Housing York Inc.
Board of Directors Meeting
November 13, 2019

Report of the General Manager

Energy and Utilities Management Plan - 2020 to 2024

Recommendation

Housing York Inc. Board of Directors approve the Energy and Utilities Management Plan - 2020 to 2024 (Attachment 1) for implementation, with funding sources to be approved through future annual budget submissions.

Summary

This report seeks Housing York Inc.'s (HYI) Board approval of the Energy and Utilities Management Plan 2020 to 2024 (EUMP). The purpose of the EUMP is to reduce greenhouse gas emissions (GHG), utility consumption, and operating costs, while maintaining resident comfort levels.

Background

Since 2005, Housing York Inc. has made strategic investments in energy conservation initiatives which reduced greenhouse gas emissions, operating costs and energy consumption

On September 14, 2005, the HYI Board approved a comprehensive program for energy management to address rising utility costs and reduction of GHG emissions. In September 2006, the Board approved the first *Energy Conservation Pilot* to determine the best energy conservation initiatives to install on a larger scale in the mass roll out. Based on the pilot project's success, the Board approved a five-year *Energy Management Retrofit Program* in December 2007, to reduce GHG emissions which included twenty apartment buildings and five town house sites. Since 2013, additional energy initiatives were implemented, including:

- Five LED Lighting parking lot retrofits
- Resident engagement program (Community Champions Program) at three sites: Orchard Heights in the Town of Aurora, Oxford Village in the Town of East Gwillimbury and Pineview Terrace in the Town of Georgina.
- Central heating management system (Evergreen Terrace, Town of Richmond Hill)

Housing York Inc.'s 2017 to 2020 Plan, *Achieving New Heights Through Innovation and Sustainability*, includes energy management actions. Early actions include measuring the effectiveness of previous energy initiatives and seeking Board input on future energy management initiatives. On November 2, 2017, the Board approved the *Effectiveness of*

Previous Energy Management Retrofit Programs and Input for Future Energy and Utilities Management Plan Report which directed staff to create an EUMP based on the following principles:

- Upgrade with high energy efficiency components at the end of component life
- Continue and expand energy education and awareness initiatives with residents
- Upgrade with high energy efficiency components before end of component life if cost recovery is eight years or less
- Pursue aggressive approach initiatives when provincial and federal funding is available to pay for initiatives

The creation of the Energy and Utilities Management Plan incorporated the best energy conservation practices, including the engagement of staff and residents

Throughout the development of the EUMP, a best in class review was conducted with a network of large municipal housing providers across the province (i.e. Toronto Community Housing, Ottawa Community Housing and CityHousing Hamilton), involving questionnaires, interactive workshops and multiple building site visits. Buildings were selected using the guiding principles whereby HYI pays all or a mixed portion of utilities, and projects would have a payback period of less than eight years.

Resident surveys were conducted on past energy projects to encourage feedback in the development of the EUMP. By engaging residents early in the process HYI created a positive culture of openness and inclusion.

This methodology provides the best opportunity to reduce GHG emissions while lowering utility costs. In the creation of the EUMP the draft Sustainable Building Policy was reviewed. This EUMP is only focused on retrofit measures for existing buildings. For new developments in the future the draft Sustainability Policy will be fully considered.

Analysis

The Energy and Utilities Management Plan aligns with the Region's Energy and Conservation Demand Management Plan

This EUMP (Attachment 1) is HYI's next step in the plan toward achieving the objectives and goals of *Vision 2051*:

- Advocating for increased energy efficiency and building standards to move toward zero carbon buildings
- Encouraging initiatives that move toward zero carbon building operations by 2051
- Building resiliency into infrastructure and communities

Housing York Inc. will reduce the carbon generated by our buildings

Seven guiding principles (shown in Table 1) were established to achieve the EUMP objectives and goals. Each property was reviewed on a building by building basis using these guiding principles to determine the actions for each property.

Table 1
EUMP Guiding Principles

Guiding Principle	Description
Reduction of GHG Emissions	Reduce or eliminate GHG emissions from HYI's building portfolio to align with the Region's 2051 goal of zero carbon building operations
Net Reduction of Operating Costs	Reduce HYI's net operating costs (utility cost savings, taking into account increases or decreases in maintenance costs, if applicable. Consideration of life cycle costs analysis is completed)
Minimize Operating Complexity	Reduce the number of different building systems and equipment across HYI's portfolio
Integrate a Holistic Systems Perspective when Selecting Equipment	Assess how new building systems will integrate with existing building systems/equipment, upgrade supporting building systems/equipment when justified, and assess the overall performance of buildings
Resident Engagement and Staff Education	Consider the impact on residents of all proposed projects, conduct outreach and education efforts throughout a project's lifecycle to gain buy-in and to promote behaviour changes, and encourage residents' efforts to reduce energy usage and GHG emissions
Climate Change Adaptation	To consider future climate patterns in the process of developing energy conservation initiatives and upgrading building equipment
Consider Conservation as Part of all Capital Projects	To move beyond a "replace like-for-like" system replacement approach, moving towards maximizing energy and utility efficiency for all capital projects

Projects will use proven technologies with a payback of eight years or less

The EUMP is a five year plan, with approximately seven projects per year. To maximize savings, the buildings selected for energy conservation projects were those with the greatest potential for reductions in GHG emissions and operating costs, regardless of their age. The nine buildings selected have a combined total of 1,011 units, representing 37% of the HYI portfolio.

The energy conservation projects will achieve reductions in energy consumption, operating costs and GHG emissions by installing proven technologies with a payback of eight years or less. The proposed energy conservation projects are expected to annually generate 22% GHG reduction, 14% electricity reduction, 24% natural gas reduction, and 4% water reduction, compared to 2017 baseline levels. In addition, energy reduction projects are positioned to take advantage of any provincial or federal funding that becomes available. The buildings will also

periodically be re-commissioned to ensure that all HYI buildings are operated at peak efficiency. The buildings and projects are shown in Table 2. Details of each proposed project are provided in Attachment 1, and building details are provided in Attachment 2.

Table 2
Proposed Energy Conservation Projects

Year	Buildings	Projects	Estimated Project Cost
2020	Richmond Hill Hub, City of Richmond Hill	LED Lighting Retrofit, Domestic Hot Water Management System, Central Heating Management	$358,000
2020/2021	Blue Willow Terrace, City of Vaughan	LED Lighting Retrofit, Central Heating Management System, Low-Flow Water Fixtures	$172,000
2021	Heritage East, Town of Newmarket	LED Lighting Retrofit, Central Heating Management System, Low-Flow Water Fixtures, Enhance Capital Project - Replace In-suite Heating Units, Enhance Capital Project - Windows, Domestic Hot Water Management System	$445,000
2022	Kingview Court, Township of King	LED Lighting Retrofit Central Heating Management System Low-Flow Water Fixtures	$167,000
	Fairy Lake Gardens (468 Eagle Street), Town of Newmarket	LED Lighting Retrofit Central Heating Management System Low-Flow Water Fixtures Variable Speed Controls - Heating Pumps Domestic Hot Water Management System	$280,000
2023	Keswick Gardens, Town of Georgina	LED Lighting Retrofit Central Heating Management System Domestic Hot Water Management System	$302,000
	Mackenzie Green, City of Richmond Hill	LED Lighting Retrofit Central Heating Management System Domestic Hot Water Management System	$248,000

Year	Buildings	Projects	Estimated Project Cost
2024	Hadley Grange, Town of Aurora	LED Lighting Retrofit Central Heating Management System Low-Flow Water Fixtures Variable Speed Controls - Heating Pumps Domestic Hot Water Management System	$234,000
	Rose Town, City of Richmond Hill	Low-Flow Water Fixtures Variable Speed Controls - Heating Pumps Domestic Hot Water Management System	$263,000
Total			$2,468,000

Staff and resident education is an important component of the Energy and Utilities Management Plan

The experience of other municipal housing providers demonstrated that resident and staff engagement and education are important for overall success in energy conservation.

Implementation of each initiative in the EUMP will include opportunities for staff and residents to learn about the new technologies, understand the impact and, where applicable, how to use new technologies, such as the centralized heating management system. Three EUMP education sessions are planned for each building:

- First: delivered prior to installation of any new technologies
- Second: delivered at the mid-point of the project construction
- Final: delivered after the technology has been commissioned; technology refresh sessions will be available to staff and residents on an ongoing basis

Financial Considerations

HYI's Strategic Initiatives Reserve was established to fund strategic priorities, including energy conservation projects. The Strategic Initiatives Reserve is funded from annual operating surpluses and has a projected 2019 year-end balance of $2.7 million.

The EUMP is projected to cost $500,000 per year for a total of $2.5 million over five years. The planned funding source for 2020 and 2021 is HYI's Strategic Initiatives Reserve. Funding sources for the last years of the plan will be considered as part of the new HYI Strategic Plan to be completed in 2020, with funding sources approved through future annual budget submissions.

All incentives paid by third party funders will be applied directly to the Strategic Initiatives Reserve. Any operating savings will be used to fund other operating pressures or to increase the annual surplus.

The projects proposed over the next five years are anticipated to deliver annual savings of over $400,000 and an annual reduction of nearly one thousand tonnes of greenhouse gas emissions

The project plan summary shown in Table 3 highlights the business case. The total estimated cost of the emergency conservation projects is $2.5 million over the next five years; roughly $500,000 per year. Incentives received from third party funders (e.g. Enbridge Gas, Independent Electricity System Operator) are anticipated and will offset costs. As part of the November 2, 2017 energy management report, the Board established an eight year payback period as a guideline to inform energy retrofit investments. With the combination of incentives and energy cost reductions, the proposed projects have an average payback period of only four and half years.

Table 3
Project Plan Summary (2020 to 2024)

Year	Total Cost of Projects	Annual Utility Savings			Annual Cost Savings	Annual GHG Emissions Reduction		Third Party Incentive	Payback Period
	$	Electricity (kwh)	Natural Gas (m^3)	Water (m^3)	$	Tonnes of CO2e	($Cost/kg CO2e)	$	Years
2020	475,260	231,245	144,595	1,844	73,025	282	1.7	135,589	4.7
2021	499,698	887,479	33,017	3,398	117,462	98	5.0	141,527	3.0
2022	499,908	232,069	106,620	2,848	64,960	211	2.4	105,377	6.1
2023	498,762	571,744	103,774	-	87,265	219	2.3	171,894	3.7
2024	495,836	524,488	68,273	1,566	80,097	150	3.3	66,073	5.4
Total	2,469,463	2,447,025	456,280	9,656	422,809	960	2.6	620,459	4.4

Local Impact

All local municipalities benefit from the reduction of GHG emissions. Reduced electricity/gas/water consumption and peak demand reduces the burden on local utility supply and infrastructure.

Conclusion

The EUMP outlines short and long-term goals and milestones developed in conjunction with all stakeholders, previous strategic documents and the seven guiding principles of the plan. The detailed five-year plan (2020 to 2024) includes energy conservation initiatives that will position HYI to successfully meet the EUMPs targets and goals. The EUMP focuses on reduction of GHG emissions, utility consumption, and operating costs while maintaining resident comfort.

The EUMP incorporates the objectives and goals of *Vision 2051* and supports the corporate GHG emissions reduction targets set out in the Council approved *2019 Energy Conservation and Demand Management Plan.* Results from implementation of the EUMP will be shared with

the Energy Conservation and Demand Management Steering Committee. The Committee, made up of staff from all Regional departments who are working collaboratively toward the reduction of corporate GHG emissions, meets quarterly. The EUMP results will also be reflected in the annual Corporate Energy Report informing Council of progress and efforts made by the Region to reduce corporate GHG emissions targets. These actions will set HYI on a path towards its aspirational goal of zero carbon building operations by 2051.

For more information on this report, please contact Josh Scholten, Director, Housing Development and Asset Strategy at 1-877-464-9675 ext. 72004. Accessible formats or communication supports are available upon request.

Recommended by: Kerry Hobbs
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President, Housing York Inc.

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Attachments (2)
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