Zero Energy Performance Index (zEPI) and Outcome Based Energy Code

Barry Hooper
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Thank You

Green codes in San Francisco are supported by

• San Francisco Energy Watch Strategic Energy Resources
• BayRENCodes and Standards Program
• Investor Owned Utility Statewide Codes and Standards Program

... and the ongoing development of an Outcome Based Energy Code proposal incorporates content from each.
Zero Net Energy Goals & California Codes

Combine Efficiency with Solar – and ZNE is Achievable

Can this inform a reach code?

- Continue with 15% T24 margin?
- ZNE = 100% margin??
- Just add solar?
Was T24 2013 The End of the Line for multifamily reach codes in CZ3?

- A 15% cut in whole building energy from regulated loads required cutting modeled ‘Performance’ loads in half

OR:

- 15% cut in modeled ‘Performance’ loads cut expected energy use only 4.5%

Source: ARUP (2014)
Need a New Approach

Current reach codes have structural limitations.

- Unregulated building loads form a bigger part of total energy consumption.
- Design codes are limited in scope.
- Design ≠ Reality
- Code baseline “moves” with each update.

Must enable pathways to Zero Net Energy goals.

- “Percent better” is relative, but “zero net energy” is absolute.
Zero Energy Performance Index (zEPI)

- “HERS-style” 0-100 scale
- Based on measured energy consumption (not estimated)

Goals
- Simple
- Absolute, “Zero = 0”
- Fair
- Stable
- Applicable to common building uses

Outcome Based Code

Measures *actual energy consumption* of the building in operation. Compares building’s consumption to a *code target maximum*.
Outcome Based Code Concept for San Francisco/California

Energy Code Title 24 Part 6

Mandatory Efficiency

San Francisco Green Building Code

Renewables or Green Roof

Binding Performance Target AND 0% T24 Margin

Non-Binding Performance Target AND -10% T24 Margin
BayREN 2016 Project

- Test zEPI target-setting online tool against actuals
- Update zEPI target-setting tool for T24 2016, in Climate Zones 2,3,4,12
- Peer review draft code
- Share results