

## Open Architecture and Energy Management Systems (EMS)

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In previous issues of the Provident Post, we have discussed the many benefits of Energy Management Systems (EMS). What has changed in more recent years is a move to so-called Open Architecture. This may have certain benefits for corporations who have an existing Energy Management System.

For many years, the manufacturers of EMS equipment developed these Systems with proprietary protocols, meaning, for example, that a Johnson Controls device could only 'talk' to another Johnson Controls device. Other manufacturers used similar schemes with the idea that if they kept these protocols proprietary, they could monopolize their markets and ensure that their customers would only be able to buy equipment from them.

More recently, in order to make certain pieces of equipment more cost effective and to increase functionality, manufacturers have developed equipment that is licensed to use these proprietary protocols to communicate with these field devices. Variable Frequency Drives (VFD) are a classic example of this. Provident Energy offers ABB™ VFDs, which are available with four protocols built in. These include the Johnson Controls, Siemens, BACNET and MODBUS protocols. The benefit of such a scenario is that instead of running several pairs of wires out to a VFD to do start, stop, speed, alarm, fault, reset and so on, a single pair of communication wires can be run out to the field device and using a communications protocol, a hundred or more operating parameters of the field device can now be seen on the network. This results in significant labour and material savings.

One of the more popular protocols out there is the BACNET protocol.

One of the reasons that this particular protocol has gained wide acceptance is the fact that it is a protocol that was developed by ASHRAE. ASHRAE, or the American Society of Heating, Refrigeration and Air-Conditioning Engineers, is the de facto authority on all things HVAC (Heating Ventilation and Air-Conditioning). This protocol was developed to be used in an open architecture. The intent is that as long as manufacturer 'A' is using the BACNET protocol, any of their devices should be able to talk to any manufacturer 'B' BACNET devices.

The stakes in this game are huge. For one protocol, LON, it is estimated that there are over 70 million LON compatible devices in use around the world. Most consumers have never heard of any of these protocols, however they form the back-bone of the Energy Management industry.

There are further ways to integrate these systems using gateways that allow two or more protocols to exist on a given building network. One may wish for example to retain an existing system using one protocol and then complete a plant or fan upgrade using another more cost effective protocol for other devices.

Of course, all of this mixing of protocols, open or not, vastly increases the complexity of a given Energy Management System. Now, the technician must be fully conversant in two or more protocols and have the ability to translate from one to the other.

To the Property Manager or Board of Directors, Open Architecture means that it may be possible to upgrade an existing System to a newer 'front end' without replacing all of the field devices already installed in a building. This means that some existing systems can be switched from one service provider to another for a much lower cost than a whole new system.

## EMS and Time-of-Use Pricing

With Time-of-Use (TOU) pricing coming, condominium owners will have the same concerns about managing costs as any other individually metered homeowner may have. And although an individual suite may not have a Smart Meter, they will be affected just the same since like the Regulated Price Plan currently in effect, the various price tiers are imposed on a condominium corporation on a per-suite pro-rated basis. So if, in aggregate, a corporation uses more electricity during peak periods, it will pay more than their neighbouring corporation who is off-peak shifted, even if they use the same number of kilowatt-hours.

Fortunately, there is something that can be done to shift peak period consumption to some degree. Like large volume users who have experienced Time-of-Use Rates since the early 1980's, many of our clients have Energy Management Systems already installed in their facilities. With an Energy Management System, fans can be cycle on and off at specific times of the day and certain loads can be shed.

An even more sophisticated control strategy would be to employ Variable Frequency Drives. While typically programmed to slow down when there is less demand, they could also be part of a strategy where they are scheduled to be slowed down precisely during peak periods, or even, when coupled to an electrical meter, reduce speed automatically when a certain *target* of electrical demand had been met.

Provident Energy will be working with our client Corporations to ensure that schedules and operation are optimized to reduce the impact of TOU pricing.

## Upcoming Event: ACMO/CCI-T Toronto Annual Conference

Provident Energy is excited to participate in the 13<sup>th</sup> annual **ACMO/CCI Conference** on November 6 & 7, 2009 - at the Hilton Suites Toronto/ Markham Conference Centre & Spa

Come and join us at booth #43. The exhibits and seminars are geared towards condominium professionals, managers and directors.

For more information on this conference, please visit the show website at [www.condoconference.ca](http://www.condoconference.ca)

## Visit our website!

**Online statements for our submetering customers will be available soon!** To sign up for e-billing, please visit [www.pemi.com](http://www.pemi.com) and follow the links (you will need your customer number). Also available through our website is the ability to monitor your daily, weekly, monthly, or yearly energy consumption in easy-to-read graphs. This will allow you to make any necessary adjustments to conserve energy and reduce your utility bill.

## Monitoring Services

One of the key components to an energy management system in a condominium is the Monitoring Services. Some of the benefits associated with Provident Energy's Monitoring Services include:

- Building Operators – our skilled technicians will remotely monitor, operate and optimize your System on a daily basis.
- 24-Hour Critical System Monitoring – equipment failure is monitored for immediate remedial action.
- Annual Energy Savings Report – factors in weather, energy cost and consumption that show that energy savings are being achieved.
- Preventative Maintenance – performed quarterly to ensure that battery backup and system components are fully operational.
- Support – for your staff includes training and an on-going co-operative environment that allows us to provide the highest level of satisfaction for you and your residents.

If your building has an existing automation system but does not include monitoring services, the energy management system may still be monitored by Provident Energy through some minor hardware upgrades. Please contact Provident Energy for a free assessment at 416-736-0630.

## Incentive Programs

If your Condominium Corporation is considering an energy retrofit, now is the time to do it! The incentives available are more attractive than they have been in the past couple of years.

Several electricity conservation programs have revamped their application program to increase the incentive amounts and simplify the process overall. Most of the programs, including City of Toronto, Toronto Hydro, and Greensaver, now have prescription measures for a basic \$/fixture cost or a custom measure stream that permits up to \$0.07 per kilowatt hour saved during peak hours. Examples of electrical saving measures include CO monitoring systems and lighting retrofits (in the corridors, garage, etc).

There are also other incentives available, such as Enbridge or Union Gas, for retrofits that result in natural gas savings. These programs provide \$0.05 - \$0.10 per cubic meter of gas saved. Examples of gas saving measures are variable speed drives, the installation of building automation systems, and boiler replacements.

Provident Energy will apply for any project incentive on behalf of the Corporation. Depending on which measures the Board of Directors approve, Provident Energy will assist the Corporation in selecting the best incentive option available. In some cases where projects will save both gas and electricity (for example, variable speed drives), multiple incentives can benefit the Corporation.

Generally, the incentive application will be completed once the purchase order from the Condominium has been issued. Incentive cheques are typically issued a few weeks after the retrofit has been completed and verified by the program.

Provident Energy can complete a free energy assessment of your facility. During our walkthrough we will look for all opportunities where energy savings measures can be implemented. Our comprehensive proposal will highlight project cost, savings and payback, as well as discuss incentive amounts that can be expected.