Outline

A. California new & existing building ZNE mandates

B. California existing building ZNE takeaways

1. Energy Efficiency does not have to cost owners

2. Renewable energy does not have to cost more

3. Existing buildings can achieve ZNE without major renovations and without additional cost
California Mandates ZNE on all New Projects

- Executive Order B-18-12
- State Administrative Manual (SAM) Section 1815.31
- **ZNE Source Definition:**
  
  “Energy efficient building that produces as much clean renewable energy as it consumes over the course of a year, when accounted for at the energy generation source.”

- Beginning 10/2017 all new construction & major renovations
  - Includes build-to-suit leases
- Energy Efficient Buildings (exceed CA T24 by 15% or more)

California Existing Building ZNE Mandates

- 50% of existing state building area to be ZNE by 2025
  - >56 M sq. ft.
- Achieve existing building ZNE energy efficiency targets
  - Top quartile (75%) efficiency targets for 27 CA building and occupancy types
  - Variations for 16 CA climate zones
- Renewable energy from onsite and/or offsite sources
  - Building
  - Campus
  - Portfolio
  - Community
Zero Net Cost Energy Efficiency Upgrades

• Upgrades from operations budgets
  - Reinvesting savings from improved energy efficiency

• Case Study: CA Dept. of Public Health – Richmond Building P
  - 205K sq. ft., 3-story office building
  - Full occupancy during all upgrades
  - MBCx + 5,000 lamps retrofit/replaced
  - Verdiem software on 700 computers
  - Replaced with high efficiency boilers
  - Variable speed ventilation calibrations
  - Increased preventative maintenance
  - 2.8 MW solar PPA on campus
  - No budget increases/ campus reinvesting

Zero Net Cost Energy Efficiency Upgrades

• Alternative financing upgrades
  - Revolving Loan Funds
  - On-Bill Financing (OBF)
  - ESCo’s
  - GS$Mart
  - Utility Programs

• Funded by energy savings
  - Electrical Systems (lighting/power)
  - Mechanical systems & controls
  - Building Envelope
  - Water Systems
  - Monitoring-Based Commissioning

CHP Academy, West Sacramento
Renewable Energy with Huge Savings

• Power Purchase Agreements
  - 3rd party owned, operated, maintained
  - Huge long-term savings
  - 45 MW installed, +56 MW more before 2020
  - >$100 M est. savings over terms of agreements

• Community Solar/Renewable Agreement
  - 20 year dedicated renewable power purchase
  - Mostly fixed rate resulting in huge savings!
  - 39 MW saving $37 M over 20 years!
  - SMUD SolarShares program has now grown to include 14 partners and 148 MW (322 GWh)

Financial Benefits of Community Solar

• SMUD SolarShares
  - 20 yr. contract
  - 34 MW (73 gWh)
  - RECs retired
  - Local (CA)
  - SMUD expanded to 148 MW & 14 partners
    - State agencies
    - Local gov’t
    - School districts
    - Colleges/Univ.

Disclaimer: The forecasts herein are based on estimates and provided for informational purposes only.

Accumulative Savings

Contract Year

$0 $5,000K $10,000K $15,000K $20,000K $25,000K

$22.823M

$2,437M

$18.174M

$16.048M

$13.432M

$8.832M

$7.346M

$6.691M

$5.805M

$4.775M

$3.918M

$1.892M

$1.248M

$0.687M

$0.126M

$0.046M

$0.001M

$0.000M
Summary

1. Energy efficiency doesn’t have to cost owners
2. Renewable energy doesn’t have to cost more
3. Existing buildings can achieve ZNE without major renovations & without additional cost

Dan Burgoyne
Sustainability Manager
State of California
Department of General Services
Daniel.Burgoyne@DGS.ca.gov
https://www.green.ca.gov
http://www.dgs.ca.gov/dgs/Sustainability/ZeroNetEnergy