

Beyond LEED Platinum: Sustainability Lessons from Award-Winning Buildings at SBCCD

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Meet Your Speakers



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Learning Objectives

1

Identify how San Bernardino Community College District is applying sustainability strategies across multiple facility types, including technical education, health science, and aeronautics facilities.

2

Explain how high-performance design strategies and emerging technologies can improve long-term building performance and support campus sustainability goals.

3

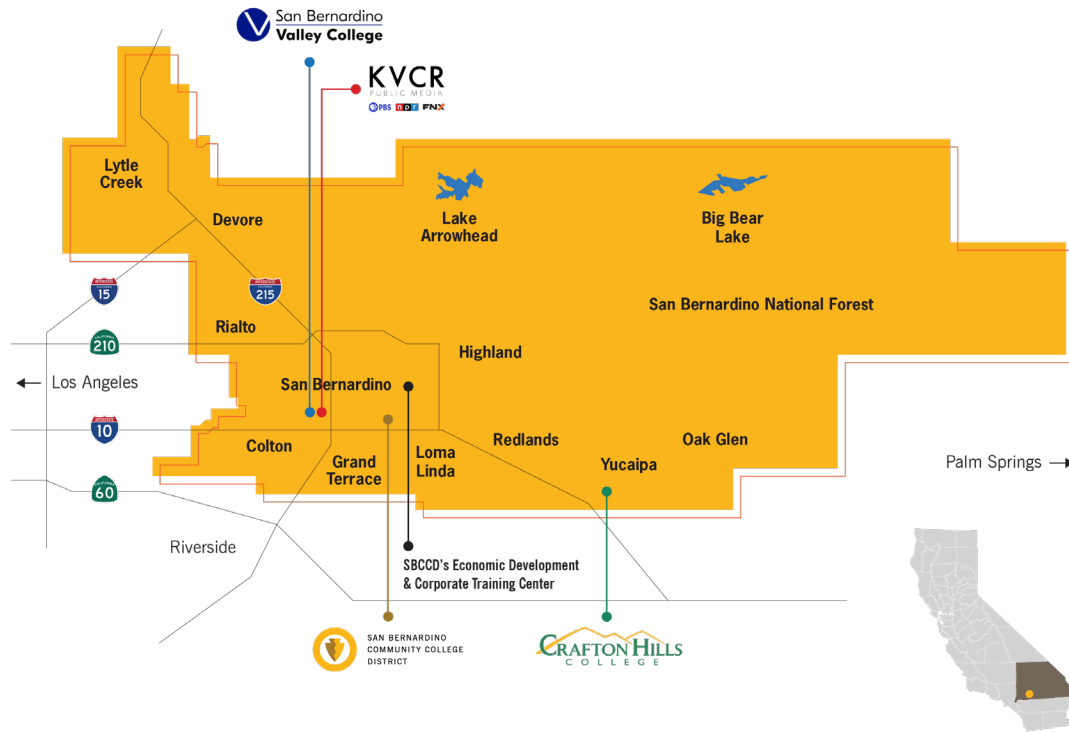
Describe how utility partnerships, including Southern California Edison's role, can support incentives, energy planning, technology evaluation, and project implementation.

4

Evaluate lessons learned from planning, funding, delivering, and operating sustainable facilities, including operational impacts, maintenance considerations, and opportunities for improvement

San Bernardino Community College District

Powering Education Across the Inland Empire



Two Colleges. One Community Impact.

- San Bernardino Valley College
- Crafton Hills College

30,000+ Students Served Annually

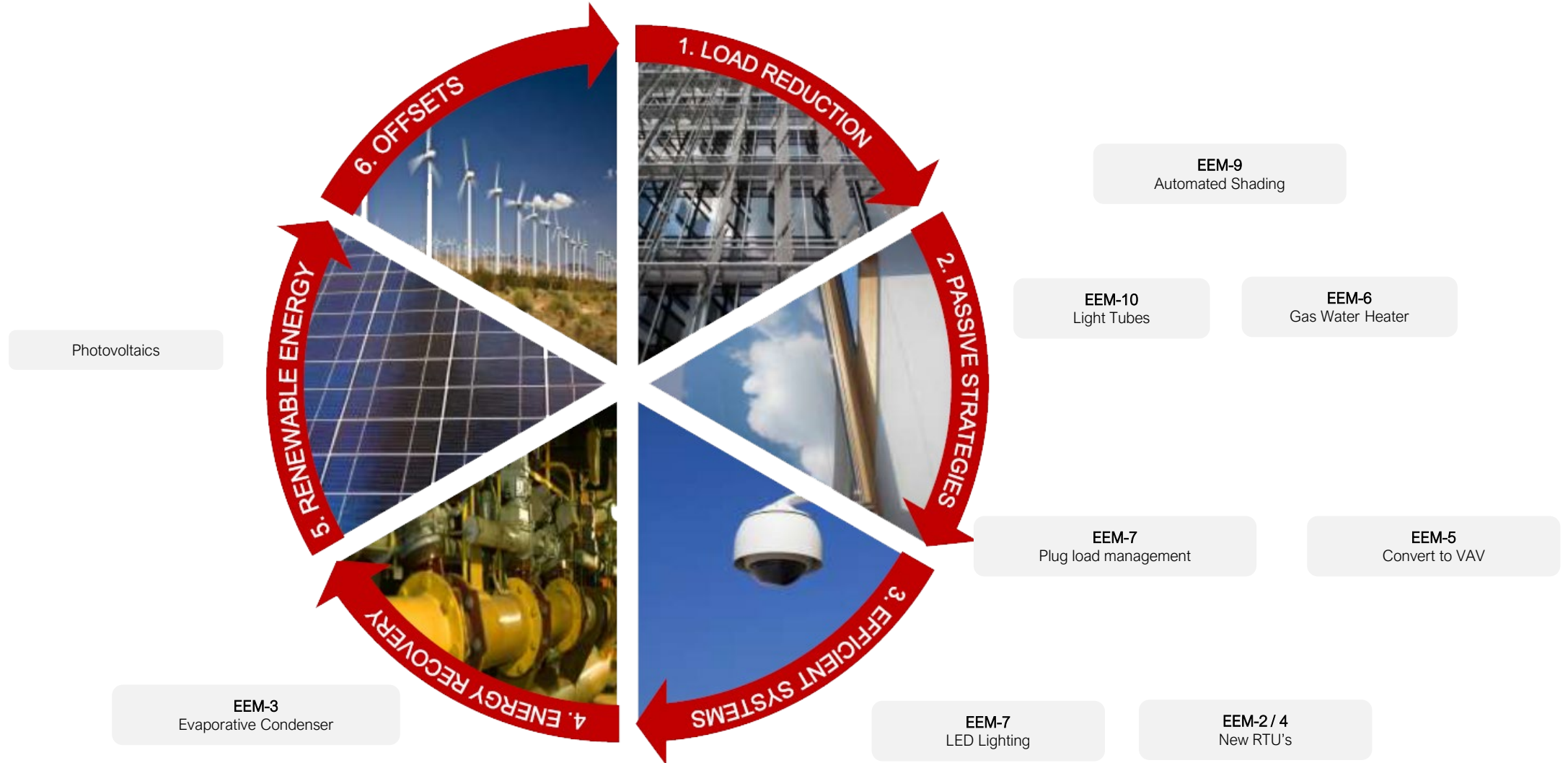
140+ Academic and Workforce Programs



San Bernardino Valley College

Net Zero Pilot Program
at SBCCD

ZNE Approach





10 Existing + 5 Upcoming
LEED Buildings Districtwide



Technical Building
(LEED Platinum + ZNE)



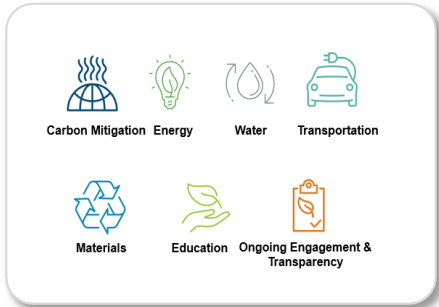
Performing Arts Center
(LEED Platinum + LEED Zero)



Student Services Building
(LEED Gold + Envision + ZNE)



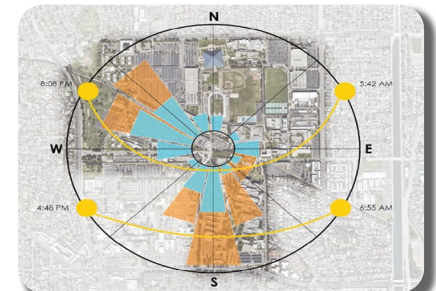
Instructions Building
(LEED Platinum)



Sustainability Plan
(Identifies Key Initiatives)



SUSTAINABILITY INITIATIVES AT SBCCD



Sustainable Student Housing



Zero Net Energy Plan
(Identifies Future Projects)



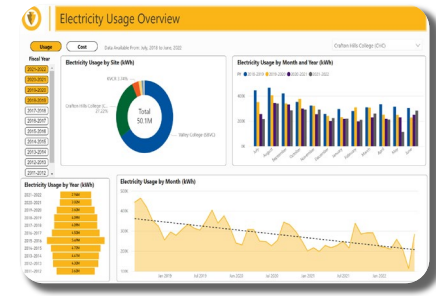
Solar Photovoltaic + Battery
Storage



EV Charging Stations
(Incentivized through SCE)



Xeriscaping
(Water Conservation)



Energy Dashboard to Track
the Consumption



SBVC Tech Building – LEED Platinum

Applied Technology Building at SBVC





MIDDLE COLLEGE HIGH SCHOOL

W. ESPERANZA ST.

PARKING

PARKING

WELDING

PARKING

HEALTH & LIFE SCIENCES

TECHNICAL EDUCATION BUILDING

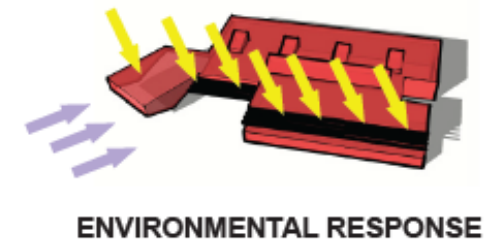
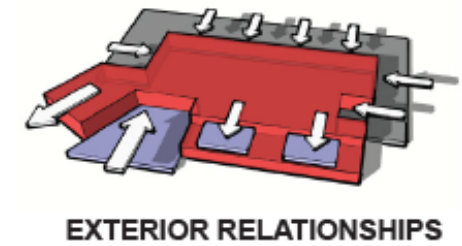
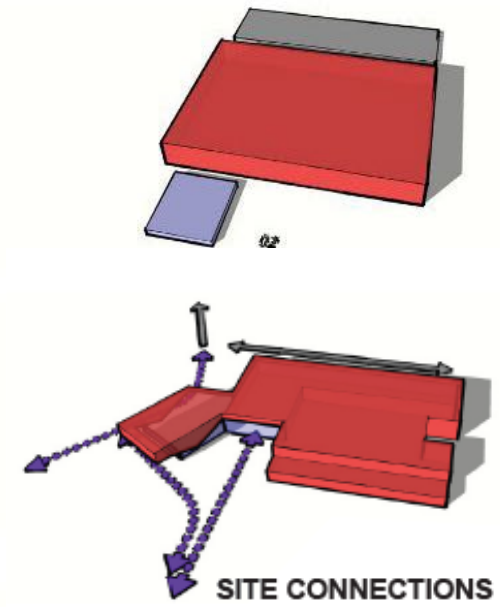
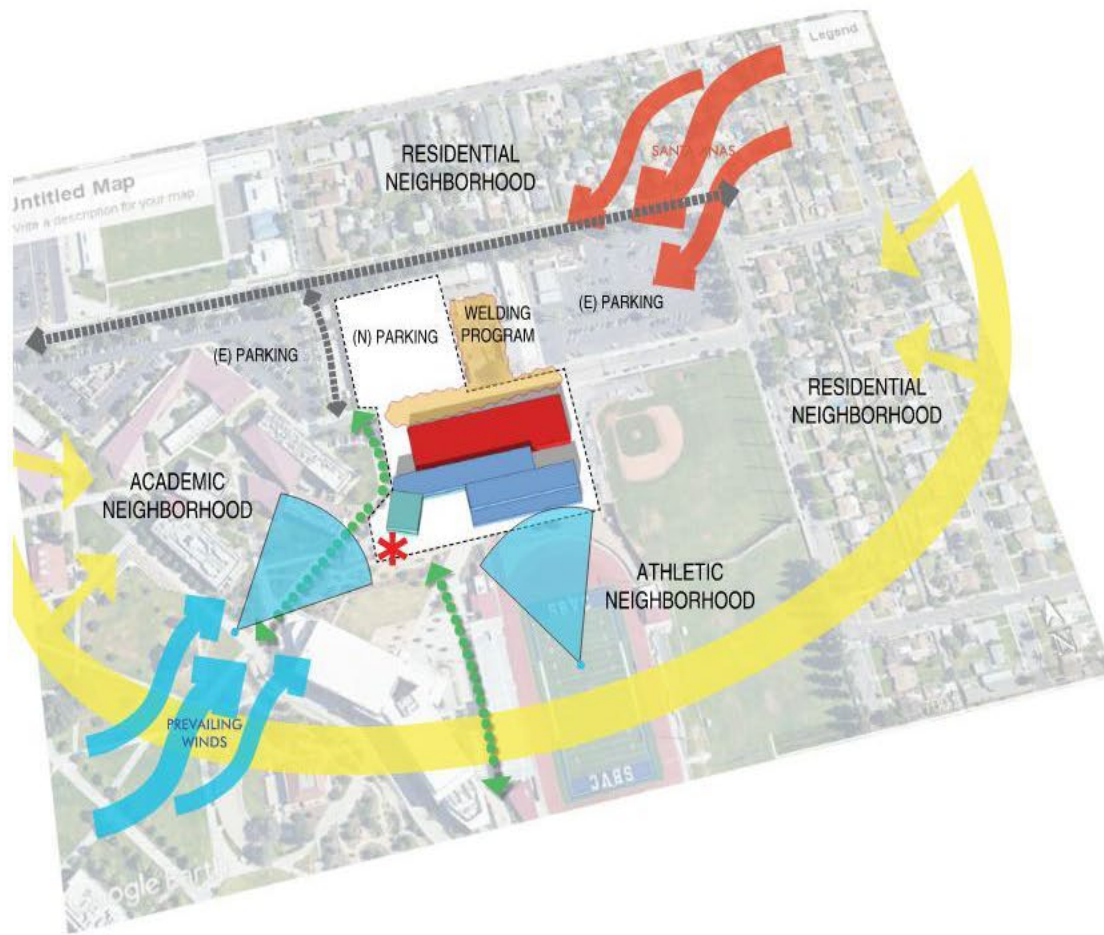
ART

BIO-GARDEN

ATHLETIC FIELDS

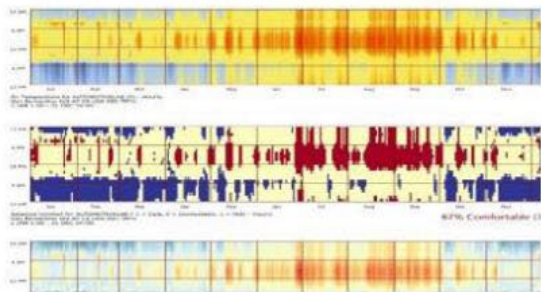
SBVC STADIUM

Contextual View

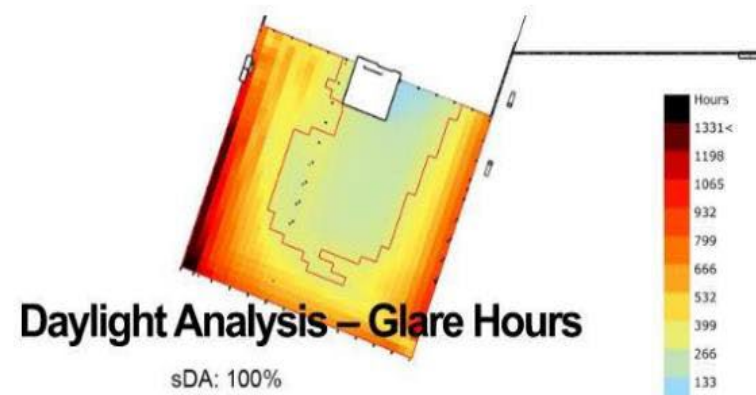




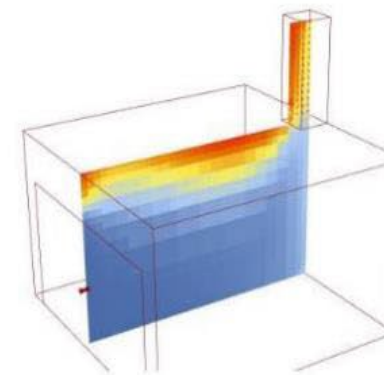
THERMAL COMFORT



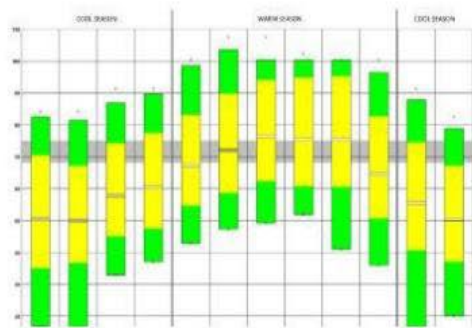
DAYLIGHT & GLARE STUDIES



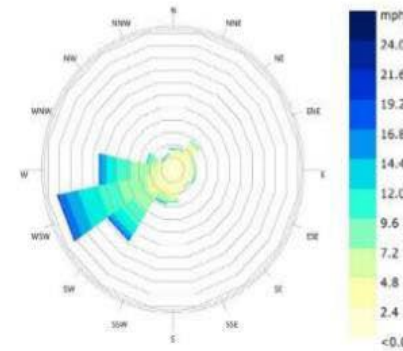
THERMAL CHIMNEY STUDIES



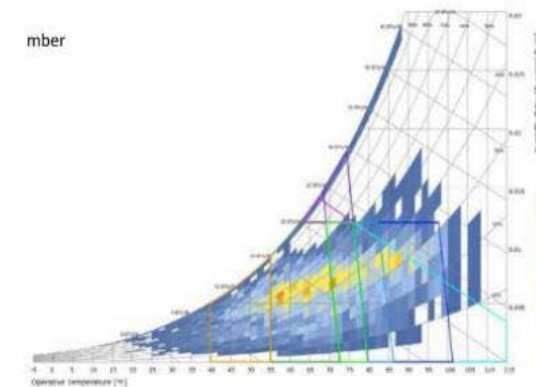
TEMPERATURE OVERVIEW



WIND STUDIES

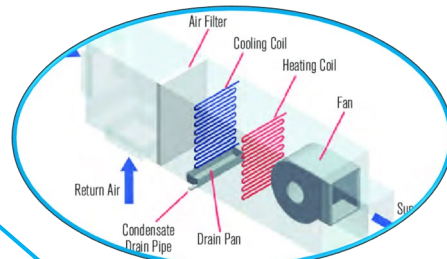


PSYCHROMETRIC CHART





Battery storage



Condensate Recovery



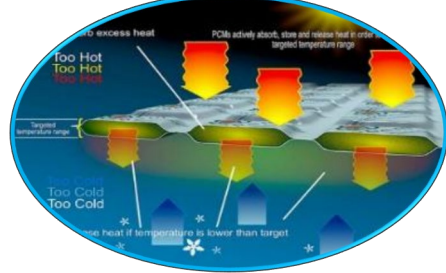
Large Fans



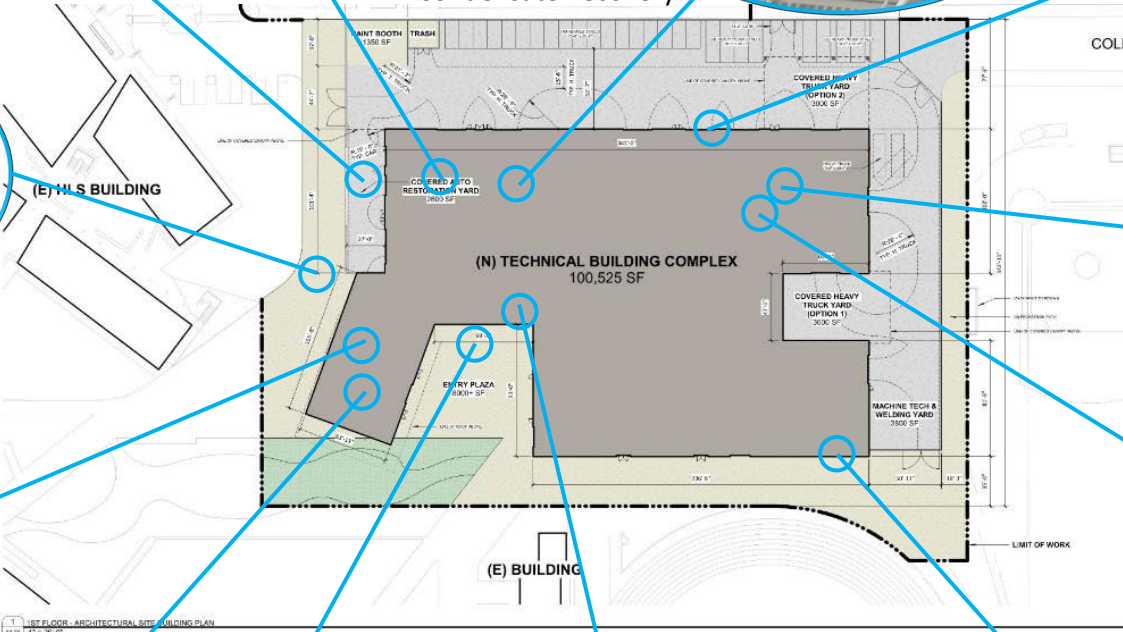
Operable Walls



Atmospheric Water Generator



PCM



Solatubes or Velux



Solar Chimney



Operable Glass Wall



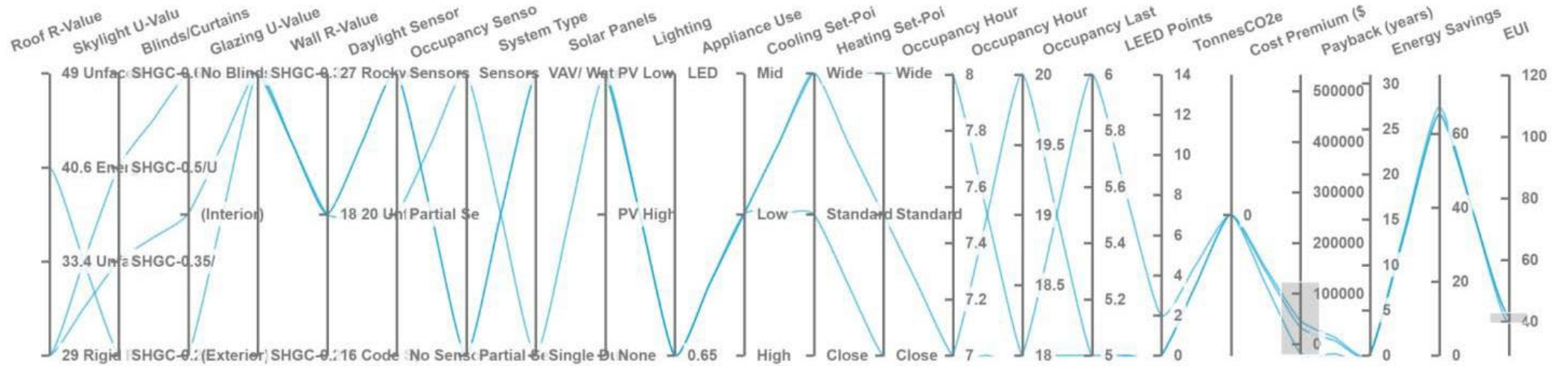
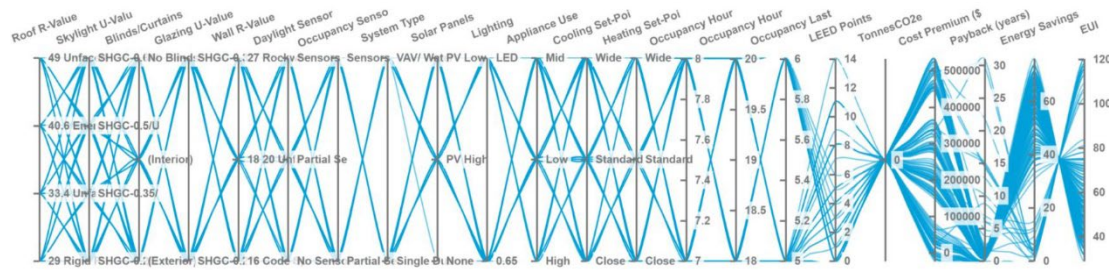
Solar Glass Canopy



Sustainability Kiosk



Solar Glass

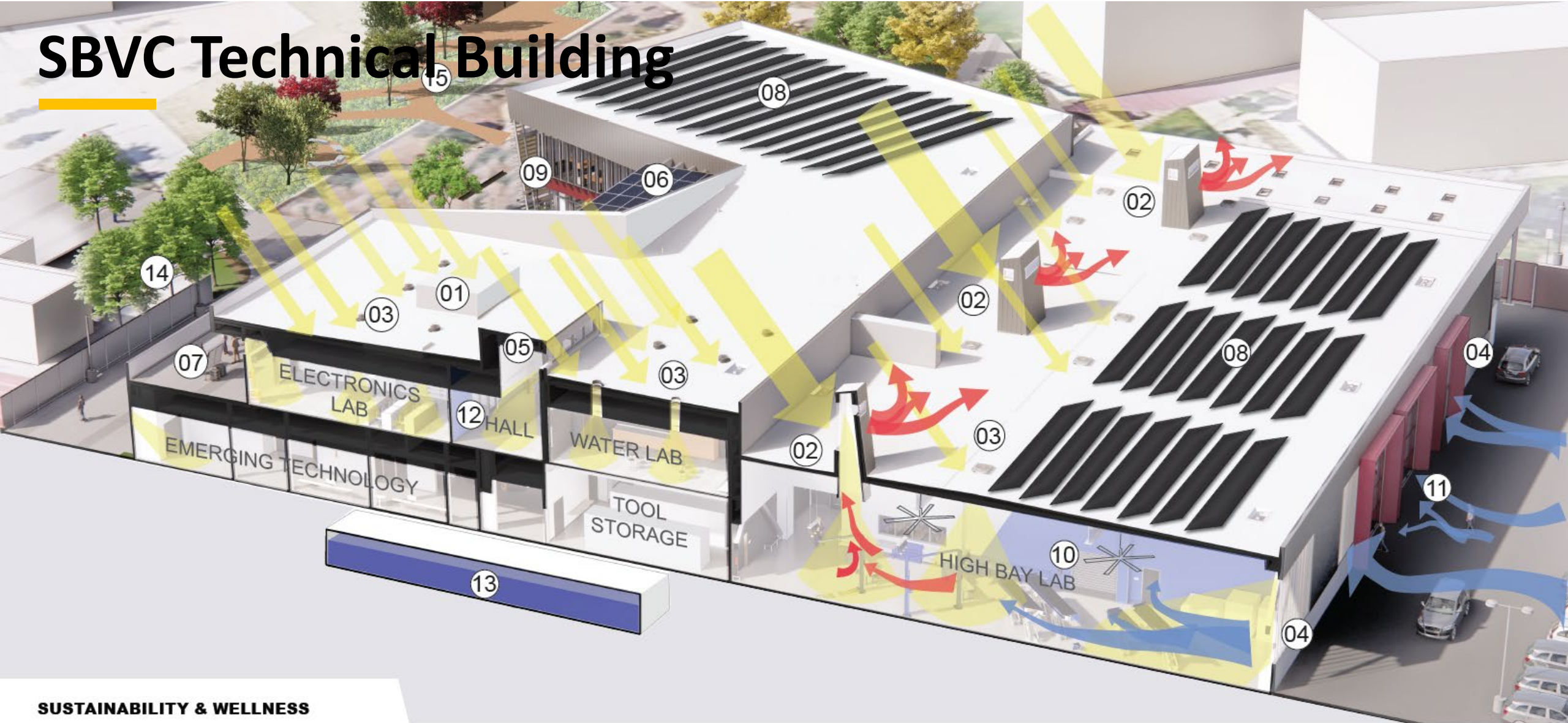


Bundle #1			
\$33,689	0.10	Appliance Use	Low
COST PREMIUM	Payback (years)	Blinds/Curtains/Shades	(Interior) Blinds
40	67%	Cooling Set-Point	Wide
EUI	Energy Savings	Daylight Sensors	Sensors
2	N/A	Glazing U-Value	SHGC-0.32/U-0.28 Sole...
LEED	CO2e (Tonnes)	Heating Set-Point	Standard
		Lighting	0.65
		Occupancy Hour First	7
		Occupancy Hour Last	18
		Occupancy Last Day of...	6
		Occupancy Sensors	Partial Sensors
		Roof R-Value	29 Rigid Fiberglass
		Skylight U-Value	SHGC-0.35/U-0.5 Energ...
		Solar Panels	PV Low
		System Type	VAV/ Water Cooled Chl...
		Wall R-Value	18 20 Unfaced Rigid F...

Whole Building Baseline ?
\$1,377,984
COST FOR SELECTED OPTIONS
120 kBtu/ft ² /yr
EUI

Optimization
(Cove tool)

SBVC Technical Building



SUSTAINABILITY & WELLNESS

The building management system will communicate energy, water, and carbon emissions data directly to an interactive display in the lobby, allowing building users to explore the variety of sustainability attributes of the project. Data gathered will be shared with industry partners and used by the campus to study the impact and effectiveness of the strategies utilized.

LEGEND

- 01 All Electric Mechanical System
- 02 Thermal Chimney
- 03 Tubular Skylights
- 04 Light Wall
- 05 Light Monitor

- 06 PV Canopy
- 07 PV Education Deck
- 08 PV Roof
- 09 Sun Shade Devices
- 10 High-Velocity Low-Speed Fans

- 11 Operable Doors & Windows
- 12 Student Sticky Spaces
- 13 Water Storage
- 14 Modular Wetlands
- 15 Bio & Wellness Garden



Sustainability Kiosk



Technical Building Dashboard

Scan QR to
access SBVC
Technical
Building
Dashboard



- / Automotive
- / Heavy Truck
- / Machining
- / Electrical
- / Solar Technology
- / HVAC&R
- / Future Technology



Sample Floor Plan
(First Floor)

/ Water Technology



Sample Floor Plan (Second Floor)

Applied Technology Building at SBVC



Applied Technology Building at SBVC



Automotive Technology Lab



Heavy Diesel Engine Lab



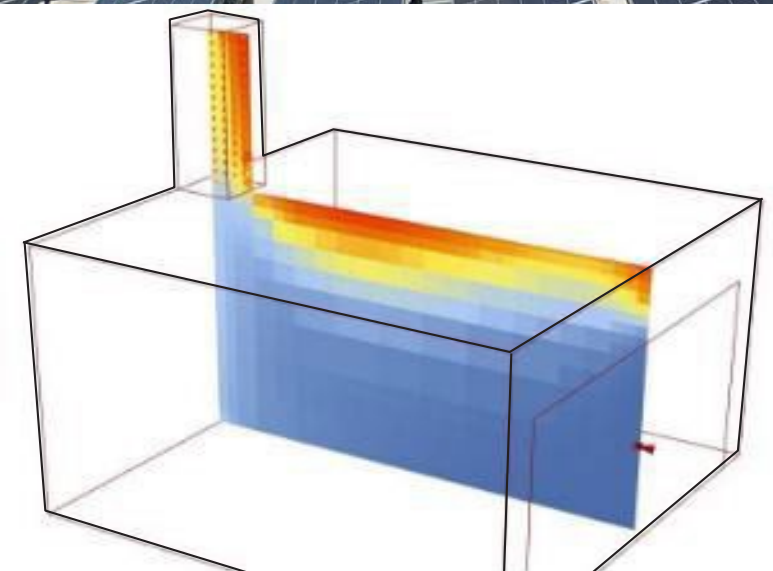
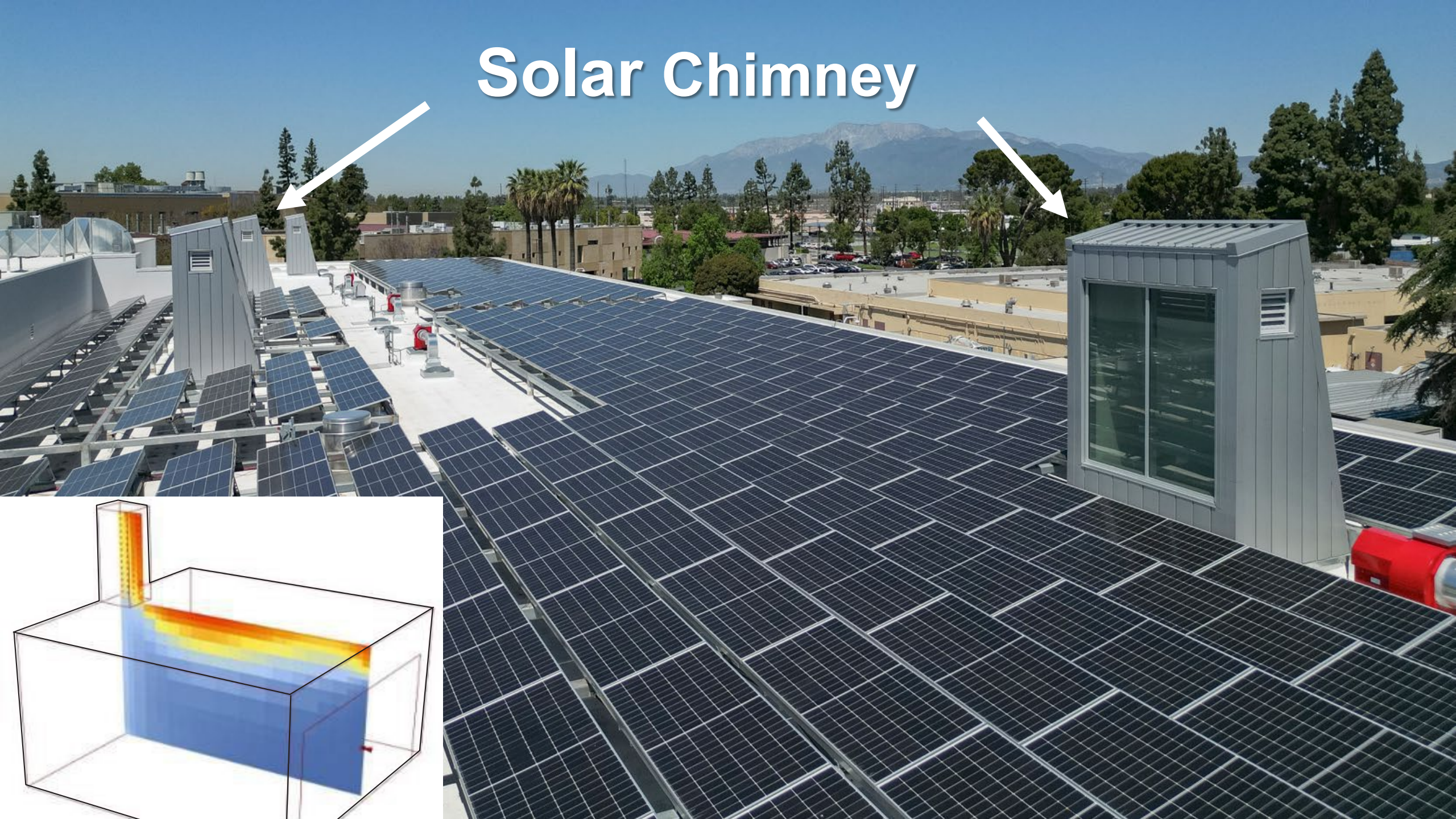
Hybrid Automotive Technology Lab





Rooftop Solar PV

Solar Chimney



Machine Technology



Student “Sticky Space”



HVACR Outdoor Lab





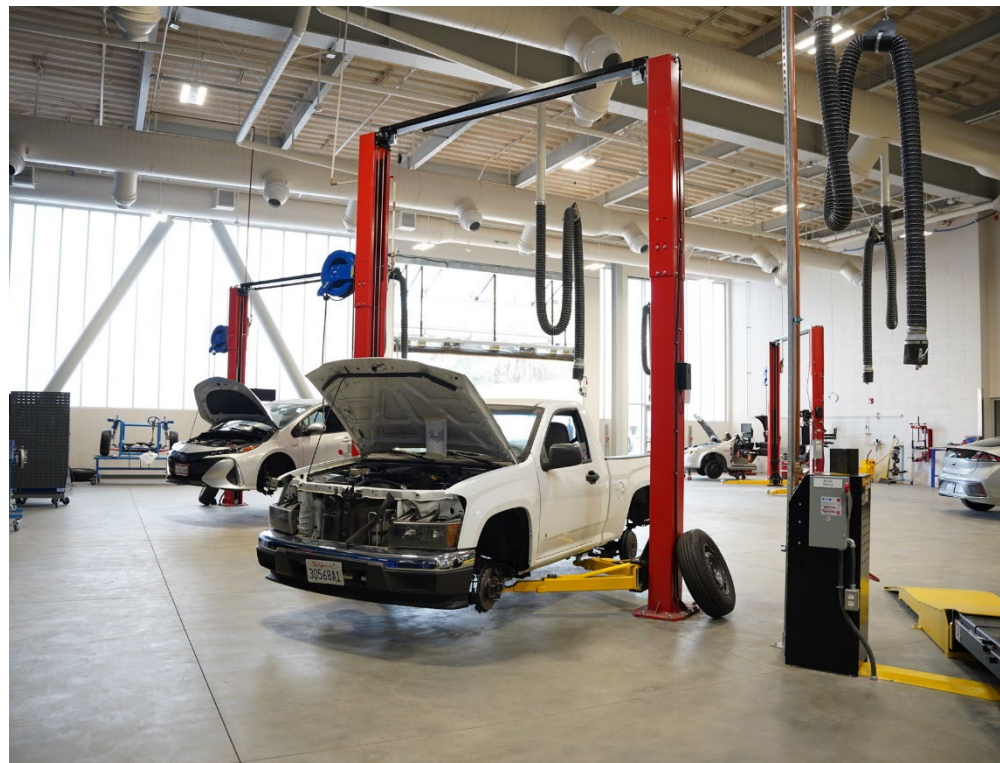
Showroom



Electronics/Electricity Lab



Automotive Technology





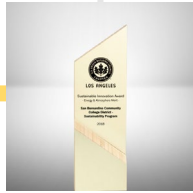
Technical Building Awards



SBCCCD Awards

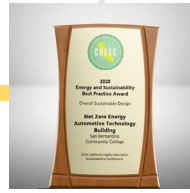
- Overall Sustainable Design, CHESC
- Large Scale Planning, CHESC
- Sustainability Innovation, USGBC

2018



- Best Practice for Overall Sustainable Design, CHESC
- Unbuilt LEED BD+C Merit, SDGBC
- Honor Award, AIA

2020



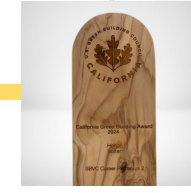
- Sustainable Innovation – Technical Education, SBVC CP2, Sustainable Infrastructure, USGBC-LA

2022



- Green Building Award of Merit – SBVC Technical Education & CHC PAC, USGBC-LA
- Green Building Award of Honor – SBVC CP2, USGBC-LA
- Award of Excellence, CCFC
- Climate Action Leadership, CCC

2024



2019

- ZNE Visionary District, NBI
- Excellence in Energy & Sustainability, CCC
- Sustainability Champion, CCC
- Self-Generation Project, CCC



2021

- Sustainable Innovation – SBVC Technical Education & CHC PAC, USGBC-LA
- Rising Star, CMAA



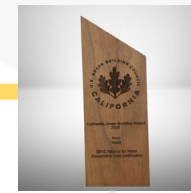
2023

- Green Technology Leadership,
- Green California
- Sustainable Innovation, USGBC



2025

- Project Achievement, CMAA
- Professional Design Award of Merit, CCFC
- Green Building Award of Merit – Water, USGBC



CUSTOMER DECARBONIZATION & BUILDING ELECTRIFICATION

**Featuring the San Bernardino Community
College District partnership**

Countdown to 2045 Identifies Electrification is Key for Carbon Neutrality

- Projects **deep electrification** by 2045 (90+% of vehicles and appliances) drives greater load and new system peaks
- **Generation mix** in 2045 more than doubles; solar, wind and storage make up majority of capacity; retained gas generation and emerging technologies (e.g., OSW, clean firm baseload) serve important role to ensure system reliability
- Clean power and electrification approach remains **most feasible and cost-effective** way to meet state goals, despite significant level of investments (~\$370B statewide); average SCE household can expect to save ~40% on total energy costs

DECARBONIZE ELECTRICITY

100%
RETAIL SALES
100%*



ELECTRIFY TRANSPORTATION

90%
OF VEHICLES
75%*



ELECTRIFY BUILDINGS

95%
OF BUILDINGS
70%*



USE LOW-CARBON FUELS

48%
NON-ELECTRIC
ENERGY
43%*



SINK REMAINING CARBON

75
MMT
CARBON
SINK
108
MMT*



=
CARBON NEUTRALITY
BY 2045

2 | HOW SCE SUPPORTS CUSTOMERS

Engage early. Plan together. Deliver with fewer surprises.

SCE’s value is the connection across customer strategy, engineering, programs and grid readiness.

Customer Decarbonization & Building Electrification

Southern California Edison as Your Decarbonization Partner

Partner for a cleaner, healthier, and affordable energy future.

RELIABILITY

AFFORDABILITY

EQUITY



ELECTRIFY?

2. HOW SCE SUPPORTS CUSTOMERS

3. AVAILABLE PROGRAMS

4. REAL CUSTOMER SUCCESS STORIES

5. PATH TO DECARBONIZATION

Electrification is essential to achieve California's climate goals and deliver numerous benefits.

REDUCE CARBON EMISSIONS
Buildings are a major source of GHG emissions. Electrification with clean energy dramatically reduces carbon.

IMPROVE AIR QUALITY & HEALTH
Eliminate on-site combustion, reducing PM2.5 for healthier communities and better environments.

REDUCE LONG-TERM COSTS
Energy-efficient buildings and efficient electric equipment can reduce energy bills and improve operating efficiency.

INCREASE RESILIENCE
Buildings paired with batteries and smart controls provide greater resilience during grid disruptions.

OPPORTUNITY
Buildings account for ~14% of California's GHG emissions.

Source: California Air Resources Board, 2022 Integrated Energy Policy Report; GreenSource, 2022 Scoping Plan.

SCE partners with you at every step to plan, design, and deliver successful building electrification projects.

- EARLY ENGAGEMENT & PLANNING**
Assess opportunities, evaluate grid impacts, and plan for long-term success.
- ENGINEERING & DESIGN SUPPORT**
Standardized designs, modular approaches, and infrastructure planning reduce risk and cost.
- CAPACITY & INFRASTRUCTURE**
Site assessments, capacity analysis, and phased solutions to meet your current and future needs.
- FLEXIBLE SOLUTIONS**
Temporary power, load management, and interim solutions keep projects moving forward.
- ONGOING PARTNERSHIP**
Programs, resources, and dedicated support through construction and ongoing operations.

Incentives, technical assistance, and financing options help lower costs and accelerate your projects.

- HEAT PUMP HVAC INCENTIVES**
Support for high-efficiency electric heating & cooling systems.
- HEAT PUMP WATER HEATERS**
Incentives for residential and commercial heat pump water heaters.
- ELECTRICAL PANEL & CIRCUIT UPGRADES**
Support for upgrades needed to safely power modern electric equipment.
- TECHNICAL ASSISTANCE**
Expert guidance for planning, design, and implementation.
- ON-BILL FINANCING SOLUTIONS**
Flexible financing that works with your cash flow.
- FEDERAL & STATE FUNDING SUPPORT**
Leverage IRA, state programs, and tax incentives.
- EQUITY & COMMUNITY BENEFITS**
Targeted support for disadvantaged communities, improved indoor air quality, job creation, and long-term affordability.

Institutions across California are leading the way to a cleaner, more sustainable future.

- CSU DOMINGUEZ HILLS Central Plant Electrification**
 - Net Zero vision
 - Central plant modernization
 - Heat pump space heating
 - Solar + battery integration
 - Significant GHG reductions
- LARGE-SCALE HEAT PUMP DEPLOYMENT**
 - Replaced gas boilers
 - Multiple large heat pumps
 - Supports heating & cooling
 - Enhances reliability
 - Reduces operating costs
- CSU SYSTEM DECARBONIZATION**
 - Efficiency first
 - Electrification
 - Thermal storage
 - Heat recovery
 - Scalable framework for all campuses

Proven results. Real impact. Replicable solutions.

A clear roadmap helps institutions take action and measure progress.

- ASSESS**
Understand your current energy use and emissions.
- PLAN**
Identify electrification opportunities and goals.
- PRIORITIZE**
Evaluate infrastructure needs and prioritize projects.
- FUND**
Secure incentives, financing and funding.
- IMPLEMENT**
Build and commission projects in phases.
- OPTIMIZE**
Measure, verify, and optimize performance.
- ACHIEVE**
Meet your decarbonization and resilience goals.



Together, we can build a cleaner, healthier, more resilient, and more equitable energy future.





Dedicated account coordination connects the right SCE teams at the right time.

3 | AVAILABLE PROGRAMS

Build the right support stack for each project

Offerings vary by eligibility, timing and regulatory approval. Confirm current terms before customer use.

1

HEAT PUMP HVAC
Efficient electric space conditioning and technical design support.

2

HEAT PUMP WATER HEATING
Commercial and residential water-heating pathways.

3

PANEL & CIRCUIT UPGRADES
Electrical readiness for increased electric loads.

4

ENERGY EFFICIENCY
Fuel substitution, weatherization and other efficiency measures.

5

TECHNICAL ASSISTANCE
Planning, design and contractor-facing support.

6

CHARGE READY
Infrastructure support for customer transportation electrification.

Funding layer: utility incentives + state/local programs + federal incentives + approved financing tools

4 | FEATURED PARTNERSHIP

San Bernardino Community College District + SCE

A sustained partnership that connects district sustainability goals with utility expertise, programs and project coordination.

PARTNERSHIP IN ACTION

- Net-zero and sustainability planning at the district, college, building and classroom levels.
- SCE assistance with initiatives, utility programs and project coordination.
- Joint external presentations that share lessons and strengthen the community-college sustainability ecosystem.
- Support for transportation electrification, infrastructure coordination and emerging technology demonstrations.

**Shared values. Shared planning.
Shared outcomes.**

NEXT UP



CAREER PATHWAYS 2



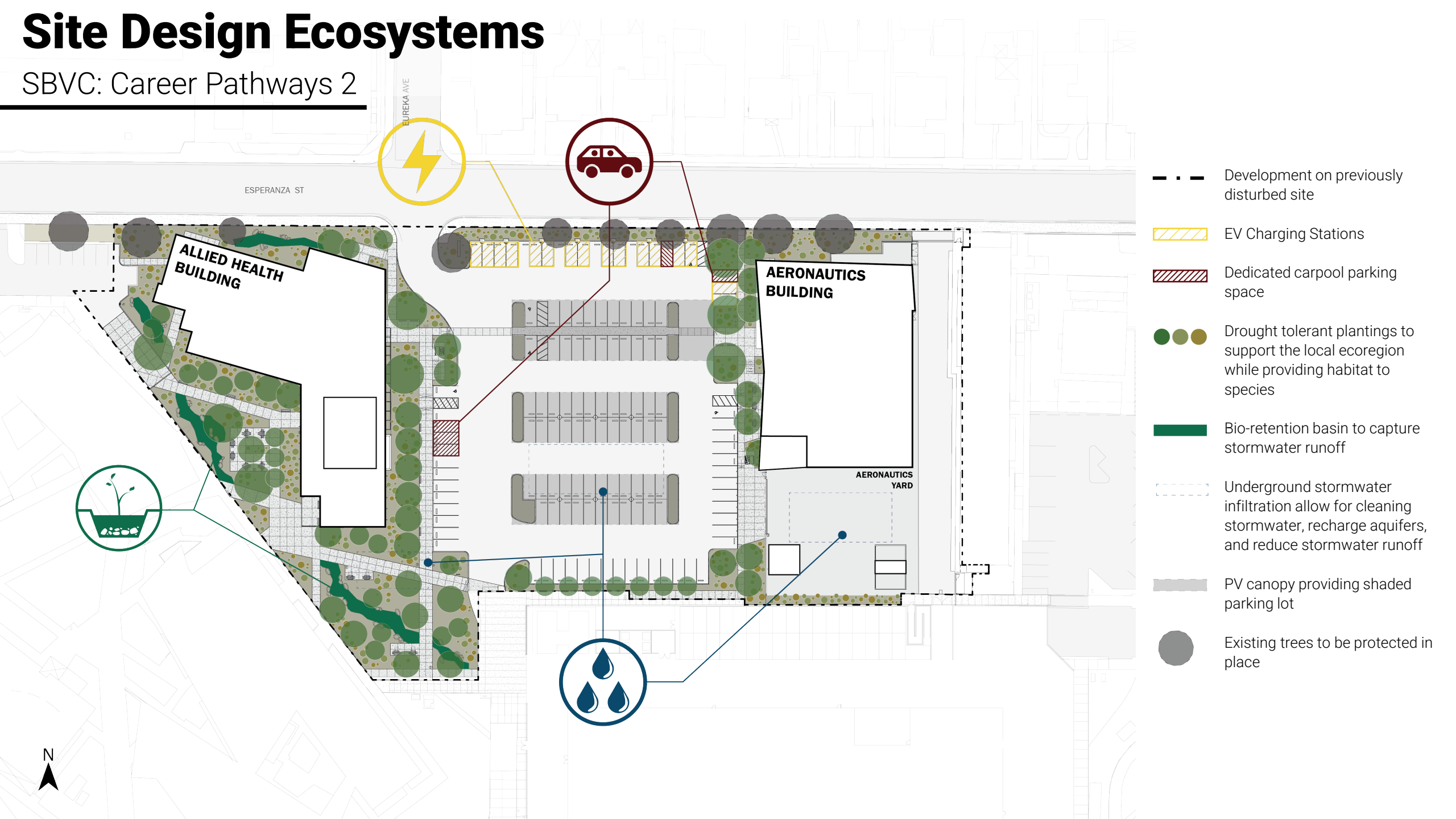
Project Description

SBVC: Career Pathways 2



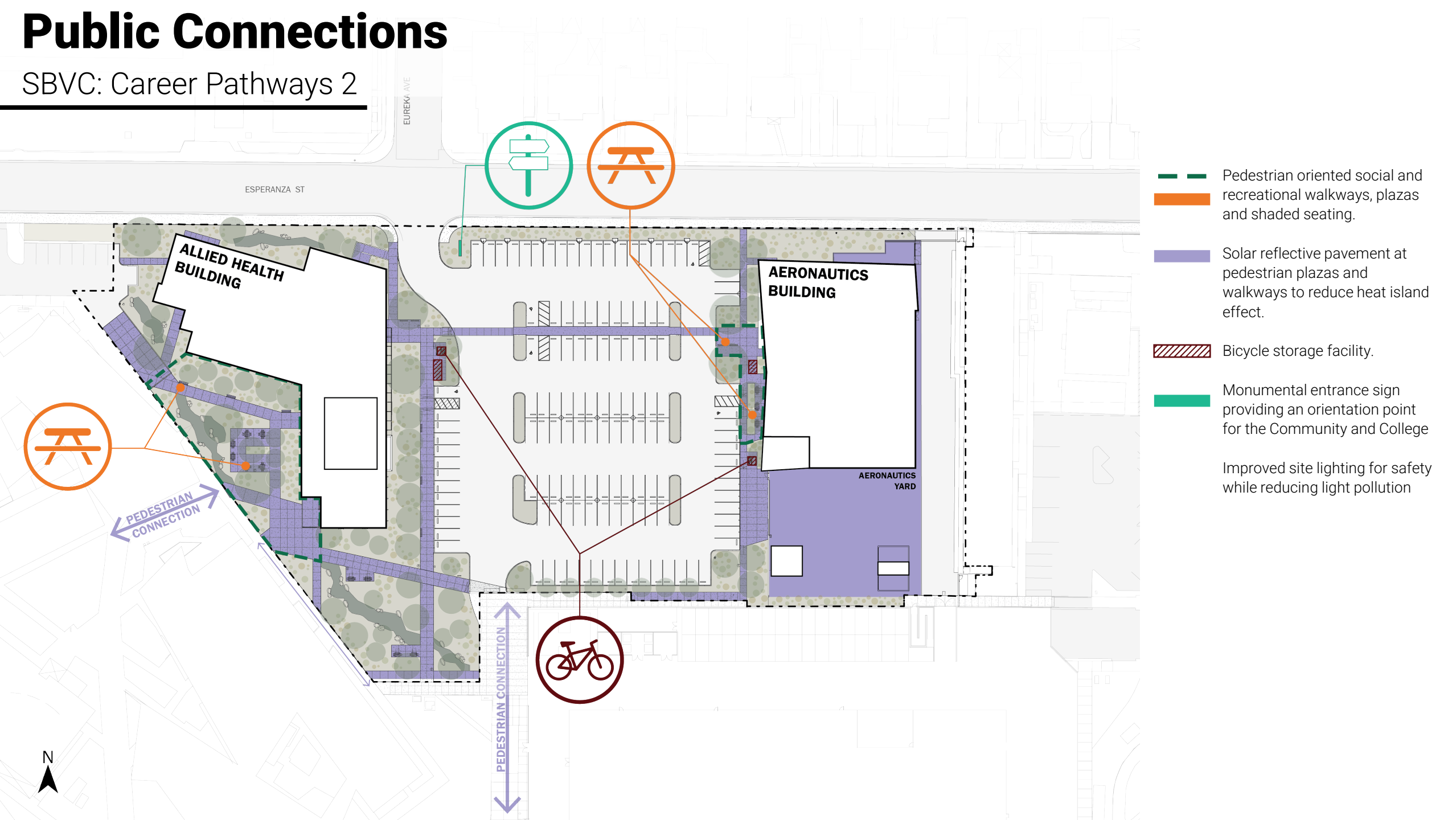
Site Design Ecosystems

SBVC: Career Pathways 2



Public Connections

SBVC: Career Pathways 2

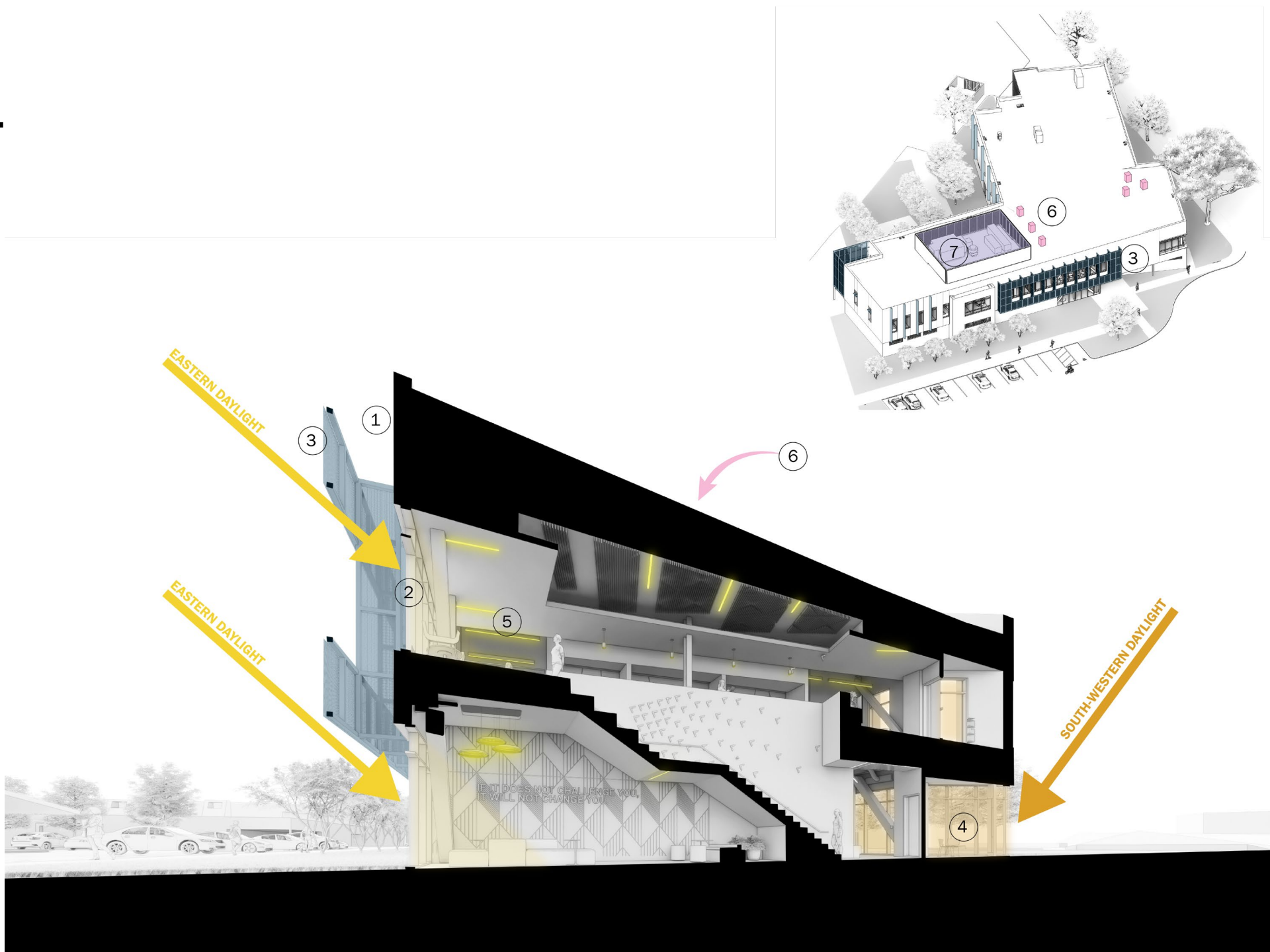


ZNE Approach

SBVC: Career Pathways 2

Allied Health Building

- ① High performing envelope with cool roofs and walls.
- ② Location & sizing of fenestrations based on climate studies aiming to reduce solar heat gain while maximizing daylighting.
- ③ Strategic location of solar screens and exterior overhangs to block direct solar gains.
- ④ Less than 25% window to wall ratio, with high performing glazing.
- ⑤ Targeting 15% reduction in light power density from Title24-2019 requirements.
- ⑥ Solar tubes to daylight the core zones on Level 2.
- ⑦ High efficiency Air Cooled VRF system with fresh air provided by Heat pump DOAS unit system to the terminal fan coil units + High efficiency electric DHW heating.

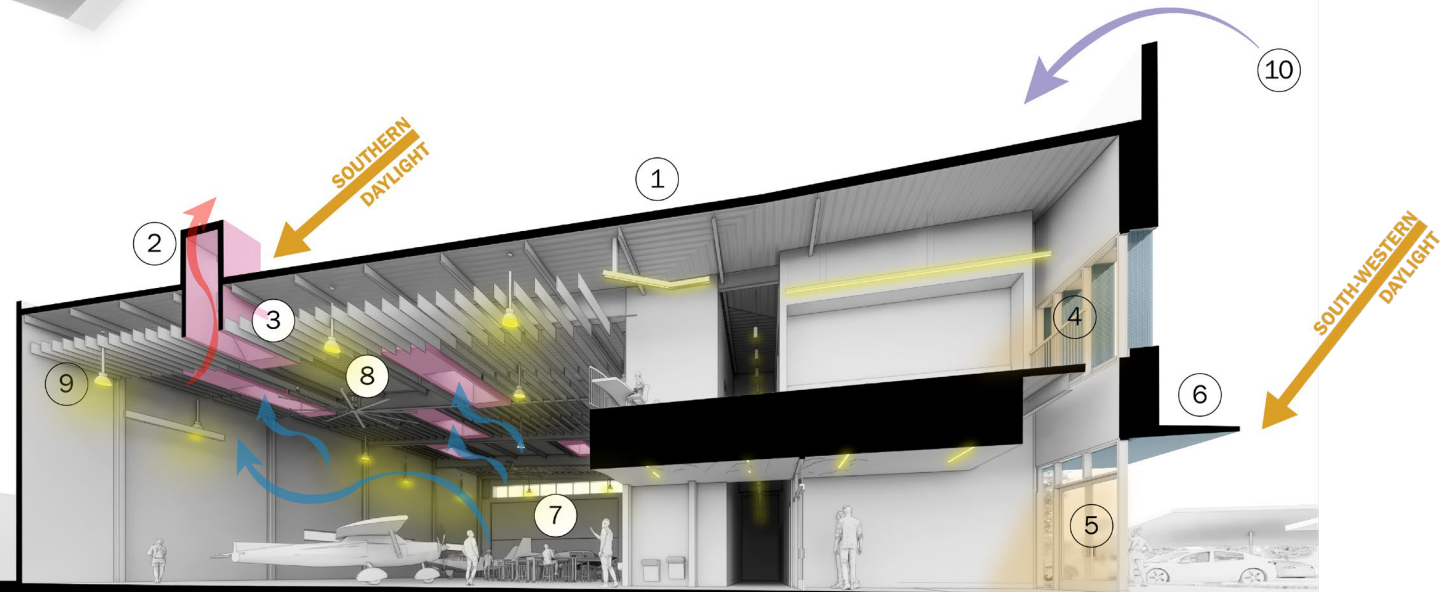
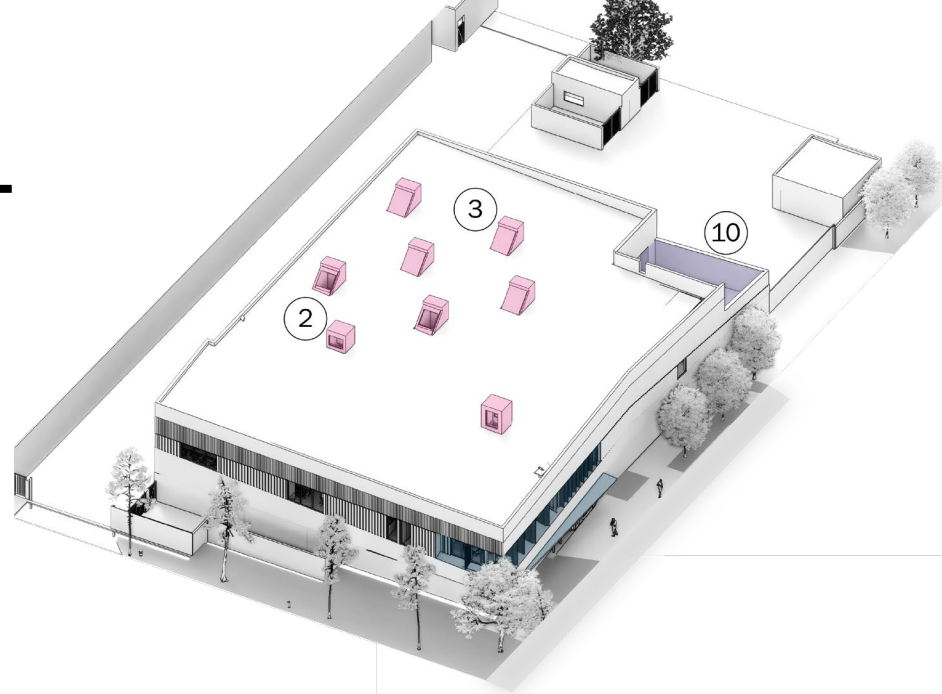


ZNE Approach

SBVC: Career Pathways 2

Aeronautics Building

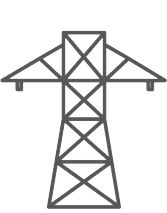
- ① High performing envelope with cool roofs and walls.
- ② Operable roof monitor windows allowing for mixed mode ventilation when conditions permit.
- ③ Roof top monitors for daylighting the high-volume hangar space
- ④ Strategic positioning & sizing of windows.
- ⑤ Less than 20% window to wall ratio.
- ⑥ Solar screens and exterior overhangs to block direct solar gains.
- ⑦ Clerestory windows for daylighting the high-volume hangar space
- ⑧ Ceiling mounted fans in the hangar space to allow for more uniform airflow.
- ⑨ Targeting 15% reduction in light power density from Title24-2019 requirements.
- ⑩ High efficiency Air Cooled VRF system with fresh air provided by Heat pump DOAS unit system to the terminal fan coil units + High efficiency electric DHW heating.



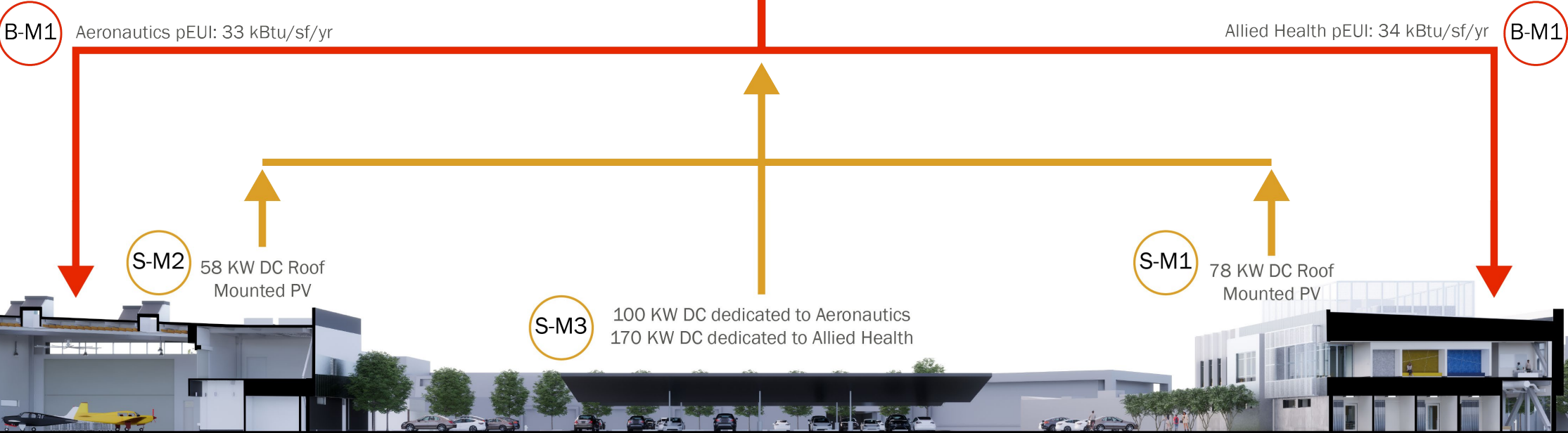
ZNE & Decarbonization

SBVC: Career Pathways 2

All Electric



No Onsite Fossil
fuel consumption



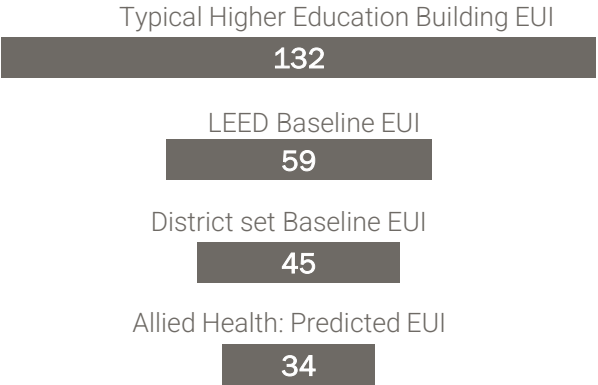
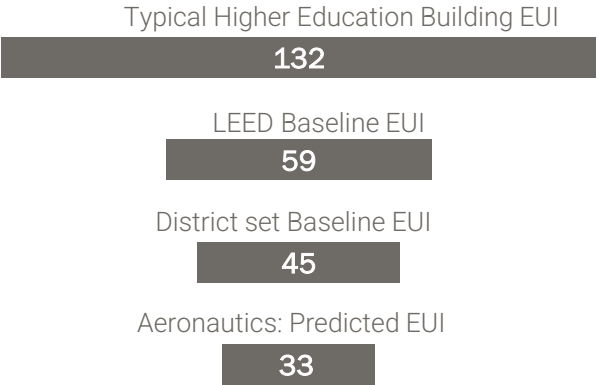
AERONAUTICS BUILDING

ALLIED HEALTH BUILDING

PATH TO NET ZERO ENERGY & DECARBONIZATION

Predicted EUI without Renewables : **33.5 kBtu/sf/yr**

Predicted EUI with Renewables : **- 3.0 kBtu/sf/yr**



Allied Health Building



Aeronautics Building



Aeronautics Building



Questions?



**Sustainability Initiatives
at SBVC**



Construction Updates

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