SOCIO-TECHNICAL POST-OCCUPANCY EVALUATION
ROBERT H LEE ALUMNI CENTRE PILOT

KERRY SHAW • APPP 506
DECEMBER 13, 2017
Agenda

▷ UBC’s Green Building Plan
▷ Why Post-Occupancy Evaluation?
▷ Project Objectives
▷ What is Post-Occupancy Evaluation?
▷ Methodology
▷ POE Pilot - Alumni Centre
▷ Overall Project – Results, Discussion, Recommendations
▷ Acknowledgements
Why Post-Occupancy Evaluation?

- **Net Positive Building Goals**
  - Comfortable environment
  - Incorporate Lessons Learned

- **Current Post-Occupant Process**
  - Lessons are not passed along to future projects
  - Mistakes repeated
  - Design brief goals never verified

- **Certification is not enough**
  - Energy use is often significantly higher than predicted
Project Objectives

▷ Determine if POE is a suitable tool
▷ What are best practices?
▷ What might process look like at UBC?
What is Post-Occupancy Evaluation?

▷ Understand building performance after it has been inhabited
▷ Consumption analysis (Energy + Water)
▷ Occupant Survey – Indoor Environment Quality (IEQ)
Types of Post-Occupancy Evaluation

**Indicative**
- Major failures & successes
- 2 hours - 2 days

**Investigative**
- Understand cause & effect of building performance issues
- 160 - 240 hours + support staff

**Diagnostic**
- Create new knowledge about building performance
- Several months – 1 year +

Sources:
Post-Occupancy Evaluation Process

Planning
- Reconnaissance & feasibility
- Resource Planning
- Research Planning

Conducting
- Initiate Data Collection
- Monitor & Manage Data Collection
- Analyze Data

Applying
- Reporting Findings
- Recommending actions
- Reviewing Outcomes

Sources:
Methodology

▷ Make survey broadly applicable
▷ Minimal resources required
▷ Incorporate current best practices
▷ Incorporate social environment
▷ Incorporate elements of Informal Learning Spaces POE
Social Environment Elements

▷ Not typically included in POE
▷ WELL Building Standard as reference
▷ Key to ensuring Green Building Plan goals are met
▷ Human wellbeing
▷ Place-making
Social Environment

Are you typically here by choice or obligation?

- [ ] Choice
- [ ] Obligation

If here by obligation, do you typically linger longer than required in the building?

Do you feel a sense of stewardship towards the building?

i.e. do you want to take care of the space

The building offers adequate space to:

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Undecided</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>Not Sure / Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socialize</td>
<td></td>
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<tr>
<td>Assemble</td>
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<td>Collaborate</td>
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</table>

Do you feel safe in the building?

How satisfied are you with the following building elements?

<table>
<thead>
<tr>
<th></th>
<th>Very Unsatisfied</th>
<th>Neutral</th>
<th>Very Satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Environment (i.e. quality of life &amp; perceived safety)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Community Design (i.e. access to services and amenities)</td>
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Social Environment (continued)

What factors contribute to your dissatisfaction with the building’s social environment or community design?
Please select all that apply

- Spaces are inflexible
- No information on design and/or operation of building
- Limited access to restorative built spaces (ex. promenade, plaza, art gallery, museum)
- Insufficient indoor gathering spaces
- Spaces are inaccessible
- Barriers (cost/availability) to social cohesion programming
- Insufficient outdoor gathering spaces
- Limited access to blue spaces (water)
- Limited access to green spaces (trees, plants)
- Building does not celebrate local culture/history
- Insufficient public art
- Other (please specify) [Type here]

Please list any other social environment related issues that are important to you.

[Type here]
## POE Pilot Results - Energy

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<tr>
<th></th>
<th>Reference</th>
<th>Predicted</th>
<th>Actual</th>
<th>% Diff vs Ref.</th>
<th>% Diff vs Pred.</th>
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</thead>
<tbody>
<tr>
<td><strong>EUI (kWh/m².year)</strong></td>
<td>351</td>
<td>132</td>
<td>197</td>
<td>-44%</td>
<td>+50%</td>
</tr>
<tr>
<td><strong>ECI ($/m².year)</strong></td>
<td>19.15</td>
<td>10.25</td>
<td>15.23</td>
<td>-20%</td>
<td>+49%</td>
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POE Pilot Recommendations

▷ More detailed IEQ analysis NOT required
▷ No specific field testing
▷ No investigative level POE

▷ Energy Audit recommended
▷ Examine sub-meters to highlight specific deviations from predicted energy model
▷ Compare model assumptions to actual operations (ex. operating hours)
POE Occupant Survey Statistics

- Open for ~3 weeks
- 71 Questions covering 10 IEQ topics
- 41 completed responses
- 37% of Alumni UBC Staff completed
- 71% completion rate
- Completion Time: 8 min 22 s
- Response spike with emails
- In-Person survey >50% of responses
Other Considerations

▷ How to really achieve high performance buildings?
▷ How to introduce accountability to design team?
▷ Integrated Project Design (IPD)
Recommendations

▷ Indicative POEs useful, simple tool for UBC

▷ Work Needed:
  ▷ Easy way to add in occupancy information
  ▷ Social factors should be improved by expert
  ▷ Define logistics & departmental ownership
  ▷ Secure funding & resources

▷ Explore IPD for future building projects
▷ Tie compensation to POE results
Thank You!
Any questions?