THE NEXT GENERATION OF ENERGY EFFICIENT BUILDING DESIGN: WHERE ARE WE AND WHERE SHOULD WE BE GOING?
The Next Generation...
The Next Generation…

Revolution, Not Evolution
The Next Generation…

Consumption Efficiency
The Next Generation…

Evolutionary Thinking
The Next Generation…

Evolutionary Thinking
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Evolutionary Thinking

Commercial State Energy Code Status
As of August, 2007

- Adopted code meets or exceeds 2006 IECC / ASHRAE 90.1-2004 or equivalent
- Meets 2003 IECC / ASHRAE 90.1-2001 or equivalent
- Meets 2001 IECC / ASHRAE 90.1-1999 or equivalent (meets EPCA)
- Precedes ASHRAE 90.1-1999 or equivalent (does not meet EPCA)
- No statewide code
- New code soon to be effective
- Significant adoptions in jurisdictions

Source:
Building Codes Assistance Project
www.bcap-energy.org
The Next Generation…

Evolutionary Thinking

<table>
<thead>
<tr>
<th>Sustainable Sites</th>
<th>SITE-CIVIL</th>
<th>ARCH</th>
<th>M-E-P &amp; BAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preq 1</td>
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<tr>
<td>Credit 1</td>
<td>Erosion &amp; Sedimentation Control</td>
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<td>Credit 2</td>
<td>Urban Redevelopment</td>
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<td>Credit 3</td>
<td>Brownfield Redevelopment</td>
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<td>Credit 4.1</td>
<td>Alternative Transportation, Public Trans.</td>
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<td>Credit 4.2</td>
<td>Alternative Transportation, Bikes Shelters</td>
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<td>Credit 4.3</td>
<td>Alternative Transportation, Alt. Fuel</td>
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<td>Credit 4.4</td>
<td>Alternative Transportation, Parking Capacity</td>
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<td>Credit 5.1</td>
<td>Reduced Site Disturbance, Open Space</td>
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<td>Credit 5.2</td>
<td>Reduced Site Disturbance, Footprint</td>
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<td>Credit 6.1</td>
<td>Stormwater Management, Rate and Quantity</td>
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<td>Credit 6.2</td>
<td>Stormwater Management, Treatment</td>
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<td>Credit 7.1</td>
<td>Reduce Heat Islands, Non-Rooftop</td>
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<td>Credit 7.2</td>
<td>Reduce Heat Islands, Roof</td>
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<td>Credit 8</td>
<td>Light Pollution Reduction</td>
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<th>Water Efficiency</th>
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<tr>
<td>Credit 1.1</td>
<td>Water Efficient Landscaping, 50% Potable</td>
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<td>Credit 1.2</td>
<td>Water Efficient Landscaping, 60% Potable</td>
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<td>Credit 2</td>
<td>Innovative Wastewater Technologies</td>
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<td>Credit 3.1</td>
<td>Water Use Reduction, 20% Reduction</td>
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<td>Credit 3.2</td>
<td>Water Use Reduction, 30% Reduction</td>
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<th>Energy &amp; Atmosphere</th>
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<tr>
<td>Preq 1</td>
<td>Fundamental Building Systems Cx</td>
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<td>Preq 2</td>
<td>Minimum Energy Performance</td>
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<td>Preq 3</td>
<td>CFC Reduction in HVAC&amp;R Equipment</td>
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<td>Credit 1.1</td>
<td>Optimize Energy Performance</td>
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<td>Renewable Energy</td>
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<td>Credit 3.1</td>
<td>Additional Commissioning</td>
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<td>Credit 4</td>
<td>Ozone Depletion</td>
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<td>Credit 5</td>
<td>Measurement &amp; Verification</td>
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<td>Credit 6</td>
<td>Green Power</td>
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<th>Materials &amp; Resources</th>
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<tr>
<td>Preq 1</td>
<td>Storage &amp; Collection of Recyclables</td>
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<tr>
<td>Credit 1.1</td>
<td>Building Reuse, Maintain 75% of Existing Shell</td>
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The Next Generation…

Evolutionary Thinking

LINEAR
The Next Generation…

Revolutionary Thinking
The Next Generation...

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The Next Generation…

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The Next Generation…

Revolutionary Thinking
Imagine a building designed and constructed to operate as elegantly and efficiently as a flower.

Imagine a building informed by its eco-region’s characteristics, and that generates all of its own energy with renewable resources, captures and treats all of its water, and uses resources efficiently and for maximum beauty.
The Next Generation…

Revolutionary Thinking

NON-LINEAR
The Next Generation…

- Evolutionary Thinking
  - Habits
  - Threshold Thinking
  - Linear Progression of Thought
  - LEED, Energy Code revisions

- Revolutionary Thinking
  - Innovation
  - Aspirational Thinking
  - Leap of Faith and Intuition
  - 2030 Challenge, Living Building Challenge
The Next Generation…

Why Evolutionary Thinking Is Not Good Enough
The Next Generation…

Jevons Paradox
The Next Generation...

Jevons Paradox
The Next Generation…

Jevons Paradox

Primary Energy Use in US Buildings, 1978-2004

Source: EIA 2004
The Next Generation…

SO HOW DO WE PROPOSE TO SAVE THE WORLD?
The Next Generation...

Schaar’s Bluff
Nininger Twp, MN
The Next Generation…

- Evolutionary Thinking
  - Pressure Equalized Rain Screen Technology
  - Double R-values in walls and roof
  - Solar Orientation/Shading
  - Occupant/Timer/Daylight Sensor Lighting
  - Energy/Heat Recovery
  - Natural Ventilation
  - Site Harvested Wood (Interior Siding)
  - Air Barrier Inspection
  - On-site Renewable Energy
  - LEED Compliant
The Next Generation...
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- Revolutionary Thinking
  - Adjust Comfort Range Expectations
  - Near Zero Net Energy Building
  - Rain Water Cistern for Gray Water
  - Permaculture Sensibility
The Next Generation...
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