

ET Summit 2019

Presented by



Piloting Zero Net Energy to Guide Future College Growth

Working outside your comfort Zone to ZNE!

Farrah Farzaneh

Director, Facilities Planning & Construction
San Bernardino Community College District

IN PARTNERSHIP WITH:



ZNE Pilot Program Highlights

- Who is SBCCD
- Prop 39 SCE ZNE Schools Retrofit Pilot Program
- Meet Our Team
- ZNE Journey
- What's next



Who is SBCCD?

1 Out of 73 Community College Districts in State of California

2 Out of 115 Campuses of CCD system

4 Million people within its geographical region

22 Cities and Communities within its geographical region

25,000 students served annually

1 Million square-feet and 57 facilities district-wide

\$621,800,000 Dollar contribution annually for regional economic impact



SBCCD Prop 39 ZNE SCE Pilot Project

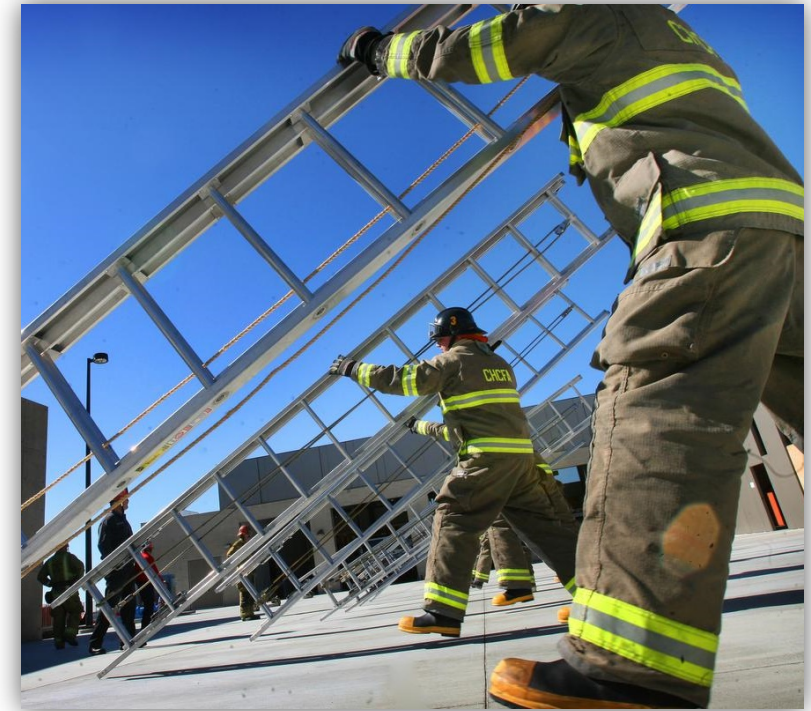
Program Goals

ZNE projects are part of California Public Utilities Company's (CPUC) Proposition 39 ZNE for Schools Pilot Program. Funds for Prop 39, The California Clean Energy Jobs Act, are helping schools across California with the state's goals to reduce energy use and greenhouse emissions

Leverage Prop 39 funds

- Retrofitting "existing" buildings
- Establish "Proof of Concept" of feasibility
- Document findings & Best Practices
- Future Program Development

After an extensive screening process by SCE, SBCCD is the only CCD in Southern California selected to participate in this innovative program and the first in California to complete it.



Meet Our Team

SBCCD & SCE



Farrah (SBCCD)



Lisa (SCE)



Robert (SCE)



Efren (SCE)

Technical Advisors



Martin (ARUP)



Ken (HMC)

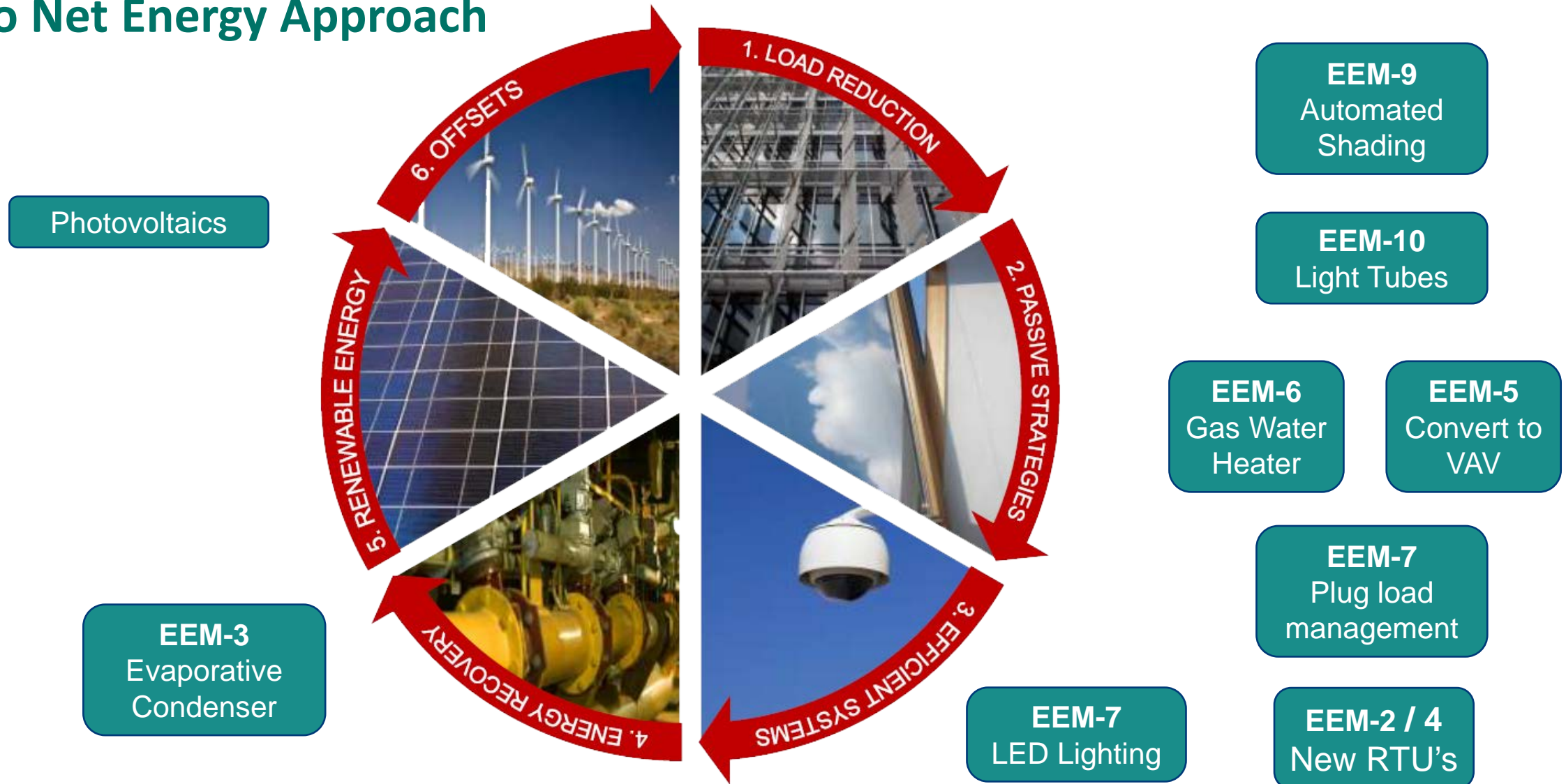


Sahar (Cadmus)

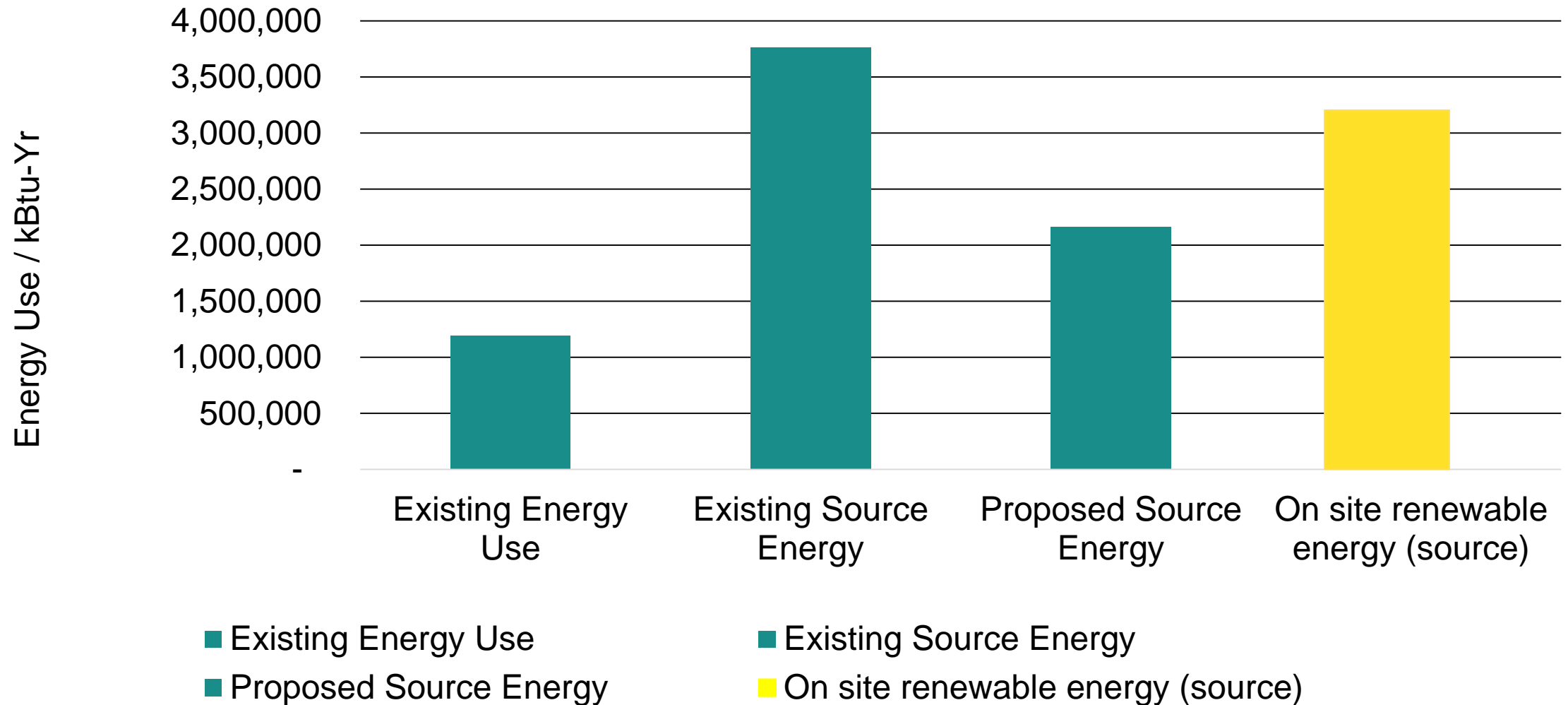


Gregory (Engie)

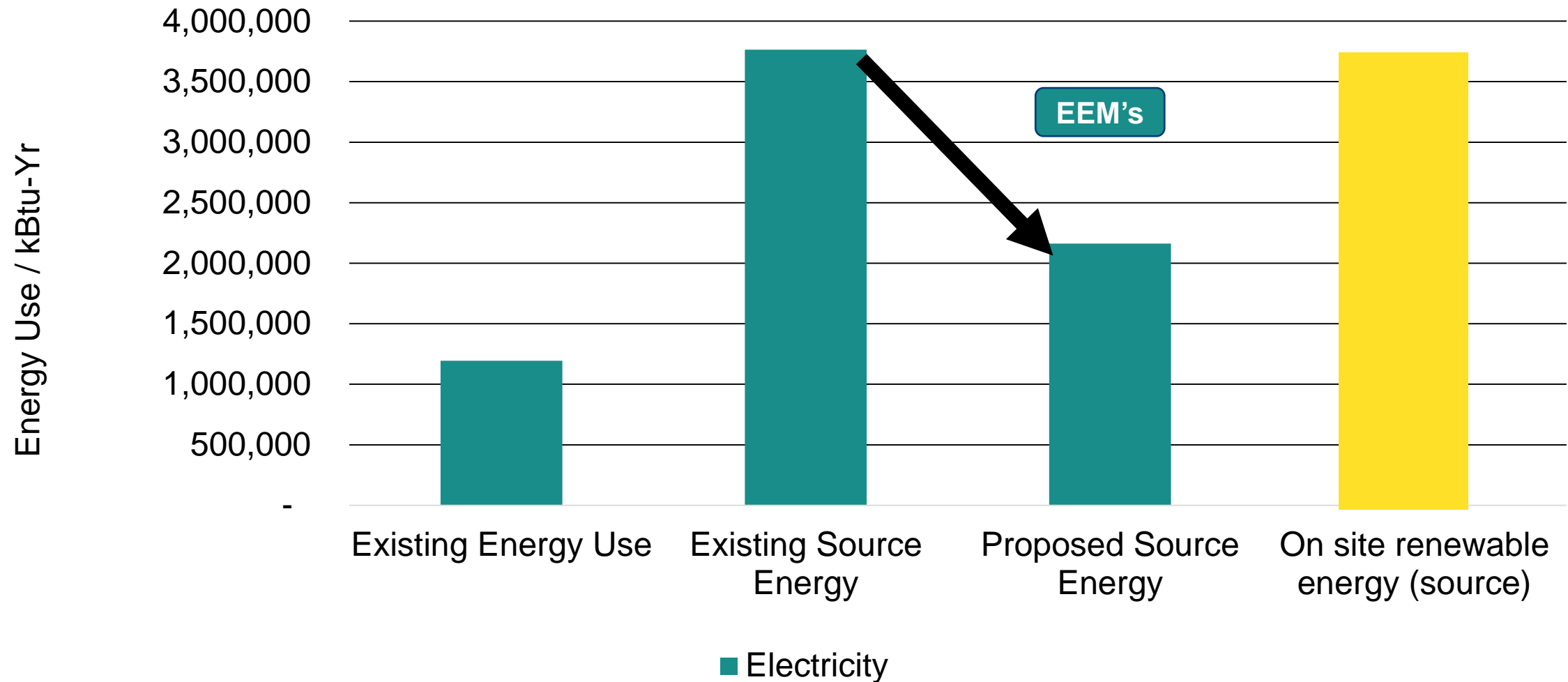
Zero Net Energy Approach



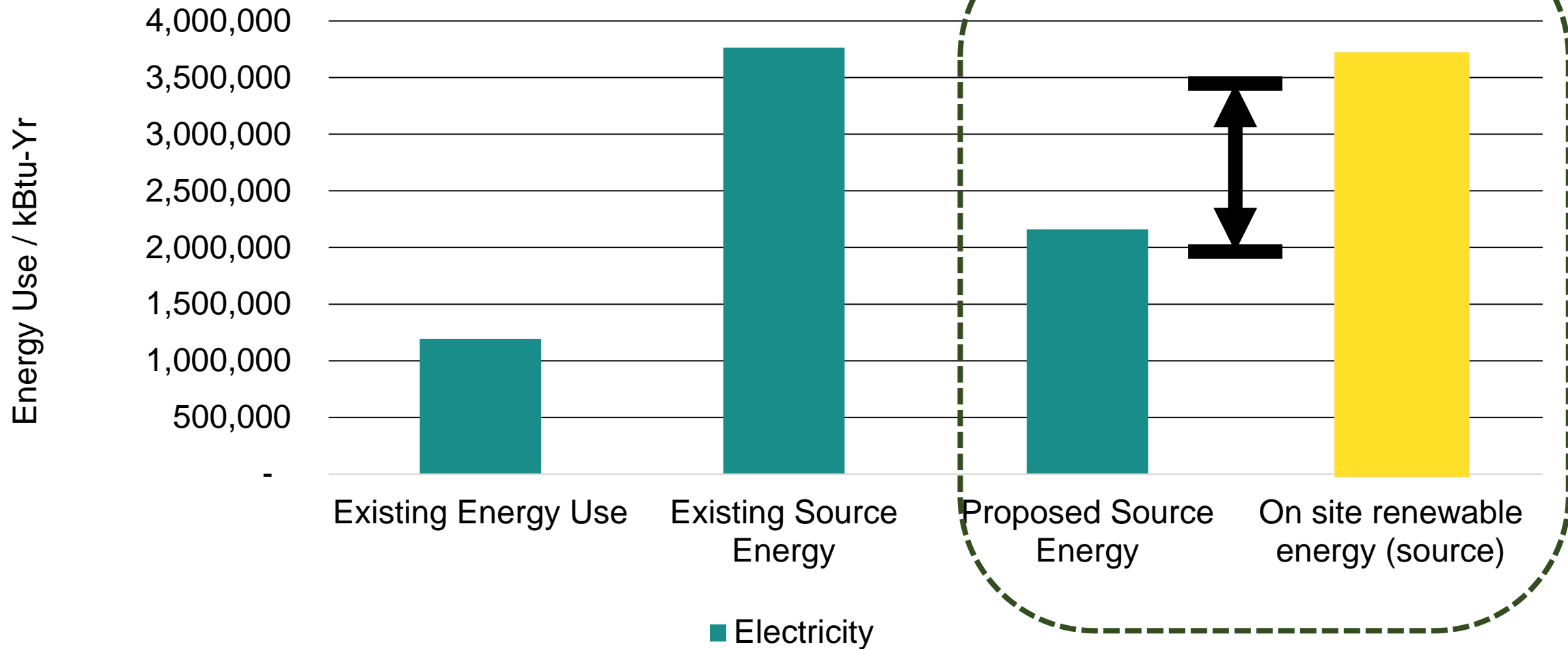
Zero Net Energy Approach



Zero Net Energy Approach



Zero Net Energy Approach



Installed Energy Conservation Measures

Additional Measures: Shut-off controls on HVAC, Boardroom LED retrofit, HVAC VVT to VAV in District Office.

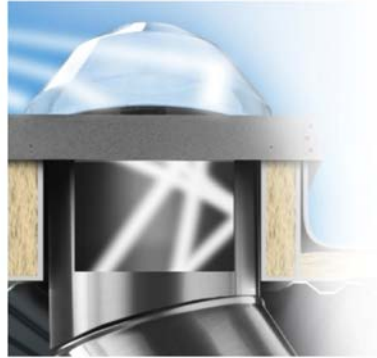
ECMs Proposed	ECMs Installed
New HVAC controls	Customized Algorithm
New RTUs – District Office	Ultra-efficiency
Evaporative condenser add-on	Unique application for SBCCD
New RTUs – Training Center	Three new AC units with VAV
Convert units to VAV - District Office	Added VAV boxes and also converted VVT boxes to VAV boxes
New gas water heater	High-efficiency condensing tankless
Plug load management	Controllers on vending machines
LED lighting conversion	Retrofit kits (custom) with wireless controls
Automated shading	With additional thermal shading and controls
Light pipes	17 Solatubes with motorized dampers and controls



LED Lighting Retrofit



Day Lighting



Raybender® 3000
A patented daylight-capturing dome lens that redirects low-angle sunlight for maximum light capture.

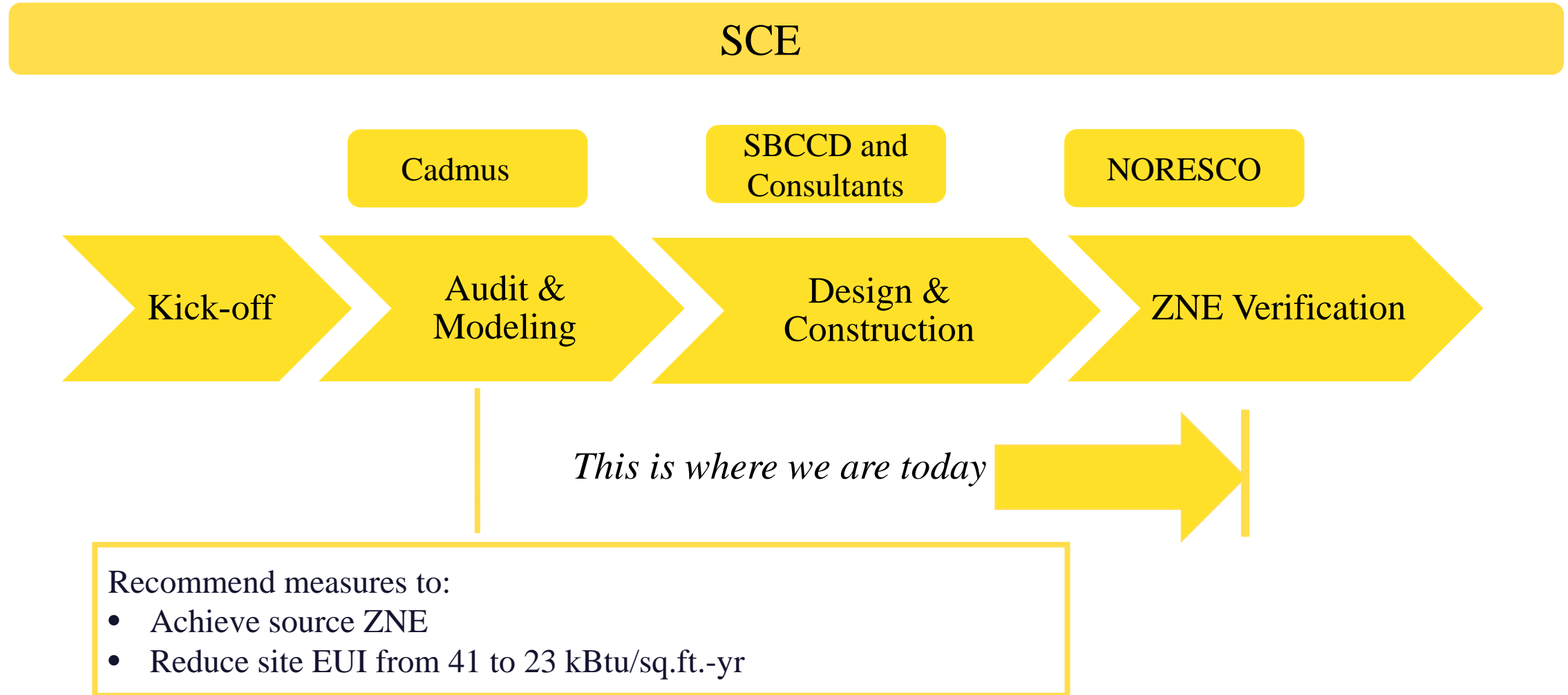


Engineered Light Diffusion
Optical lenses and lighting control options that provide visual comfort and deliver superior diffusion.

Solar Shading

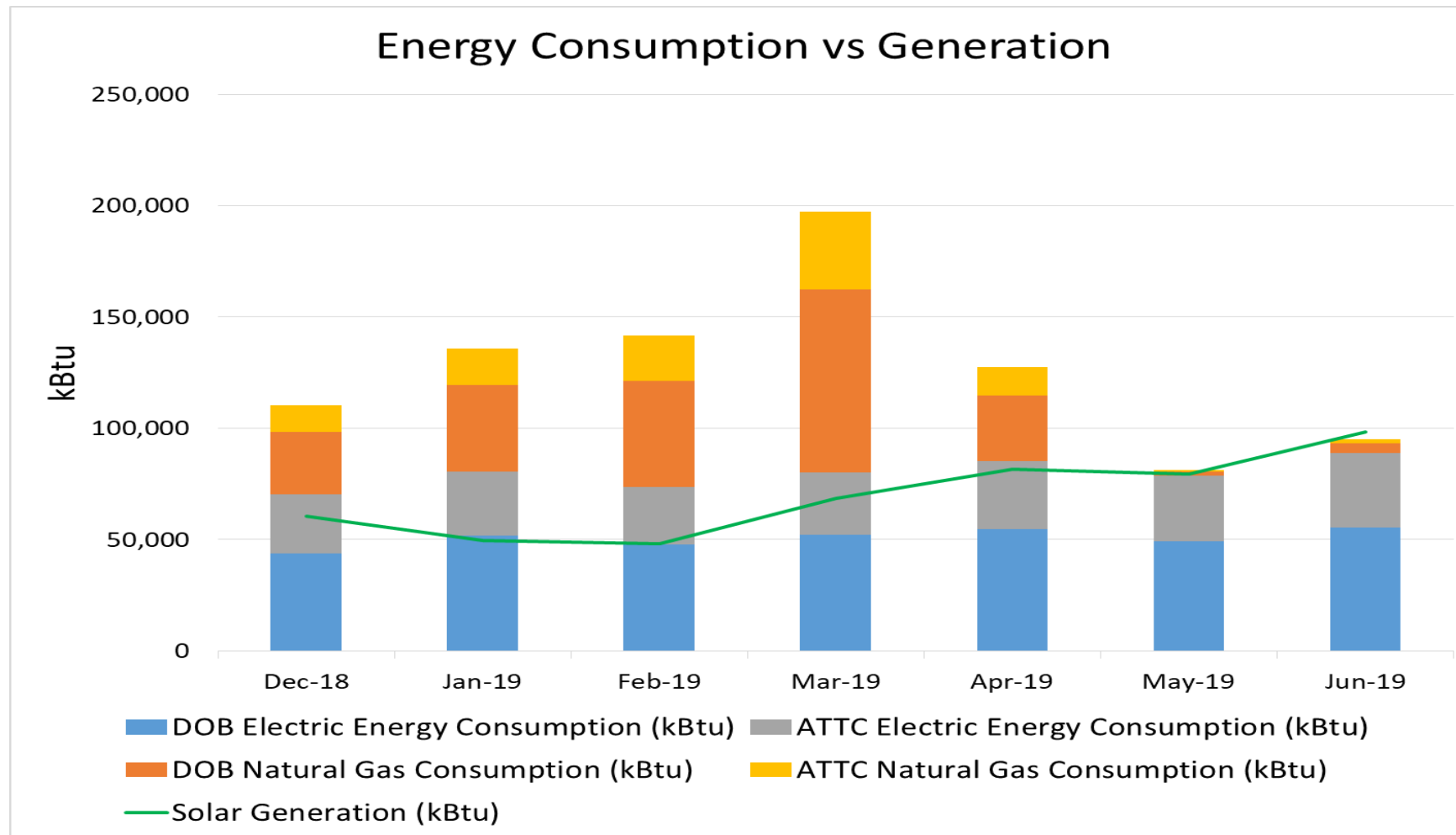


Prop 39 ZNE Pilot Program Process

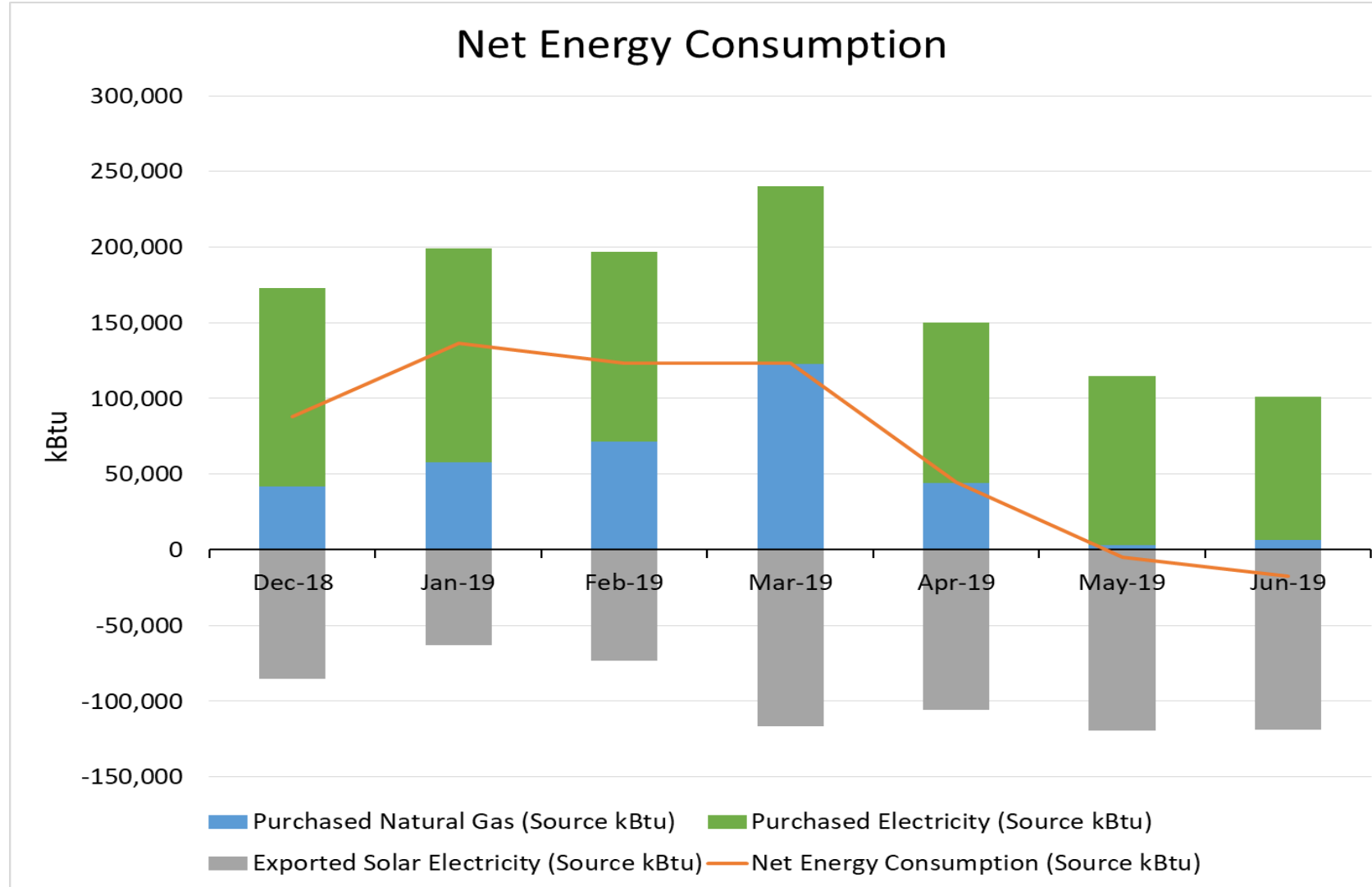


Site ZNE Projections

The M&V effort identified a scheduling issue as the cause of excess natural gas consumption. This was corrected in May 2019.



Source ZNE Projections



Campus-Wide Renewable Energy

Solar for Valley College includes:

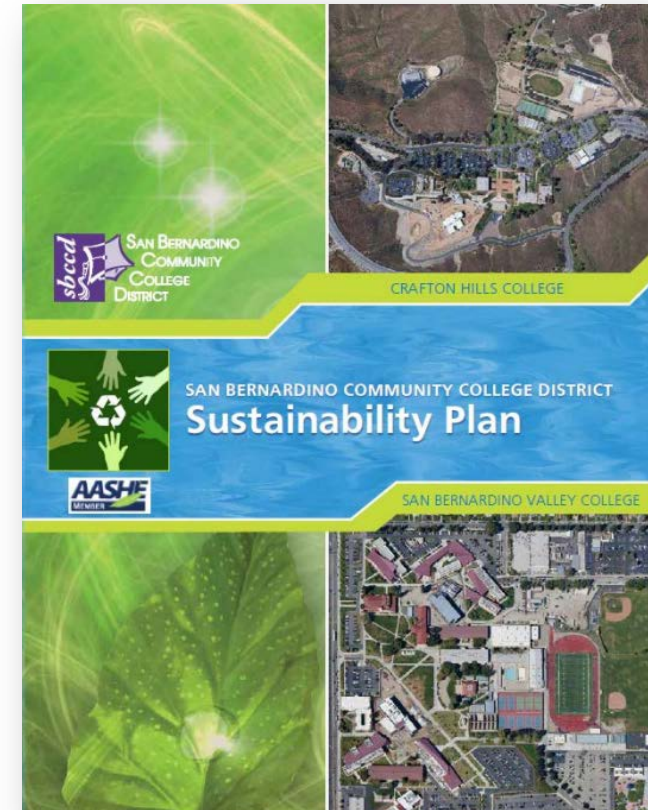
- 2.3 MW, comprised of 4,900 high efficiency solar modules
- 1.85 MW provides shade in the parking lots
- 0.45 MW on the rooftop of the new gym in the center of campus
- Solar is expected to generate 4,197,102 kwh in the first year
- Over 101,839,244 kwh over 25 year warranty period
- Battery Energy Storage System (BESS)



Sustainability Plan Update

Arup has begun the process of updating the sustainability plan:

- Develop initiatives and targets to take the District through the next bond program and beyond
- Stakeholder engagement process started September 2019
- Renewable energy focus leading to zero net carbon pathways
- Set energy, water, waste efficiency and reduction targets
- Crafton Hills Solar Farm Optimization
- Building Electrification – Great Option for a Pilot Program
- Electrical busses, and charging stations
- Focus on resiliency and community preparedness
- Implemented through District Standards and Owners Project Requirements Template



This project was funded by The Clean Energy Jobs Act (**Proposition 39**) and California Emerging Technologies Program

For more information, contact Efren Villasenor Jr at
Efren.Villasenor@sce.com.





Farrah Farzaneh

Director, Facilities Planning & Construction
San Bernardino Community College District
ffarzaneh@sbccd.edu
www.sbccd.org

