Moving to Zero at Scale
Residential & Commercial

Mindy Craig, Principal, BluePoint Planning
Mindy Craig, Principal
BluePoint Planning

- New ZNE Residential Action Plan
- ZNE Commercial Action Plan update
- Existing Buildings Energy Efficiency Action Plan
- ARRA Statewide Energy Upgrade California Outreach, Marketing & Communications
- Energy Upgrade California Working Group
- Local Government – Regional Energy Networks Business Planning
- Strategic Plan Statewide IOU Workforce Education & Training
Zero Net Energy Building...

Produces as much energy as it consumes over the course of a year, when accounted for at the energy generation source.

State of California, DGS

David and Lucille Packard Foundation, Los Altos, CA
Purpose of ZNE

- Reduce Energy Demand
- Reduce GHG Emissions
- Increase Resiliency
- Grid Integration
- Better Health, Air Quality & Buildings
- More!
California’s ZNE Building Goals

All new residential construction in California will be ZNE by 2020

All new commercial construction will be ZNE by 2030

50% of existing commercial buildings will be retrofit to ZNE by 2030

All new & major renovations of state buildings shall be ZNE 2025; 50% at 2020
Title 24 Path to Net Zero - Residential

- 2008 Title 24 part 6 Standards in Effect
- 2010 CA Green Building Standards in Effect
- 2010 CALGreen 18 month Supplement
- 2013 T-24 Pt 6 Std Adopted
- 2013 CALGreen Adopted
- 2013 CALGreen In Effect
- 2014 T-24 Pt6 Std in Effect
- 2014 CALGreen Adopted
- 2014 CALGreen In Effect
- 2015 T-24 Pt 6 Standards Adopted
- 2015 T-24 Pt 6 Standards in Effect
- 2016 Title 24 Pt 6 Standards Adopted
- 2016 Title 24 Pt 6 Standards in Effect
- 2016 CALGreen Adopted
- 2016 CALGreen In Effect
- 2017 CALGreen In Effect
- 2018 CALGreen In Effect
- 2019 Title 24 Pt 6 Standards Adopted
- 2019 Title 24 Pt 6 Standards in Effect
- 2020 All Res New Construction Starts are Zero Net Energy

Key:
- T24 Part 6 – Energy Efficiency Standards
- T24 Part 11 – Green Building Standards
- CA Long-Term Strategic Plan Goals
- On-site renewables in base case
Title 24 Path to Net Zero – Nonresidential Building Standards

2008 Title 24 part 6 Standards in Effect

2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030

2013 T-24 Pt 6 Std Adopted
2016 Title 24 Pt 6 Standards Adopted
2019 Title 24 Pt 6 Standards Adopted
2022 Title 24 Pt 6 Standards Adopted
2025 Title 24 Pt 6 Standards Adopted ZNE for some new bld
2025 Title 24 Pt 6 Standards Adopted ZNE for all new bld
2025 CALGreen Adopted ZNE for all
2022 CALGreen Adopted ZNE for some Bld
2016 CALGreen Adopted
2013 CALGreen Adopted

Key:
T24 Part 6 – Energy Efficiency Standards
T24 Part 11 – Green Building Standards
CA Long-Term Strategic Plan Goals
Star On-site renewables in base case

All NonRes New Construction Starts are Zero Net Energy
HOW MANY ZNE BUILDINGS ARE THERE?
Residential ZNE Buildings

TOP 10 STATES AND PROVINCES BY NUMBER OF BUILDINGS

EXHIBIT 8

MA, 219
CT, 212
CA, 1538
AB, 206
NM, 168
AZ, 114
NY, 85
OR, 60
TX, 16
ON, 15
ALL OTHERS, 306

Inventory and graphics by Net Zero Coalition
Commercial ZNE Buildings

Interim Count: 191
Does ZNE New Construction Matter?  
Energy Savings Potential in Residential ZNE Bldgs
Moving Strategies to Scale in a Dynamic Environment

• How do we address existing buildings?
• Need an economically feasible path to deep Carbon Reduction in Buildings
• With increased Renewables, is energy efficiency and Zero Net Energy still relevant?
Building by Building

- Does not impact outside of building
- Does not leverage larger scale infrastructure projects
- Disconnected from a systems perspective
- Load profile is too small to matter
- Every building cannot be ZNE
The Future ...Dynamic Environment

CARBON

ELECTRIFICATION

STORAGE

TECHNOLOGY

NEW FUELS

PEOPLE
ZNE (Zero Carbon) Districts: Integrated & Solution

- Infrastructure Imperative
- Local Government
- Scale
# Infrastructure Imperative

## America's GPA

<table>
<thead>
<tr>
<th>Category</th>
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<tbody>
<tr>
<td>Energy</td>
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<td>Transit</td>
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<tr>
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<td>Wastewater</td>
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<td>Hazardous Waste</td>
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<td>Drinking Water</td>
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## Estimated Investment Needed by 2020

- **$3.6 Trillion**
Electrical Grid Management

California's electrical grid throughout the day

The net load on March 31 of each year

Source: CalISO
Distributed Energy Resources
Local Government

- Economic Development, Financing
- Mission & Values
- Land Use Plans
- Convene
- Climate Planning
- Codes & Standards
Multiple Benefits, Multiple Audiences
Identifying a District

- Educational Campus
- Downtown/Commercial
- Major New Development
- Residential
Aggregate Infill & Existing Buildings
Context matters!

New Residential

Historic Building

New Park

Parking

Old Strip Mall

New Residential

Parking

Parking

New Streetscape

Remodel Retail & Residential

Historic Theater

Historic Theater & School
Citi2Zero Framework

- Buildings (New & Existing)
- Renewable Infrastructure
- District Fabric
- Financing
- People
Large New Zero Energy Community

- 21,500 New Housing Units
- 11.5 Million square feet Commercial & Light Industrial
- +2,000 Electric Vehicle Charging Stations
- 10,000 acres open space
- 50 miles of trails

“We took a hard look at our proposal and saw an opportunity to rethink what’s possible and use forward-looking community planning to create a true legacy project for California, and even the nation.”

Emile Haddad, FivePoint CEO
Why is this important?

- Fundamentally Changes How We Think and Implement Community Development
- Essential for Achieving Scale
- Rethinking who is Leading Effort
- Infrastructure As Funding Catalyst
- Grid Management
- Leads to Resiliency
“But when we want to shake things up and instigate change, it’s necessary to break free of familiar thought patterns and easy assumptions. We have to veer off the beaten neural path. And we do this, in large part, by questioning.”

_A More Beautiful Question_ – Warren Berger

Discussion & Questions
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