LEED for Entertainment Facilities:
Is It Worth It?

Panelists:
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  Theatre Consultants Collaborative, LLC
- Steven Cullipher, LEED AP
  Systems Division Manager, Barbizon Lighting Company
- Katie Oman, LEED AP
  Fisher Dachs Associates

Moderator:
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  Showman Fabricators, Inc.
Leadership in Energy & Environmental Design
Leadership in Energy and Environmental Design

A leading-edge system for certifying the greenest performing buildings in the world

What Is Green Building?

Site Planning
Indoor Environmental Quality
Material Use
Energy
Water Management

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### LEED Address the Complete Lifecycle of Buildings:

<table>
<thead>
<tr>
<th>HOMES</th>
<th>NEIGHBORHOOD DEVELOPMENT (IN PILOT)</th>
<th>COMMERCIAL INTERIORS</th>
<th>CORE &amp; SHELL</th>
<th>NEW CONSTRUCTION</th>
<th>SCHOOLS, HEALTHCARE, RETAIL</th>
<th>EXISTING BUILDINGS OPERATIONS &amp; MAINTENANCE</th>
</tr>
</thead>
</table>

### Cross-Functional Team

- ENGINEERS
- OPERATIONS AND MAINTENANCE TEAMS
- BUILDING OCCUPANTS
- FACULTY
- ENVIRONMENTAL HEALTH AND SAFETY STAFF
- GROUNDSKEEPERS
- CAPITAL PLANNING STAFF
- UTILITY MANAGERS
- INTERIOR DESIGNERS
- UTILITY MANAGEMENT
- CUSTODIAL TEAM
- PROPERTY MANAGERS
- CUSTOMER SERVICE
- HUMAN RESOURCES
- BUILDING OWNERS
- HUMAN RESOURCES
- PURCHASING STAFF
- ENVIRONMENTAL GROUPS
- ENGINEERS
- OPERATIONS AND MAINTENANCE TEAMS
- BUILDING OCCUPANTS
- BUILDING MANAGERS
LEED is Consensus-Based

USGBC has four levels of LEED:
Commercial LEED Registered Projects
Total Currently Registered
As of August 2010

35,350

Commercial LEED Certified Projects (cumulative)
As of August 2010

6,602
Steps to LEED Certification

1. REGISTER YOUR PROJECT
2. TRACK PROGRESS & DOCUMENT ACHIEVEMENT
3. APPLY FOR CERTIFICATION

Making LEED Happen: process, paperwork, price tag

FDA
Process
The value of LEED is directly proportional to its level of integration in the design and construction process.

Planning
- Eco charrette: setting goals, defining strategies
- Budgeting: assessing true cost

Integrated Design
- LEED credit assessment and tracking
- Integrated Design is an iterative process

Documentation & Implementation
- Design and Construction submittals
- Construction monitoring and credit implementation
- Measurement & Verification period (if req’d)

Certification!

Planning

Eco Charrette
-(very) early in design
- gather as many stakeholders as possible
- identify opportunities/challenges
- set sustainability goals

then, later

LEED Charrette
- design team and owner
- establish LEED credit strategy
- assign credit responsibility
**Integrated Design**

Leveraging LEED and enhancing coordination

- iterative process
- search for synergies
- leverage modeling and other LEED requirements

- active and continuing participation of users, code officials, building technologists, cost consultants, engineers etc.
- can prevent costly changes down the road

**Documentation & Implementation**

**Paperwork**

- LEED Online
- credit Templates & submittals
- resources: reallifeleed.com, buildinggreen.com, green.harvard.edu

**Implementation**

- contractor education
- construction monitoring
- measurement & verification
Certification
Hooray!

Planning

Assessing True Cost (and coping with ambiguity)

“How much does LEED cost?”

Soft Costs
- 2 categories: Design costs and documentation costs
- documentation costs remain relatively constant
- design costs can fluctuate depending on credits pursued
- how do you evaluate the up-front cost of something that will save money elsewhere?

Hard Costs (more complicated)
Look at the Big Picture:

Sustainability looks at the Lifecycle of a System through the lenses:

- **Environmental** – Theatres can be a challenge
  - Historically Lots of Waste
  - Energy Hogs
- **Social Sustainability** – This one is easy
  - “is the idea that future generations should have the same or greater access to social resources as the current generation. Social resources include ideas as broad as other cultures and basic human rights.” *Wikipedia*
- **Economic Sustainability**
  - Macro: Economic engines for local economy
  - Micro: can be dicey

Curtis Kasefang
Theatre Consultants Collaborative, LLC

Components of Sustainability:
Environmental

- Materials
- Manufacturing
- Sales
- Delivery
- Operational efficiency
- Expendables
- End of life reuse, disposal and decay, or recycle

Curtis Kasefang
Theatre Consultants Collaborative, LLC
Components of **Sustainability:**

**Economic**

- First Costs
- Operating Costs
- Disposal Costs

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**Example: Dimmer Racks**

**Environmental:**
- 1\textsuperscript{st} Cost: Lots of metals, often of recycled origin, but we don’t know...
- Operation: On 24/7!
- Last Cost: Metals often recycled at disposal.

**Economic:**
- They are on 24/7.
- They add operating costs when they are doing nothing.

That 24/7 thing – how wasteful!
Shouldn’t we switch them off at night?

Time to do a cost / benefit analysis.

Curtis Kasefang
Theatre Consultants Collaborative, LLC
Parable:

Al and George both work in Washington. Both live in Pinehaven Woods and both drive a Hummer to work.

Al took advantage of the Cash For Clunkers program, “clunked” his Hummer and bought a Prius.

George is driving his Hummer until it dies.

• Who is behaving in a more sustainable fashion?
The Answer is:

It depends.

The Greenest theatre is the one you already have.

The question is whether it is more Sustainable to renovate or replace?

Cost / Benefit time again:

Socially: Will the replacement have enough benefits to overcome the costs of the disposal?
Economically: What is the breakeven point? Is it within the useful life of the new facility?
Environmentally: Will the replacement have a positive impact within the useful life of the new structure? Can it overcome the environmental cost of replacement, including the disposal of the embodied energy represented by the existing building?
Embodied Energy

- An object is the sum of the parts that make it, including the energy that went into making those parts.
  - Material
  - Manufacture
  - Delivery
  - Installation

- Your existing theatre (or Hummer) is the embodiment of the vast amount of energy that it took to build it.

Curtis Kasefang
Theatre Consultants Collaborative, LLC

Renovation vs new Construction

- Replacement cost include:
  - Disposal of the old including subsequent decay
  - AND its replacement:
    - Material
    - Manufacture
    - Delivery
    - Installation

- Renovation uses less materials and generates less waste
- Disturbing earth in disposal and new construction releases carbon
- 25% of our waste stream is construction debris
- Many of our large Performing Arts Centers were built between 1950-1979 when energy cost was not a significant consideration
- Our built environment contains unsustainable amounts of retail space and abandoned industrial space. Will one of these make a theatre? At what cost?

Curtis Kasefang
Theatre Consultants Collaborative, LLC
Is LEED worth it?

- It costs $ for which you get a better product
- It keeps you focused
- It forces commitment
- It’s a start...
  - The LEED rating system is the product of a supply chain that is focused on new construction.
  - More points for using recycled materials than for reusing a building containing those materials.

Whether you seek LEED certification or not, you need to prepare yourself by:
- Make sustainability an organizational objective
- Refine your operation to maximize sustainability in your current facility
- Articulate the limitations that are imposed by your current facility

Curtis Kasefang
Theatre Consultants Collaborative, LLC
Performing Arts & LEED

Vancouver Convention Center

Performing Arts & LEED

Holland Performing Arts Center, Omaha

National Assembly for Wales

Copenhagen Opera House

Performing Arts & LEED

Knight Concert Hall, Adrienne Arscht Center, Miami, FL

National Assembly for Wales

Copenhagen Opera House
Innovation & Design (ID) Credits

- Write your own credits for designs for exceptional performance above requirements set in LEED™ or an innovative performance in categories not specifically addressed by LEED™
- Exceptional performance credits are typically awarded for doubling the credit requirements and/or achieving the next percentage threshold.
- LEED™ for New Construction ID Credits (v3)
  - None are required
  - Up to 5 points possible
  - 1 point for LEED AP
  - 5% of total possible points

Awarding ID Points

The following is a catalog of credits submitted by projects before the summer of 2012. This document is a work in progress and is intended as a starting point only. It should not be used in the development of new LEED projects. It does not set any precedent for a total LEED AP certified project. The information is for LEED ID points and should not be considered a standard or comprehensive example of designs used by LEED projects. Additional criteria for LEED AP certification or any associated LEED credits may vary and should be confirmed with LEED AP certification or by the LEED rating system. For more information on LEED credits, please visit www.usgbc.org/leed.
Programming | Operations

Design | Benchmarking & Optimization
Design | Energy Reduction

Operations

- Water Savings
- Car Sharing
- Waste reduction programs / enhanced recycling of sets, batteries, etc.
- Other Standards – ISO 14001 & BS8901
# LEED for Entertainment Facilities; Is It Worth It?

Drilling Down on the Lighting Impact

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## V.3 - Certified: Silver 55:55; Gold 65:75; Platinum 75 & above.

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material &amp; Resources</th>
<th>LEED</th>
<th>Reporting &amp; Analysis</th>
<th>Sustainability Strategies</th>
<th>Procurement &amp; Optimization</th>
<th>Incentives &amp; Credits</th>
<th>Total points</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Passive Solar</td>
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<td>RDI</td>
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<td>4</td>
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<td>Innovation &amp; Design Process</td>
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</tbody>
</table>

**LEED for Entertainment Facilities**

**Is It Worth It?**

Drilling Down on the Lighting Impact
LEED is a VOLUNTARY rating system, not a building standard.

• LEED doesn’t tell you how to build, it gives you options to build with the environment (including human health) as a priority.
• The Green Police will not arrest you if your building doesn’t get certified.
• Your Certificate of Occupancy won’t (can’t) be denied by USGBC.

Standards

• Standards vary by State or even Municipality
• With a few exceptions, each state has adopted a recognized standard or developed their own.
• 9 States use a version of ASHRAE 90.1 (American Society of Heating, Refrigerating and Air-Conditioning Engineers)
• 30 States use a version of the IECC (International Energy Conservation Code)
States Using ASHRAE Standards

• ASHRAE 90-1975
  – MS
• ASHRAE 90A/90B
  – TN
• ASHRAE 90.1 1999
  – MI

• ASHRAE 90.1 2004
  – LA, MN
• ASHRAE 90.1 2007
  – AR, DC, IN, NJ

Source: www.energycodes.gov

States Using IECC

• IECC 2003:
  – CO, NE, NY, WV
• IECC 2004
  – VT
• IECC 2006
  – AL, CT, GA, HI, ID,
    KS, KY, NM, NV, OH,
    OK, SC, VA, WI

• IECC 2009
  – DE, IA, IL, MA, MD,
    ME, MT, NH, PA, RI,
    UT

Source: www.energycodes.gov
State with Self Developed Codes

• CA: On 01/12/2010, Governor Schwarzenegger announces the first-in-the-nation statewide Green Building Standards Code (CALGREEN) taking effect on January 1, 2011, requiring all new buildings in the state to be more energy efficient and environmentally responsible.

• FL: Florida has moved to use the 2009 IECC as the foundation.

• NC: Modeled on the 2006 IECC with amendments including ASHRAE/IESNA 90.1-2004.

• OR: 2010 Oregon Energy Efficiency Specialty Code (OEESC) are based on the 2009 IBC State-developed code that meets or exceeds IECC 2009.


Source: www.energycodes.gov

States with No Lighting Code

• AK
• AZ (Many counties have adopted IECC 2006)
• MO
• ND
• SD
• WY

Source: www.energycodes.gov
What’s The Difference?

- For a “Performing Arts Theater”, ASHRAE 90.1-2007 prescribes a Lighting Power Density (LPD) of 2.6 (using space by space model).
- For a “Performing Arts Theater”, ASHRAE 90.1-2007 prescribes an LPD of 1.6 (using Building Area Method).\(^1\)
- IECC 2009 prescribes an LPD of 1.6.\(^1\)

\(^1\)In cases where both a general building area type and a more specific building area type are listed, the more specific building area type shall apply.

Source: www.energycodes.gov