



Getting to Zero: Local Government Buildings

David Hewitt

Who's NBI?

- NBI is a non-profit “think tank” devoted to being a driving force for efficient buildings
- We focus on “What’s Next” for small and mid-size commercial buildings: research, guidance and policy
- Interest areas include:
 - Advancing effective building codes
 - Design guidance for new buildings
 - Optimal operation of existing buildings
- Based in Vancouver WA, NBI works across the US and Canada



Background on ZNE Involvement

- Worked on ZNE for about 6 years
 - On the Board of International Living Futures Institute, USGBC, Seattle 2030
 - Consultant to the CA Public Utility Commission on ZNE “Big Bold” for commercial buildings
 - Worked with NASEO on Commercial Buildings Collaborative and to accelerate efforts at the state level.
-

Background

Getting to Zero 2012 Study

- First national status report
- Includes:
 - lists of buildings
 - building characteristics
 - design strategies
 - technologies
 - costs
 - energy savings
 - project profiles

nbi new buildings
institute

research report
March 2012



Getting to Zero 2012 Status Update:
A First Look at the Costs
and Features of Zero Energy
Commercial Buildings

With support from:



Definitions

- **ZNE Buildings:**

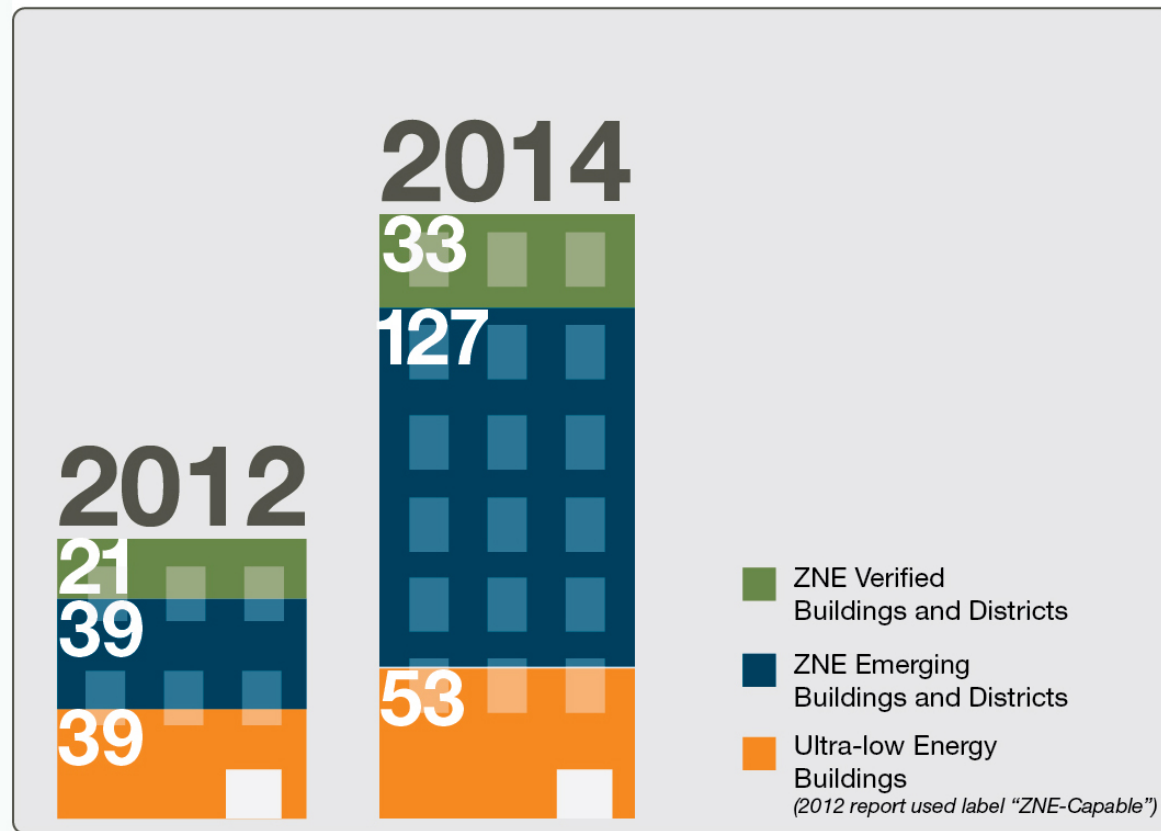
- **ZNE-Actual** - 1 year or more of measured energy data at ZNE performance (renewable energy generated onsite equals other energy); reviewed by a third party
- **ZNE-Emerging** – net zero targets but early in design, operations or data not yet reviewed

- **Ultra-low Energy**

- **Low-energy building** compared to peer energy use. **Not currently targeting net-zero** performance through onsite renewables. May be pursuing ZNE through district or renewable energy credits.

Number of ZNE Projects from 2012 to 2014

Number of ZNE Projects from 2012 to 2014



ZNE and Ultra-Low Buildings are Possible in Many Building Types Across the US



**Small-Med Commercial
Offices**



K-12 Schools



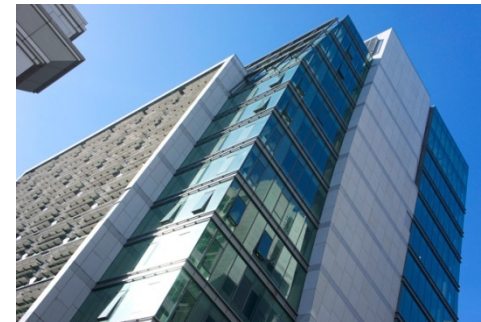
Large Office Facilities



Environmental Centers

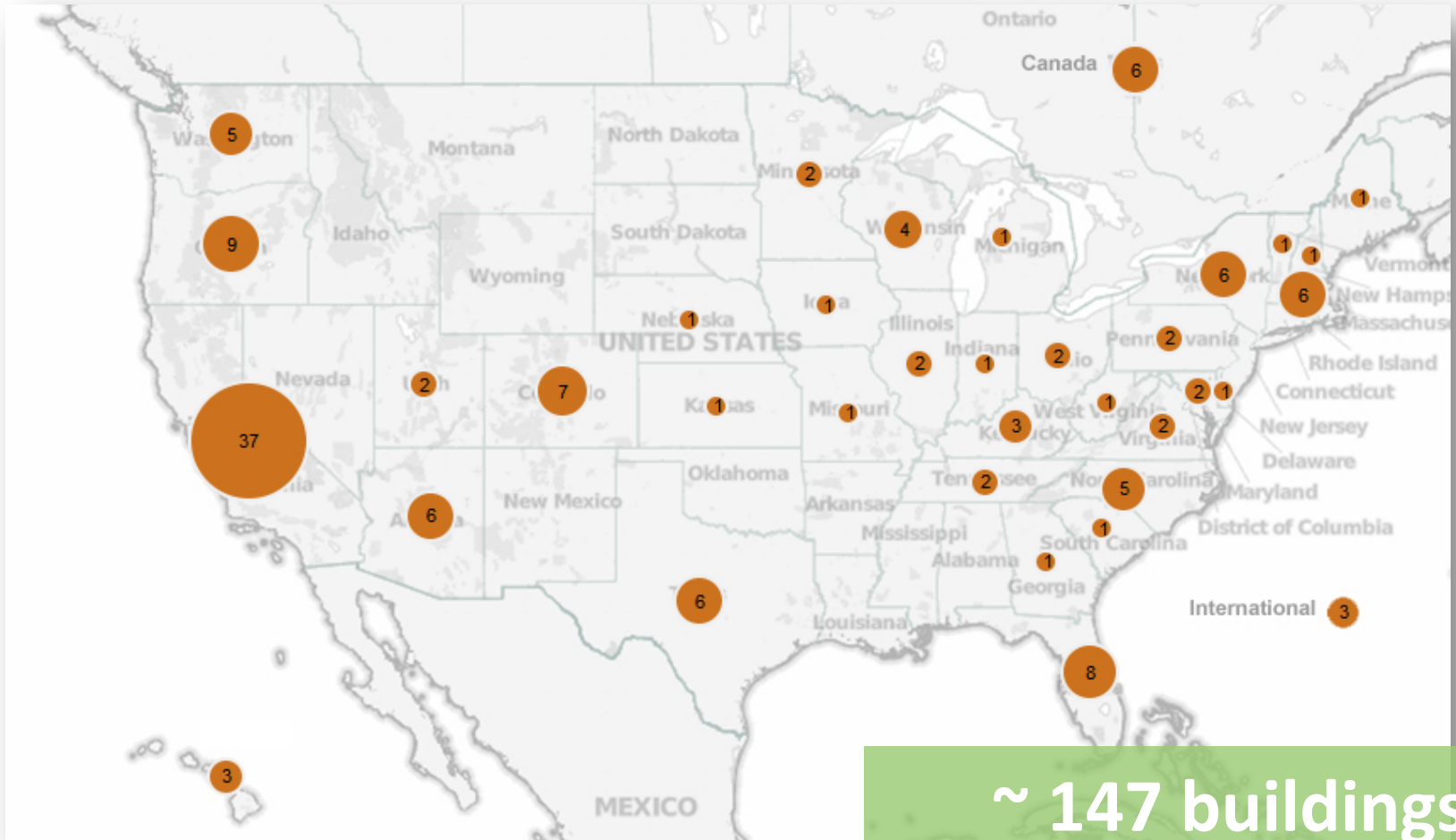


**Higher Education
Institutions**



Government Offices

Locations: 2014 ZNE Buildings



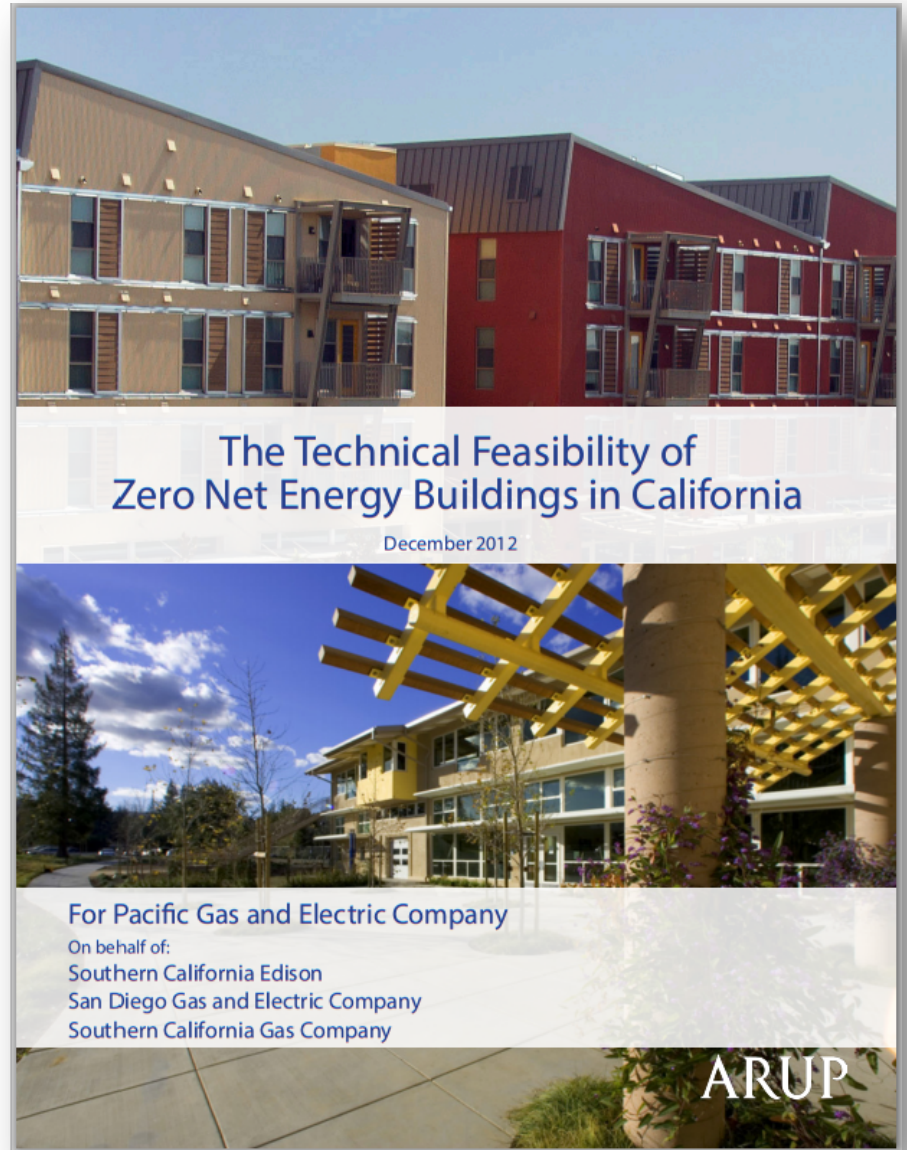
**~ 147 buildings
in 37 states!**

Insights

- ZNE offers a clear and **aspirational** target
- It is hard - a **process** not a static outcome
- **High performance first** – lower energy use lowers PV cost
- Growth and opportunities in repeatable buildings (**schools, banks, small offices**)
- **District**, community, campus level offer cost and scaling efficiencies
- Actual ZNE happens **downstream of design** - operational focus, tenant behavior focus

So, how much does this ZNE
stuff cost anyway?

“The study’s central finding is that ZNE buildings will be technically feasible for much of California’s new construction market in 2020.”



The Technical Feasibility of
Zero Net Energy Buildings in California

December 2012

For Pacific Gas and Electric Company

On behalf of:

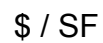
Southern California Edison

San Diego Gas and Electric Company

Southern California Gas Company

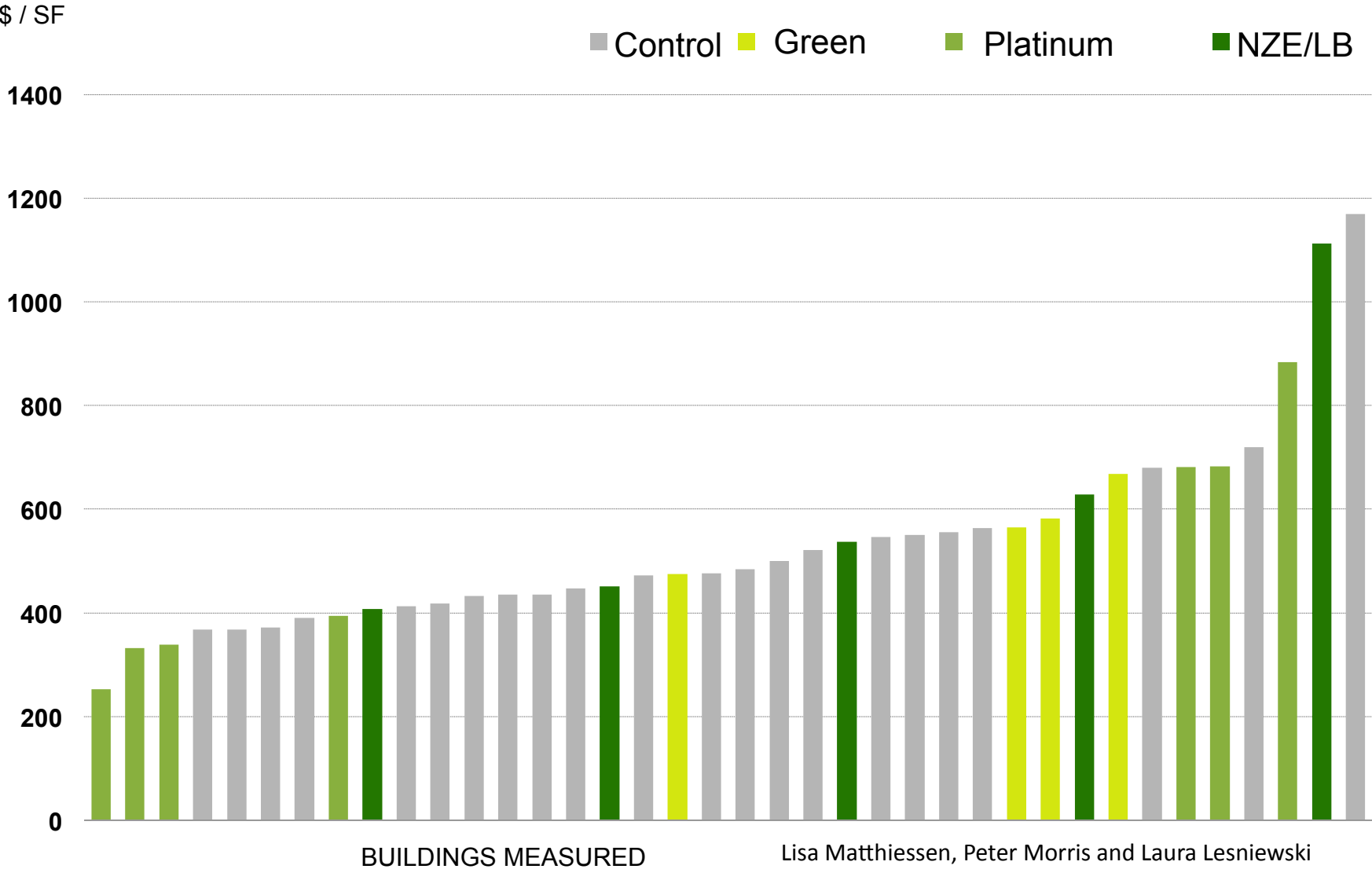
ARUP

statistical analysis

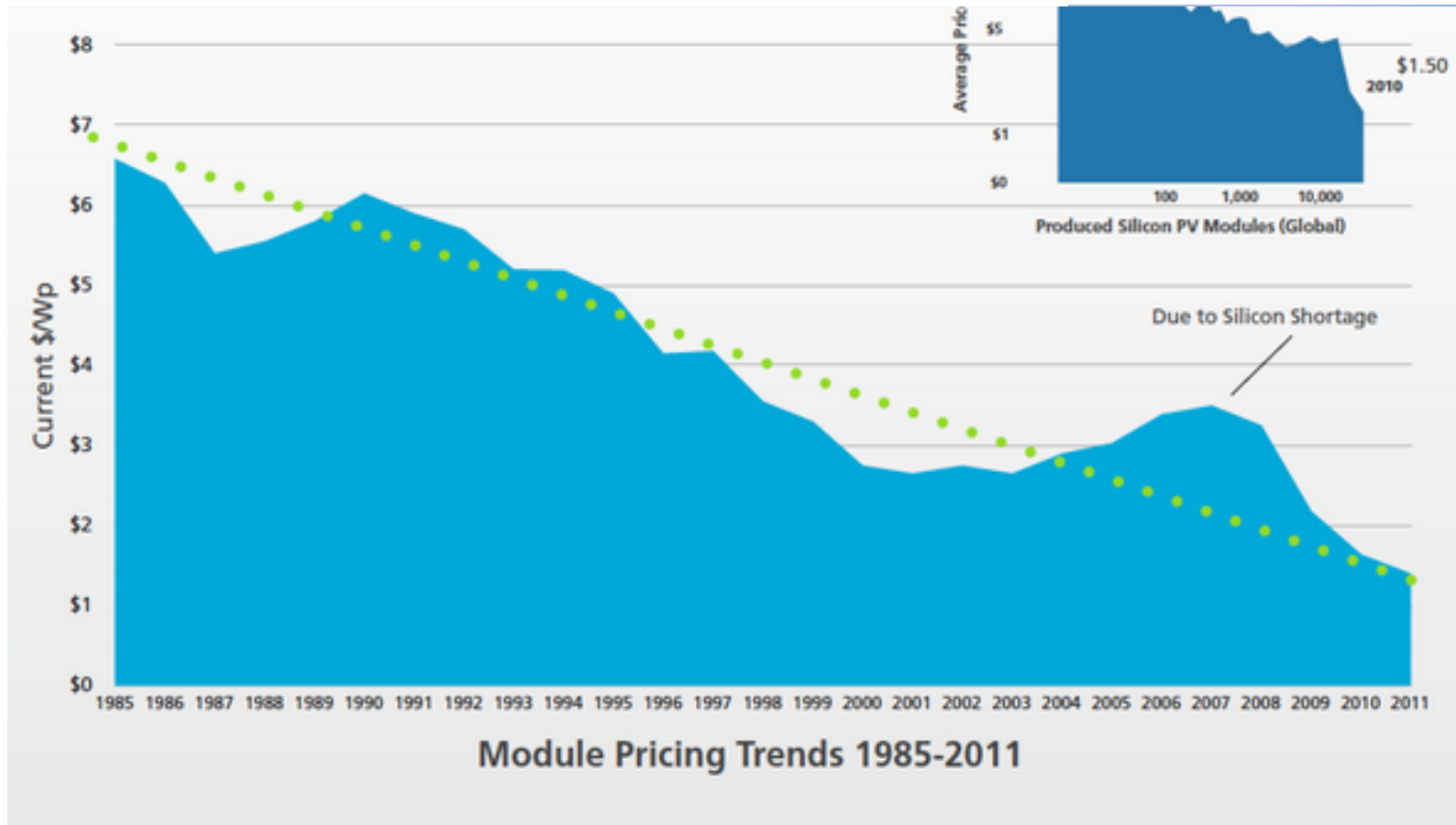


community centers

statistical analysis



PV cost trend makes ZNE accessible



Source: P. Mints, Navigant Solar Services Program, 2011



Report Findings:

- Costs for getting to zero are difficult to distinguish from overall project costs
- 1-12% premium for energy efficiency
- 5-19% for net zero energy
- ROI for energy efficiency alone 5-12%
- ROI for net zero up to 30%

www.newbuildings.org

NET ZERO AND LIVING BUILDING CHALLENGE FINANCIAL STUDY:

A COST COMPARISON
REPORT FOR BUILDINGS IN
THE DISTRICT OF COLUMBIA

PREPARED FOR:



PREPARED BY:

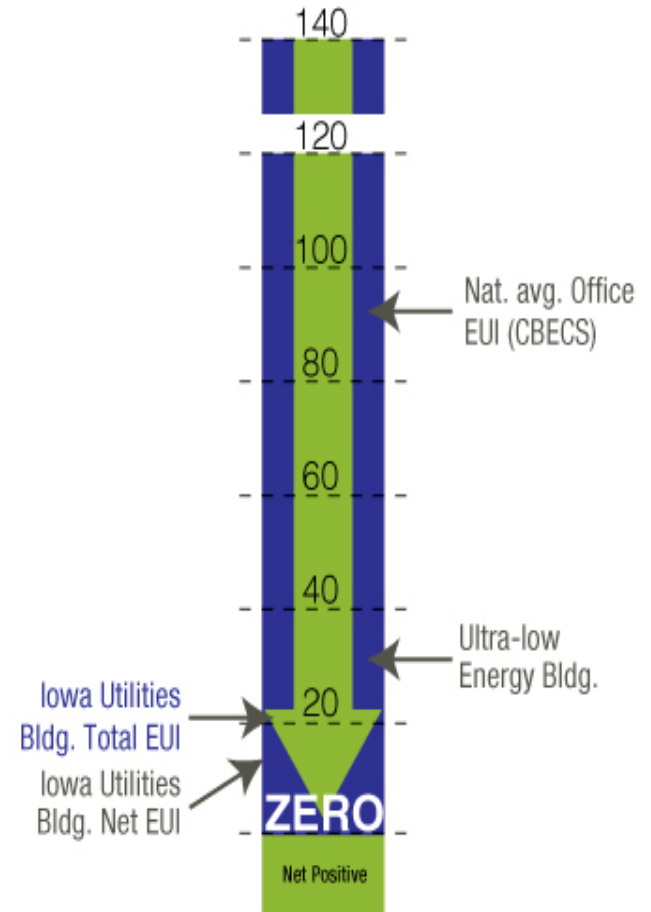




$$21 - 5 = 16$$

BUILDING'S TOTAL EUI RENEWABLE PRODUCTION EUI BUILDING'S NET EUI

Site Energy Use Index (EUI) kBtu/sf/yr



COMMUNITY PLANNER

ay

ly Hilly

ts of all ages and skill levels encouraged to bundle up and join Cascade Bicycle Club as they kick off the cycling season with a ride around Bainbridge Island. The ride begins on Win-Way at the end of the ferry loading ramp and the course is open for riders from 8 a.m. to 10 a.m.

e: Registration by the Win-Way ferry dock

\$30

www.cascade.org

ving Berries and ll Fruit With Watts

about variety selections, placement, maintenance and harvest. Topics will include raspberries, blackberries, raspberries, blueberries, grapes, kiwis and others.

e: Valley Nursery, 20882 Road NE, Poulsbo

i: 1 to 2 p.m.

Free

www.valleynurseryinc.com

ly Fairytale Ball

rate the joy of childhood with the whole family. Kids dressed up as your favorite fairytale character, fairy or hero. Enjoy music, dance, eats, face painting, make-up and games.

e: The Charleston Ballroom, 312 N Callow Ave., Porton

i: 2 p.m.

KITSAP TIME CAPSULE | A WEEKLY LOOK AT THE PAST



Fifth Street

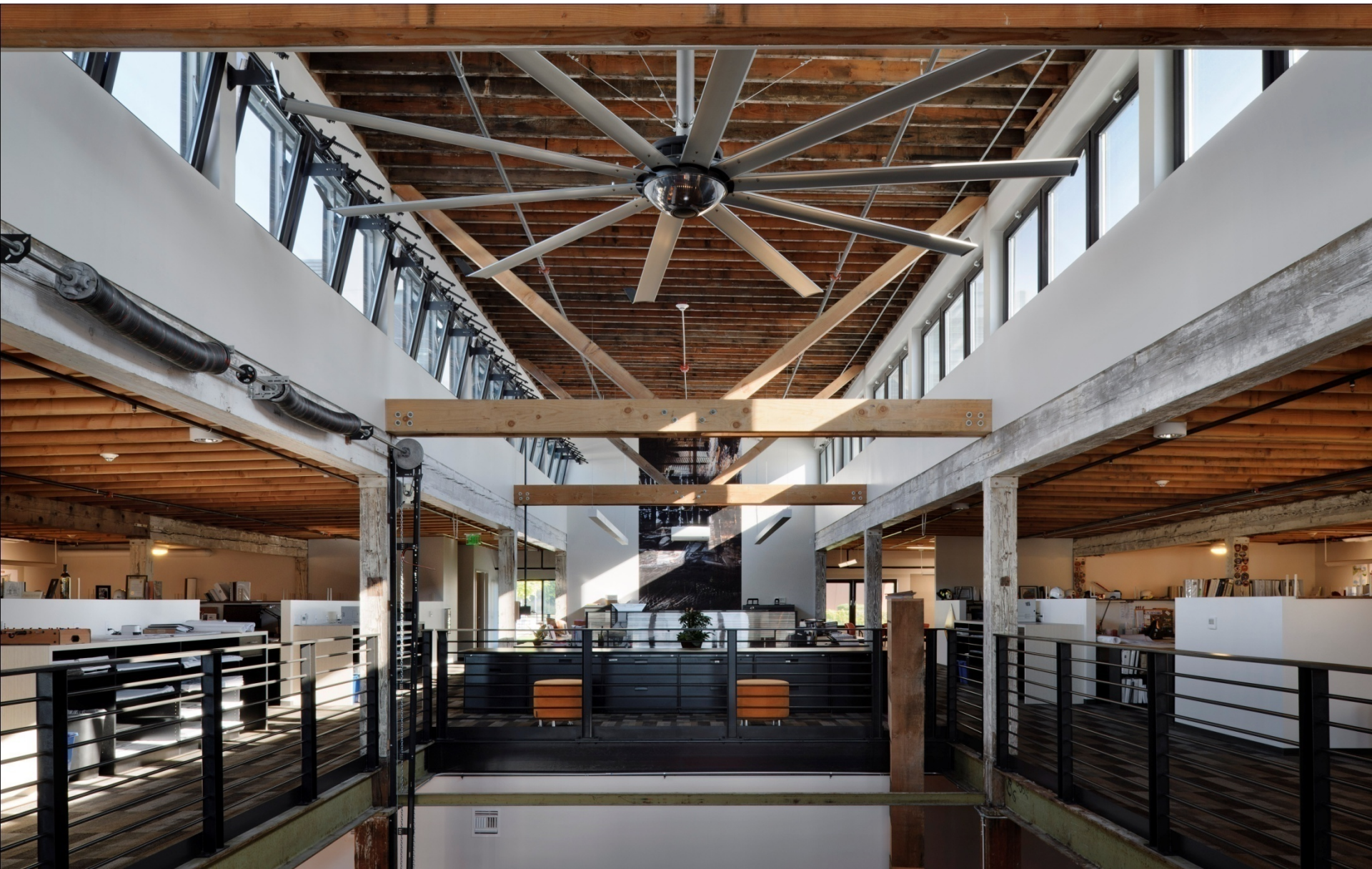
| The Sears upper annex and automotive garage on Fifth Street in the early 1950s. The property now is being developed by Rice Fergus Miller.

KITSAP COUNTY HISTORICAL SOCIETY | KITSAPHISTORY.ORG











11/30

What can you do?

Selected Policies

- Codes Roadmap
 - Benchmarking
 - Rate Policies
 - Utility Program
 - Tax Incentives (density bonuses, fast permitting)
 - ZNE Goals for Public Buildings
 - Target Markets (Schools, redevelopment districts)
 - District Scale Renewables
-

NBI Resources

www.newbuildings.org

- Nine Policies to advance ZNE for state and local governments w/ examples
 - Communications Tool Kit
 - Database and Case Studies
 - District of Columbia Study
 - Early Adopters Workshop: Date October TBD
 - UC San Diego – Venter Institute's ZNE building
 - Sponsorship in conjunction with SDG&E
-