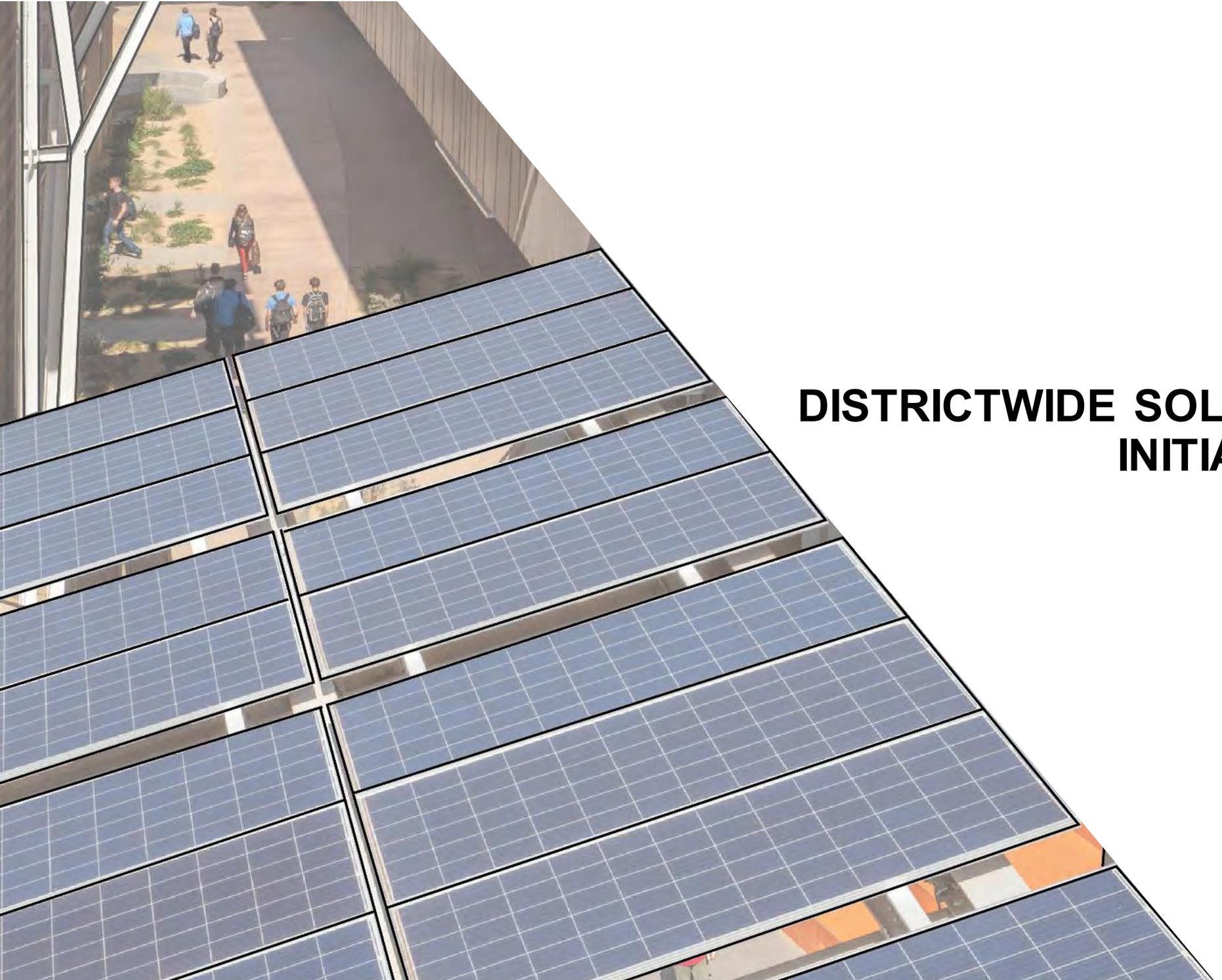


RCCD
RIVERSIDE COMMUNITY COLLEGE DISTRICT

DISTRICTWIDE SOLAR PLANNING INITIATIVE UPDATE

August 18, 2020

DLR Group
Architecture Engineering Planning Interiors

AGENDA

1 INTRODUCTION

2 GOALS AND OBJECTIVES

3 PROJECT OVERVIEW

4 PROGRESS

5 NEXT STEPS

INTRODUCTION

DLR Group
Architecture Engineering Planning Interiors

Energy and Solar Planning Consultant

Rod Oathout

PE, CEM, LEED AP

PRINCIPAL-IN-CHARGE

Energy Leader

Leigh Anne Jones

AIA, LEED AP BD+C

CLIENT LEADER

Higher Education Expert

Sean Avery

PE, LEED AP

SENIOR ELECTRICAL ENGINEER

PV System Design Expert

RCCD
RIVERSIDE COMMUNITY COLLEGE DISTRICT

Energy and Solar Planning Committee

MORENO VALLEY COLLEGE

Dr. Nathaniel Jones, Vice President of Business Services

Brian Adair, Interim Facilities Director Facilities

Dr. Fabian Biancardi, Professor, Political Science, Humanities & Social Sciences

NORCO COLLEGE

Dr. Michael Collins, Vice President of Business Services

Steven Marshall, Facilities Director Facilities

Jeff Buch, Maintenance Mechanic, Facilities

Monica Gutierrez, Professor, Biology, Math & Sciences

Teresa Chihuahua, Student
Norco College

RIVERSIDE CITY COLLEGE

Dr. Chip West, Vice President of Business Services

Robert Beebe, Director Facilities, M&O Facilities

Tonya Huff, Associate Professor, Biology Life Science

Garth Schultz, Associate Professor, Counseling Counseling

John Taack, Maintenance Manager Facilities

EvaDeshay Mayd, Student

Krystin Steranka, Assistant Director Facilities M&O

DISTRICT OFFICE

Hussain Agah, Associate Vice Chancellor Facilities Planning & Development

Mehran Mohtasham, Director, Capital Planning Facilities Planning & Development

Bart Doering, Facilities Development Director Facilities Planning & Development

Susanne Ma, Director of IT Infrastructure & Systems

Myra Nava, Facilities Planning Specialist Facilities Planning & Development

GOALS AND OBJECTIVES

Goals and Objectives

Solar Planning Initiatives aligns with …

1. RCCD Board Policy 6870 Sustainability & Environmental Responsibility

   - ✓ District recognizes its responsibility to exercise environmental stewardship
   - ✓ Minimize negative environmental impacts of activities under district control
   - ✓ Economically manage the use of buildings, land and natural resources

2. CCCCO BOG Climate Change and Sustainability Policy (May 2019) – one of its goals “increase renewable energy consumption to 25% by 2025 & 50% by 2030”

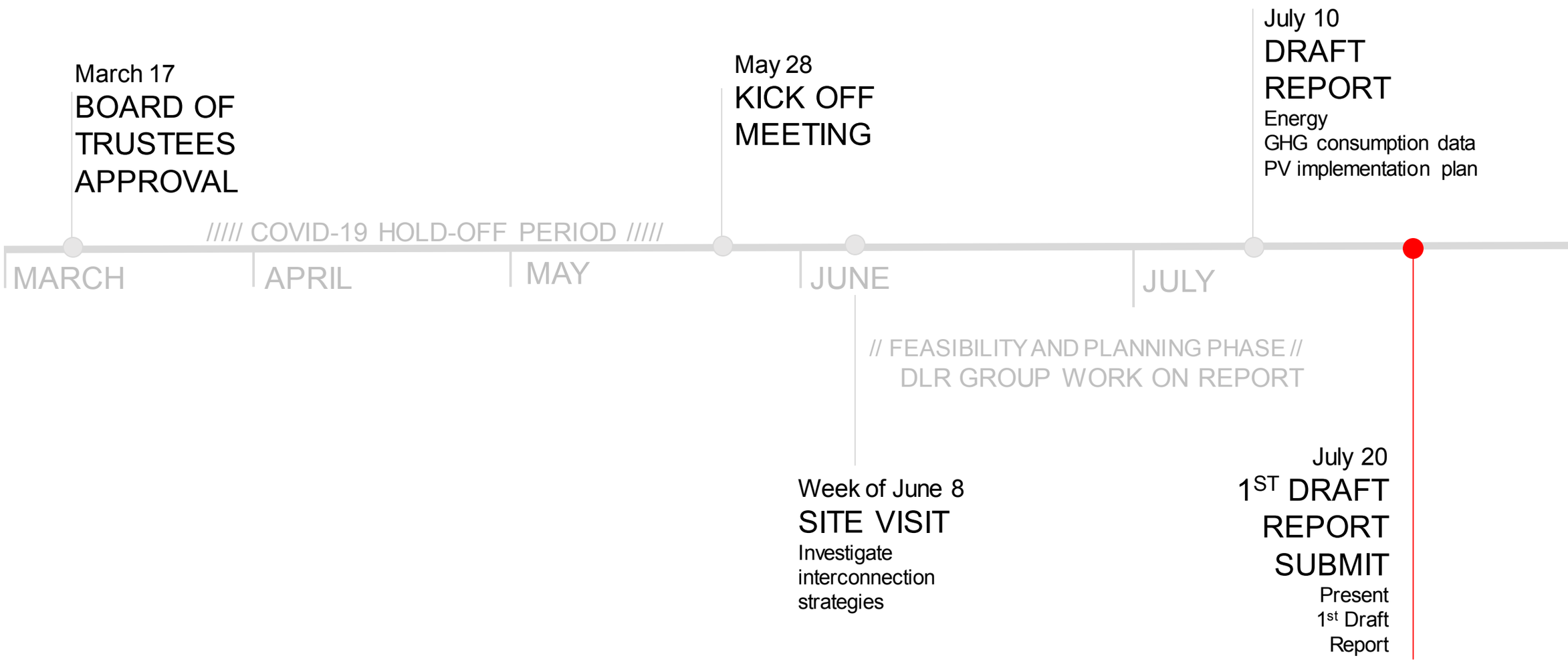
3. RCCD upcoming Sustainability Plan – Part of the Long-Term Capital Facilities Program (LTCFP)

4. College Facilities Master Plans

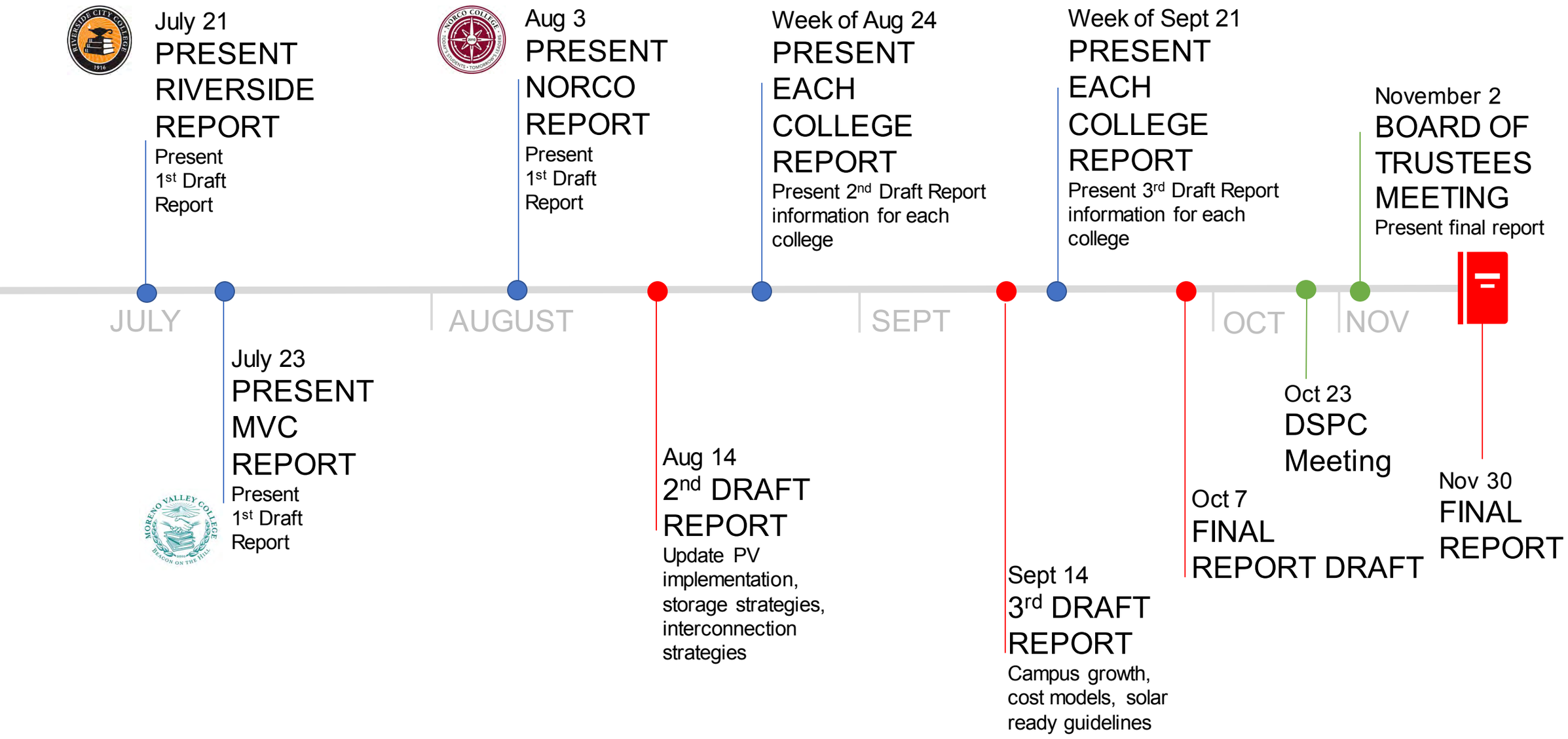
PROJECT OVERVIEW

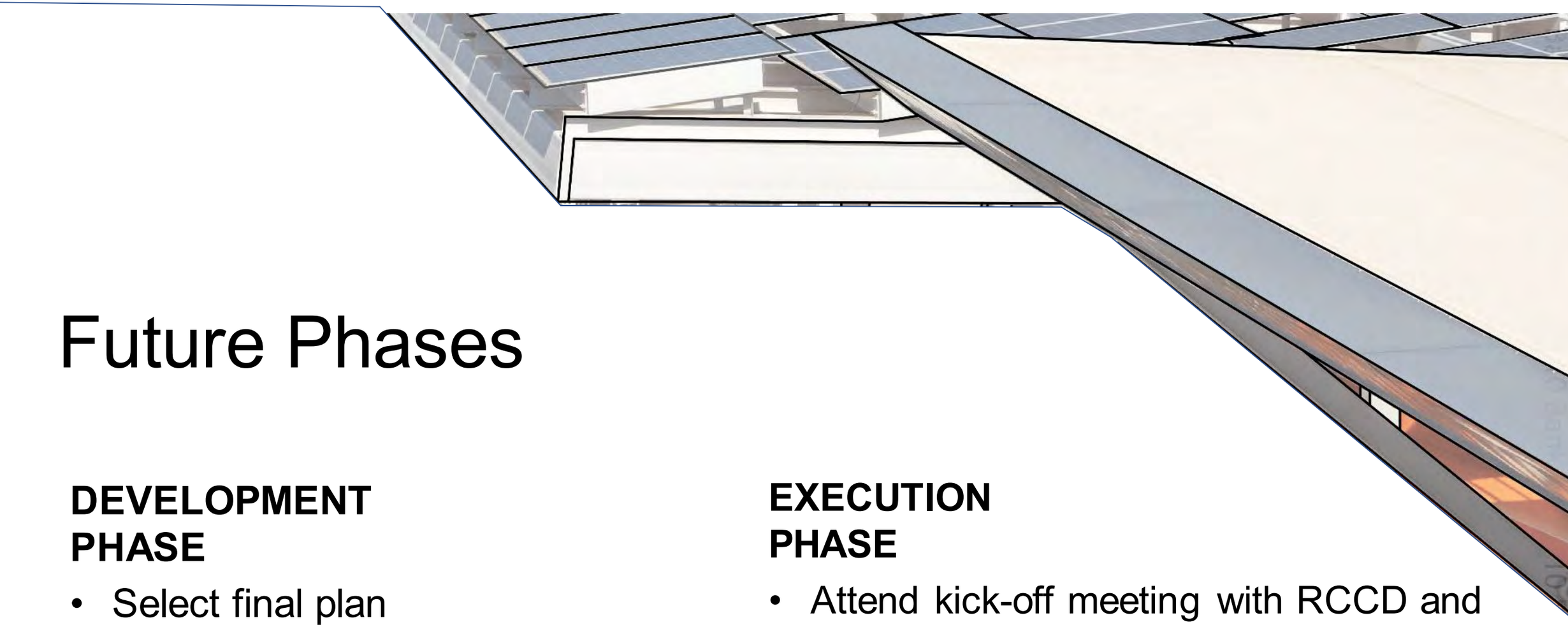
FEASIBILITY & PLANNING PHASE
DEVELOPMENT PHASE
EXECUTION PHASE

Project Schedule Timeline (Feasibility & Planning Phase)



Project Schedule Timeline (Feasibility & Planning Phase)





Future Phases

DEVELOPMENT PHASE

- Select final plan
- Discuss project phasing and schedule
- Assist in preparation of RFQ/Ps
- Assist in evaluations RFQ/Ps submissions

EXECUTION PHASE

- Attend kick-off meeting with RCCD and selected PV contractor
- Provide peer reviews
- Field visits and observation reports

  Review commissioning report + Performance tests

EDUCATION

RENEWABLES **IN CURRICULUM**

- Showcase of sustainability features
- Sustainability kiosk with web-based dashboard, mural and teaching area also engage students and community members
- Visible photovoltaic systems demonstrate on-site renewable energy production
- Practical, hands-on training opportunities

Feasibility and Planning Phase

PROGRESS – EVALUATION

EVALUATION DEVELOPMENT REFINE FINALIZE

Utility Assessment

Electric consumption (kWhr)

- On-peak, mid-peak, off-peak, etc

Electric demand (kW)

- On-peak, mid-peak, off-peak, etc

Cost for consumption

Cost for demand

Taxes, fees, and other charges

Benchmark data

Dec 2018 – Nov 2019

EVALUATION | DEVELOPMENT | REFINE | FINALIZE

Task Completed

Renewable Incentives

Federal
Solar –Business Energy Investment Tax Credit (ITC)
2020 - 26%, 2021 - 22%, After – 10%

State
Solar – None
Storage – Self-Generation Incentive Program (SGIP)
$0.25-0.35/Wh installed

Utility
Solar - None
Storage – None.

Feasibility and Planning Phase

PROGRESS – DEVELOPMENT

EVALUATION | **DEVELOPMENT** | REFINE | FINALIZE

Approach to Synergy

(Solar + Storage)

- Solar has most impact off-setting electric consumption (kWhr)
- Over-production not permitted
- Ideally array sizes will be larger than 50kW (approx. 3500 sqft)
- Average lifecycle of Solar Panels: 20-25 Years

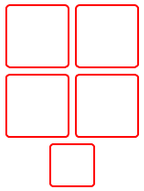
Storage will impact:

- Electric demand (kW)
- Can shift consumption to a lower tariff

Methods to Consider Renewable Delivery

Purchase to own

Traditional project delivery



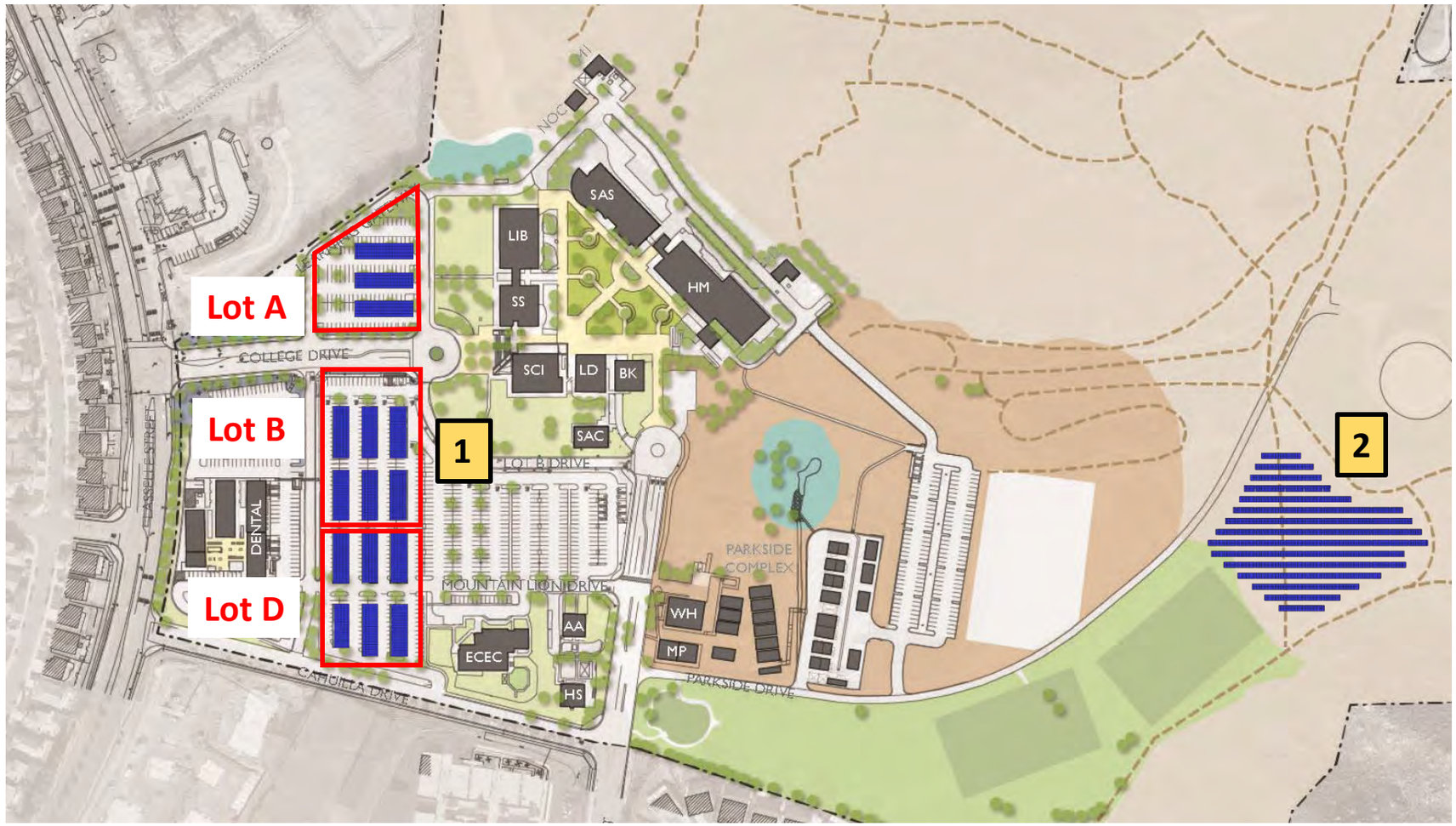
Power purchase agreements (PPA)

Traditional solar delivery

PROGRESS – MORENO VALLEY COLLEGE

MORENO VALLEY COLLEGE

SOLAR ON EXISTING CAMPUS



ARRAYS OPTIONS

1. LOTS A, B, & D CARPORTS: 986 KW DC

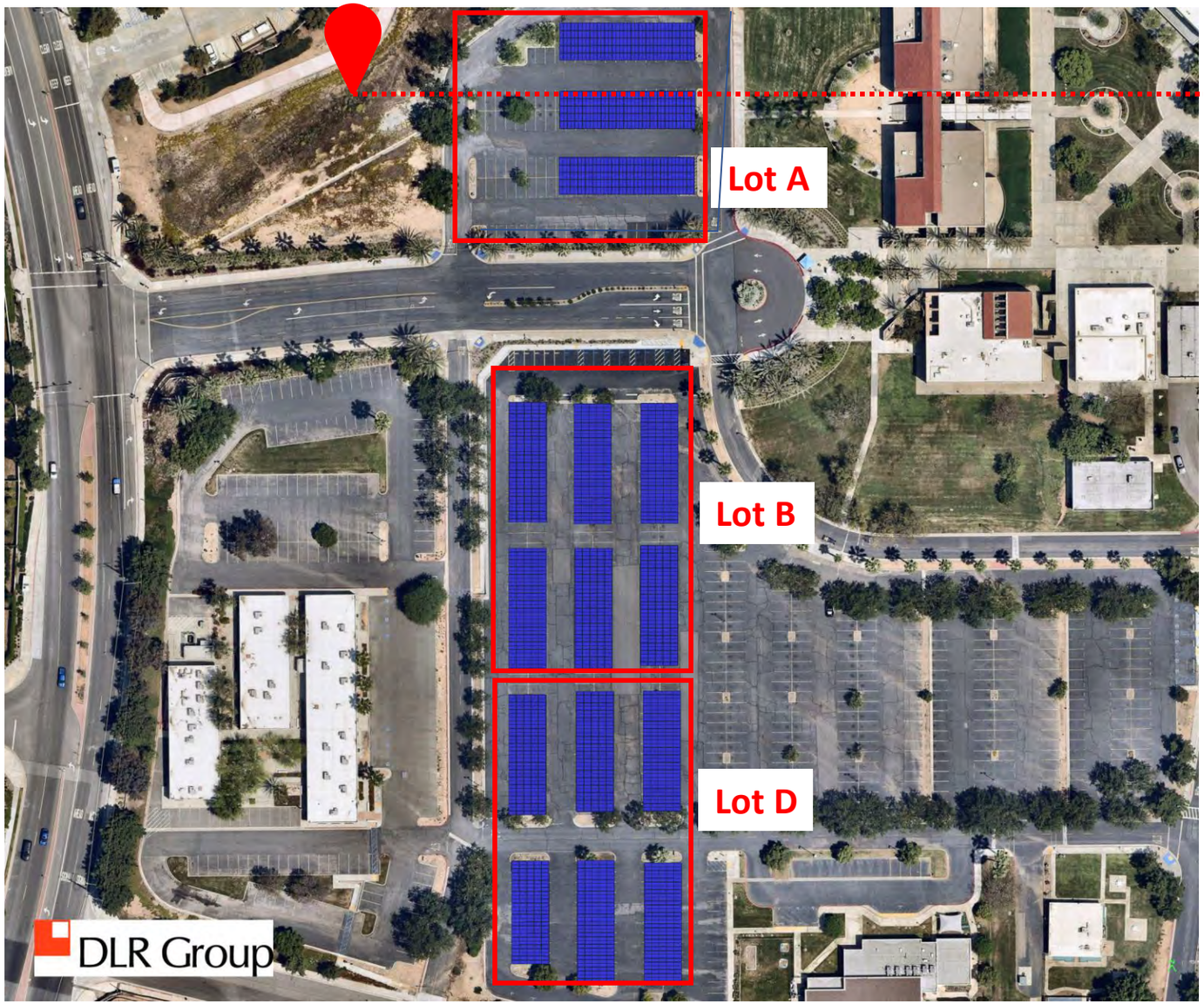
2. GROUND MOUNT: 979 kW DC

Total

1.96 MW DC

MORENO VALLEY COLLEGE

BATTERY STORAGE LOCATION



Location of 400 kW battery storage and new interconnection switchgear

CURRENT SUMMARY– MVC

Performance

Solar

986 kW carport arrays

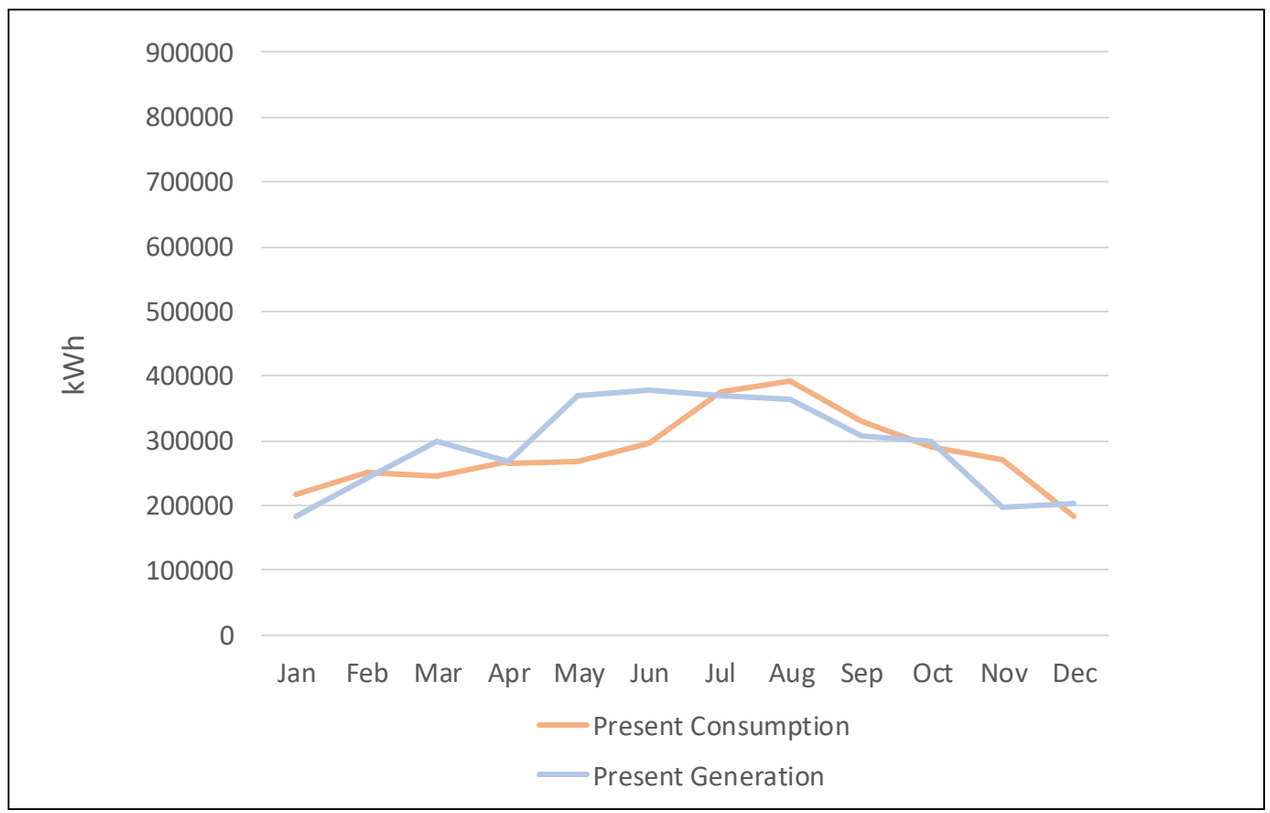
979 kW ground mount arrays

1,965 kW Total

Energy Offset: 102%

Battery Energy Storage System

400 kW



To Be Completed by Meeting #2

Reduces demand by %

Reduces CO2 emissions by %

Financial Analysis

MORENO VALLEY COLLEGE

SOLAR ON FUTURE CAMPUS

ARRAYS (CURRENT/FUTURE)

1. LOTS A,B,D CARPORTS: 986 kW DC
2. GROUND MOUNT: 979 kW DC
3. **PARKING STRUCTURE: 1.19 MW DC (FMP Phase 3 Part of Structure Design in 2031-32)**
4. **LOT B, C CARPORTS: 904 kW DC (FMP Phase 4, Demo Dental Bldg. in 2032-33)**

Total

4.06 MW DC

FUTURE SUMMARY– MVC

Performance

Solar

1,890 kW carport arrays

979 kW ground mount array

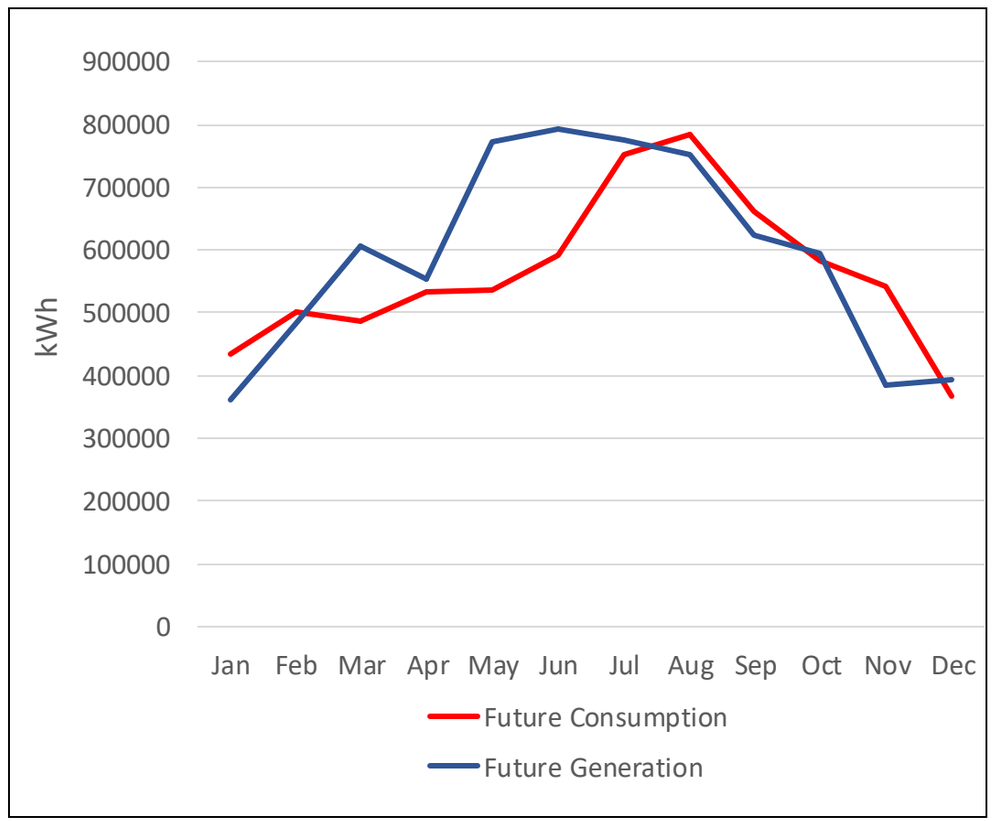
1,190 kW parking structure arrays

4,060 kW Total

Energy Offset: 104%

Battery Energy Storage System

400 kW



To Be Completed by Meeting #2

Reduces demand by %

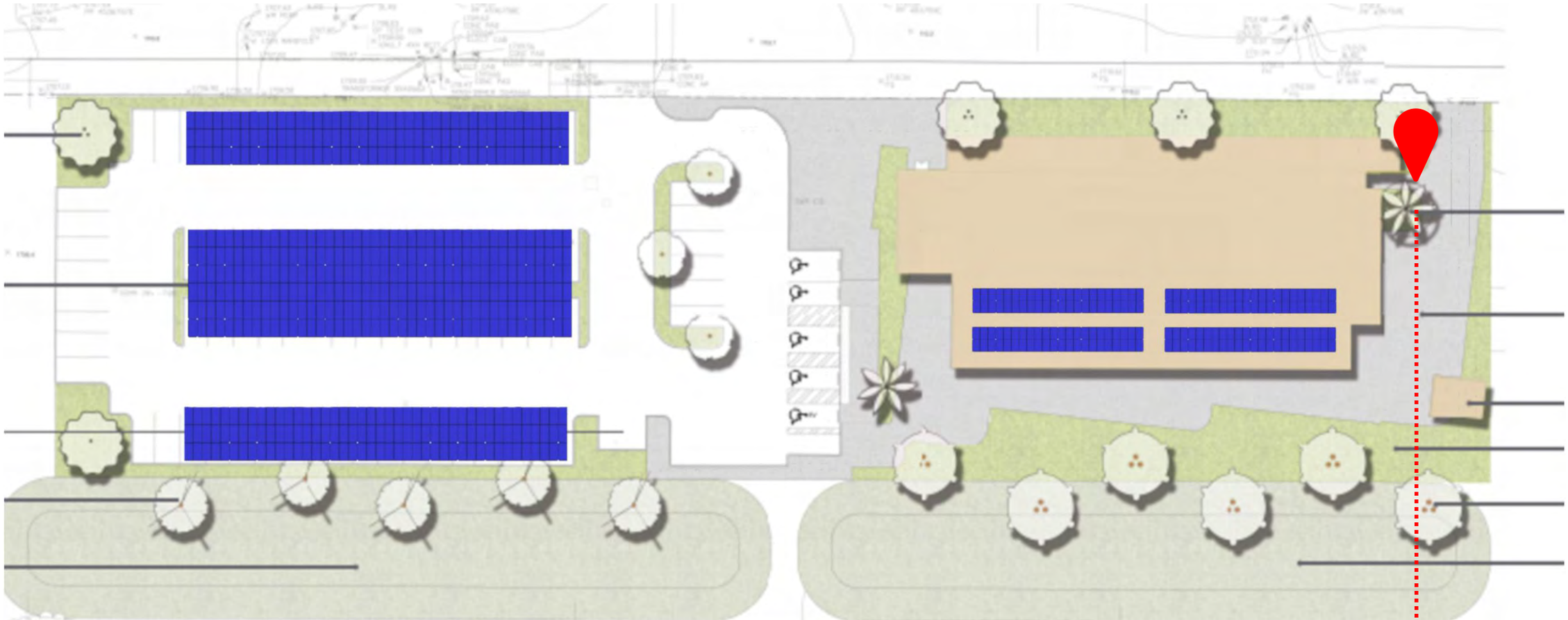
Reduces CO2 emissions by %

Financial Analysis

PROGRESS
BEN CLARK TRAINING CENTER
EDUCATION BUILDING PH.1

BEN CLARK TRAINING CENTER

SOLAR ON NEW BUILDNG AND SITE



Rooftop Array: 71 kW DC

Carport Arrays: 204 kW DC

BESS= 50 kW DC

SOLUTION SUMMARY– BCTC

Performance

Solar

71 kW Rooftop Array

204 kW Carport Arrays

275 kW Total

Battery Energy Storage System

50 kW

To Be Completed by Meeting #2

Reduces demand by %

Reduces CO2 emissions by %

Financial Analysis

PROGRESS – NORCO COLLEGE

NORCO COLLEGE

SOLAR ON EXISTING CAMPUS

ARRAYS OPTIONS

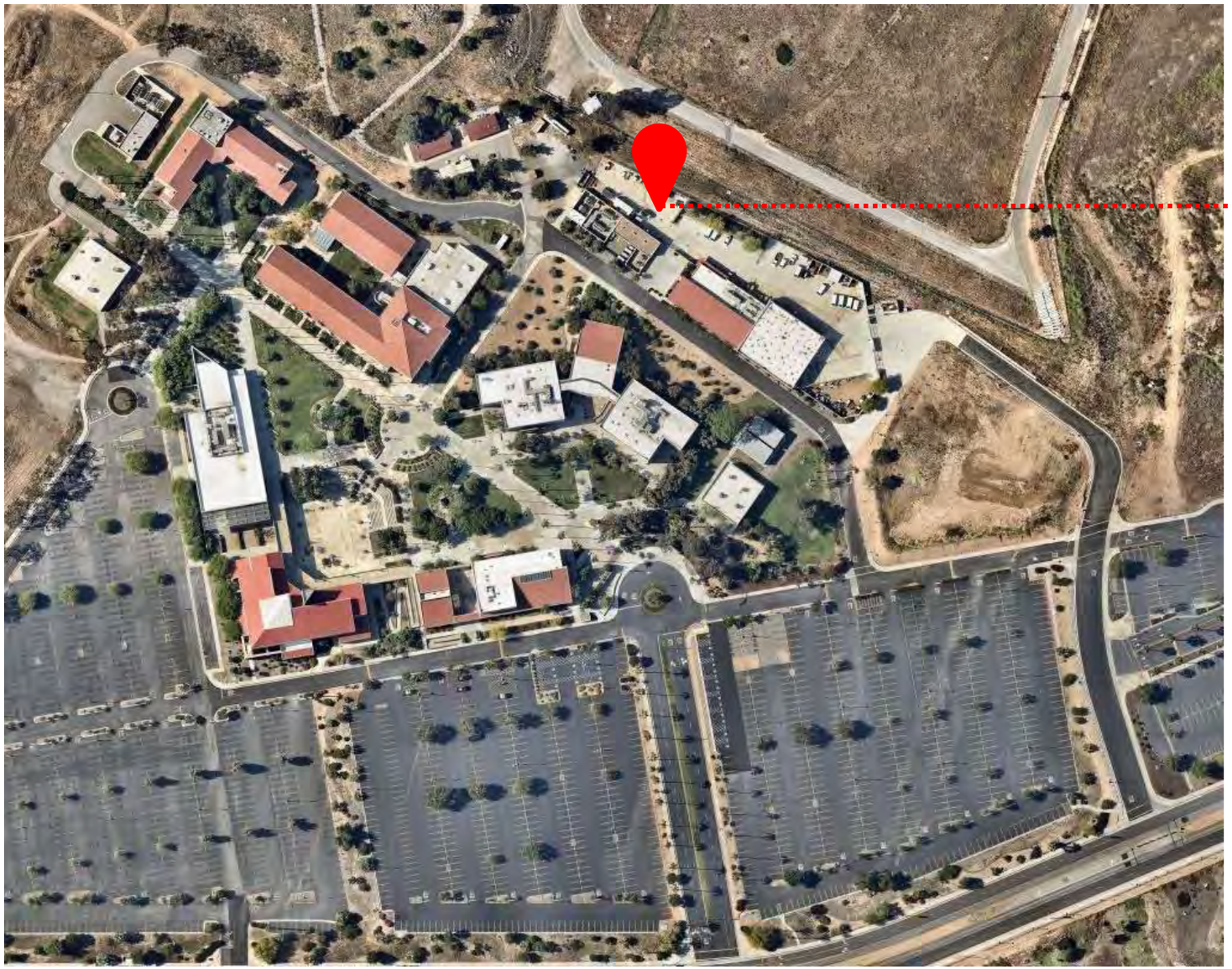
1. CENTER FOR STUDENT SUCCESS BUILDING ROOF: 69 KW DC
2. EAST GROUND MOUNT: 364KW DC
3. NE GROUND MOUNT: 1.63 MW DC
4. NORTH GROUND MOUNT: 467 kW DC

TOTAL

2.53 MW DC

NORCO COLLEGE

BATTERY STORAGE LOCATION



Location of 500 kW battery storage

CURRENT SUMMARY - NORCO

Performance

Solar

69 kW Rooftop Array

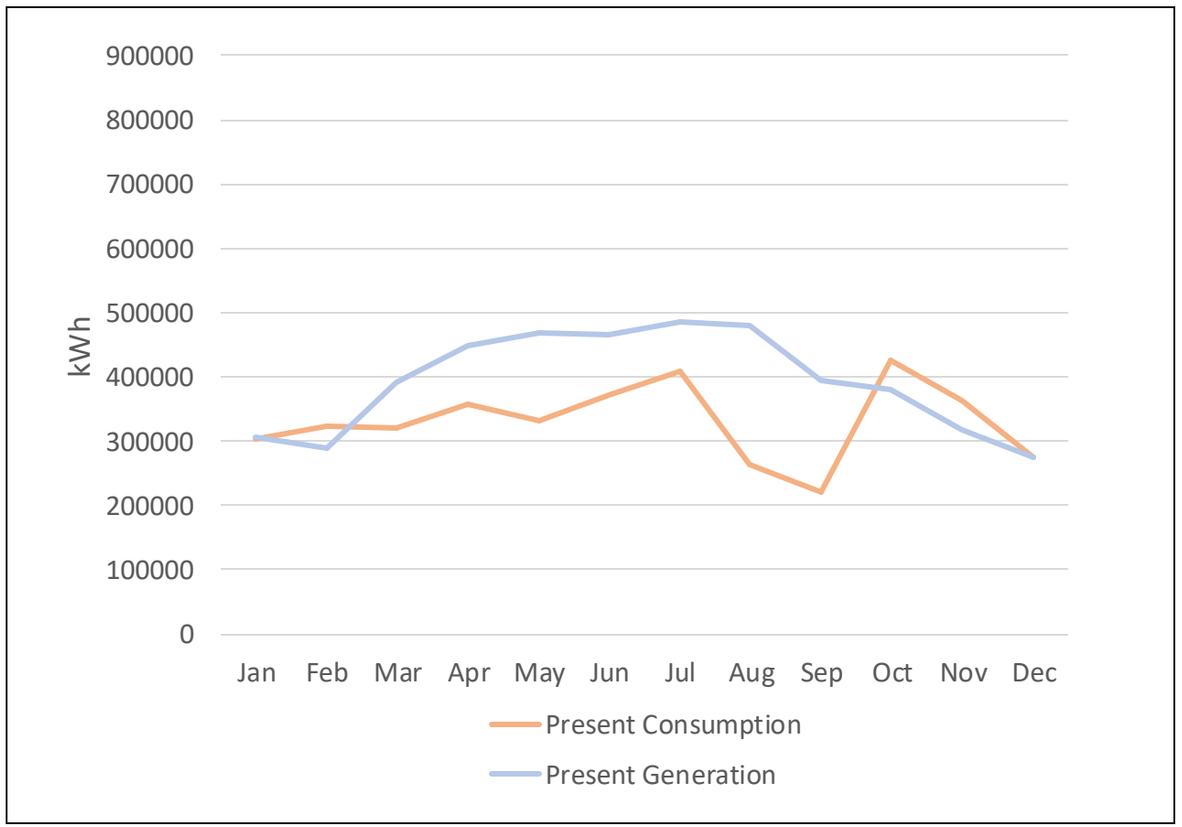
831 kW Ground Mount Arrays

900 kW Total

Energy Offset: 118%

Battery Energy Storage System

500 kW



To Be Completed by Meeting #2

Reduces demand by %

Reduces CO2 emissions by %

Financial Analysis

NORCO COLLEGE

SOLAR ON FUTURE CAMPUS

ARRAYS OPTIONS CURRENT/FUTURE

1. CENTER FOR STUDENT SUCCESS BUILDING ROOF: 69 kW DC
2. EAST GROUND MOUNT: 364 kW DC
3. NE GROUND MOUNT: 1.63 MW DC
4. ~~**NORTH GROUND MOUNT: 467 KW DC**~~ **DEMO**
5. **SE PARKING ARRAY, (FMP Phase I, 2030-31): 652 kW DC**
6. **SW PARKING ARRAY (FMP Phase II, 2033-34): 642 kW DC**
7. **NORTH PARKING STRUCTURE (FMP Phase III, 2036-37): 700 kW DC**

Total
4.06 MW DC

FUTURE SUMMARY - NORCO

Performance

Solar

364 kW ground mount array

69 kW roof top array

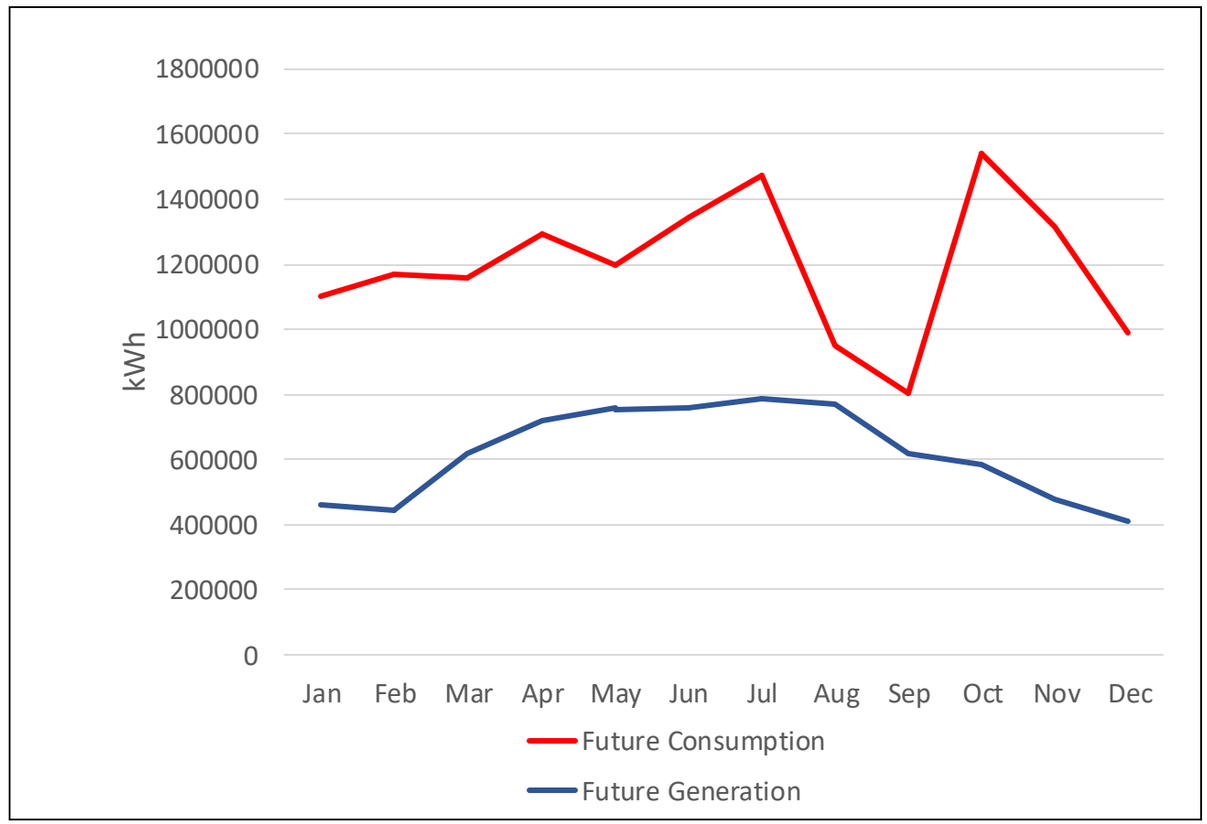
2.0 MW parking structure arrays

2,420 kW Total

Energy Offset: 52%

Battery Energy Storage System

500 kW



To Be Completed by Meeting #2

Reduces demand by %

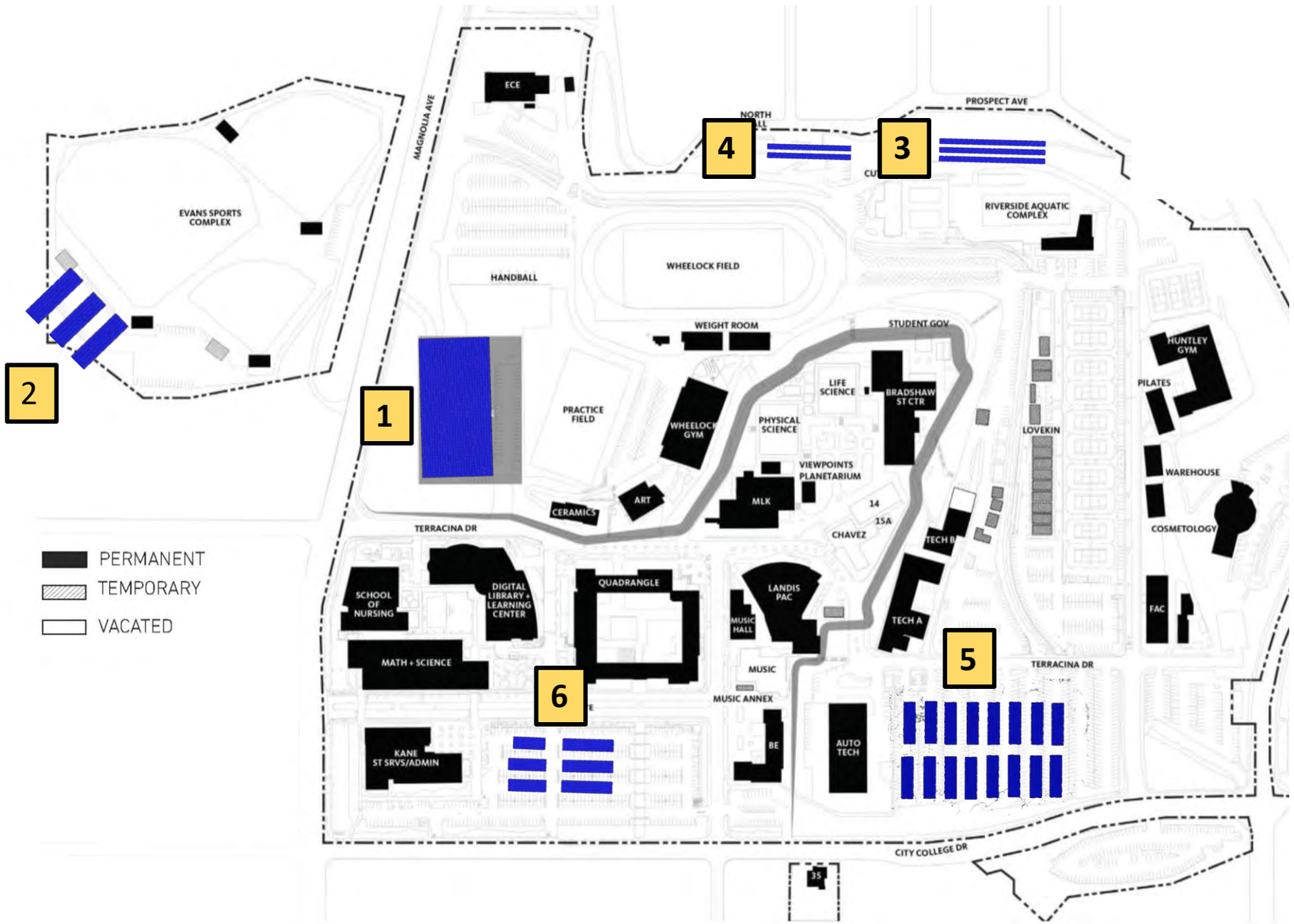
Reduces CO2 emissions by %

Financial Analysis

PROGRESS
RIVERSIDE CITY COLLEGE

RIVERSIDE CITY COLLEGE

SOLAR ON EXISTING CAMPUS



ARRAYS OPTIONS

1. PARKING STRUCTURE: 831 KW DC
2. EVANS PARKING: 261KW DC
3. RAC POOL: 194 kW DC
4. COLLEGE HOUSE: 102 KW DC
5. Lot E: 1.17 MW DC
6. Lot C: 445 kW DC

Total

3.0 MW DC

RIVERSIDE City College

BATTERY Storage Locations

Digital Library
250 kW battery storage

Wheelock Field
200 kW battery storage

Aquatics Complex
100 kW battery storage

Math and Science
300 kW battery storage

MV Service Point
600 kW battery storage

CURENT SUMMARY - RCC

Performance

Solar

1,615 kW Carport Arrays

831 kW Parking Structure Arrays

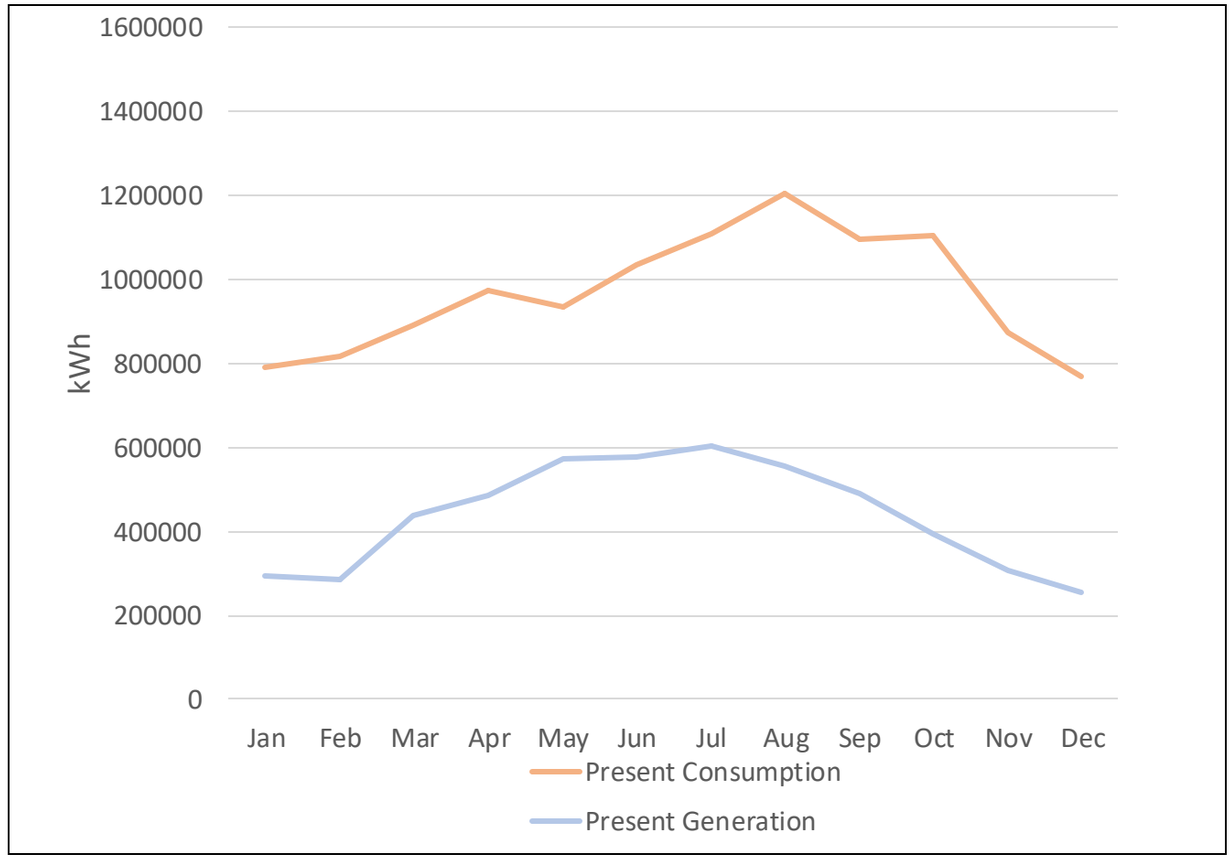
194 kW Ground Array

3,000 KW Total

Energy Offset: 45%

Battery Energy Storage System

1,450 kW



To Be Completed by Meeting #2

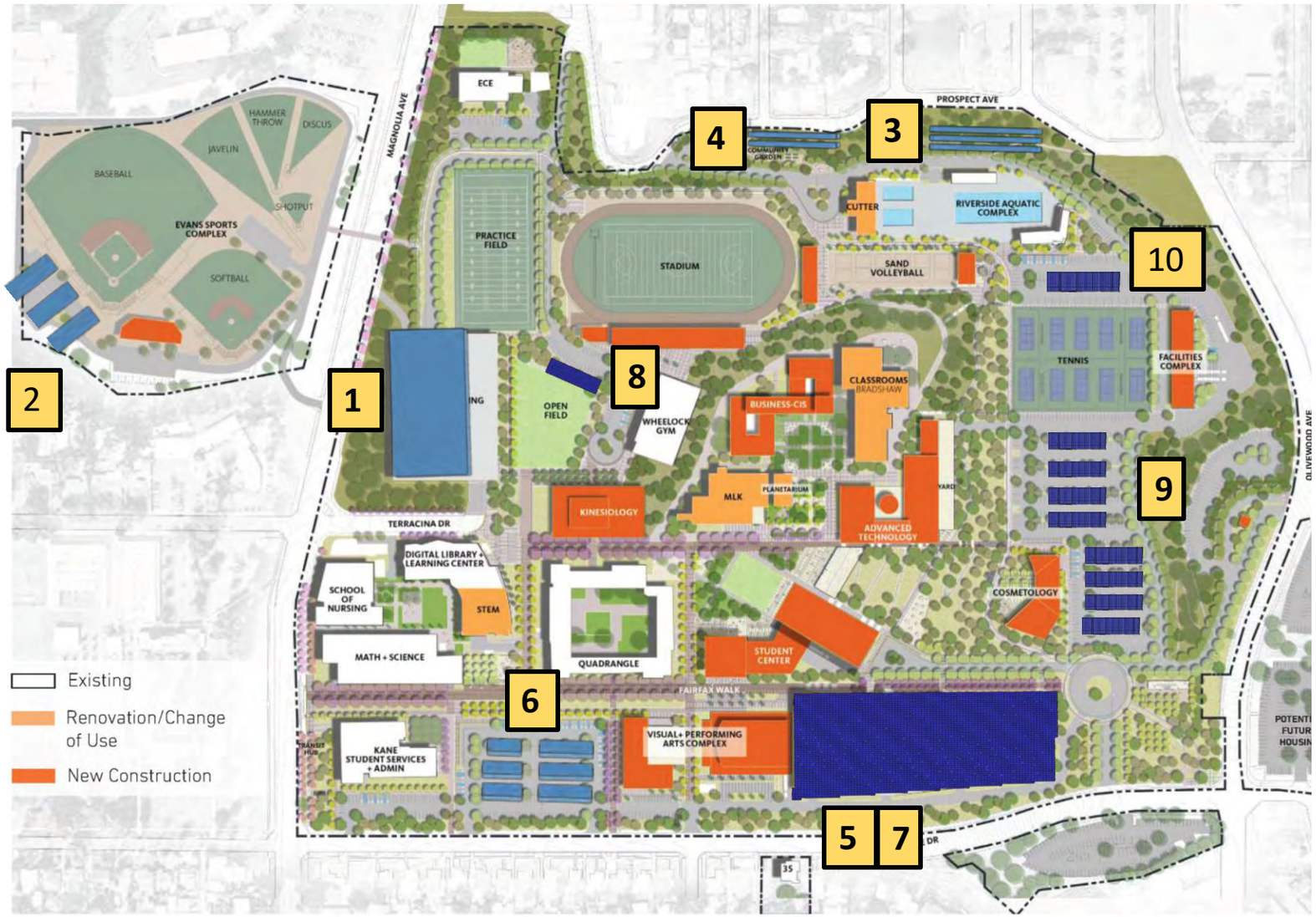
Reduces demand by %

Reduces CO2 emissions by %

Financial Analysis

RIVERSIDE CITY COLLEGE

SOLAR ON FUTURE CAMPUS



ARRAYS OPTIONS (CURRENT/FUTURE)

1. PARKING STRUCTURE: 831 KW DC
2. EVANS PARKING: 261 KW DC
3. RAC POOL: 194 KW DC
4. COLLEGE HOUSE – 102 KW DC
5. **DEMO Lot E (2030-31): (-1.17 MW DC)**
6. PARKING LOT C: 445 KW DC
7. **PARKING STR. 2 (FMP Phase II,2031-32): 1.68 MW DC**
8. **WHEELOCK GYM (FMP Phase II, 2033-34): 105 KW DC**
9. **PARKING LOT G (FMP Phase III, 2035-36): 697 KW DC**
10. **RAC PARKING (FMP Phase III, 2035-36): 87 KW DC**

Total

4.40 MW DC

FUTURE SUMMARY - RCC

Performance

Solar

1,490 kW Carport Arrays

2,511 kW Parking Structure Arrays

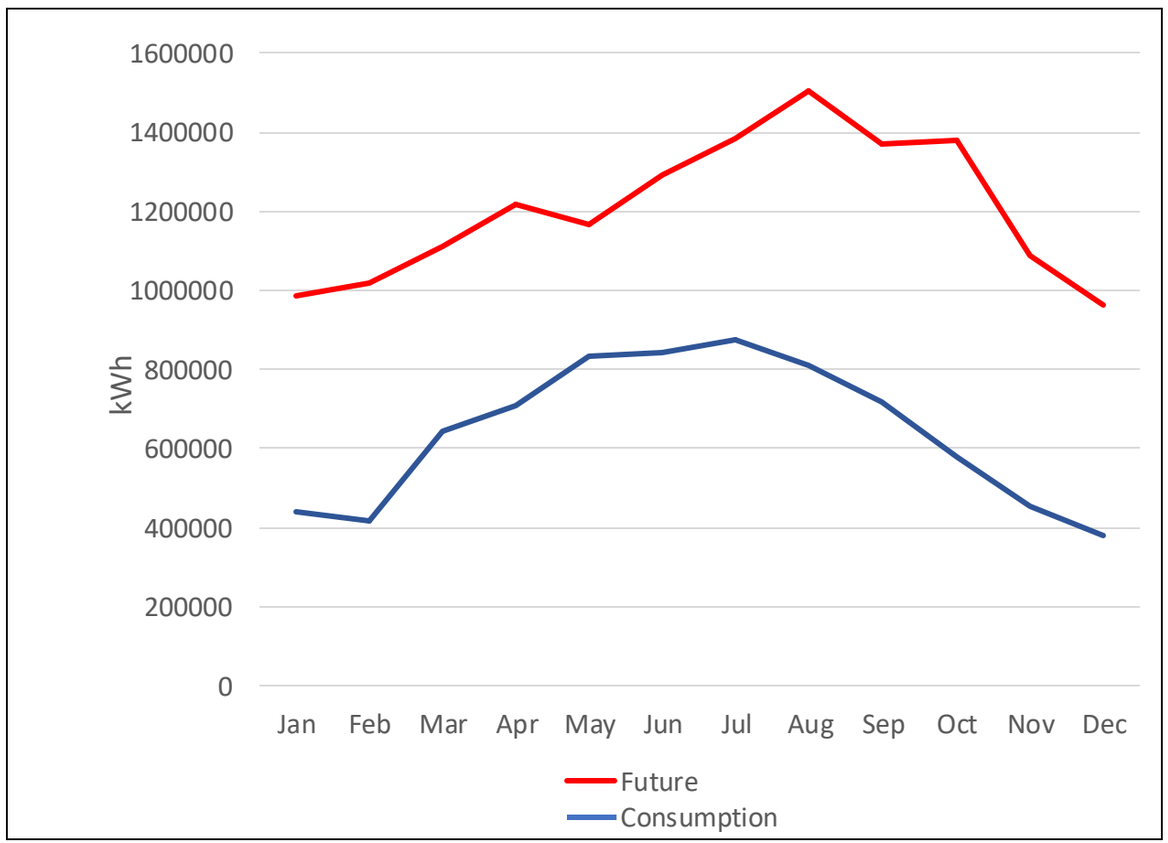
296 kW Ground Array

4,400 KW Total

Energy Offset: 53%

Battery Energy Storage System

1,450 kW



To Be Completed by Meeting #2

Reduces demand by %

Reduces CO2 emissions by %

Financial Analysis

PROGRESS – DOWNTOWN RIVERSIDE

DOWNTOWN RIVERSIDE

SOLAR ON EXISTING BUILDINGS

ARRAY OPTIONS

1. PARKING STRUCTURE ARRAY 194 kW DC

2. CSA BUILDING ARRAYS
   76 kW DC

Total
270. kW DC

80 kW Energy Storage for the CSA Building

CURRENT SUMMARY – DOWNTOWN RIVERSIDE

Performance

Solar

76 kW Carport Arrays

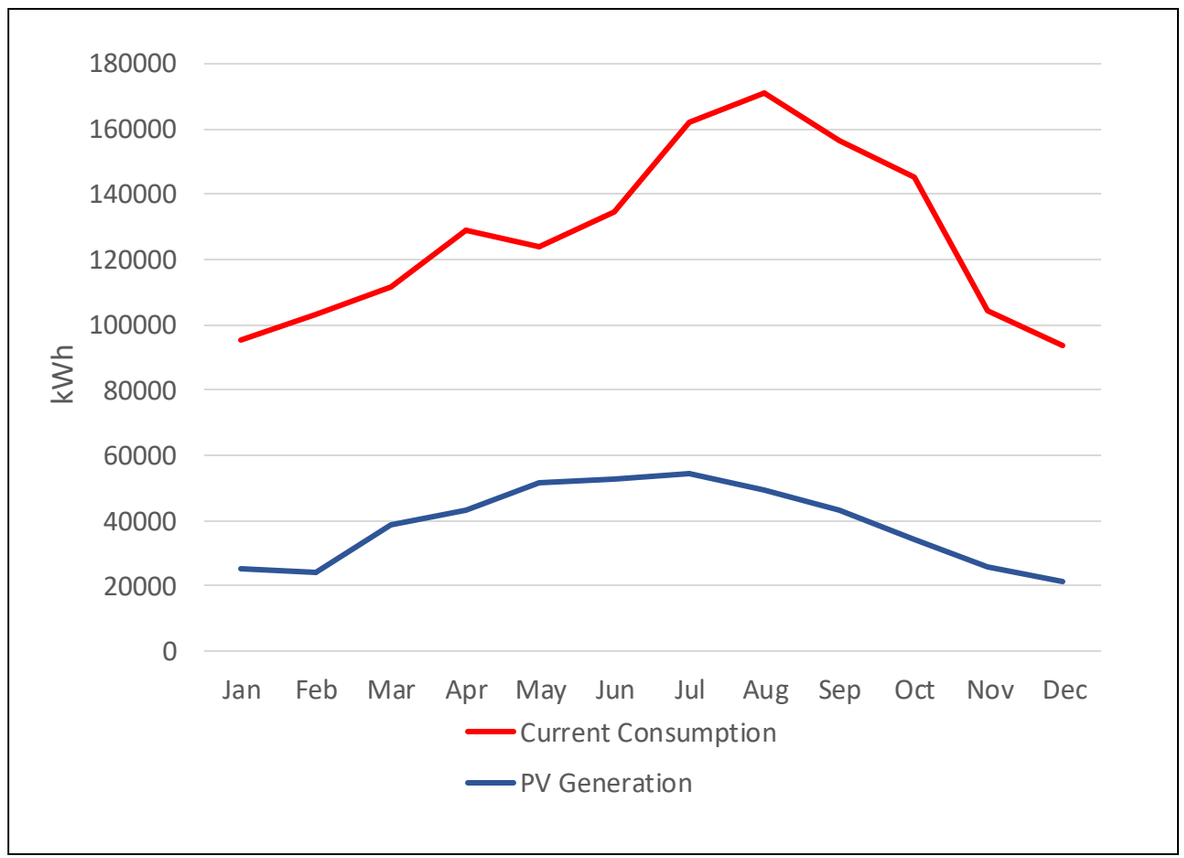
194 kW Parking Structure Arrays

270 kW Total

Energy Offset: 30%

Battery Energy Storage System

80 kW



To Be Completed by Meeting #2

Reduces demand by %

Reduces CO2 emissions by %

Financial Analysis

Q + A

DLR Group
Architecture Engineering Planning Interiors