Green Building Code Priorities and Policy: An Elected Official's Perspective

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Outline

- Background
- Green Building Policy Overview
- Current Enforcement schemes
- Enforcement Options: Pros and Cons
- Looking ahead

Background: Jeff Aalfs

- Council Member, Portola Valley, 2011-Present
- ASCC Member, 2008-2011
- Formerly a laboratory biologist
- Currently an Energy and Green Building Consultant
  - Certified Energy Analyst (CABEC)
  - HERS Rater
  - Green Point Rater & CGBP
- Vice Chairman, Peninsula Clean Energy (San Mateo County CCA entity; Government-organized electricity generation)
  - Offering Renewable and GHG-free electricity to San Mateo County
  - Promoting local efficiency and renewable projects.

Background: Portola Valley

- Located Near Stanford University
- Established 1964
- Population: ~4300; 1,800 homes
- Mainly single-family residential land use
- "Green" ethos:
  - Open Space
  - Slope-gradient density planning policies
  - Sustainability Element in General Plan
  - LEED Platinum Town Center facilities, completed 2009 (privately funded)
- "Green" credentials:
  - Brandi de Garmeaux, Sustainability Manager since 2007
  - Keith Weiner (CGBP): Building Inspector hired in 2016

Green Building Policy Goals: The Big Picture

- Energy:
  - Reduced Energy Consumption
  - Reduced Carbon Footprints
    - Climate Action Plans
    - GHG Inventories
    - Kyoto Mayors' Agreement
  - Public Image on Climate Change
- Water:
  - Water Conservation
  - Environmental Responsibility

Everyone agrees "green" is good; the questions are about how to achieve it.

Building Energy Standards: Title 24 (overview)

- Title 24, Part VI ("Title 24"): Building Energy Efficiency Standards.
  - Wide range of building requirements (insulation, window ratings, HVAC and water heating system efficiency, renewables)
  - 3-year code cycle; tightening to enact Zero Net Energy Standard, for residential buildings in 2020.
- Benefits:
  - Reduced carbon footprints
    - CA per capita energy consumption has been flat since 1974; typical US state has seen ~50% increase
  - Delayed/avoided electricity generation/transmission investments

Title 24, Section X: Green Building Code ("CAL Green")

- A wide variety of measures with different goals:
  - Water savings
  - Energy efficiency
  - Reduced use of materials
  - Reduced waste
  - Promotion of Renewables
- Relates to all other codes and standards:
  - Energy Code
  - Plumbing Code
  - Mechanical Code
  - Green Point Rating (part of some reach codes)
- Enforced by local jurisdictions

Green Building enforcement

- Plan Check for new or altered buildings:
  - CF1R submitted to building agency
  - Cal Green measures included in plan notes
  - Reviewed by agency, or by outside plan checker
  - Approved as part of permit issuance
  - NEW: Registration of CF1Rs: CalCERTS, CHEERS, USERA
- Field inspections
  - Site inspections by local officials, particularly for CALGreen.
  - Paperwork completed and filed by installing contractors
  - NEW: Required third party testing of specific systems and assemblies
  - NEW: Registration of CF2Rs (Installer Certificates) and CF3Rs (Rater Certifcates)

Current enforcement regimes:

- Inspection of plans and job sites by building officials
  - Increased Green Building training for officials
- Requirements for checklists, completed by applicant
  - CALGreen
  - Build It Green
- Checklists completed by third-party raters (typically Green Point Raters
- Required certification:
  - Green Point Rated and Certified Projects
- Building department review of registered documents on registry
  - CalCERTs, CHEERS, USERA
  - Verify that all needed tests are done

Added enforcement option:
Sustainability Training for Building Inspectors

- Training on Energy Code, CALGreen and other aspects of sustainability
- Available on-site or in convenient off-site locations
- Advantages:
  - Widely available
  - No cost or minimal cost
  - Puts knowledge in hands of responsible official
- Shortcomings:
  - Building Inspectors have limited time and bandwidth

Added enforcement option: Client-completed checklists

- Require applicants to complete one or more checklists as part of permit:
  - CalGreen Measures
  - Green Point Certification
- No independent verfication by third-party; option for review by building staff
- Advantages: no cost to applicant; minimal time and effort; raises awareness of issues and options
- Disadvantages: no enforcement value; no verification of performance or benefits

Added enforcement option: Third-party checklists

- Checklists completed by certified, third-party rater
  - CALGreen checklist (adapted from code)
  - Build It Green Checklist
  - Typically requires a Green Point Rater
- Checklist completed as part of permit; second form required at time of final inspection.
  - Both signed by third-party, certified rater
- Advantages:
  - Accountability of third-party rater
  - Verification of measures installed; could be used to track benefits
- Disadvantages:
  - Added cost and labor for applicant
  - Administrative burden for building staff

Added enforcement option: Required Certification

- Typically, a requirement for Green Point Certification through Build It Green
  - Green Point Certification requires >10% margin of compliance with the Building Energy Code ("Title 24")
- Green Point Certification required for final signoff
  - Typically, the Rater provides a letter for final sign-off, then certifies the project shortly after it is signed off.
- Advantages:
  - Verified, enhanced sustainability for the project
  - Opportunity to track future benefits
  - Green Point Rating includes Cal Green measures
- Disadvantages:
  - Added costs for applicant ($1000-2000 for a residential project)
  - Added work for building department*

Added enforcement option: Verification of registered documents

- Building official verifies that all required documents (CF1R, CF2Rs & CF3Rs) are uploaded to a qualifying registry before issuing occupancy permit.
- Advantages:
  - Easy and fast for building department
  - Takes advantage of existing requirements and processes (HERS Raters, CalCERTS/CHEERS/USERA)
  - Provides for verification of work done and potential for future quantitation of benefits
- Disadvantages:
  - May require some new understanding of registry and field testing
- Now being adopted through Bay Area

Other enforcement options, and looking ahead:

- Reach codes:
  - Cost-effectiveness studies required
  - With Energy Code moving to ZNE in 2020, these will get harder to justify in many cases.
- "Performance" studies
  - Comparing projected energy use from permit documents with measured energy use of completed buildings
    - Validation of required EE measures
    - Quantitation of contributions of non-covered end uses
      - Plug loads

Conclusions:

- There are a wide range of options to capture more benefits from green building codes
- Those options range widely in cost to implement and expected benefits
- A number of options exist to effectively capture benefits at acceptable expense (in money, labor and time)
- Councils want results with minimal investment or complication.
- Be prepared to explain both benefits and costs of proposed enforcement changes

Thanks!

- Town of Portola Valley:
  - Brandi de Garmeaux, Sustainability Coordinator
  - Keith Weiner, Building Official

- San Mateo County
  - Rachel Londer
  - Andrea Chow

- BayREN