



LEED Certification Review/ LMFM Post Occupancy Study

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Issued May 12, 2016

The LMFM 2016 LEED Certification Review and Post Occupancy Study is a document created by the Energy & Environmental Sustainability, Strategic Planning teams within Lower Mainland Facilities Management (LMFM). The report analyses key elements of sustainable design, challenges and lessons learned on four LEED Gold Certified projects within four lower mainland health organizations. It also includes the post occupancy study of the facilities.

The four facilities are Fraser Health, Vancouver Coastal Health, Providence Health Care, and Provincial Health Services Authority. The findings of this report are based on interviews that my mentor Laura Arpiainen and I conducted with the Lower Mainland Facilities Managers, Clinical Managers, Architecture design firms and site occupants.

The intent of the report is to document lessons learned in the planning, construction, and operations of a LEED certified building. Replicating successes and learning from past mistakes or current challenges will improve the efficiency of future LEED projects.

Although the projects reviewed in the report had a range of success, there were some challenges as well. Here is a highlight of common challenges and lessons learned:

- **Light Pollution Reduction**

One example of this is at Cancer Agency for the North where parkade lights are too bright so they are all being changed to LED lights. Or at Czorny Center they had to change all the Low mercury lights with LED lights because they are durable and low maintenance.

- **Optimize Energy Performance**

At Mission, the light level is too low for the facility so they need to be fixed or replaced. Or at Hope Centre, the Councilors have brought table lamps - to control the ambiance in interview rooms.

- **Water efficient landscape (no irrigation)**

The landscape watering is not functioning well at all sites. Most of the plants are dead and design has completely failed. So it requires lots of manual labor.

- **Water use reduction - Installed low flush toilets**

Health facilities usually require a higher volume flush. Currently they are using 1000 gram rated toilets, while they require at least 1500 gr rated toilets.

- **Thermal Comfort**

The heating system on all sites is inadequate on cold days in many spaces.

It should be noted that the common success of all facilities is that ample natural light is provided with properly positioned skylights and good window sizes.

The focus of the post occupancy study of the facilities was on Acoustic, lighting, and Indoor Air Quality (IAQ). Here is the takeaway:

Acoustic

- Acoustic performance requirements need to be stated in the planning phase and tested through construction.
- In open offices they have speech privacy problems and it is noisy in the offices. There are also acoustical issues between toilets and offices.
- There is inadequate acoustic separation.
- No sound masking.

Lighting

- Lightings are properly laid out.
- The lighting controls do not work as planned with occupancy.

Indoor Air Quality

- Inadequate ventilation system.

Another common challenge amongst all buildings was getting in touch with managers and architects of the buildings. After a building is approved for a LEED certification, people are usually not inclined to be responsive. It might be better to have a graduating scale for LEED scores to be able to get more information about the details.

The third common problem amongst facilities was that they neglected to take into account some specific needs of the occupants of the buildings. And finally we found out that commissioning usually was not done properly at the facilities.

Other than the challenges highlighted, we found that while designing buildings for LEED points, features were added with no real benefit to the operation of the building. A specific example that we came across was that an architect chose to invest resources on irrigation system (i.e. low flush toilets) instead of natural day lighting, which is more expensive as it requires large windows. So there seems to be an inherent problem with the way LEED points are assigned to buildings.

Overall, LEED certified facilities have had many positive impacts on Lower Mainland Health Authorities and generally receive a very positive public response.