

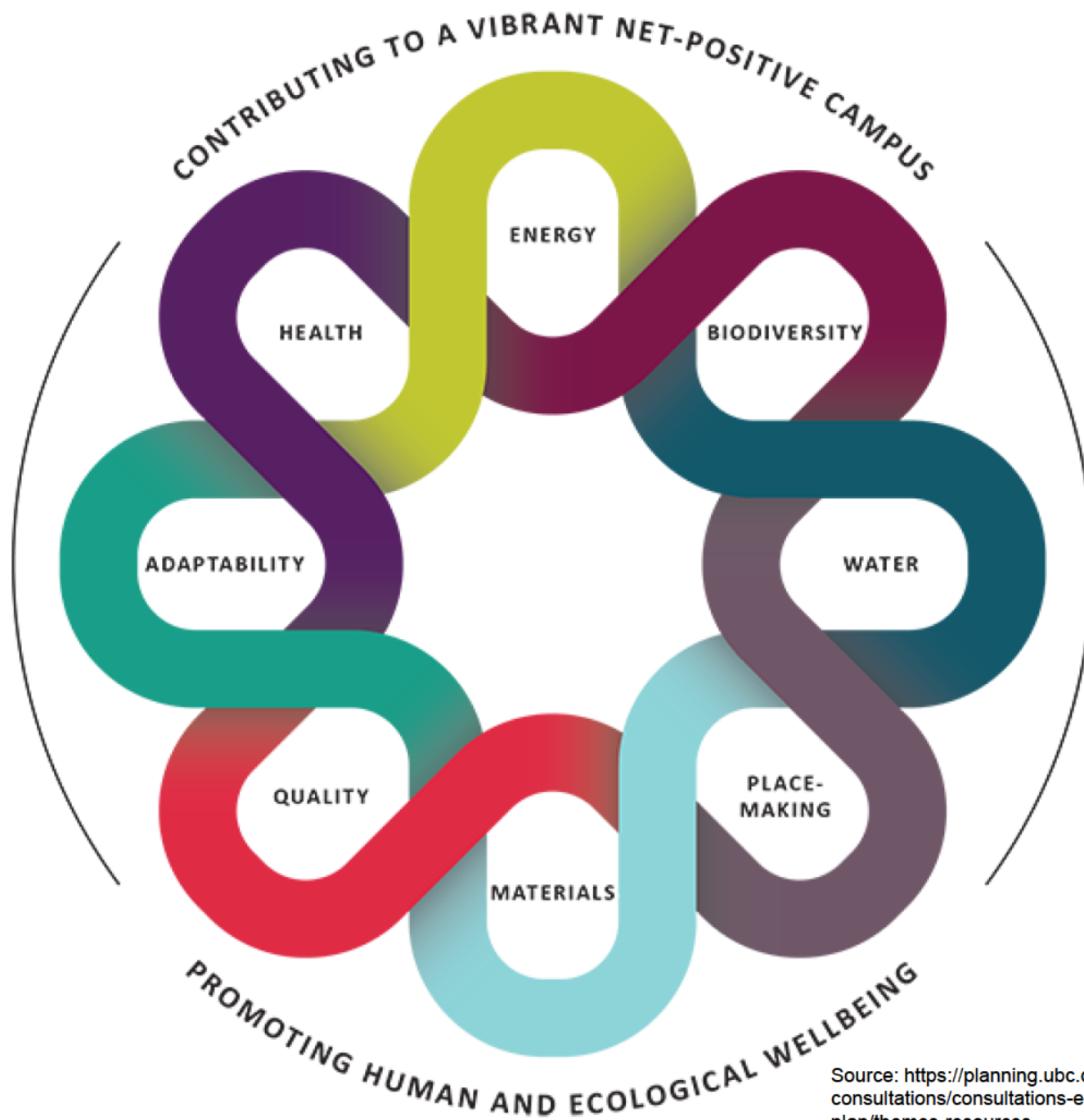


SOCIO-TECHNICAL POST-OCCUPANCY EVALUATION ROBERT H LEE ALUMNI CENTRE PILOT

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



Source: <https://planning.ubc.ca/vancouver/projects-consultations/consultations-engagement/green-building-plan/themes-resources>

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	<ul style="list-style-type: none">• Major failures & successes• 2 hours - 2 days
Investigative	<ul style="list-style-type: none">• Understand cause & effect of building performance issues• 160 - 240 hours + support staff
Diagnostic	<ul style="list-style-type: none">• Create new knowledge about building performance• Several months – 1 year +

Sources:

Preiser, W. F. (2002). The Evolution of Post-Occupancy Evaluation: Toward Building Performance and Universal Design Evaluation. In Federal Facilities Council Staff, *Learning from Our Buildings: A State-of-the-Practice Summary of Post-Occupancy Evaluation* (pp. 9-22). Washington, D.C.: National Academies Press.

Preiser, W. F., Rabinowitz, H. Z., & White, E. T. (2015). *Post-Occupancy Evaluation*. New York, NY: Routledge Revivals.

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:

Preiser, W. F. (2002). The Evolution of Post-Occupancy Evaluation: Toward Building Performance and Universal Design Evaluation. In Federal Facilities Council Staff, *Learning from Our Buildings: A State-of-the-Practice Summary of Post-Occupancy Evaluation* (pp. 9-22). Washington, D.C.: National Academies Press.

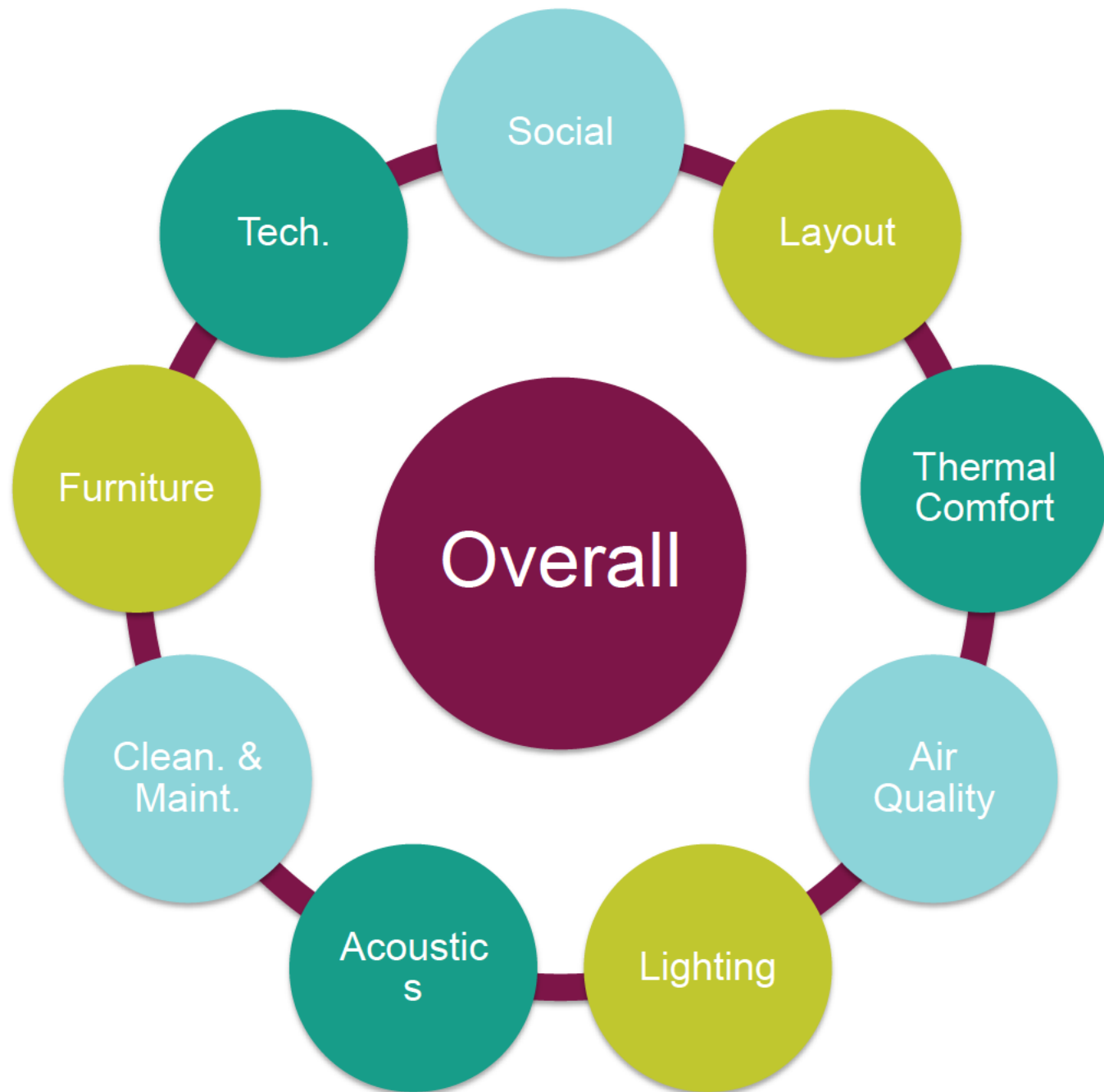
Preiser, W. F., Rabinowitz, H. Z., & White, E. T. (2015). *Post-Occupancy Evaluation*. New York, NY: Routledge Revivals.

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 (continued)

What factors contribute to your dissatisfaction with the building's social environment or community design?

Please select all that apply

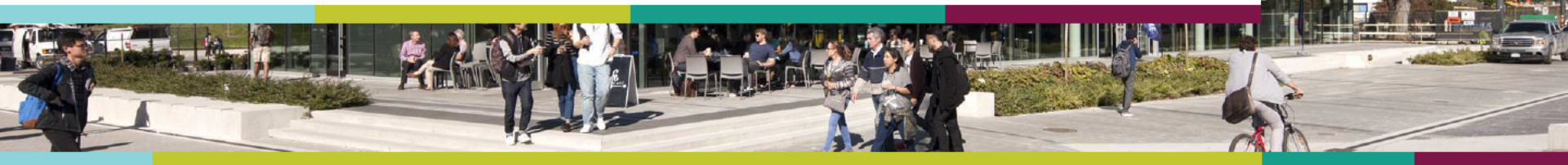
- Spaces are inflexible
- No information on design and/or operation of building
- Limited access to restorative built spaces (ex. promenade, plaza, art gallery, museum)
- Insufficient indoor gathering spaces
- Spaces are inaccessible
- Barriers (cost/availability) to social cohesion programming
- Insufficient 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)

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

A modern building with a distinctive triangular roofline and a facade of vertical glass panels. The building is set against a clear blue sky. In the foreground, a paved plaza with some greenery and people is visible. A white banner is overlaid on the lower half of the image, containing the title and subtitle.

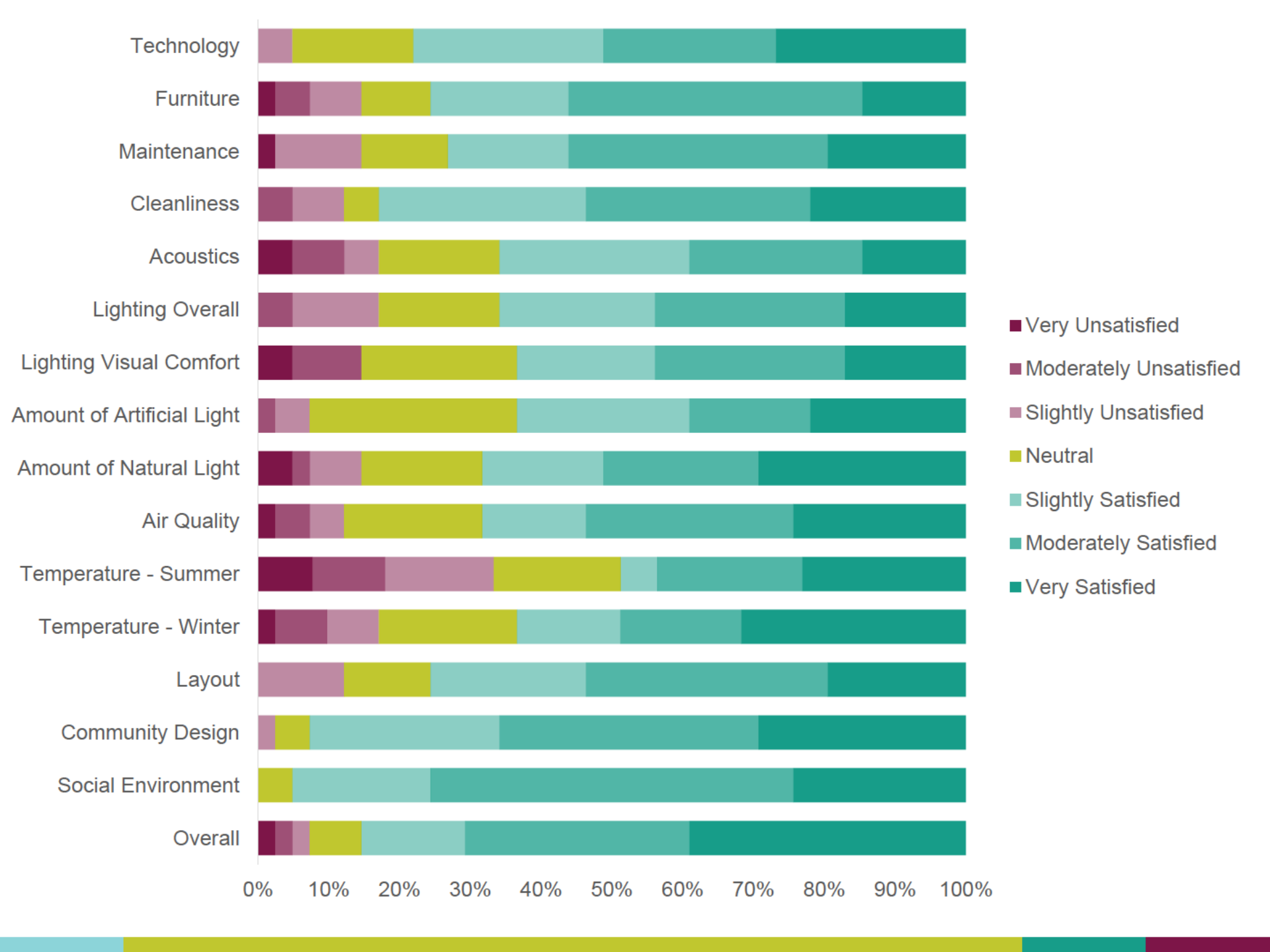
POST-OCCUPANCY EVALUATION PILOT

Robert H Lee Alumni Centre



POE Pilot Results - Energy

	REFERENC E	PREDICTED	ACTUAL	% DIFF VS REF.	% DIFF VS PRED.
EUI (kWh/m ² .year)	351	132	197	-44%	+50%
ECI (\$/m ² .year)	19.15	10.25	15.23	-20%	+49%



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?