



● ACCESS POINTS

● GREEN SPACE

● COMMUNAL ZONES

● TRANSPORTATION ROUTES

# THE INTERACTION BETWEEN THE BUILT FORM, ENERGY CONSUMPTION + THE ENVIRONMENT

A case study of Dockside Green and lessons learned  
for Winnipeg, MB

BY: ZACH ROSTOSKY

WITH: ANDREI FRIESEN, MCP, LEED AP LANDMARK PLANNING

CASE  
IN  
POINT  
2019

## **ABSTRACT**

Master planned communities dominate Canada's urban landscape. The continued development of suburbs that sprawl toward the outer regions of our cities is not a sustainable type of growth for future generations. Dockside Green, located in Victoria, BC, is a master planned community that integrates the new urban neighbourhood and surrounding natural and built environment (Dockside Green, 2019).

Dockside Green is a leading edge in environmental planning and neighbourhood development that focuses on the interaction of the built form with energy consumption and the natural environment. The uniquely constructed LEED accredited development focuses heavily on energy consumption and waste reduction in order to be resilient. Because many master planned communities in Canada consume copious amounts of energy through heating, cooling, and electric power, neighbourhood's like Dockside Green look to prove that new developments can be lessened the impact that the built form has on the environment. While Dockside Green is located on the southern coast of Vancouver Island, many of their energy saving design strategies and implementation tools are transferrable to Winnipeg's climate through adaptation and energy-related funding and programs. Combining techniques and strategies from Dockside Green into the fabric of Winnipeg's suburban developments will push consumers and developers to realize how effective energy efficient design and planning can impact daily life.

## INTRODUCTION

Green community design is an important factor of planning and development that aims to ensure newly designed urban and suburban neighbourhoods are resilient. In Canada, green community design includes varying components, neighbourhoods must follow criteria to ensure their designs meet the needs of the Canadian Green Building Council (CGBC). Neighbourhoods like Dockside Green are unique because it combines the use of naturalized and low impact construction and energy materials to create a cleaner community. Green community design can not only create communities that physically function sustainably, but also create a sense of place and community by integrating urban and natural environments. The impetus behind the research was to analyze the relationship between the built form and natural environment and the impact on energy use in master planned communities.



*Figure 2: Dockside Green Concept Plan. Current build-out*

# BACKGROUND + CONTEXT

Dockside Green, located on the southern coast of Vancouver Island in Victoria, BC, is a 1.3 million square foot development that began construction in 2007. The development lies on a former brownfield site that was home to industry prior to remediation (Dockside Green, 2019). The mixed-use development has a current 25% build-out with an targeted completion date of 2027 (Dockside Green 2019). The neighbourhood currently consists of 266 residential units, 49 affordable housing units, and 13 businesses with 3 commercial properties (Dockside Green, 2019). Dockside Green has a waste water treatment plant, grey water recycling system, and district energy facility, which generates heat for the entire neighbourhood, on site. Additionally, the development is certified LEED ND Platinum (Dockside Green, 2019). The 'ND' designation denotes neighbourhood and in this particular case demonstrates how Dockside Green's mandate is to "enhance and maintain the ecological health of the community" (2019). Future development has designated that buildings be built to LEED Gold standard in order to maintain the overall LEED Platinum ND certification for the neighbourhood (Dockside Green, 2019).



Figure 3: Residential Property in Dockside Green



Figure 4: Canada Green Building Council Seal

While energy use and consumption is a primary focus behind the design and function of Dockside Green, the neighbourhood includes elements of both social and economic functions to support the 'triple bottom line': economy, society, environment. Within the neighbourhood, Indigenous Art installations have taken place in order to reflect and respect the traditional culture and land practise that originally existed on the site. Further, BETA at Dockside Green is a concept pop-up installation that was created in order to make temporary use of the undeveloped portion of the neighbourhood (Dockside Green, 2019). BETA houses small cultural events and interventions for members of the community to interact with; events include ThinkCubes, ThinkLandia, and Topsoil (Dockside Green, 2019). The pop-up events and installations are important for green community design because they create a space where residents can interact with and understand their environment. The produce and plants that are grown at BETA are consumed by those that live in the neighbourhood of Dockside Green (2019).



*Figure 5 + 6: ThinkCubes + BETA at Dockside Green*

# FACTS OF CASE

Dockside Green has been innovative in providing cleaner energy for a neighbourhood as a whole. In terms of overall energy production, Dockside Green has its own energy plant: Dockside Green District Energy (DGDE). The energy plant was built through partnership between Vancity Corporation, Corix Utilities, and FortisBC and has been designed with the intent to run carbon neutral (Dockside Green, 2019). The plant currently runs on natural gas but has been built to accommodate the future use of biomass for energy production (Dockside Green, 2019). This plant is a leading edge in green community design because it was designed specifically for the neighbourhood in which it is situated and provides energy that gets recycled in to the community. The Dockside Green District Energy plant was developed alongside a storm water management facility.

The neighbourhood also has a region called 'Greenway Mews' which is a precinct that focuses on the integration of natural storm water management processes of the environment and the built form. In Greenway Mews, storm water is collected in the visible streams that run off from the properties. Much of the water is cleaned with the help native plants before flowing to the on-site storm water management facility.

# CONCLUSIONS + OUTCOMES

Dockside Green is still undergoing build-out through the phasing process. The complete effects and outcomes of the



Figure 7: Greenway Mews

neighborhood including its total energy production/consumption and interaction with the environment will not be realized until completion or there after. However, the current state of Dockside Green illustrates how the neighbourhood is and continues to be a leading edge in green



*Figure 8: Dockside Green District Energy*

community design. The relationship between the built form, the environment, and energy is clear as Dockside Green’s current and future developments are all certified through the Canada Green Building Council (CBGC). The certification ensures that all of the future developments meet the LEED standards already achieved by the developments existing.

## **LESSONS LEARNED**

A few lessons can be learned from Dockside Green’s development and planning. Master planned communities like Dockside Green have applicability across North American in cities like Winnipeg. Future neighbourhoods need to follow the precedent set by Dockside Green in order to provide citizens with cleaner energy and sustainably designed communities. Sustainably designed communities meet LEED standards and aim for resiliency through programs and initiatives that provide developers and home owners the opportunity to make their communities and homes efficient.

The built form must consider the natural environment. Developers must be conscientious in choosing the types of materials used for commercial and residential properties in order to impact the environment at a smaller scale. Strategies need to be context specific and dependant on the region, size, and scale of the proposed project.

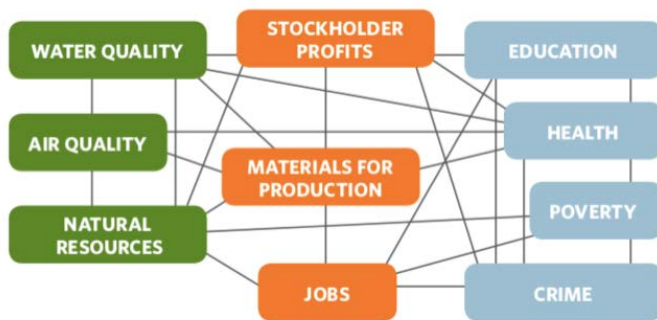
Partnership funding is required in order to achieve energy consumption measures that attribute to the success of communities in relation to the natural environment. Manitoba Hydro offers programs and rebates for homeowners, landlords, and developers to aid in financing energy saving measures for projects (2019). The Affordable Energy Program is an income-based program that allows for upgrades to heating and energy saving options (such as insulation) at reduced costs through financing (Manitoba Hydro, 2019). Although small, these options are good for retrofitting existing homes in neighbourhoods in order to increase energy efficiency. Additionally, Manitoba Hydro also offers the Residential Earth Power Loan which creates financing for projects that are upgrading to geothermal heat pumps, cold climate air source heat pumps, solar thermal water heaters, and solar photovoltaic systems (2019). While these upgrades are useful increasing energy efficiency, they are currently only available for individual homeowners and not large development projects.

Localized energy sources have the potential to lessen the strain on city-wide power stations are useful in large suburban developments. Dockside Green's district energy plant is good example of what a neighbourhood can achieve through clean energy use via smaller power plant. Dockside Green's energy system is able to heat water on site and distribute the water via pipe system to the buildings for residential and commercial use (Dockside Green Energy, 2008). The type of system could be kin to geothermal heating whereby Manitoba Hydro offers their savings and rebate programs (2019). The strategies employed through Dockside Green align with the *OurWinnipeg* sub-document *A Sustainable Winnipeg*. *A Sustainable Winnipeg* works with *OurWinnipeg*, *Complete Communities*, and the *Transportation Master Plan* in order to provide the City with a set of goals and objectives for achieving directives that



align with the three pillars: society, the environment, and the economy (2011). Clean energy directly correlates to *A Sustainable Winnipeg's* Direction 4: "Establish partnerships with communities, businesses, and other public sector agencies to achieve joint goals towards a sustainable Winnipeg" (City of Winnipeg, 2011: 18).

The key message resulting from the document is that Winnipeg has a set of directives to follow but is not being held accountable in terms of innovation and planning. Winnipeg's sustainability is measured based on the International Institute for Sustainable Development's (IISD) Bellagio Stamp (City of Winnipeg, 2011). While there is a measure in place for recording progress for sustainability, Winnipeg is not achieving its directives. Therefore, in order for precedents like Dockside Green to be feasible and successful in Winnipeg, measurements of success must be taken seriously in order to integrate principles of green community design such as the interaction between the built form, the environment, and energy consumption.



*Figure 9: The Bellagio Stamp*



*Figure 10: Bridgewater Neighbourhood*

Bridgewater is one of Winnipeg's newest master planned communities located in Southwest Winnipeg.

Do we meet our own goals of **sustainability**?

## REFERENCES

- City of Winnipeg (2011). *A Sustainable Winnipeg*.  
<https://winnipeg.ca/interhom/CityHall/OurWinnipeg/pdf/ASustainableWinnipeg.pdf>
- Dockside Green Energy (2008). The Energy System.  
[http://docksidegreenenergy.com/the\\_energy\\_system.html](http://docksidegreenenergy.com/the_energy_system.html)
- Dockside Green (2019) Dockside Green. <http://www.docksidegreen.com>
- Manitoba Hydro (2019) Home Energy Efficient Loan.  
[https://www.hydro.mb.ca/your\\_home/residential\\_loan/](https://www.hydro.mb.ca/your_home/residential_loan/)

## IMAGES

- Figure 1 (Title Page): Rotary (2019). Dockside Green Project.  
<https://www.harboursiderotary.org/stories/dockside-green-project>
- Figure 2: Dockside Green Energy System (2019).  
[http://docksidegreenenergy.com/the\\_energy\\_system.html](http://docksidegreenenergy.com/the_energy_system.html)
- Figure 3: Dockside Green (2019). Residential Building.  
<http://www.docksidegreen.com>
- Figure 4: Dockside Green (2019). Canada Green Building Council Seal.  
<http://www.docksidegreen.com>
- Figure 5 + 6: Dockside Green Beta (2019). <http://www.docksidegreen.com/beta/>
- Figure 7: Greenway Mews (2019). <http://www.docksidegreen.com>
- Figure 8: Dockside Green District Energy (2019).  
[http://docksidegreenenergy.com/the\\_energy\\_system.html](http://docksidegreenenergy.com/the_energy_system.html)
- Figure 9: City of Winnipeg (2011): *A Sustainable Winnipeg*. The Bellagio Stamp.  
<https://winnipeg.ca/interhom/CityHall/OurWinnipeg/pdf/ASustainableWinnipeg.pdf>
- Figure 10: Bridgwater (2017). Get more from the Neighbourhoods of Bridgwater.  
<https://bridgwaterneighbourhoods.com/get-more-from-the-neighbourhoods-of-bridgwater/>