Welcome to the Getting to Outcome-Based Performance Summit
Introductions
NEVER GIVE UP. EVER.
NBI... the virtuous cycle

Vision

Thought Leadership

Research

Policy & Codes

Solutions

NBI © 2014
Program-wide, energy modeling turns out to be a good predictor of average building energy performance for the sample. However, as with the other metrics in the study, there is wide scatter among the individual results that make up the average savings. Some buildings do much better than anticipated... On the other hand, nearly an equal number are doing worse - sometimes much worse.
# NBI Outcome-Based Codes Efforts

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
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<tbody>
<tr>
<td>11/08/09</td>
<td>Future of Codes Meeting, Seattle (series kick off), NBI, with NEAA</td>
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<tr>
<td>5/15/10</td>
<td>‘Future of Codes’ Whitepaper, NBI</td>
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<td>5/14/10</td>
<td>Three Outcome-Based Codes Proposals Submitted to IGCC, by NBI, DOE, and EPA</td>
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<td>7/15/10</td>
<td>Outcome Based Codes Summit 1, Seattle, NBI, with NEAA</td>
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<td>8/20/10</td>
<td>‘Model Code for Existing Buildings’ Whitepaper, NBI, PGL, City of Seattle</td>
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<tr>
<td>8/20/10</td>
<td>NBI participates in two OBC Sessions at ACEEE Summer Study</td>
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<td>11/10</td>
<td>IGCC with comments released, NBI, DOE, EPA, BOMA, AIA, NTHP, NIBS and others work to resolve OBC proposal differences</td>
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<tr>
<td>4/14/11</td>
<td>National Summit on Outcome-Based Codes NBI, with NEAA, NIBS, NTHP, and AIA</td>
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<td>11/11</td>
<td>IGCC Final Action Hearings, OBC proposal fails by one vote</td>
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<td>11/12/12</td>
<td>‘Establishing a Pathway to Outcome-Based Codes’ Whitepaper, NBI</td>
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<td>5/2/14</td>
<td>Outcome-Based Code Pathway Adopted by IGCC Committee</td>
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<td>8/4/14</td>
<td>Summit on Getting to Outcome, Seattle, NBI and NIBS</td>
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Establishing a Pathway to Outcome-Based Codes Policy
November 12, 2012

Prepared by:
Mark Frankel, Technical Director
New Buildings Institute
Code departments are under increased pressure to enforce a myriad of code requirements—often with less personnel and resources than in the past, all while communities continue to address sustainability and decreased energy use.

Code departments have the perpetual struggle of trying to achieve community goals for energy-efficient buildings while balancing reduced department staffs and limited budgets. That is why a diverse group of building industry stakeholders have come together to identify a solution—an Outcome-Based Pathway for Energy Use.

This new pathway proposed for the International Green Construction Code (IgCC) (proposal GEW-147) sets energy-use targets by building type and climate zone, with the goal of actually achieving expected energy results while reducing the burden on code departments to enforce beyond-minimum code requirements.

### The Benefits:
- Utilizes all potential opportunities to save energy while giving maximum flexibility to the design team
- Moves beyond component-based requirements to capture systems-level, energy-saving opportunities
- Allows for energy-efficiency results recognizing the fiscal, technical and personnel limitations of today’s code departments

### How it Will Work:
1. Once a jurisdiction adopts the IgCC, the outcome-based pathway would become one of three pathways to meet the energy performance requirements.
2. Together, the design team and the building owner, in consultation with the code department, would select to pursue the outcome-based pathway, thereby committing to meet energy targets and provide energy use results post-occupancy.
3. The code official and design team would assure the design and construction meet the baseline requirements of the
The Challenges We Face...

- Difficult to connect design to operations
  - To get components to operate as designed
- Facilities & operations - buildings more complicated & new to them
  - Operators turn off systems/functions
- Higher Ed/hospitals/public buildings faculty
  - Supportive in design but don’t want to think/worry about operations
  - Facilities guys “give up”
  - Facilities staff turn over
  - After turn over—don’t have money to have A&E come back
- Occupants don’t care about operating costs—don’t see in budget
- Doctors are not there to save energy, there to make patients happy/healthy
- Different skill levels of facility staff depending on building type
- Life cycle cost - everyone talks about in hiring, but lose focus during design, focus on budget
Performance Range (all projects w/ MP data)

National CBECS average for Commercial Buildings

EUI (kBtu/sf/yr)

Avg. EUI 21

n=95
Energy Code Stringency

- 90.1-1975
- 90.1-1989
- 90.1-1990
- 90.1-2001
- 90.1-2004
- 90.1-2007 (IECC 2009)
- 90.1-2010 (IECC 2012)

Year 2000 Baseline
- A2030 Goals
- Code Stringency
Range of Outcome

Year 2000 Baseline
A2030 Goals
Code Stringency

Energy Use Index (1975 Use=100)

Year


90-75
90.1-1989
90.1-2001
90.1-2004
90.1-2007 (IECC 2009)
90.1-2010 (IECC 2012)

11% savings
5% savings
19% savings
Building Operation: Post Construction

Features that can be delivered/required in the construction contract/process:

- Acceptance Testing (incl., economizers, controls, feedback systems etc)
- Infiltration Testing/Air Barrier Commissioning
- Metering/Meterability
- Equipment Fault Detection and Diagnostics (FDD) Capabilities
- Updated OPR
- Operations guide
- Maintenance schedule
- As-Built Drawings
We Need to Evolve Processes

Design + Construction + Operations & Maintenance:

Design Team → Construction Team "→ Operations & Maintenance Team
MONDAY, AUGUST 4, 2014

8:30 – 9:00 am  Continental Breakfast

*Part 1: Establishing the Vision*

9:00 - 9:20 am  Welcome (Objectives and Outcomes)
*Ralph DiNola*
Executive Director, New Buildings Institute

9:20 – 9:35 am  Attendee Introductions

9:35 – 9:50 am  Identification of the Issues: Survey Results
*Ryan Colker*
Presidential Advisor, National Institute of Building Sciences

9:50 – 10:35 am  What’s our End State?
*Mark Frankel*
Technical Director, New Buildings Institute

10:35 – 10:40 am  Introduction to Breakout Groups
*Mark Frankel*

10:40 – 10:55 am  Break/Assembly Time

10:55 am – 12:15 pm  Breakout Session I: Implications for Individual Disciplines

12:15 - 12:45 pm  Lunch
12:45 – 1:15 pm  Reports from Breakout I/Discussion  
Moderator: Ryan Colker

Part 2: Overcoming the Hurdles

1:15 – 2:45 pm  Breakout Session II: Tools, Technologies and Practices to Support Outcomes

2:45 – 3:05 pm  Break

3:05 – 3:35 pm  Quickfire Reports  
Moderator: Ryan Colker

Part 3: Shifting the Paradigm

3:35 – 5:00 pm  Breakout Session III: The Roadmap to Outcomes

6:30 pm  Dinner & Drinks  
Brave Horse Tavern, 310 Terry Avenue North
TUESDAY, AUGUST 5, 2014

8:30 – 9:00 am  Continental Breakfast

Part 4: From Concept to Reality

9:00 – 9:45 am  Welcome and Recap  
Henry L. Green, Hon. AIA  
President, National Institute of Building Sciences

9:45 – 11:00 am  Breakout Session IV: Implementing a Multi-Faceted Solution

11:00 - 11:30 am  Break

11:30 am – 12:30 pm  Breakout IV Reports/Discussion  
Henry L. Green

12:30 - 1:00 pm  Wrap up/Next Steps  
Moderator: Mark Frankel

1:00 pm  Grab and Go Box Lunch

1:00 – 3:30 pm  Optional Tour of Outcome-Based Pilot Projects
Our Objectives

• Understand relevant motivations of owners, developers, institutions and design teams in relation to outcome-based approaches
• Identify challenges to implementation and possible negative impacts of outcome-based approaches and policies
• Develop strategies and framework for addressing key issues including near- and mid-term actions
Our Charge…

• What does the **End State** look like?
• What is the **Vision for our Industry**?
Potential Outcomes

• Identify leading individuals and/or organizations that commit to research and piloting
• Identify case studies to understand and address concerns with implementation of an outcome-based process
• White paper on implementation of outcome-based processes
• Creation of Risk/Reward Task Force
• A best-practices guide to help state government entities pursue these kinds of contracts
• Creation of best-practices guide for outcome-based processes