

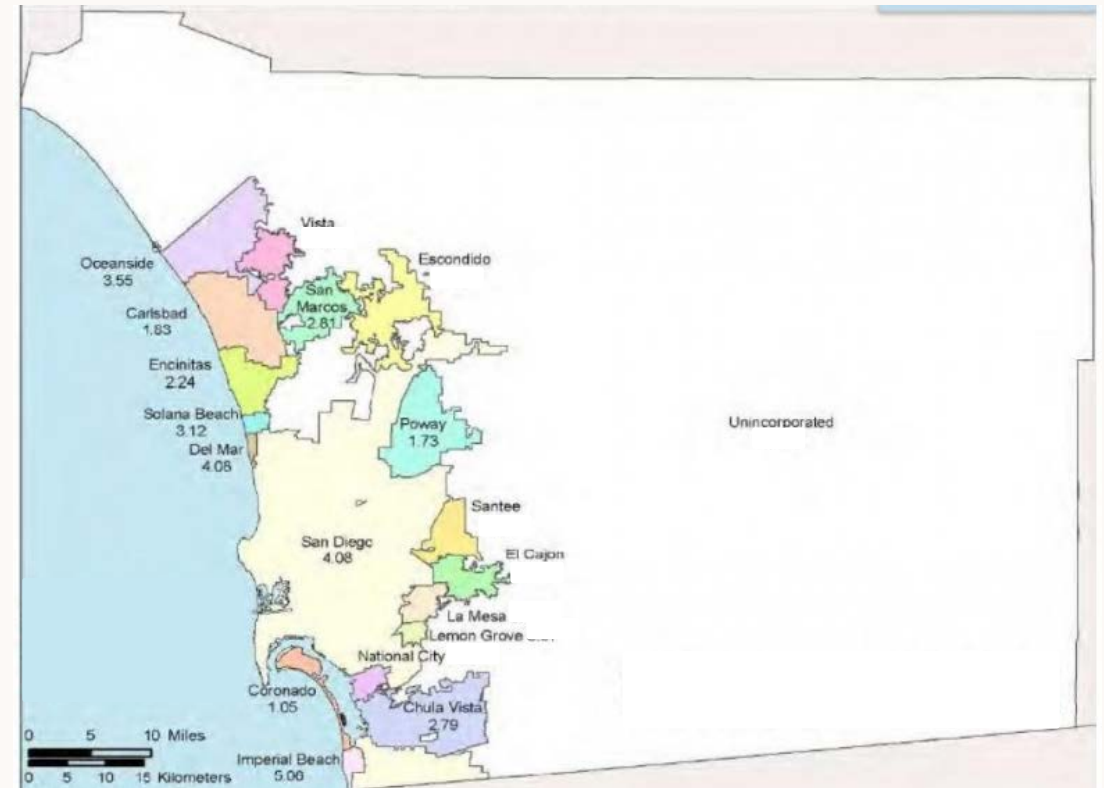


Response to SB350

The County of San Diego's Zero Net Energy Portfolio Plan

COUNTY PROFILE

- Territory is 4,526 square miles
- County population = 3.5M
- Unincorporated area population = ~600K

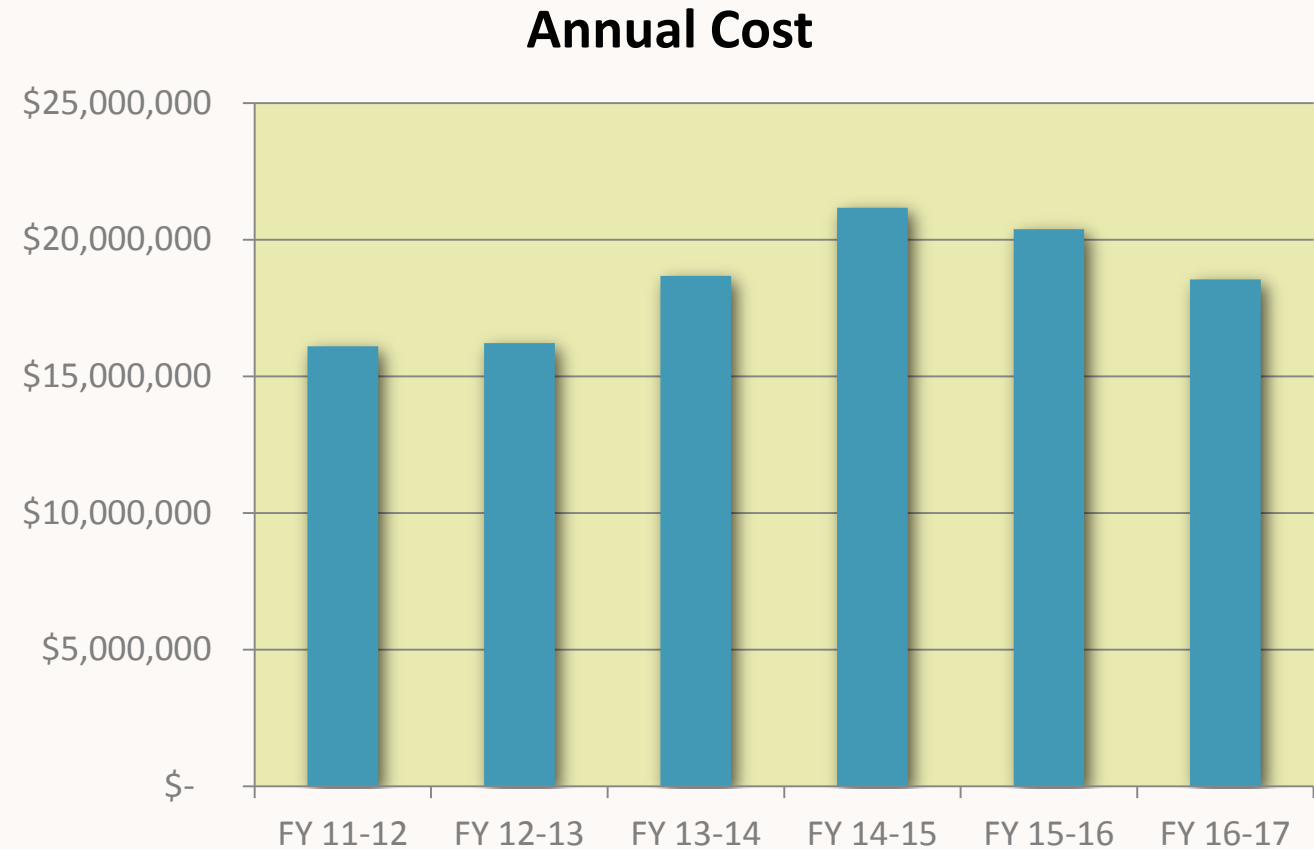


**Incorporated and Unincorporated areas
in San Diego County**

COUNTY PROFILE

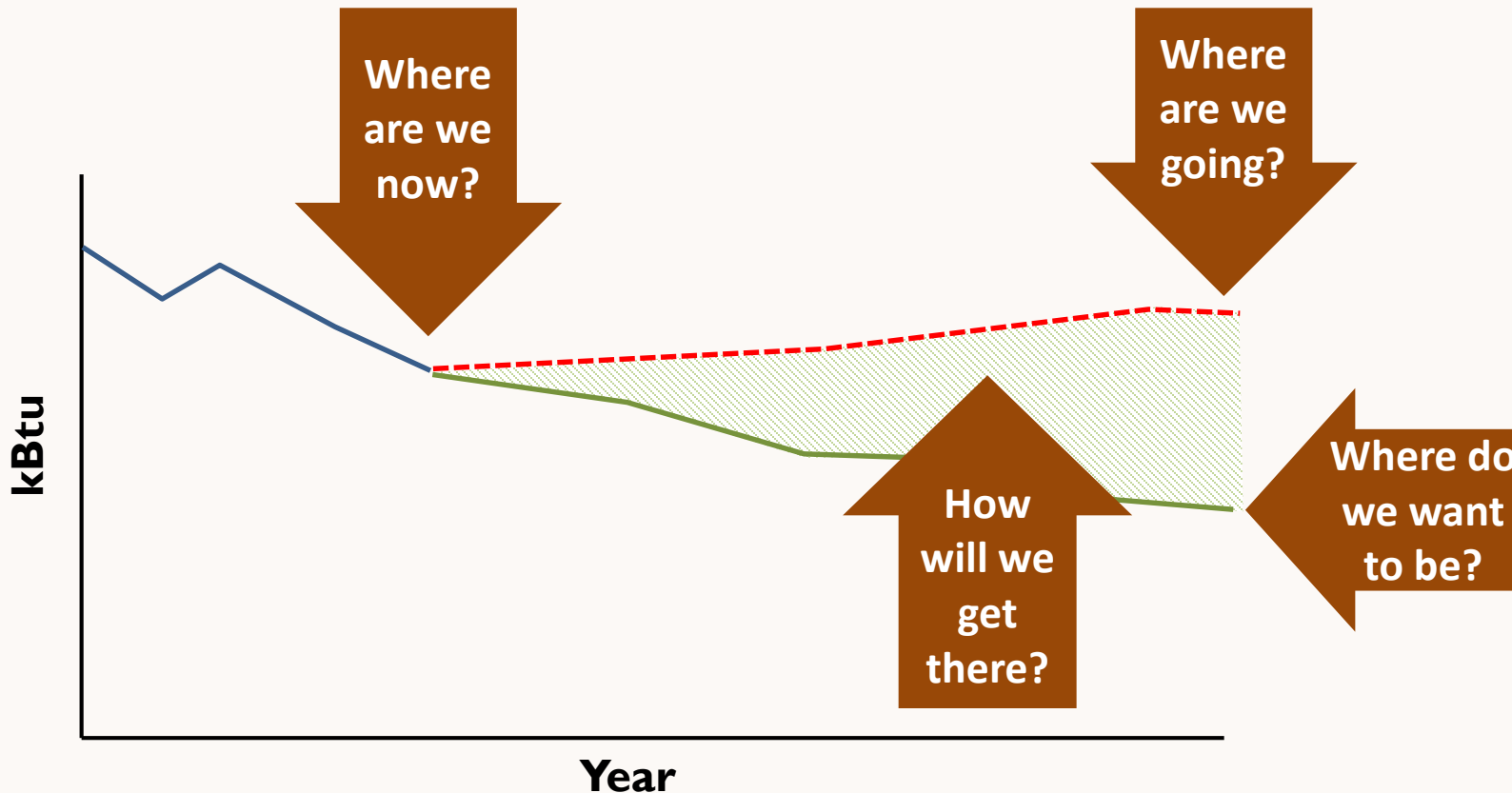
- **Facility inventory**

- >1,000 facilities
- >10M square feet
- >17k employees



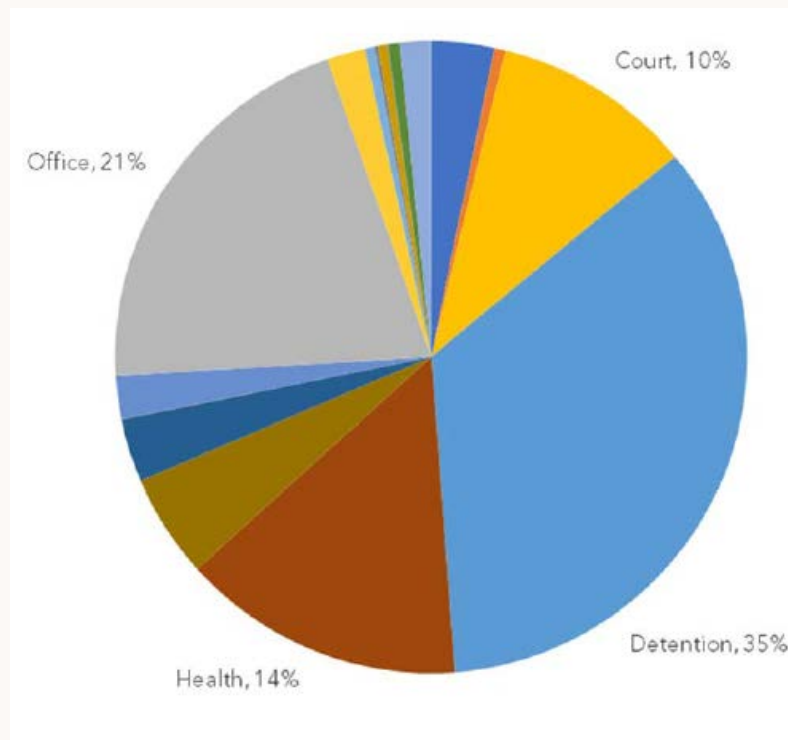
Crafting the Plan

- How to organize planning process

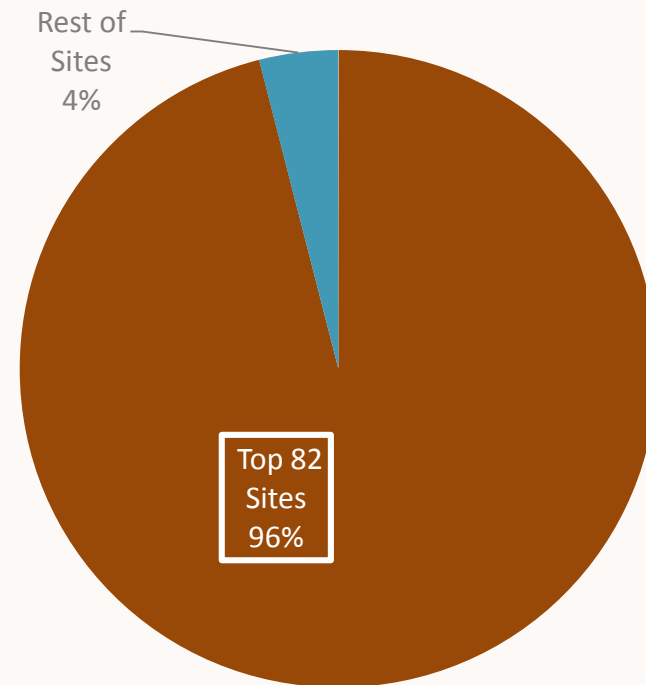
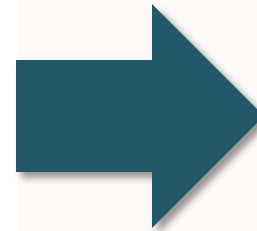


Crafting the Plan

- **Where are we now? Establish Baseline**
 - **Portfolio consumes ~1.6 MMBtu/yr (source energy)**

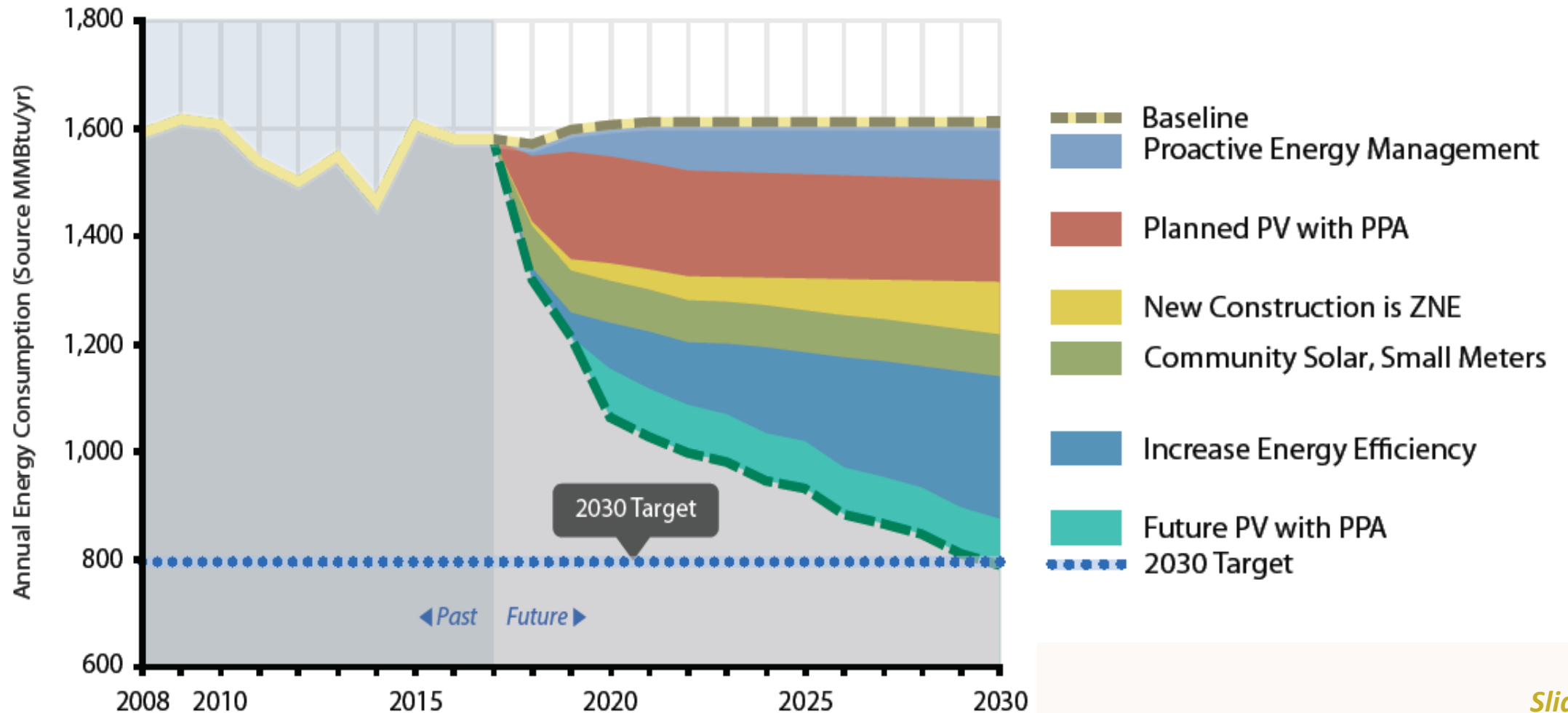


Site Energy Use by Building Class



Annual Btus

Portfolio Plan Measures





Susan Freed, Project Manager
County of San Diego
Susan.freed@sdcounty.ca.gov
858-694-3627



OFFICE OF
SUSTAINABILITY

COUNTY OF SAN MATEO



County of San Mateo Municipal Green Building Policy

SEEC // June 21, 2018

PRESENTATION OUTLINE

- Background
 - Previous County of San Mateo policies
 - State's goals
 - County approach
- Updated Municipal Green Building Policy

BACKGROUND

- County of San Mateo policies
 - 2001 Sustainable Building Policy
 - 2014 Sustainable Green Building Policy
- State of California goals
 - 2010 CAL Green
 - 2020, 2030 Zero Net Energy goals



COUNTY APPROACH

County Departments

- Office of Sustainability
- Project Development Unit
- Department of Public Works
- Budget, Policy, & Performance
- Planning & Building Department

Board of Supervisors
Legislative Aides

Consultants

- KW Engineering
- Sage Renewables

Municipal
Green
Building
Policy



OFFICE OF
SUSTAINABILITY
COUNTY OF SAN MATEO

NEW POLICY

MUNICIPAL GREEN BUILDING POLICY

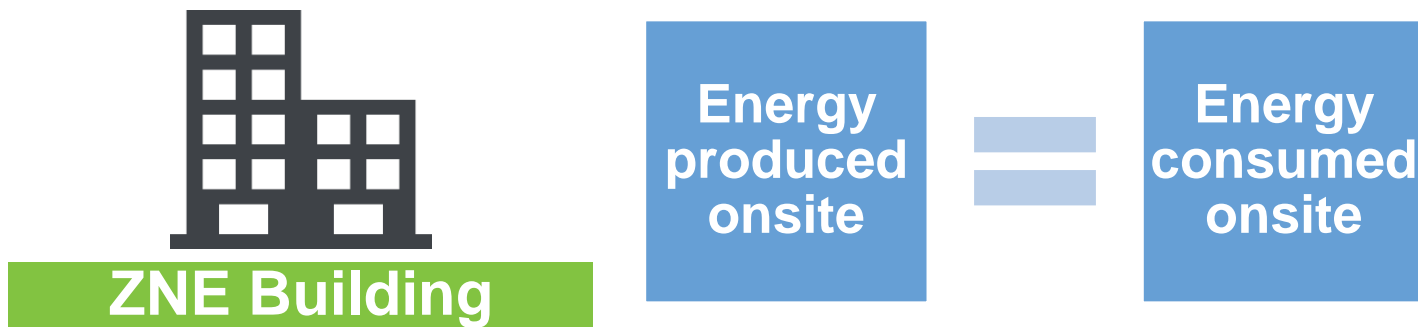
- Adopted by our Board of Supervisors (Dec. 2017)
- Policy Measures
 - LEED® Certification
 - Energy Efficiency
 - Zero Net Energy
- Green Building Steering Committee
- Procedures and Responsibilities

ENERGY EFFICIENCY



- Achieve a minimum of 50% of LEED® Energy and Atmosphere points
- Reduce energy usage
- Use energy efficient design strategies

ZERO NET ENERGY



- County projects will achieve ZNE on-site or adjacent renewable resources
- If a project cannot achieve ZNE, then the project must maximize energy efficiency and the amount of renewable energy generation



OFFICE OF
SUSTAINABILITY

COUNTY OF SAN MATEO

Thank you!

Rachael Londer

County of San Mateo, Office of Sustainability

rlonder@smcgov.org



Climate Action Progress Report: San Francisco 2016 Emissions Inventory



SF Environment

Our home. Our city. Our planet.

A Department of the City and County of San Francisco



San Francisco: 1990 – 2017

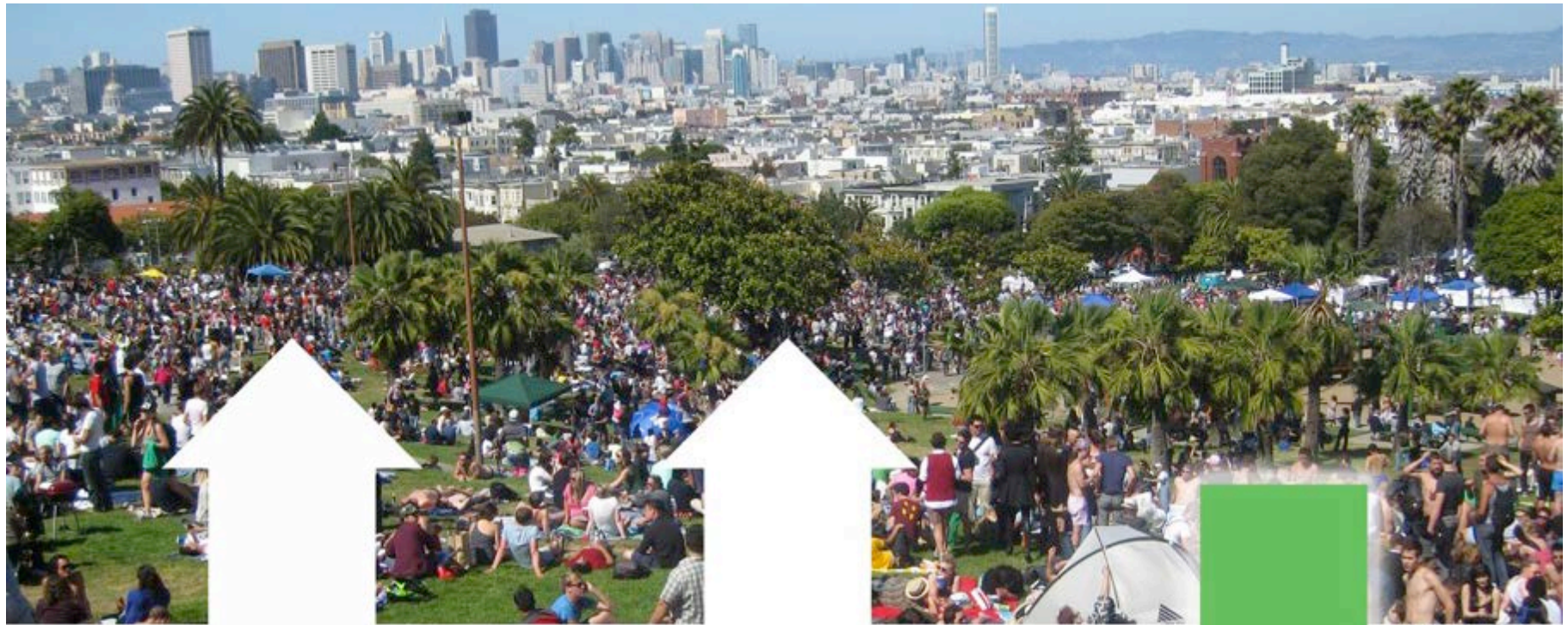


Photo credit: Merri, Flickr

20%

Population

111%

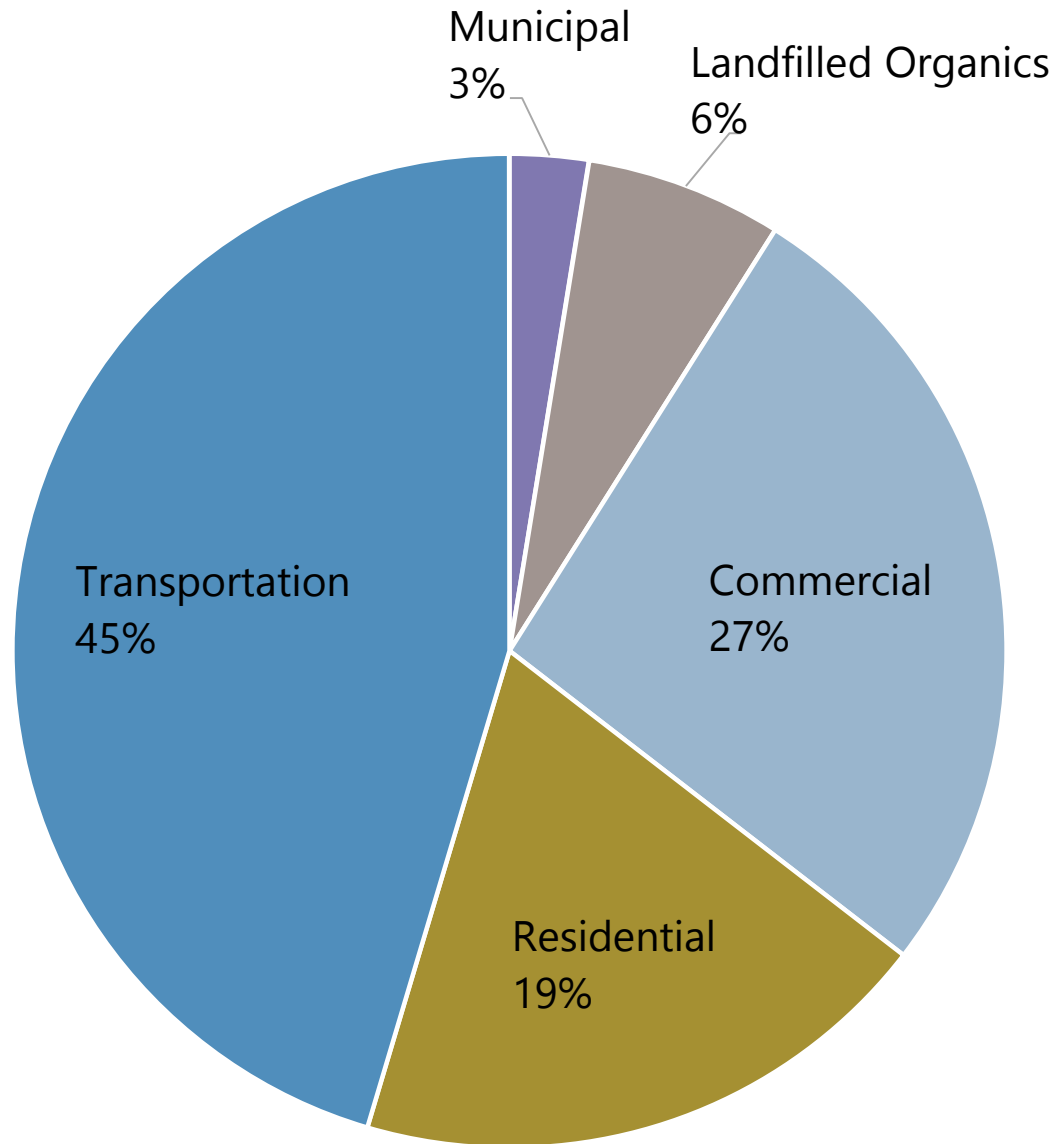
GDP



29%

GHG Emissions

Emissions





SF Environment Code 706 (c)

Municipal new construction and major renovations must:

- Set a target for annual net energy consumption
- Determine feasibility of ZNE (if ≤ 3 stories)

bit.ly/bayrenzepi

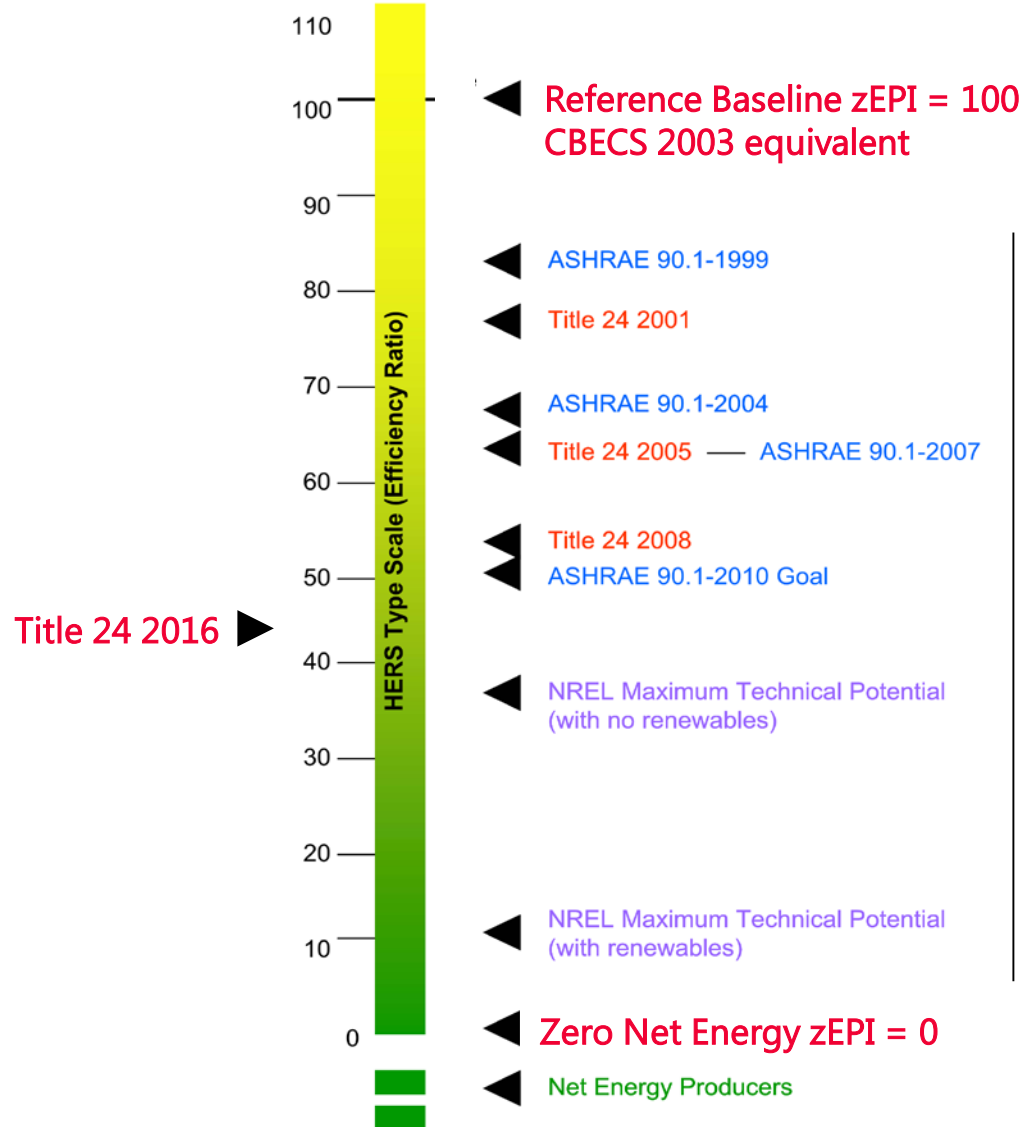
- Analyze costs and benefits of onsite solar photovoltaic systems and battery storage

www.solarresilient.org

How should we measure building energy performance?

	Pros	Cons
EUI (kBtu/ft ² -yr)	<ul style="list-style-type: none">• Simple• Widely recognized	<ul style="list-style-type: none">• Difficult to adjust fairly for process loads, building types, climate, etc.• Difficult to set a baseline and scale to different versions of code
ENERGY STAR Target Finder	<ul style="list-style-type: none">• Widely recognized• Integrated with Portfolio Manager	<ul style="list-style-type: none">• Relative, not absolute performance• Difficult to set a baseline and scale to different versions of code
zEPI (Zero Energy Performance Index)	<ul style="list-style-type: none">• Adjusts for process loads, use types, climate• Easy to set a baseline and scale to code versions• Integrated with Portfolio Manager (somewhat)	<ul style="list-style-type: none">• Not widely used (yet)

Zero Energy Performance Index (zEPI)



- Absolute, "Zero = 0"
- Fair
- Stable

Functions of Targeting and Verification Tool

Before Construction

- Set an energy use target
 - Tool suggests energy budget should be between T24 (code minimum) and 2030 Challenge (exceptional efficiency)
- Roughly estimate ZNE feasibility

In Operation

- Determine if target is met

<http://bit.ly/bayrenzepi>

Energy Target Setting and Performance Verification

Applicant Name	SF Department of Such and Such
Building Name	Example Municipal Facility

Street Address	123 Market St
City	San Francisco

Primary Building Area

1 Office

Building Gross Area (ft2)	200,000
Computers (#)	1,000
Weekly Operating Hours	120
Workers on Main Shift (#)	1,000

+ Add Building Area

2 Weather Data

Climate Zone	CZ 3: ~Coastal, ~Alam
Heating Degree Days (HDD)	2,885
Cooling Degree Days (CDD)	138

3 12 Month Modeled Energy (design stage)

Electricity Usage w/o PV (kWh)	2,800,000
Natural Gas Usage (therms)	20,000
Available Roof for PV (ft2)	75,000

4 12 Month Metered Data (input data once operational)

Electricity Usage (kWh)	0
Natural Gas Usage (therms)	
Billing End Date	

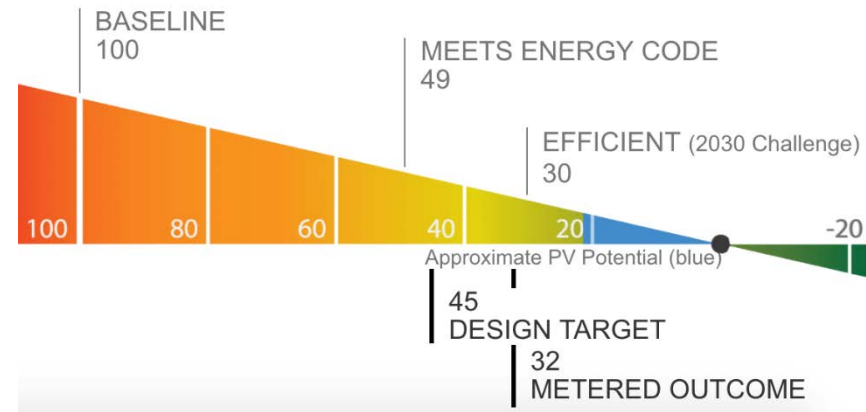
Summary

Before Construction

- Set an energy use target
- Roughly estimate ZNE feasibility

In Operation

- Determine if target is met



Climate Zones Supported: 2, 3, 4, 12

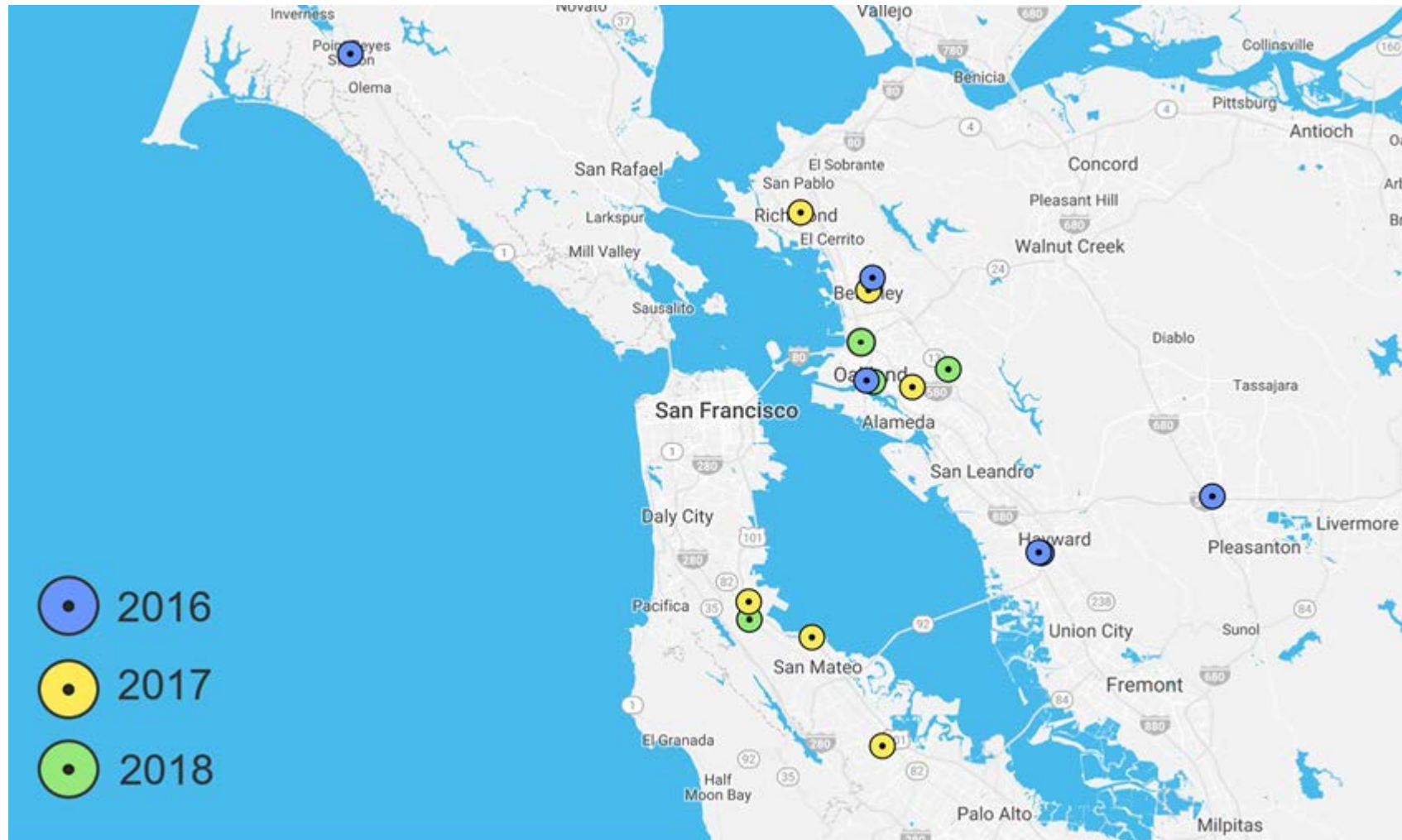


Local Governments Empowering Our Communities

Municipal ZNE Technical Assistance Program

June 21, 2018

ZNE Technical Assistance Program

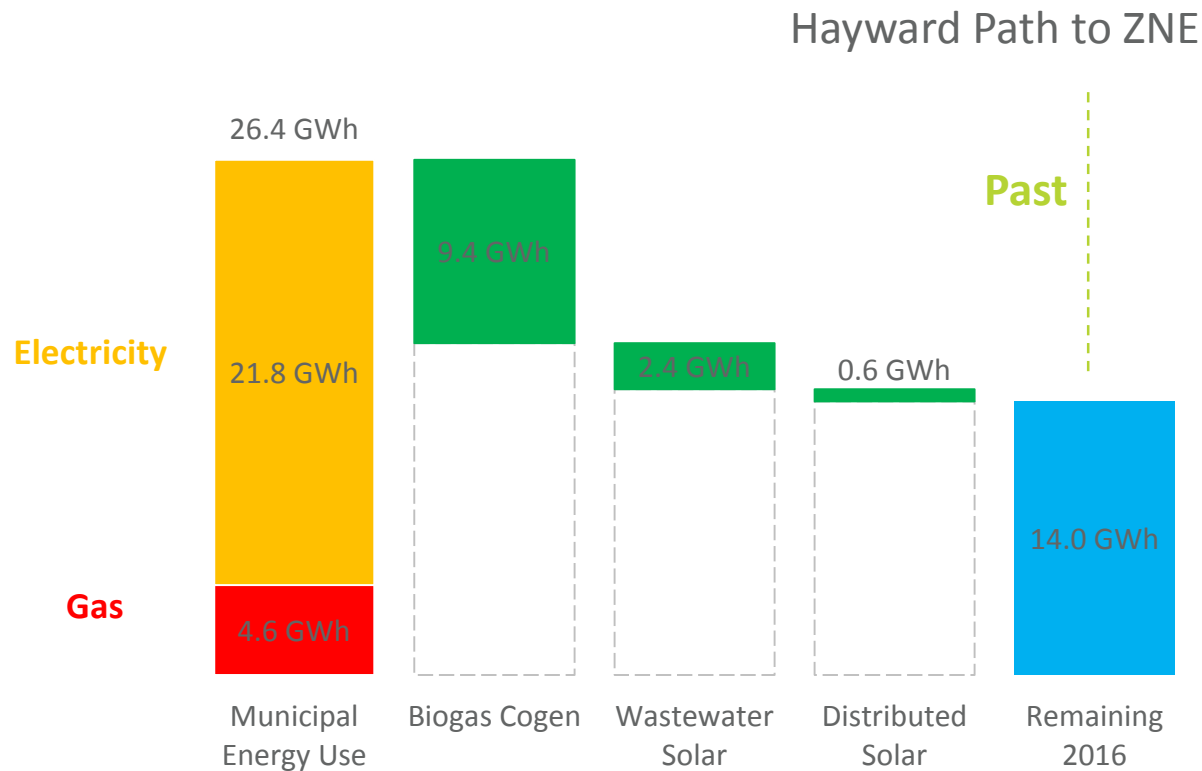


Mandatory Ordinances for Zero Net Energy Buildings

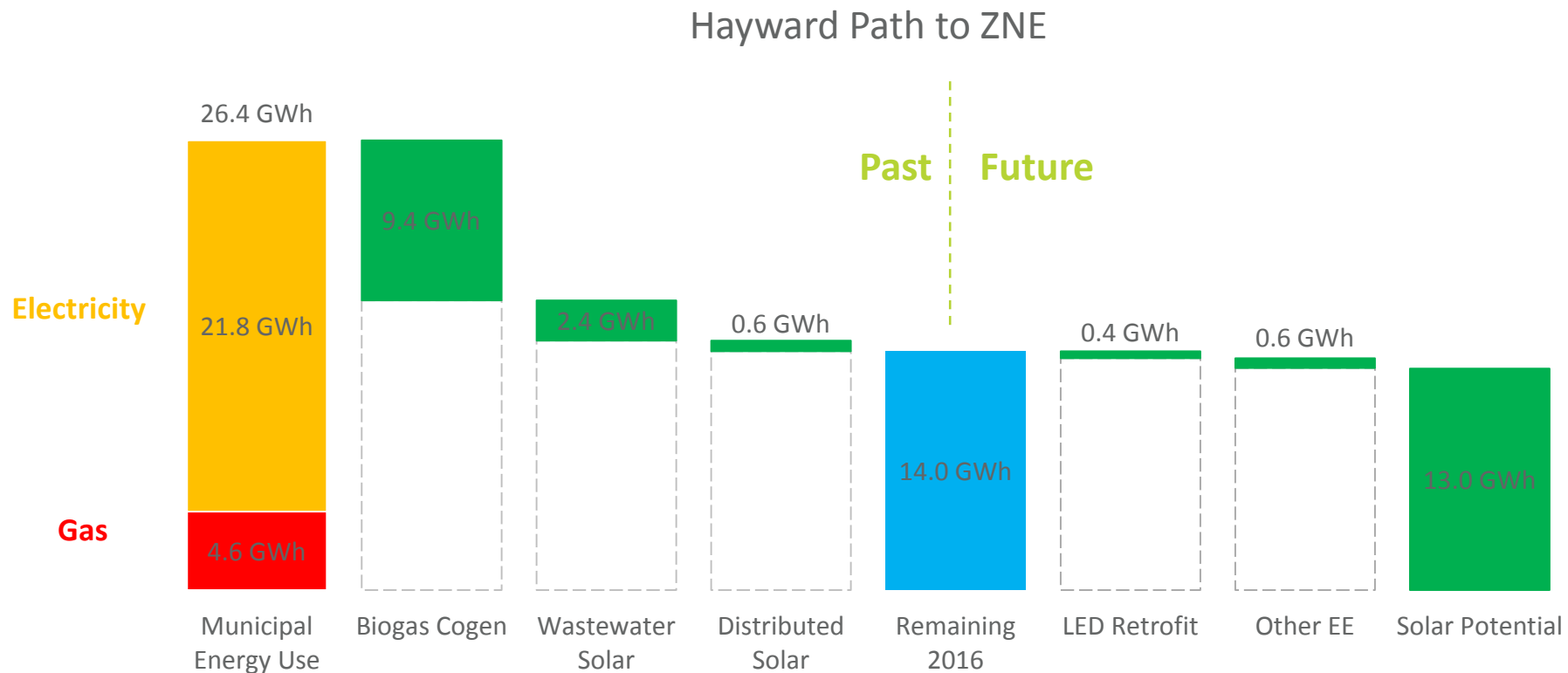
- **ZNE municipal buildings**
 - City of Hayward
 - County of San Mateo
- **ZNE residential new construction**
 - City of Santa Monica requires EDR = 0
- **Mandatory installed solar PV**
 - Cities of San Francisco, San Mateo, Brisbane, Sebastopol, Lancaster, Culver City
- **Mandatory energy benchmarking (above AB 802)**
 - Cities of Los Angeles, San Jose (in progress), Boulder and New York



City of Hayward: ZNE Technical Assistance – Portfolio Approach

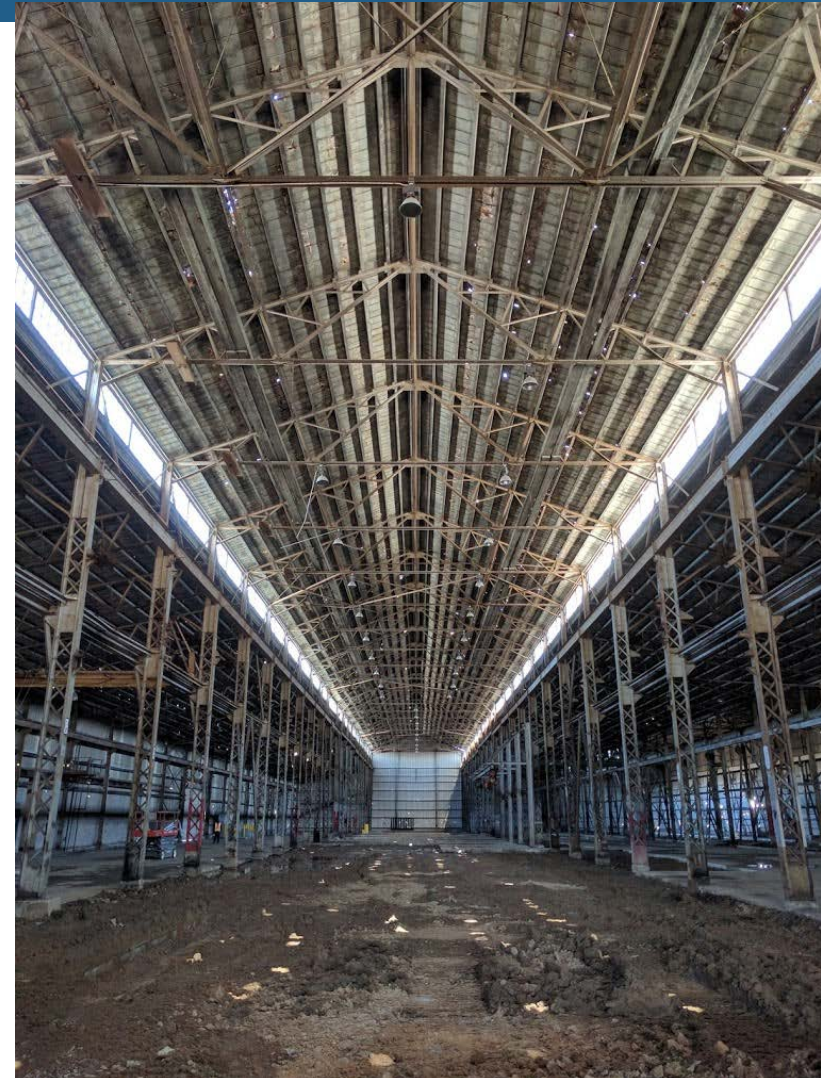


City of Hayward: ZNE Technical Assistance – Portfolio Approach

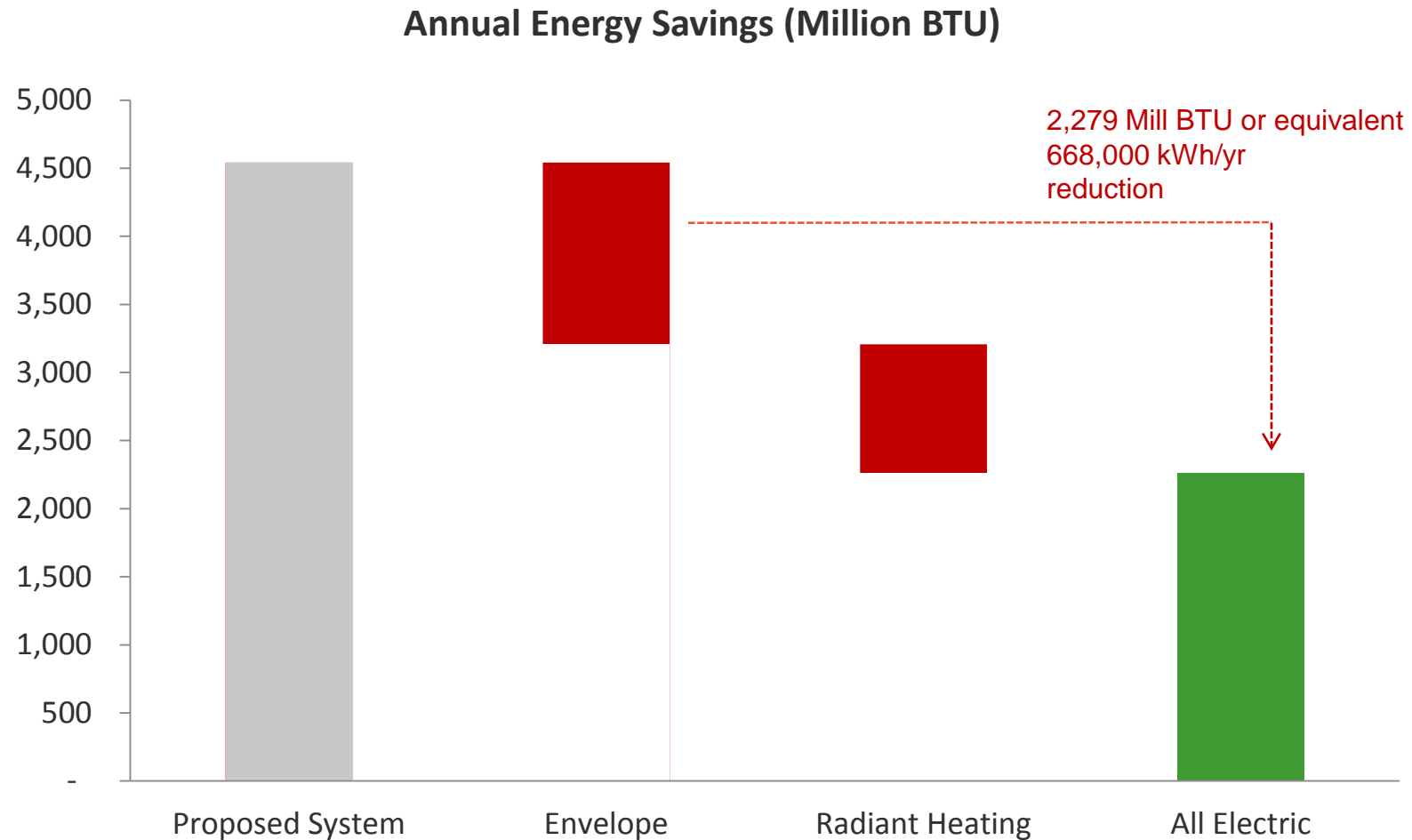


Richmond Public Works

- **Opportunity to consolidate public works and parks facilities**
- **Existing Green Building Ordinance of LEED Silver**
- **City Manager requested a cost benefit life cycle analysis to explore ZNE**

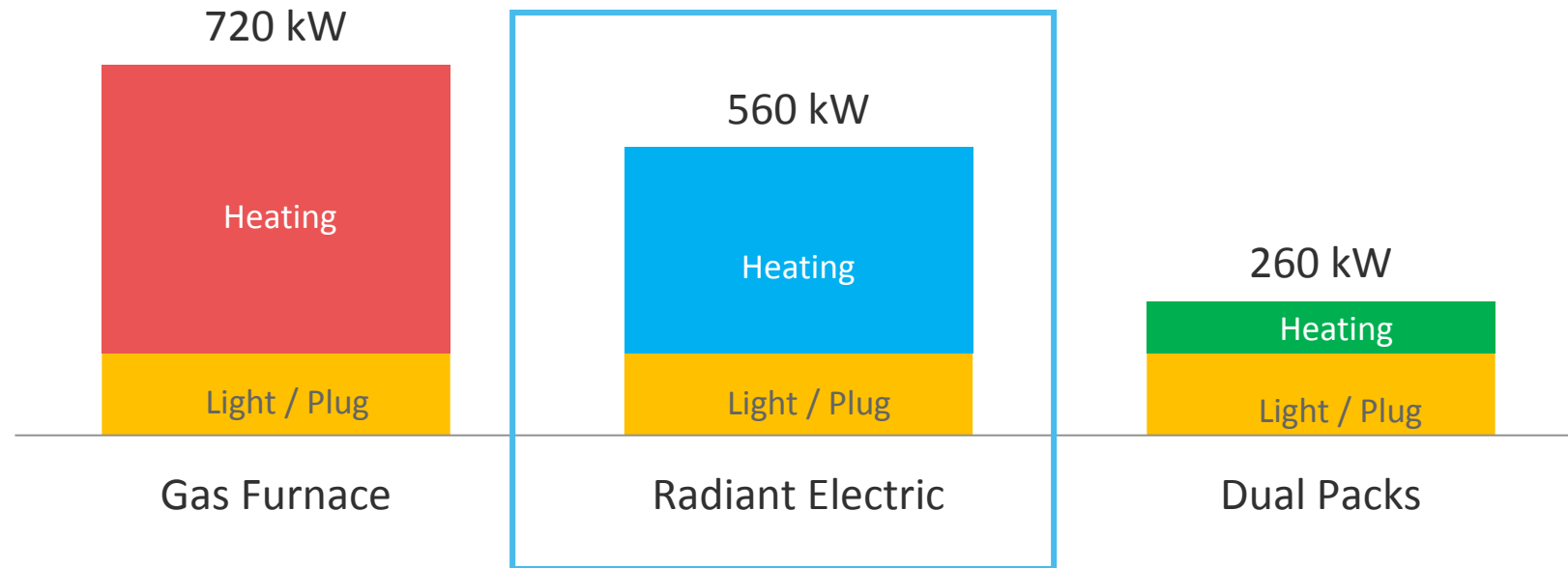


City of Richmond Energy Savings Summary



City of Richmond: Renewable Energy

ZNE Solar PV System Size by Heating System



Betty Seto, Head of Department
DNV GL

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