



Guidance for **Building Operators**



This is a section of the document “CEC. 2015. *Improving Green Building Construction in North America: Guide to Integrated Design and Delivery*. Montreal, Canada: Commission for Environmental Cooperation. 84 pp.” The full document is available at: <http://www3.cec.org/islandora/en/item/11661-improving-green-building-construction-in-north-america-guide-integrated-design>.

For the purposes of this Guide, the category of “building operators” includes facility managers, superintendents, and custodians—those who are in charge of making the building function during occupancy.

Role to Play in an Integrated Approach

If included early in design, building operators can provide feedback about how occupants might react to certain design features, or offer recommendations for optimizing building operation and maintenance. At minimum, building operators will know more about the building they will manage and will carry knowledge of the project’s values into occupancy. Building operators ultimately make sure that a building designed to be green actually has lower environmental impacts.

As an operator, take steps during the IDD process to prepare yourself for your future responsibilities:

- **Learn about the building you’ll be held responsible for.**
- **Provide feedback about design features that might not work for occupants or that you think will be too difficult to manage.**
- **Ensure that the values defined in design, and any green performance goals those values have generated, extend into practice.**

Opportunities

Without proper tools, support and necessary resources to operate the systems well, green, high-performance buildings can underperform. For the operator, taking part in creating the building and ensuring that the building design enables efficient and simple maintenance will be highly beneficial when the project is finally completed. Understanding any decisions made on alternate concepts will help building operators understand how the building is supposed to function and what ends it achieves. Since integrated projects are based on values, operators will share in a sense of ownership for what the building does for the community or for the environment, which will help guide how the project lives after its construction.

As an operator, wouldn’t you like to:

- **“be handed” a building and already know how it works?**
- **know that the approach to operations is being thought about early in design rather than when it is too late?**
- **be a part of creating a building you’ll be responsible for?**

“ Operations [personnel] have a right to be able to see their job as continually making a building better—not just making sure it runs.”

– Barry Giles, BuildingWise

Selling One’s Expertise

The value building operators could bring to early design is widely acknowledged by owners and architects. Owners typically want their operators involved because, as people who are familiar with the organization and its functional demands, they can represent the owner’s needs. Architects also appreciate operators’ involvement because the building is much more likely to perform well when the operators fully understand the building’s design features, and this in turn makes the design team look good. These benefits put the building operator in a strong bargaining position. The team may be willing to adjust their meeting times to accommodate operators’ busy work schedules, for example (case study: Barus and Holley, Brown University, p. 54)

Particular expertise that you as the operator can offer a project:

- **Only you can provide practical feedback on occupant behavior.**
- **As the person in charge of the building, it is especially important for you to know its features and how it is supposed to perform.**

Utilizing BIM

BIM models can be very useful to utilize during occupancy if they have been created with that use in mind. A study conducted by the US National Institute of Standards and Technology estimated that US\$0.23 per square foot of managed facility space is wasted by owners and operators each year (Gallaher 2004). Reasons could include warranty repairs done at the owner's expense, the labor involved in filling out Computerized Maintenance Management System databases, or the labor expended in researching existing conditions. A BIM program designed specifically for building operators can automate the creation of equipment inventory lists, populate facility management systems, and reduce redundancy in the maintenance data. This will allow building operators to focus on pre-emptive maintenance and optimizing of systems, instead of “putting out fires.”

However, a design team might not build BIM models for that capacity if the intent to use the program post-construction is not expressed. Building operators should decide on and communicate to the design team the way they might use these 3-D, data-rich models to improve operations and maintenance. Some of these uses might include transferring the as-built data into the Facility Management System, running ongoing analysis of operational capabilities, or using the models to support future renovations. This would require specifying requirements for interoperability and an as-built model up front. A good start is to look for BIM programs that have been verified compliant with the Construction Operations Building Information Exchange (COBIE).

Key Point:

- **If a BIM model will be used to manage the building, make sure the model is built to support that function.**

Tools to Manage Obstacles

Integrated design and delivery will not prevent all possible obstacles and project-specific challenges that may arise, but it will help find the right solutions, even if construction is already complete. As mentioned in step 3 of this Guide, integrated project teams are often linked in a risk and reward structure in which their payment is tied to the fulfillment of performance goals. The owner can still hold the project team responsible for resolving issues the building operator may find, such as a malfunctioning system or a building that is falling short on its green performance targets.

If those problems do arise, Lean construction offers tools to help find solutions. The “5 Whys Analysis” technique helps a team find the reasons for a problem by formulating a question five times in response to each answer. This may be particularly useful to help identify who should be involved in finding a solution, since so many players have had a stake in the project by the time construction begins. Another tool, the “Constraint Log,” helps keep track of challenges and holds certain players accountable for resolving a problem by a certain date. This ensures progress is made and that issues are resolved as quickly as possible (Lean Construction Institute 2015).

- **5 Whys Analysis: The problem-solving technique used to dig for the root cause of a condition by asking “why” successively (at least five times) whenever a problem exists, in order to get beyond the apparent symptoms.**
- **Constraint Log: A list of constraints, with identification of an individual promising to resolve each item by an agreed-upon date. Typically developed during a review of the Six-Week Look-Ahead Plan when it is discovered that activities are not constraint-free.**



Commission for Environmental Cooperation

393, rue St-Jacques Ouest, bureau 200

Montreal (Quebec)

H2Y 1N9 Canada

t 514.350.4300 f 514.350.4314

info@cec.org / www.cec.org