Newman Consulting Group, LLC

Consultants for Energy-Efficient and Sustainable Buildings

ASHRAE's bEQ (& ASTM's BEPA) - How Does Your Facility Stack Up?

ASHRAE DL – MS Valley – 05/11/11

Why Change?

"It's not the strongest who survive, nor the most intelligent – it's those most adaptable to change" - Charles Darwin

Stay flexible

Don't fear difficult moments

Think outside-the-box

Try new things

Educate yourself - *continually*

Growth comes from change - and so does survival!

And that's what happened to the dinosaurs!

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What's Coming (or Here Now)?

- ANSI/ASHRAE/IESNA Standard 189.1 for High Performance Green Buildings (2009)
- LEED 2009
- ASHRAE Energy Standard 90.1 – 2010 (much tougher than 2007)
- ICC's International Green Construction Code (IGCC) – will be published as new code in 2012 – (input from ASHRAE, AIA, USGBC, IESNA, BOMA, etc.)
- ASHRAE Building Energy Quotient (bEQ) Label (2nd Qtr. 2011 – just finished Beta test– more difficult but more comprehensive than Energy Star)
- Energy Use Index (EUI) – Btu/SF/yr or kW/SF/yr

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ASTM's BEPA Standard: E2797-11 (published 02/10/11)

- Building Energy Performance Assessment
- 5 components:
  - Site Visit
  - Records Collection
  - Review and Analysis
  - Interviews
  - Report
- *Not* building benchmarking
- Precursor to bEQ, energy audit & retro-commissioning

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Driving Forces

- Regulatory
  - Building energy use disclosure
  - Benchmarking against peers
- Business

Driving Forces - Regulatory (as of 03/11)

Energy Performance Disclosure in EU - 2003

- California
- District of Columbia
- Austin, TX
- Washington State
- Seattle, WA
- New York City
- Additional **Cities** considering
  - Denver, Portland, San Francisco
- Additional **States** considering
  - IL, MA, MD, MI, MN, OH & OR
- Federal Legislation being discussed

Driving Forces - Business

- Energy efficient buildings
  - Lower operating costs
  - Higher net operating income
  - More valuable
  - More attractive to tenants
- Energy inefficient buildings
  - Less competitive in the marketplace
  - In danger of obsolescence

What's the problem?

- Significant variability depending on:
  - Period of time chosen over which the data was collected (1 yr, 2 yrs, 3 yrs) and how it was calendarized
  - Whether or not changes in building occupancy were considered
  - How weather conditions were factored in and baseline conditions established
  - How building operating hours were considered
  - Whether or not major building renovations were considered

What does the BEPA Standard accomplish?

- Standardizes the collection and reporting of energy consumption information for a building involved in a real estate transaction
- Facilitates improved benchmarking (by others)

Report Deliverables

- Pro Forma (representative) building energy ***use***
- Pro Forma (representative) building energy ***cost***
- Projected range of building energy ***use*** for:
  - lower, upper and average case
- Projected range of building energy ***cost*** for:
  - lower, upper and average case
- Actual building energy ***use*** data for each year collected
- Actual building energy ***cost*** data for each year collected

What's the Problem?

- Prospective purchasers as part of due diligence are asking, "What is the building's energy consumption?"
- Pro Forma provided to potential lenders by buyers has line item for utilities under building operating costs
  - Lenders want a "reasonable" and "realistic" value here
  - ***No consistent methodology exists to provide answers***

Building Energy Quotient™

ASHRAE's Building Energy Labeling Program

Providing Valuable Information to Building Owners and Operations Staff

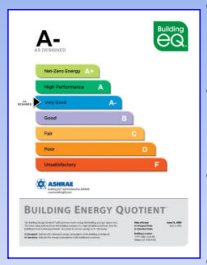
March 2010

Sustaining our Future by Rebuilding our Past

Energy Efficiency in Existing Buildings – Our Greatest Opportunity for a Sustainable Future

- G. Holness, ASHRAE

Building Energy Labels Provide. . .



- Information on the potential and actual energy use of buildings
- Feedback to building owners and operators on how their building is performing
- Insight into the value and potential long-term costs of a building
- Differentiation in the marketplace

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Why ASHRAE?

- Over 100 years of experience in the building sciences
- Strong technical expertise across all aspects of building design and operation
- Historic focus on developing consensus-based, non-commercial documents
- Respect and credibility within the building community

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Why Now?

Potential utilization outside of North America for areas without existing labeling programs

Mandatory labeling requirements already in place:

- European Union
- California
- Washington, DC
- Austin, TX
- Denver, Seattle, New York City, etc.

Building owners need a technically sound label that can serve as a consistent model for such mandatory programs.

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Developing the Program

- Technically sound and widely applicable program
- Committee with international team of experts
- Members familiar with the Energy Star and EU labeling programs
- Building energy modeling experts
- Representatives from Utilities, Government, and Advocacy community.
- Following initial roll-out, validate and enhance the program using ASHRAE's broad technical resource network

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What types of Ratings?

In Operation Rating (operational)

- Measured energy use of a building
- Based on a combination of the structure of the building and how it is operated
- Applicable for existing buildings
- Applicable for new buildings after 12-18 months of operation.

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What types of Ratings?

As Designed Rating (asset)

- Assessment of the building based on design components: mechanical, envelope, orientation, and daylighting.
- Based on the results of a building energy model
- Applicable to both new and existing buildings
- Can be utilized to make choices between potential building designs

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How is bEQ Program Different from "Green" Programs like LEED or GreenGlobes?

- Focuses solely on a building's **energy** use

- Greater concentration on understanding energy use and **identifying opportunities** for improvement
- Could be used to improve/verify energy component of green building rating systems

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How is bEQ Different from Energy Star?

- Greater differentiation for high performing buildings
- Greater emphasis on top performers and net zero energy
- Able to label building types outside of Energy Star
- Validation via required site visit
- Measured IEQ
- Expanded information provided
- Easily comparable scores across similar buildings

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These Buildings are "Green" How Efficiently Do They Use Energy?

This Building has a Good Energy Quotient

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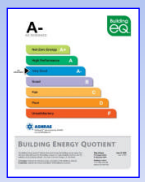
Providing Relevant Information

The **Label**:

- Most visible component of the program
- Simple to understand – targets **general public**
- at the state and local level
- Suitable for display in building lobbies and marketing materials
- Satisfies public disclosure requirements at the state and local level



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Providing Relevant Information

The **Certificate**:

- Technical information explains the rating score
- Information useful to **building owners**, **tenants**, **utilities**, and **operations and maintenance personnel**

Additional **Documentation**:

- Background technical information
- Useful for **engineers**, **architects**, and technically savvy building owners
- Useful for determining the current state of the building and opportunities for improving its energy use

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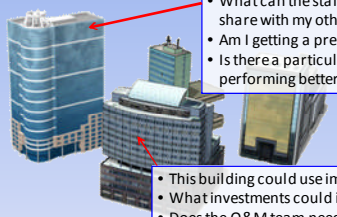
Why Should Owners be Interested?

Manage portfolios and identify investment opportunities

Existing Building Portfolios (*In Operation Rating*):



- What can the staff managing this building share with my other building managers?
- Am I getting a premium for this building?
- Is there a particular reason this building is performing better?

- This building could use improvement.
- What investments could improve energy use?
- Does the O&M team need additional training?
- Can re-commissioning or retro-commissioning address poor performance?

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Why Should Owners be Interested?

Make educated decisions on new building design

Design Options for a New Building (*As Designed Rating*):

- Which design will be most marketable?
- What can I expect in future energy costs?
- Does the design meet my initial energy use expectations?
- What will I need to do to assure the building performs to its potential?

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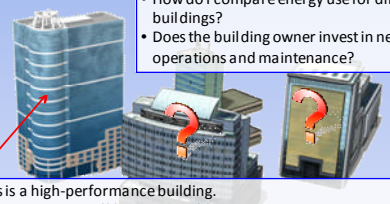
Why Should Owners be Interested?

Tenants are looking to understand energy use and cost

Potential Leases:

- Is this a bad building or just not measured?
- What will my energy bills be?
- How do I compare energy use for different buildings?
- Does the building owner invest in necessary operations and maintenance?



- This is a high-performance building.
- My energy costs will be manageable.
- The building owner pays attention to operations and maintenance.
- I can afford to put more money towards rent.

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Benefits for Building Owners

- Side-by-side comparison of *As Designed* (asset) and *In Operation* (operational) Ratings
- Measurement-based Indoor Environmental Quality (IEQ) indicators to assure levels of service are maintained
- List of operational features including commissioning activities, energy efficiency improvements
- Provides information on how the building is using energy and how performance can be improved
- ***Differentiate building from peers to attract tenants or potential buyers***

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www.buildingEQ.com

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"If We Do Not Change Our Direction, We Are Likely To End Up in the Place We Are Headed"

– Chinese Proverb

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AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS (ASHRAE)

- Trainer, ANSI/ASHRAE/IESNA Energy Standard 90.1
- Past Member, Air-to-Air Energy Recovery Technical Committee
- Past Vice-Chair, Industrial Air Conditioning Technical Committee
- Past Board Member; Distinguished Service Award (Local), 2005
- Distinguished Lecturer

BUILDING OWNERS & MANAGERS ASSOCIATION (BOMA)

- Member, Energy & Environment Committee (National)
- Judge, TOBY Awards (The Office Building of the Year)
- Chair, Sustainability Task Force (Local)

ENGINEERING SOCIETY OF DETROIT (ESD)

- Distinguished Service Award, 2007; Fellow, 2010
- Member, Construction & Design Committee
- Spokesperson on Energy & Environmental Issues
- Past Chair, Council of Affiliated Societies

U.S. GREEN BUILDING COUNCIL (USGBC)

- Past Board Member; Distinguished Service Award (Local), 2008
- Past Co-Chair, Public Policy Committee (Local)
- Member, Green Schools Advocacy Committee (Local)
- Representative to ESD Affiliate Council

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So What Now?

- Use what you're learning today – never stop learning
- Think "Outside the Box"
- Keep up-to-date
  - ASHRAE Standards, LEED Guidelines
  - BOMA/IFMA/USGBC/ASTM
  - Government Regulations
- Join professional organizations
- Get a professional certification
- Be a teacher, not just a student

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