

Post-Occupancy Evaluation

A Guide for Multi-Unit Residential Buildings

THE RESEARCH

Canada Mortgage and Housing Corporation (CMHC) has supported the post-occupancy evaluation (POE) of multi-unit residential buildings (MURBs) to 1) broaden awareness and knowledge of the impacts that innovative technologies and practices can have on building performance and 2) assess the performance of existing buildings to identify where improvements may be possible. In each study, a POE strategy had to be created as general guidelines were not available, and this has contributed to the slow uptake of POEs in the affordable housing sector. To help overcome this problem, CMHC commissioned the development of a guide for building owners and managers of new and existing housing projects that they can use to assess the need for a POE, the depth of POE required and the various steps involved. By developing and demonstrating a broad-based approach to POEs, this work can support the affordable housing sector in better understanding the performance of their buildings and identifying where improvements may be possible.

What is a POE?

A post-occupancy evaluation (POE) is the systematic assessment of building performance under typical occupant and operating conditions to assess the various design and construction strategies employed in the building. It can also be used to assess the extent to which the performance of a building meets objectives and how it compares to relevant baselines.

PROJECT OVERVIEW

A literature review of existing documentation of POE processes for MURBs was undertaken. This included the compilation of performance indicators, related standards and baselines. Based on this literature review, a set of performance areas and indicators was identified and a guide on the process of undertaking a POE for MURBs was developed.

KEY FINDINGS

The resulting guide contains 4 steps with sub-tasks detailed below.

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| STEP 1 | OBJECTIVE SETTING
Task 1: Meeting with owners
Task 2: Meeting with design team (for new buildings) |
| STEP 2 | SURVEYS, INTERVIEW AND PLANNING
Task 1: Building operator interview
Task 2: Occupant satisfaction survey
Task 3: Development of POE implementation plan |
| STEP 3 | DATA COLLECTION AND ANALYSIS
Area 1: Energy consumption
Area 2: Water consumption
Area 3: Indoor air quality and thermal comfort
Area 4: Lighting and visual environment
Area 5: Acoustics
Area 6: Building envelope + preliminary reporting |
| STEP 4 | INFORMATION TRANSFER
Task 1: Meeting with owner and design team
Task 2: Final POE assessment report |

Step 1, objective setting, includes meeting with the owner(s) and design team (in the case of new buildings) to establish the intent of the POE, budget, timeline, etc. An initial walk-through of the building may be done at this stage as well.

Step 2, surveys, interviews and planning, includes interviewing the building operator(s) and conducting occupant satisfaction surveys to help identify any concerns in building operation, management and maintenance that the POE may be able to address. The results of these steps along with those of step 1 are used to formulate the POE implementation plan.

Step 3, data collection and analysis, is modular, consisting of six performance areas and two levels of assessment. Step 3 includes the POE system installation, monitoring, data collection and analysis for the selected performance areas, and preliminary reporting.

Step 4, information transfer, includes meeting with the owner and design team to transfer information and gather feedback on results, producing a final POE assessment report, and decommissioning the POE system.

Modular data collection and analysis

A POE can include the following six performance areas: energy consumption, water consumption, indoor air quality and thermal comfort, lighting and visual environment, acoustics, and building envelope. For each performance area, the guide offers a modular two-level methodology that allows building owners to choose between a simple snapshot of the building’s performance (level 1 assessment) or a deeper analysis of performance and related potential cost saving opportunities or corrective actions (level 2 assessment).

- **For performance areas** where significant issues have not been identified prior to the POE
- **For performance areas** where budgets are limited

▶ LEVEL 1
INDICATIVE

- **For performance areas** central to a research or demonstration project POE
- **For performance areas** where significant issues have been identified
- **For performance areas** where level 1 assessment outcomes are not sufficient to identify the source of the identified issues

▶ LEVEL 2
DIAGNOSTIC

The simple decision guide presented was designed to assist building owners in understanding the appropriate POE methodology (level 1 or level 2) to suit their needs, for each performance area. The modular format of data collection and analysis offers the ability to tailor the POE to the particular needs of the project, building and owner within a structure that offers an easy-to-follow, consistent approach.

IMPLICATIONS FOR THE HOUSING INDUSTRY

There is a growing awareness of innovative technologies and practices that can be included in new affordable housing projects or retrofitted into existing ones to reduce operating costs, enhance indoor air quality and comfort, and reduce environmental impacts. However, uptake can be slowed by the lack of evidence that such innovations are reliable, achieve the intended results and provide an adequate return on investment. Thorough, rigorous, yet appropriate, post-occupancy evaluations can produce the data, analysis and knowledge needed to reduce the risks associated with new technologies and practices and can help building owners and managers better understand, and control, the performance of their buildings. The development of this POE guide was done to help developers, property owners and managers understand the POE process, promote the inclusion of POEs in new and existing MURB projects and support the generation of knowledge that can enhance the viability of the affordable housing stock.

FURTHER READING

Full report: [Post-Occupancy Evaluation—A Guide for Multi-Unit Residential Building](#)

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