

How to get the most out of your design team

This is **Part 1** of a three-part series aimed at providing a non-profit society with the tools and preparation needed to operate its new building effectively.

THESE RESOURCES ARE FOR YOU, IF:

You are about to develop a new building for the first time.

It has been 10 or more years since you have developed a new building.

A recent building development project did not go smoothly.

“Why should I care? I just want a building...”

Things have changed - building codes have changed, technologies have become more advanced, and buildings have become more complex. This means that operating a newly built building is more complicated than it once was, and often requires specific knowledge and skill sets to operate effectively. Not being prepared for this in advance can lead to higher than expected maintenance and utility costs, increased tenant complaints, and operator frustrations. We want you to be prepared, and able to make choices early on in the design stage so you can avoid some of these potentially negative consequences later on.

“Why bother being involved in the design process?”

You might think you do not have to be involved in the design process because you may have no building design/construction experience, or because you can rely on the professionals to know what you need. But, the fact remains: this is your building. You will be responsible for its day-to-day operations and maintenance (O&M), and only you know how you will occupy and use the building. Predictable utility and maintenance costs, ease of operation, and tenant comfort are all achievable in a high-efficiency building. But you will need to be involved and prepared.

Remember - no one knows how you will run your building better than you.

How to get the most out of your design team

Here are some tips in dealing with your design team:

1

Understand the Importance and Purpose of the IDP.

The Integrated Design Process (IDP) means that everyone is in the same room at the same time working together to design a building that meets your needs. Although it is not always perfect, this is currently the best method to engage all members of the design team. Being in these meetings is important for you as a society representative. Consider the big-picture systems as much as the small, and focus on making sure the design meets your needs from an operational and functional standpoint.

2

Communicate. It is important for you to be at the design meetings, but it is even more important for you to communicate with your design team. Tell them who you have, or expect to have, operating the building. It is important for the team to understand the level of knowledge that will be available for day-to-day building operations; and it is important for you to emphasize the importance of taking this into account when designing the systems for your building. If you can, have your operations person at the design meetings to provide input and ask questions.

3

Ask Questions. Don't be afraid to ask questions when you do not understand the jargon. Your design team is working for you. They should be able to explain anything technical in layman terms, but will not know when to do so unless they are asked. You have a right to be there, and a right to know what is being planned. Consider this: if you don't ask the questions now, what will you do when they have left the site and you have to operate the building on your own?

4

Plan Ahead. Operating a building, especially a new one, is not easy. There will be a lot to learn and a lot of things to consider. To avoid rushing at the end of the building process, plan ahead. Do your best to ensure that:

- You know who or what type of person/people you will have in operations.
- You negotiate longer-term service agreements with all of your service contractors, specifically for mechanical and control systems (aim for at least 3 years post-occupancy).
- Understand you will spend the first year (at least) tweaking building systems until the building as a whole is operating optimally for you and your tenants.
- It is strongly recommended to ask for a Maintenance and Renewal Plan, based on the Operations and Maintenance manuals provided to you by the General Contractor upon building completion.
- It is also strongly recommended that you arrange with your contractors and consultants how building issues will be addressed and reported to the General Contractor during the one-year warranty period.

Mechanical systems pros and cons - Who do I need to hire to operate my building?

This is **Part 2** of a three-part series aimed at providing a non-profit society with the tools and preparation needed to operate its new building effectively.

You are in the design stage, and mechanical systems for your building are being designed. Now is the time to speak up about what makes the most sense for you and your operations team. Some systems are more complicated than others, and may require elevated skill sets. The following table will help you identify what you will need to operate certain common mechanical systems, and what qualifications (education or experience) your building operator should ideally have.

System	Pros	Cons	Service Required	DDC System	Staff Qualifications
Air-source or ground-source heat pump	Three times or more efficient than electric baseboard or high-efficiency boiler per unit of input energy; low GHG emissions	May need specialized service professionals	Must be closely monitored using direct digital control (DDC) system; filters must be cleaned regularly; coolant flow, temperatures and quality of coolant must be monitored periodically Recommend extended warranty and servicing by installer/manufacture	Required	Class 4 building engineer or equivalent, and/or qualified controls and mechanical contractors required
In-floor radiant heating	Very efficient way of distributing heat; people feel warmer even though less heating is required Keeps the full floor space open for furniture	Slow to respond to thermostatic control; may require tenant education; difficult to contain heat in small suites especially with concrete slab	Fluid pressure, temperature, and quality need to be monitored Contract with qualified mechanical contractor required	Recommended	Building personnel should be familiar with hydronic heating systems and/or receive basic training from installer or mechanical contractor
Electric baseboards and domestic hot water boiler	Easy to operate and low cost to repair or replace; least capital and maintenance cost option; temperature is directly controlled by tenants	Not very durable (susceptible to damage by tenants); can be used to hide items; can create fire hazard if used to hide items; very difficult to convert to future district energy systems	Minimal service required If combined with gas boiler for domestic hot water heating may require occasional servicing by mechanical contractor	Not required	Minimal building operator experience required

Mechanical systems pros and cons - Who do I need to hire to operate my building?

System	Pros	Cons	Service Required	DDC System	Staff Qualifications
PTAC units with heat pump or split systems	Energy-efficient way of producing heat with the benefit of air-conditioning, especially in southern and coastal regions	Need suite access to change filters and maintain units	May require service contract for maintaining units and cleaning/replacing filters	Not required	Basic maintenance such as filter changes could be performed by janitorial staff with minimal experience
Gas boiler and domestic hot water	Simpler than ground-source or air-source heat pump if paired with baseboards	High GHG emissions impact especially if high-efficiency boilers not used; gas prices are currently low but much more volatile than electricity prices	Regular testing and system cleaning required	Recommended on larger projects	Boilers must be cleaned, tested, and maintained by qualified building professionals or building maintenance contractors
Gas furnace	Simpler systems with ability to condition/filter air	Not an appropriate solution for larger buildings	Filter changes, duct cleaning, and annual servicing required Occasional inspections by mechanical contractor	Not required	Typical building manager can maintain
Heat-recovery or energy-recovery ventilation	Allows for better air volume and air quality while capturing waste heat to reduce heating or cooling loads (high energy efficiency)	Cleaning not difficult, but parts expensive and difficult to obtain if damaged	Must be cleaned yearly and monitored using DDC Best serviced by qualified professionals such as the installer or manufacturer	Required	Can be cleaned by qualified building operators given proper training
Solar hot water	Preheats hot water before reaching boiler or domestic hot water heater - energy efficient and cost effective	Higher initial and maintenance cost than conventional systems	Basic cleaning/inspection for broken parts Fluid must be analyzed and potentially replaced every five years Usually must be serviced by installer/manufacturer	Recommended	Can be operated by typical building manager, who can monitor DDC from time to time

So now I have a new building...

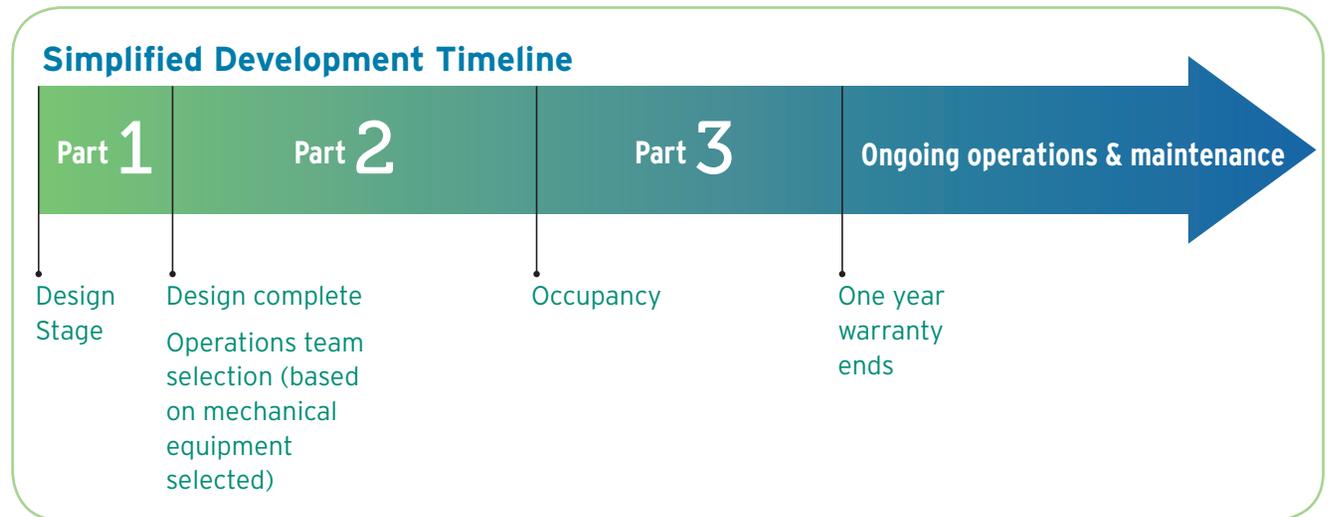
This is **Part 3** of a three-part series aimed at providing a non-profit society with the tools and preparation needed to operate its new building effectively.

Your building is designed and under construction or near completion; soon it will be handed over and you will be responsible for daily operations. If this is your first new building, or if you have not developed a building for about 10 years, this document will help prepare you for new experiences. Although this resource is not exhaustive, it is designed to help you to weed out the deficiencies from issues that simply require tweaking.

In the First Year of Building Occupancy...

The first year of operating your building is the most important; it might also be the most difficult, considering that you will have to deal with things like new tenants, new programs, new staff, etc. However, it is important to understand what it means to operate a new building. Consider this comparison: when you drive a car off the lot, it will never operate better than that very first day (or maybe week/month/year if you are lucky). However, a building is precisely the opposite: it cannot be expected to operate under ideal conditions until at least the first year has passed, and you have tweaked the systems throughout that period. Only after this first period of adjustments can it be expected to operate smoothly.

Although it may be difficult at times, the first year is when you will learn how your building works, and have the opportunity to identify any equipment or system that isn't performing properly and have it taken care of while under warranty.



So now I have a new building...

What is “Normal” vs “Not Normal” in Operations?

Situation	Normal	Not Normal
Equipment or systems don't seem to be working correctly	Occasional warning lights that are readily addressed with information provided in the O&M manual	Frequent and persistent warning lights; equipment appears to have stopped working entirely
Complaints from tenants about hot water	It should take less than one minute for hot water to reach the faucet (depending on how the system was designed)	It takes more than two to three minutes for hot water to reach the faucet
Temperature complaints in the building	10-20% of tenants complaining periodically, especially as seasons change (for example, when building transitions from heating to cooling or vice versa)	Large sections of the building with no heat or cooling as appropriate; significant and persistent over-/under-heating issues
Building staff do not know who to contact when heating problems exist	Contact information for installed systems and materials in the building provided by the contractor upon completion	Late or incomplete submission of warranty and O&M manuals
Contract personnel attendance at site	When the building is complete, you can expect these individuals to leave, and not return unless they are called back for warranty items, or service calls	Contractors do not return for warranty items or for service calls when requested

For Normal situations:

As you are starting to learn about the building and how it works, you will need to do some tweaking of the systems to ensure that they are working best for your needs. This likely means adjusting some settings on the DDC, and we recommend having the controls company return on a service contract to help you do this (unless you have been able to hire a Class 4 Engineer - see Part 2). Other situations that may arise will require patience, and sometimes careful reading of O&M manuals for answers. Anything out of the ordinary should be recorded as a deficiency.

For Not Normal situations:

When you encounter a situation that is considered “not normal,” especially within the first year, be sure to call the General Contractor or architect as appropriate. In addition, be sure to document everything in writing; make sure any system, equipment or component failures or problems are well-documented and provided to the contractors as soon as possible and definitely before the one-year warranty period ends. If you have problems with your contractors not being onsite when requested or other concerns about these situations, don't hesitate to contact your BC Housing representative for assistance.