positive cash flow after year 7
- ❑ The cash flow incorporates major equipment replacement in year 13
- ❑ Loan amount can be paid-off from a future local bond
- ❑ Solar providers can/will only guarantee the system performance if they self-maintain and operate the system – typically 25 years

Strategies and Recommendations

- ❑ Test the market
  - Develop and issue an RFQ&P for multiple projects identified in the planning phase for all sites under GC 4217
  - Ask solar providers to propose “alternative” innovative solutions
- ❑ Recommended renewable option is 50% with expansion to 100% overtime
- ❑ Invest in future energy saving and efficiency strategies:
  - Infrastructure (5%-10%)
  - Energy Conservation (5%-10%)
  - Integrated Energy (10%-15%)
- ❑ For Riverside City College:
  - Research off-campus community solar to achieve balance of energy goals
  - Expansion of medium voltage loop to consolidate meters, batteries, PV energy flow

Preliminary Schedule

❑	RFQ/P	3 months	Mar 21 - May 21
❑	Finance loan application	2 months	May 21 - Jul 21
❑	Contract negotiation	3 months	May 21 - Jul 21
❑	Board approval	3 months	Aug 21 - Oct 21
❑	Due diligence	6 months	Nov 21 - Apr 22
❑	Design	3-9 months	Nov 21 - Jul 22
❑	Permit (DSA) ★	3-6 months	Jan 22 - Sep 22
❑	Construction ★	6-10 months	Apr 22 - Jun 23
❑	Commission ★	2 months	Oct 22 - Aug 23
❑	Operation ★	25 years	Nov 22 - Nov 48

★ Schedule varies and depends on final response to RFQP

SOLAR PLANNING FUNDING OPTIONS

Q & A