



Connecting People, Services, and Equipment for Better Living While Reducing Your Building's Carbon Footprint

By Fan Fong and Nancy Zdravko

Smart Building Control Systems are generating a lot of buzz these days, with fancy terms like “cloud control,” “AI-driven,” and “carbon negative” to contemporize decades-old technology as the next fad for today’s condo owners. Digital devices have come a long way with technological capabilities and, more importantly, lower fees to purchase and maintain devices and software. Once upon a time, “proprietary systems” reigned over the reduced carbon footprint landscape because building managers had limited knowledge and technical expertise. Condo boards were



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subjected to purchasing costly technology, with reports generated in technical formats more suited for plant operation managers than property managers. Not anymore! More resources and products are available on today’s market geared towards giving control and visibility to condominium managers and comfort to residents, all while putting money back on the books.

As the world has become increasingly digital over the years, the cost to obtain and monitor data has become more affordable and user-friendly. Single-family homes were the first to implement smart thermostats that record energy consumption, control temperatures, and count the dollars saved daily. Condominiums have missed out on this digital revolution yet, needed it the most. Condominium managers are constantly under pressure to ensure residents are

content with their condo living standards while ensuring that costs are kept to a minimum. That’s a lot of pressure to put on one individual. So what’s the solution to avoid large, energy-hungry HVAC equipment creating a massive dent in the operating fund? Connectivity is the key to mainly keeping old, outdated, and constantly operating equipment in check. At the forefront of condo connectivity is the Building Automation System, or BAS. Implementing smart technology identifies and prevents wasted energy, putting money back into your budget.

Connecting People and Energy Technology

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All it takes is being proactive with an Energy Audit to investigate where you are using the most energy, connecting mechanical systems to be accessible with any device, fine-tuning the equipment

to meet manufacturer specifications, controlling peak hours, and minimizing financial impact. Sounds simple enough, but where do you start, and how do you transition to being a SMART BUILDING? And do you really need to implement it? You've managed to balance the budget by running old systems on local controls that are unmonitored but are paying untold amounts of money in energy waste each year. Why switch now?

It's all about the connection we make with people and machines using tech-

nology. We do it in our personal lives, so why not with the buildings we service? There is a real benefit in going digital and connecting people with services and mechanical systems using BAS. Just imagine having the convenience of complete control and awareness of the building 24/7 with real-time reporting and annual measurable savings. There's also the benefit of shielding your building from the recently imposed Carbon Tax Policy, which is expected to jump 340% from the previous cap and increase gradually from

2022 to 2030. Unfortunately, that is not a typo; it is the ugly and profound truth that impacts all condominium boards!

The Carbon Tax Policy

Did you know that while most people were doing their holiday shopping in 2020, the government introduced a New Carbon Tax Policy? This silent issue that fell under everyone's radar during the last election removes the \$50 a ton cap by 2022 and increases it to \$170 a ton by 2030, which means that the rate of an annual increase will accelerate from the current \$10 a year to \$15 a year starting in 2023. The long-term effects of this policy will have natural gas costs more than double by 2030 for all consumers – including condos. This leaves many corporations in a precarious position – condominium managers will need to budget a 5% increase in natural gas expenditure until 2023 and a further 7% increase every year until 2030. This financial strain is compounded further by the continuous rising costs in water and hydro. Is your condominium prepared to handle these exponential costs?

A Two-Tiered Plan

Implementing complete energy management with a two-tiered plan by retrofitting more efficient equipment and effective operation of the current equipment will help mitigate these increasing costs. The first tier – increases efficiency, benefits the building by lowering the cost of heating by consuming less natural gas to produce the same output. In most buildings, the total cost of ownership and the cost to own and operate equipment over its expected life span are not reflected on the reserve fund study or operating fund. Unlike cars, which have depreciation as the highest portion of their total cost of ownership, natural gas equipment such as boilers and make-up air units have a whopping 90% or more of their total ownership cost attributed to fuel. To put this into perspective, a five-boiler system in a condominium may cost around \$350,000 to install. Over its 20-to-25-year rated lifespan, that same boiler system will use over \$3,000,000 in natural gas, an average of \$150,000 in natural gas a year – not accounting for inflation or the proposed Carbon Tax increases. In cases like this, it may be wise for the building to perform a cost-benefit analysis and determine if they will save



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money by retrofitting their equipment earlier, either in whole or in part.

The second tier solution requires transitioning into a smart building, generating cost-effective operations of the existing equipment by installing a BAS, which allows scheduling of equipment to shut off when it is not required to operate or reduces equipment speed and energy consumption. Many buildings overheat or cool unoccupied rooms and hallways, which is energy spent for the benefit of no one. Monitoring the building with an automation system to reduce energy waste is often cheaper than replacing equipment and provides a more attractive return on investment, with typical project paybacks of 2.5 years or less. The BAS also provides building managers and residents insight into individual equipment's energy consumption, which could be adjusted to meet a savings target or budget.

Smart Building Benefits

Another added benefit of a BAS is less foot traffic entering the building. Many problems with the building's

HVAC equipment, such as nuisance shutdowns, could be solved via remote troubleshooting. Identifying a piece of malfunctioning equipment before a technician is dispatched will allow the service provider to solve the issue in one visit, parts included. A good BAS will send out alarms when equipment malfunctions, which prevents a minor repair from becoming an extensive and costly replacement.

Energy waste also comes with an environmental cost, as most of the heating equipment runs on natural gas, emitting carbon dioxide. This is reflected in the skyrocketing cost of using hydrocarbon-based fuels and the tax associated with them. The most effective way to address this increase is to proactively reduce total carbon consumption and lower the building's carbon footprint. Smart Building controls counter energy waste and the carbon tax policy while putting money back in your budget, helping control temperature conditions for residents, reducing the building's carbon footprint, and increasing the overall asset value of your building. Digital connec-

tions between people, mechanical systems and services are a true and sustainable benefit and one that can no longer be ignored. ■

Fan Fong, Director of Energy Management for Complete Energy Services, has over 15 years of experience in energy management, developing onsite power generation, building controls, and mechanical retrofit projects. With CES, Fan has identified and realized over \$30 million in energy savings and counting for condos.

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