Dockside Green, a development of 1.3 million square feet of mixed residential, office, retail and industrial space, is one of the first projects to achieve LEED Neighborhood Development (ND) Platinum certification. The first phase was Synergy, a 95-unit residential building. It was completed in 2008 and is serving as a testing ground for innovative products, construction methods and technologies used in the rest of Dockside Green, especially Balance, a residential development that was completed in 2009.

**Sitewide Strategies**
The master plan of the Dockside Green community uses site-wide strategies including a biomass gasification plant completed in 2009 and a wastewater treatment facility completed in 2008.

The biomass gasification plant converts locally sourced wood waste into a clean burning synthetic gas (syngas), which is used to produce heat and hot water. Clean wood waste (made up of local trimmings, land clearing, and waste from construction/industrial uses) is supplemented by wood from forestry projects in the northern part of Vancouver Island, to supply all of the fuel for the biomass plant.

The biomass gasification system (see sidebar) makes the development carbon neutral on a net annual basis without the purchase of green power certificates. This is made possible by selling heat to a neighboring building (outside of the Dockside development). This sale of heat is equal to the electrical profile of the current buildings at Dockside, but each project did purchase green power certificates from the local utility for LEED purposes.

Dockside’s on-site tertiary (final stage) wastewater treatment will save more than 50 million gallons of water annually when the development is fully built out (Synergy alone is calculated to save more than 2 million gallons of water annually based on LEED water calculations). One-hundred percent of all sewage will be treated onsite at the wastewater treatment facility. Also, water is reused for toilet flushing, green roof irrigation and to replenish the greenway.

A series of waterways in Dockside’s central greenway assist in on-site stormwater storage while the greenway itself provides public amenity space. Other sustainable features for Dockside Green include rooftop gardens; a car co-op with Smart Cars; and, additional energy-saving features, including ENERGY STAR appliances, heat recovery ventilations units, low-e double-glaned windows and exterior blinds.

**Case Study**

**Dockside Synergy at Dockside Green**

**Building at a Glance**

- **Name**: Dockside Synergy at Dockside Green
- **Location**: Two kilometers from downtown Victoria, British Columbia
- **Owner**: VanCity Credit Union
- **Principal Use**: Multi-Unit Residential
- **Employees/Occupants**: 170 (95 units)
- **Occupancy**: 100%
- **Gross Square Footage**: 178,498
- **Total Cost**: $24 million
- **Cost Per Square Foot**: $132
- **Substantial Completion/Occupancy**: January 2008

**Distinctions/Awards**
- **LEED for Neighbourhood Development Platinum Certification, 2009**
- **LEED® Platinum Certification, Canada Green Building Council, 2008**
- **Top Ten Green Projects – American Institute of Architects/Committee on the Environment, 2009**

**Building at a Glance**

- **Name**: Dockside Synergy at Dockside Green
- **Location**: Two kilometers from downtown Victoria, British Columbia
- **Owner**: VanCity Credit Union
- **Principal Use**: Multi-Unit Residential
- **Employees/Occupants**: 170 (95 units)
- **Occupancy**: 100%
- **Gross Square Footage**: 178,498
- **Total Cost**: $24 million
- **Cost Per Square Foot**: $132
- **Substantial Completion/Occupancy**: January 2008
on the west and south faces of each building.

Due to the global economic crisis and a resulting surplus of residential suites on the market in Victoria, construction on Phase 3 (residential) has been postponed. The first two phases of the development are more than 99% sold.

Analysis completed by the firm’s in-house cost consultant showed that being able to sell the units quickly and reducing condominium fees helped offset any capital costs associated with green features.

The success of the marketing and positive media the project has received (both locally and internationally) has helped make the residential portions of the project a financial success.

The two mixed use commercial developments Inspiration (LEED Platinum) and Insight have leased well. Farmer Construction, the contractor for the project, purchased the third commercial building for its head office.

Synergy
The first phase of Dockside Green, Synergy, was completed in 2008 and achieved LEED Platinum by the Canada Green Building Council at 63 points, making it the highest-scoring LEED Platinum certified project in the world. Sister project Balance tied that record in 2011.

Synergy is a 178,680 square foot project with 95 residential units and approximately 170 residents. Most of the residents are between

<table>
<thead>
<tr>
<th>WATER AT A GLANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Water Use: 793,000 gallons</td>
</tr>
</tbody>
</table>

Annual Energy Use Intensity (Site) 27.8 kBtu/ft²
Biomass: 13 kBtu/ft²
Electricity: 14.6 kBtu/ft²
Annual Source Energy: 66 kBtu/ft²
Savings vs. Standard 90.1-2004: Design Building 73%
Heating Degree Days: 5,494
Cooling Degree Days: 1,286

ENERGY AT A GLANCE

<table>
<thead>
<tr>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roof</td>
<td>Varies</td>
</tr>
<tr>
<td>Overall R-value</td>
<td>R-40</td>
</tr>
<tr>
<td>Reflectivity Emissivity of 0.9</td>
<td></td>
</tr>
<tr>
<td>Walls</td>
<td>Varies</td>
</tr>
<tr>
<td>Overall R-value</td>
<td>R-29</td>
</tr>
<tr>
<td>Glazing percentage</td>
<td>42%</td>
</tr>
<tr>
<td>Windows</td>
<td>Varies</td>
</tr>
<tr>
<td>U-value</td>
<td>2.31 W/m²·°C</td>
</tr>
<tr>
<td>Solar Heat Gain Coefficient (SHGC) Varies</td>
<td></td>
</tr>
<tr>
<td>Visual Transmittance</td>
<td>0.7</td>
</tr>
<tr>
<td>Location</td>
<td>Latitude: 48° 25'55&quot;</td>
</tr>
<tr>
<td>Orientation</td>
<td>East/west</td>
</tr>
</tbody>
</table>

Rainwater entering the greenway. 100% of all sewage will be treated on-site at the wastewater treatment facility.
Synergy townhouse patios, as seen from the greenway. The project uses rainwater leaders to direct building runoff to the central greenway. The greenway is designed to mimic natural systems by keeping water on land for as long as possible. The greenway also polishes and conveys the treated effluent from the wastewater treatment plant.

30 and 60 years old, and most of the units have one or two bedrooms. Synergy has also been designed to meet adaptable housing guidelines, allowing for aging in place. In addition to attracting a range of ages, affordable housing units (rental) in Synergy are aimed at those with incomes of $30,000 to $60,000. Synergy was constructed for an approximately $24 million

DOCKSIDE BIOMASS GASIFICATION PLANT

District Energy System

The district heating strategy was a concept that came out of initial master planning discussions. The vision statement for the project meant that the cleanest, most cost-effective solution for energy production needed to be found. Without access to reliable wind power and a long payback for solar technologies in the overcast Pacific Northwest, a waste-to-energy gasification plant became the obvious choice.

Initial costing suggested that the economy of scale for district energy was most feasible using clean wood waste, as it was plentiful in the region. Gasification technology had been successfully implemented and improved upon in Sweden over the past 30 years. And, waste-to-energy gasification technology had become the cornerstone for Sweden’s greenhouse gas reduction and would prove to be the most environmentally and economically sound means for heat production at Dockside Green.

The thermo-chemical process of gasification uses heat to convert a carbon-containing fuel into a cleaner burning gas. Gasification differs from combustion (or incineration) because it uses just 20% to 30% of the air or oxygen needed for complete fuel combustion. During gasification, the amount of air supplied to the gasifier is controlled so only a portion of the fuel burns. This reduced air combustion process provides sufficient heat to chemically break down the balance of the fuel into synthetic gas (syngas).

DOCKSIDE GREEN OVERALL SITE PLAN

KEY SUSTAINABLE FEATURES FOR DOCKSIDE GREEN

Water Conservation
- Uses no municipal potable water for irrigation; rainwater or reclaimed site black water is used instead
- 100% of all sewage will be treated on site at the wastewater treatment facility
- Water is reused for toilet flushing, green roof irrigation and to replenish the waterway and pond features
- Achieves a 67% reduction in potable water use over baseline by using dual flush toilets, low flow sinks, showers, and by providing greywater from the wastewater treatment facility

Recycled materials
- Recycling is easily accessible
- Achieved a 96.02% construction waste diversion rate
- Achieved an average of 17.08% recycled content in the building materials
- Achieved an average of 23.8% local/regional materials
- Renewable materials incorporated

Daylighting
- Provides daylight for 99% of regularly occupied spaces and views for 97% of spaces

Operations
- Implements a green housekeeping plan, developer provided six months of eco-certified cleaning products
- Green guidelines and product literature are distributed
- Offers site tours and on-site signage
- Uses operable windows, temperature and lighting controls

Other Major Sustainable Features
- Meets the requirements of ASHRAE Standard 62-2001
- Smoke-free in all common areas of the building
- Monitors carbon dioxide (CO2)
- Follows a stringent IAQ plan and testing
- Uses low VOC adhesives, paints, coatings and sealants in addition to low emitting carpet and urea-formaldehyde free composite wood products
- In compliance with ASHRAE Standard SS-2004
- Erosion and sedimentation control plan was developed
- Site is on former industrial brownfield land

- Provides site density of over 23,000 m2/ha (5,280 R2/acre)
- Located within 800 meters of area amenities
- Walking distance to public transportation is provided
- Bicycle storage and change rooms are provided
- Two high-efficiency fuel vehicles are provided
- Has a 29% reduction in parking requirements
- Restores open space through use of green roofs
- Total site area restored is 184,697 m2 and is 53% of the remaining site area (excluding the building footprint)
- Rainwater management visibly demonstrates rainfall capture on buildings and flow from the buildings to the central waterway and to the harbor
- Rainwater harvesting is used for site irrigation
- Approximately 90% of all parking is located underground
- Combines green roofs with high albedo roofing materials for 76% of roof surfaces

- Provides site density of over 23,000 m2/ha (5,280 R2/acre)
- Located within 800 meters of area amenities
- Walking distance to public transportation is provided
- Bicycle storage and change rooms are provided
- Two high-efficiency fuel vehicles are provided
- Has a 29% reduction in parking requirements
- Restores open space through use of green roofs
- Total site area restored is 184,697 m2 and is 53% of the remaining site area (excluding the building footprint)
- Rainwater management visibly demonstrates rainfall capture on buildings and flow from the buildings to the central waterway and to the harbor
- Rainwater harvesting is used for site irrigation
- Approximately 90% of all parking is located underground
- Combines green roofs with high albedo roofing materials for 76% of roof surfaces
The building has a recycling room for organic waste collection and strategic partnerships have been forged with local organizations for material diversion. The composting plan meant that sink garbage disposals were unnecessary, saving with reclaimed water from the site in the summer.

Three distinct construction types were used at Synergy. Due to construction schedule and contractor familiarity, one townhouse building used traditional wood frame construction. The nine- and six-story buildings used cast-in-place concrete, while the four-story building piloted the use of insulated concrete forms (ICF).

The use of ICF was piloted on Synergy as its use was new on Vancouver Island. The design and development team wanted to showcase an emerging technology; however, due to the increased cost of construction on the Island, ICF won’t likely compete financially with cast-in-place concrete on future phases.

Diversion of waste during construction (greater than 95%) was augmented by an organics composting program. Workers composted the leftovers from their lunches. This organics collection and composting was integrated into the project.

The building has access to the greenway and the footpath that crosses the Dockside Lands from south to north. A naturalized creek at the center of the greenway is charged with reclaimed water from the site in the summer.

Additional energy-saving features include ENERGY STAR appliances, heat recovery ventilation units, low-e double glazed windows and exterior solar shades on the south and west faces of each building. Interior blinds are provided in each unit.

Right: Townhouse decks as seen from the greenway. The Dockside Green community and Synergy buildings function as an entire ecosystem: all systems are fully integrated and interdependent. The greenway itself provides significant public amenity space as well as habitats for local wildlife.

(Canadian). From north to south, there is a nine-story residential tower with allowance for commercial units on the ground floors; a two-story townhouse building; a six-story building with minor commercial units on the ground floor and a second four-story residential building.

Synergy has access to the greenway and the footpath that crosses the Dockside Lands from south to north. A naturalized creek at the center of the greenway is charged with reclaimed water from the site in the summer.

### Synergy Energy Use

<table>
<thead>
<tr>
<th>Month</th>
<th>Heat (kWh)</th>
<th>Electricity (kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>92,209</td>
<td>19,133</td>
</tr>
<tr>
<td>Feb</td>
<td>70,749</td>
<td>110,212</td>
</tr>
<tr>
<td>Mar</td>
<td>72,149</td>
<td>31,124</td>
</tr>
<tr>
<td>Apr</td>
<td>55,530</td>
<td>100,990</td>
</tr>
<tr>
<td>May</td>
<td>38,970</td>
<td>28,125</td>
</tr>
<tr>
<td>Jun</td>
<td>28,030</td>
<td>91,553</td>
</tr>
<tr>
<td>Jul</td>
<td>25,000</td>
<td>31,190</td>
</tr>
<tr>
<td>Aug</td>
<td>23,700</td>
<td>87,012</td>
</tr>
<tr>
<td>Sep</td>
<td>27,200</td>
<td>29,689</td>
</tr>
<tr>
<td>Oct</td>
<td>46,740</td>
<td>88,121</td>
</tr>
<tr>
<td>Nov</td>
<td>32,979</td>
<td>32,557</td>
</tr>
<tr>
<td>Dec</td>
<td>164,009</td>
<td>113,187</td>
</tr>
<tr>
<td>Total</td>
<td>677,355</td>
<td>763,826</td>
</tr>
</tbody>
</table>

*Data shown is actual BC Hydro billing data. This billing data does not represent usage during the given months shown, only the amount billed during that monthly utility billing cycle.

[How Big Is Your Carbon Footprint?](#)
The building masses have been oriented in an east/west direction to maximize the spaces between for light penetration while minimizing east/west building faces and solar heat gain. Open plazas are placed to maximize sun exposure while landscape is developed to maximize winter solar penetration while providing shading during the summer. Shadowing goes hand in hand with light penetration. Maximizing light penetration typically minimizes shadowing. However, sometimes shadowing is desired. To accommodate this and to reduce solar heat gain within buildings, horizontal sun shades and deciduous trees are used on south and south/west facing façades. Shading devices are designed to reflect light in winter and to provide shade in summer. Through a combination of thermally broken double glazed low-e argon-filled glazing, and a doubling of insulation values over code requirements (average of R-29 for walls and R-40 for roof), the project significantly reduced heat gains and losses compared to a baseline building. Operable shading devices were also used to limit south and west solar heat gain. The supplied shades are designed to automatically retract during a windstorm to ensure that the fabric does not get damaged.

The buildings use two condensing 90.5% efficient boilers as backup to the district energy plant. Boilers were initially installed as the project was completed before the construction of the district heating system. The exhaust air from the washrooms is centrally exhausted through a heat recovery wheel with an effectiveness of 81%. There is no vapor-compression cooling equipment, but a four-pipe fan coil system using domestic hot water (DHW) for heating, and domestic cold water makeup for summer cooling preheats the DHW.

While this system does not provide year-round cooling, a system to chill water could be added for a full cooling system. In winter, the district heating system provides all DHW.

A reduction in overall lighting power density (average of 0.6 W/ft²), and use of ENERGY STAR labeled appliances throughout, contributed to overall electrical savings. Energy reduction strategies are a selection of high performance building strategies coupled with district energy efficiencies. The design of a high performance envelope along with passive solar oriented buildings ensured that the heating and ventilation systems could be right sized. Daylight penetration through the whole site is enhanced by the stepped and broken building forms.

**Energy Reduction Strategies**

Central to Synergy’s energy efficiency are a selection of high performance building strategies coupled with district energy efficiencies. The design of a high performance envelope along with passive solar oriented buildings ensured that the heating and ventilation systems could be right sized. Daylight penetration through the whole site is enhanced by the stepped and broken building forms.
from the cost-effectiveness of the centralized wood-powered biomass gasification plant. Synergy was completed in 2000, but the district energy system didn’t come online until early in 2009, so the project ran for a short time on the backup natural gas boilers.

Actual Performance
Synergy’s overall energy performance in 2009 was 29.2 kBtu/ft², with consumption going down in 2010 to 27.6 kBtu/ft². These values are based on electrical utility readings (British Columbia Hydro) and biomass central plant readings (Corix also included the small amount of natural gas from early 2009).

This energy performance is consistently better than the LEED compliance energy model assumption of 32 kBtu/ft². While the actual electrical performance was close to

The BUILDING TEAM

Building Owner/Representative
VanCity Credit Union

Architect Perkins+Will Canada

General Contractor
Farmer Construction Inc

Mechanical Engineer Stantec

Electrical Engineer Stantec

Energy Modeler Stantec

Structural Engineer
Read Jones Christofferson

Civil Engineer Worley Parsons Komex and RCL Consulting

Environmental Consultant Aqua-Tex Scientific Consultants

Landscape Architect
PWL Partnership Landscape Architects

LEED Consultant Perkins+Will Canada

The green roofs and rooftop gardens were a huge success. However, the northernmost gardens are shaded during the summer by the mechanical penthouse, so most of the gardeners found that area to be a less desirable location.

The green roofs and rooftop gardens were a huge success. However, the northernmost gardens are shaded during the summer by the mechanical penthouse, so most of the gardeners found that area to be a less desirable location.

The green roofs and rooftop gardens were a huge success. However, the northernmost gardens are shaded during the summer by the mechanical penthouse, so most of the gardeners found that area to be a less desirable location.

The green roofs and rooftop gardens were a huge success. However, the northernmost gardens are shaded during the summer by the mechanical penthouse, so most of the gardeners found that area to be a less desirable location.

The green roofs and rooftop gardens were a huge success. However, the northernmost gardens are shaded during the summer by the mechanical penthouse, so most of the gardeners found that area to be a less desirable location.

The green roofs and rooftop gardens were a huge success. However, the northernmost gardens are shaded during the summer by the mechanical penthouse, so most of the gardeners found that area to be a less desirable location.
The norm in the mild climate of Victoria, residential buildings without cooling are on passive strategies involving operable windows. In many cases, these products were not used due to warranty callbacks from delamination in such as wheat board and bamboo. Due to the angled awnings at Synergy function well, they are more sensitive to wind conditions and frequently retract into a protected position. As a result, during windy days that also see direct solar gain, vertically mounted horizontal blinds were used at Balance with a greater number of days of direct solar protection achieved.

The first phase of Dockside was an opportunity to use some innovative materials such as wheat board and bamboo. Due to warranty callbacks from delamination in some units, these products were not used at Balances.

In an attempt to right size mechanical equipment, fan-coil terminals were largely selected as one roll row coil units. In retrospect, the negligible cost increase of two roll coils would have allowed for extra system capacity should additional heating or cooling be necessary.

Synergy was designed with only a minor amount of mechanical cooling, relying on passive strategies involving operable windows and seasonal free cooling. Residential buildings without cooling are the norm in the mild climate of Victoria, however, the realities of climate change may necessitate some form of mechanical cooling. In addition, code requirements which only allow a 4 in. opening due to fall hazards with children), along with some residents requesting operable windows with manual controls on the clearstory level rather than the view level (making them higher than 7 ft from the floor level), has limited the ability to use natural ventilation in some suites.

The project’s green roofs and rooftop gardens were a huge success, with all the garden plots being claimed before all units were sold. However, the northern-most gardens are shaded during the summer by the mechanical penthouse. While there are some shade plants that grow well in shady areas, most of the gardeners found this area a less desirable location. Greater consideration for rooftop gardening would have created a more democratic distribution of plots.

While not necessarily a lesson learned on what was predicted in the energy model, the biomass gasification heating system was either more efficient than anticipated or heating demands were lower than predicted. It was anticipated that Synergy would use 919,000 kWh of biomass energy whereas only 764,000 kWh was required of the central plant in 2009 and only 672,000 kWh in 2010.

**Conclusion**

While the design of Synergy has helped contribute to the energy performance of the project, it has become evident from actual energy consumption data and the level of engagement the residents have taken, that behavior cannot be ignored in high performing buildings. The real-time energy and water data available to residents on their personal computers has helped them make good choices about their usage.

The project has seen lower than modeled energy use with the numbers continuing downward in 2010. While commissioning, weather and operational factors are likely at play, there is no question that the residents at Synergy deserve some of the credit for its success as a high performing building.

**ABOUT THE AUTHOR**

Michael Driedger, LEED Canada AP (BD+C), is a sustainability building advisor at Perkins+Will Canada.

### LESSONS LEARNED

As Synergy was the first phase in this multi-phased development, many of the lessons learned have already been applied to Phase 2 (Balance).

While the angled awnings at Synergy function well, they are more sensitive to wind conditions and frequently retract into a protected position. As a result, during windy days that also see direct solar gain, vertically mounted horizontal blinds were used at Balance with a greater number of days of direct solar protection achieved.

The first phase of Dockside was an opportunity to use some innovative materials such as wheat board and bamboo. Due to warranty callbacks from delamination in some units, these products were not used at Balances.

In an attempt to right size mechanical equipment, fan-coil terminals were largely selected as one roll row coil units. In retrospect, the negligible cost increase of two roll coils would have allowed for extra system capacity should additional heating or cooling be necessary.

Synergy was designed with only a minor amount of mechanical cooling, relying on passive strategies involving operable windows and seasonal free cooling. Residential buildings without cooling are the norm in the mild climate of Victoria, however, the realities of climate change may necessitate some form of mechanical cooling. In addition, code requirements which only allow a 4 in. opening due to fall hazards with children), along with some residents requesting operable windows with manual controls on the clearstory level rather than the view level (making them higher than 7 ft from the floor level), has limited the ability to use natural ventilation in some suites.

The project’s green roofs and rooftop gardens were a huge success, with all the garden plots being claimed before all units were sold. However, the northern-most gardens are shaded during the summer by the mechanical penthouse. While there are some shade plants that grow well in shady areas, most of the gardeners found this area a less desirable location. Greater consideration for rooftop gardening would have created a more democratic distribution of plots.

While not necessarily a lesson learned on what was predicted in the energy model, the biomass gasification heating system was either more efficient than anticipated or heating demands were lower than predicted. It was anticipated that Synergy would use 919,000 kWh of biomass energy whereas only 764,000 kWh was required of the central plant in 2009 and only 672,000 kWh in 2010.

**Conclusion**

While the design of Synergy has helped contribute to the energy performance of the project, it has become evident from actual energy consumption data and the level of engagement the residents have taken, that behavior cannot be ignored in high performing buildings. The real-time energy and water data available to residents on their personal computers has helped them make good choices about their usage.

The project has seen lower than modeled energy use with the numbers continuing downward in 2010. While commissioning, weather and operational factors are likely at play, there is no question that the residents at Synergy deserve some of the credit for its success as a high performing building.

**ABOUT THE AUTHOR**

Michael Driedger, LEED Canada AP (BD+C), is a sustainability building advisor at Perkins+Will Canada.

### LESSONS LEARNED

As Synergy was the first phase in this multi-phased development, many of the lessons learned have already been applied to Phase 2 (Balance).

While the angled awnings at Synergy function well, they are more sensitive to wind conditions and frequently retract into a protected position. As a result, during windy days that also see direct solar gain, vertically mounted horizontal blinds were used at Balance with a greater number of days of direct solar protection achieved.

The first phase of Dockside was an opportunity to use some innovative materials such as wheat board and bamboo. Due to warranty callbacks from delamination in some units, these products were not used at Balances.

In an attempt to right size mechanical equipment, fan-coil terminals were largely selected as one roll row coil units. In retrospect, the negligible cost increase of two roll coils would have allowed for extra system capacity should additional heating or cooling be necessary.

Synergy was designed with only a minor amount of mechanical cooling, relying on passive strategies involving operable windows and seasonal free cooling. Residential buildings without cooling are the norm in the mild climate of Victoria, however, the realities of climate change may necessitate some form of mechanical cooling. In addition, code requirements which only allow a 4 in. opening due to fall hazards with children), along with some residents requesting operable windows with manual controls on the clearstory level rather than the view level (making them higher than 7 ft from the floor level), has limited the ability to use natural ventilation in some suites.

The project’s green roofs and rooftop gardens were a huge success, with all the garden plots being claimed before all units were sold. However, the northern-most gardens are shaded during the summer by the mechanical penthouse. While there are some shade plants that grow well in shady areas, most of the gardeners found this area a less desirable location. Greater consideration for rooftop gardening would have created a more democratic distribution of plots.

While not necessarily a lesson learned on what was predicted in the energy model, the biomass gasification heating system was either more efficient than anticipated or heating demands were lower than predicted. It was anticipated that Synergy would use 919,000 kWh of biomass energy whereas only 764,000 kWh was required of the central plant in 2009 and only 672,000 kWh in 2010.

**Conclusion**

While the design of Synergy has helped contribute to the energy performance of the project, it has become evident from actual energy consumption data and the level of engagement the residents have taken, that behavior cannot be ignored in high performing buildings. The real-time energy and water data available to residents on their personal computers has helped them make good choices about their usage.

The project has seen lower than modeled energy use with the numbers continuing downward in 2010. While commissioning, weather and operational factors are likely at play, there is no question that the residents at Synergy deserve some of the credit for its success as a high performing building.

**ABOUT THE AUTHOR**

Michael Driedger, LEED Canada AP (BD+C), is a sustainability building advisor at Perkins+Will Canada.