



Policy Out Front: Pulling Ahead of Standard Practice

Role of Policy to Support ZNE

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Lessons from a ZNE Early Adopter State

California Energy Efficiency Strategic Plan - 2008

Big Bold Energy Efficiency Strategies

Commercial New Construction

- All new commercial construction in California will be zero net energy by 2030.

Residential / Small Commercial HVAC

- Heating, Ventilation, and Air Conditioning (HVAC) industry will be reshaped

Residential New Construction

- All new residential construction in California will be zero net energy by 2020.

Low-Income Energy Efficiency

- All eligible homes energy-efficient by 2020

September 2008

California **long term ENERGY EFFICIENCY STRATEGIC PLAN**

ACHIEVING **MAXIMUM ENERGY SAVINGS** IN CALIFORNIA FOR 2009 AND BEYOND

RESEARCH & TECHNOLOGY
COMMERCIAL SECTOR
 AGRICULTURAL SECTOR

WORKFORCE EDUCATION & TRAINING
 CODES & STANDARDS
LOCAL GOVERNMENTS
 RESIDENTIAL SECTOR INCLUDING LOW INCOME
 MARKETING, EDUCATION & OUTREACH

INDUSTRIAL SECTOR

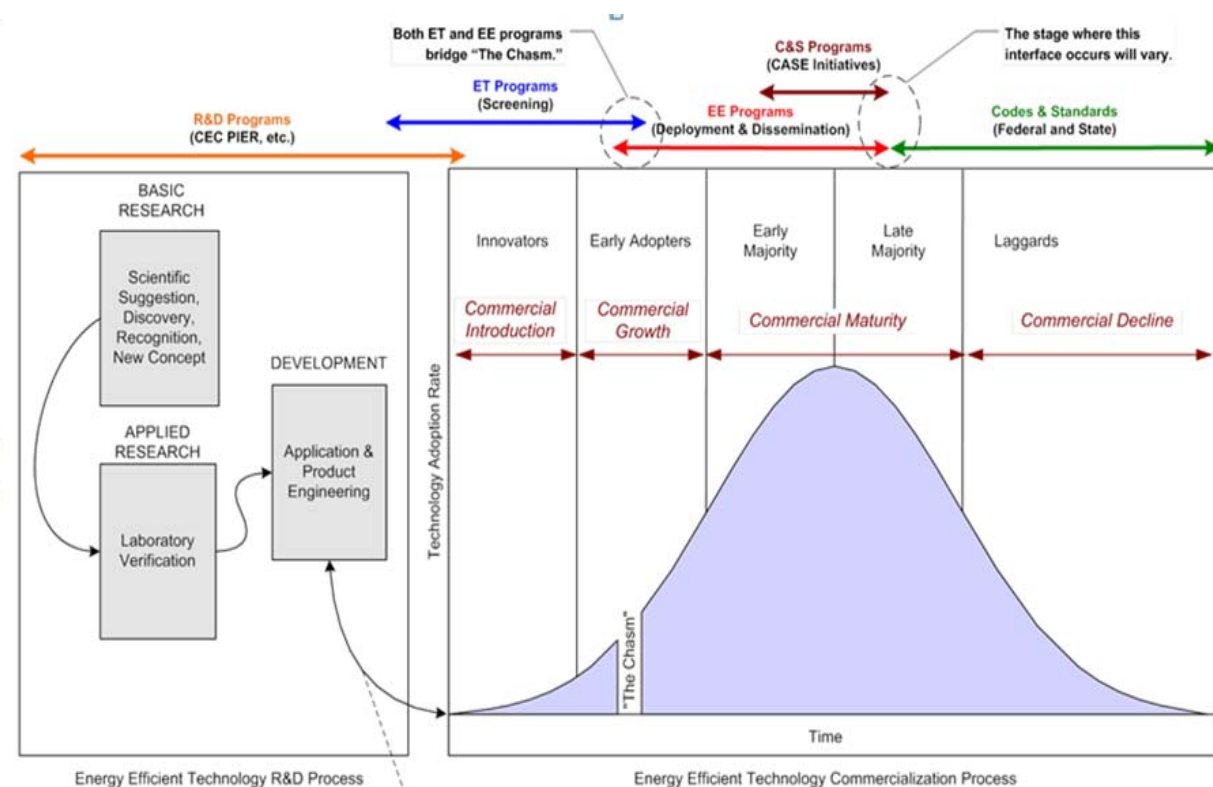
California Public Utilities Commission

www.CaliforniaEnergyEfficiency.com DSM COORDINATION AND INTEGRATION

Moving from Intent to Practice

- Early adopters see ZNE as inevitable
 - Want to be ahead of the curve
 - Willing to experiment and try new ideas
 - Their motivations are inherently different than the rest of the market
- Essential Challenge is to go from a handful of early adopters to
 - The broader construction industry
 - An industry that is tradition bound and resistant to radical changes imposed on 'standard practice'
- **This needs a market transformation initiative**

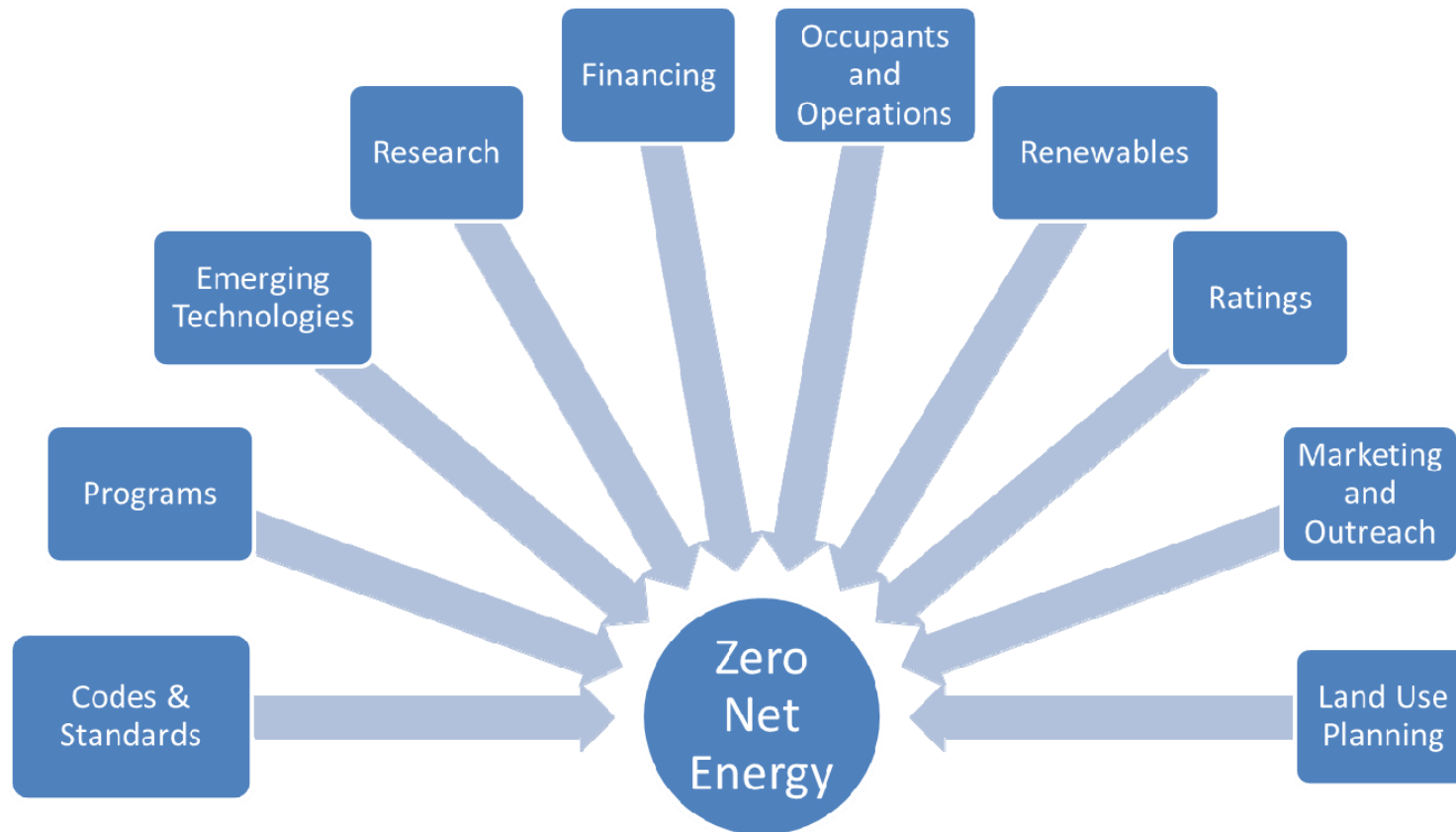
Traditional “Bottom Up” Approach to Market Transformation and Codes



--- New technologies and applications may cycle between Product Engineering and Commercial Introduction several times until the correct mix of features, performance, price, availability, etc. are reached. Degree of failures and risk are high.

- Diffusion of innovations
- C&S “Exit Strategy”
- Passive Recipient of market Development
- Slow evolutionary progress

ZNE Goals Dictate a Different Approach



Source: "Road to ZNE: Mapping Pathways to ZNE Buildings in California", TRC, 2012

Top-Down Approach to ZNE

- Define an end-goal target
 - Clear definition of what ZNE means
 - Identify stakeholders
- Consolidate top management support
 - Regulators, legislators, utilities and industry groups need to “buy-in” to the goal
- Develop a well-coordinated top down plan
 - Identify pathways and dependencies
 - Orient portfolio towards goals
- Implement the plan
 - Check-in regularly and update

Statewide Energy Policy driven by ZNE Goals

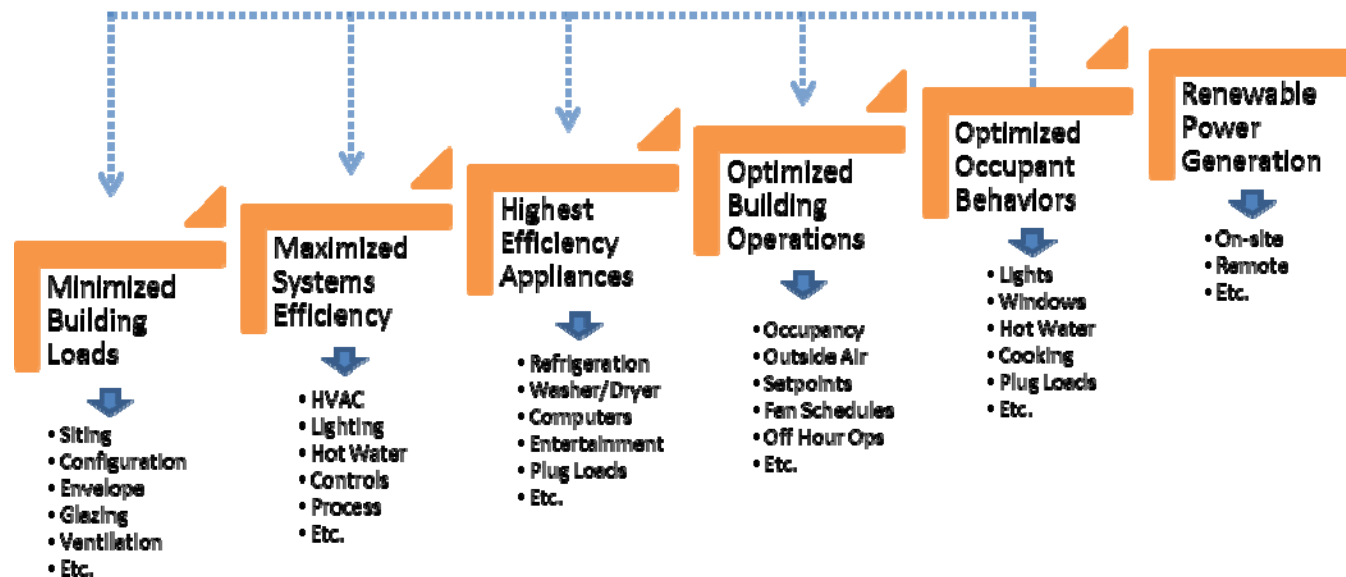
- Active and coordinated efforts necessary to achieve ZNE goals
 - Especially in light of aggressive timelines
- End goal for ZNE is to require ZNE construction through building energy codes
 - Title 24, part 6 in California
- The California Integrated Energy Policy Report (IEPR) identifies ZNE as goal for building energy codes
 - Emphasizes energy use targets to support energy efficiency

Internalize ZNE Goals in Portfolio Planning

- New construction programs
 - IOU and POU residential new construction programs have moved to support ZNE EUI targets
- Focus on target markets that have multiple reasons to pursue ZNE goals first
 - State buildings, schools, warehouses
 - Prop 39 funds for schools being leveraged for ZNE
- Integrated demand side management
 - Coordinated programs for EE, DR, DG
- Evaluate grid impacts of ZNE goals
- Conduct research to overcome technical barriers

Energy Efficiency as a Foundation for ZNE – As a Policy Goal

- “All cost-effective energy efficiency”
 - Should be the foundation of any ZNE definition or metric



Steps to ZNE Buildings

- Distributed renewable generation critical to ZNE goals
 - Need to address cost and feasibility issues for ‘all’ buildings

Codes and Standards

- CA IOU and CEC have established a tactical plan to develop ZNE building energy codes
 - By 2019 for residential buildings and 2030 for nonresidential buildings
 - Identified key measures for inclusion in Title 24 (building efficiency) and Title 20 (appliance efficiency standards) in 2016/2019
 - Make quality construction the foundational element of ZNE buildings
- CEC in the process of developing ZNE targets for codes
 - CEC to update cost-effectiveness metrics to account for distributed generation
- Need to Address
 - Federal pre-emption of state standards
 - Increasing plug loads and appliances energy use

Thank you

Questions?

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