Agenda – Executive Policy Committee – May 18, 2022

Report – Standing Policy Committee on Protection, Community Services and Parks – May 6, 2022

Item No. 1 Request for Approval to Apply for Third-party Funding for a Geothermal Option for St. Boniface Industrial Area and Windsor Park Station Consolidation Project

STANDING COMMITTEE RECOMMENDATION:

On May 6, 2022, the Standing Policy Committee on Protection, Community Services and Parks concurred in the recommendation of the Winnipeg Public Service and submitted the following to Council:

1. That the Public Service be authorized to apply for third-party funding available for a geothermal heating, ventilation, and air conditioning (HVAC) system for the St. Boniface Industrial Area and Windsor Park Station Consolidation project.

2. That the Proper Officers of the City be authorized to do all things necessary to implement the intent of the foregoing.

Agenda – Executive Policy Committee – May 18, 2022

Report – Standing Policy Committee on Protection, Community Services and Parks – May 6, 2022

DECISION MAKING HISTORY:

STANDING COMMITTEE RECOMMENDATION:

On May 6, 2022, the Standing Policy Committee on Protection, Community Services and Parks concurred in the recommendation of the Winnipeg Public Service and submitted the matter to the Executive Policy Committee and Council.

ADMINISTRATIVE REPORT

Title: Request for Approval to Apply for Third-party Funding for a Geothermal Option for St. Boniface Industrial Area and Windsor Park Station Consolidation Project

Critical Path: Standing Policy Committee on Protection, Community Services and Parks – Executive Policy Committee – Council

AUTHORIZATION

Author	Department Head	CFO	CAO
L. Hathout	C. Schmidt	N/A	M. Jack

EXECUTIVE SUMMARY

The Winnipeg Fire Paramedic Service is requesting approval to apply for third-party funding available for a geothermal heating, ventilation, and air conditioning (HVAC) system for the St. Boniface Industrial Area and Windsor Park Station Consolidation project (Station 9).

The inclusion of a geothermal HVAC system will help the City meet its greenhouse gas emissions targets and will result in the reduction of approximately 35 tonnes of carbon emissions, annually, that would otherwise be produced if this building were dependent on natural gas for heating and cooling.

The geothermal system has an estimated life of up to 50 years and an estimated capital repayment period of 15 years.

Early estimates indicate the geothermal heating, ventilation, and air conditioning (HVAC) system will add approximately $300,000 to the overall project cost. This could be partially funded from a variety of third-party government grants.

The total Council-approved project budget for the consolidation of the St. Boniface Industrial Area and Windsor Park Stations is $13,439,000.

RECOMMENDATIONS

1. That the Public Service be authorized to apply for third-party funding available for a geothermal heating, ventilation, and air conditioning (HVAC) system for the St. Boniface Industrial Area and Windsor Park Station Consolidation project.

2. That the proper officers of the City be authorized to do all things necessary to implement the intent of the foregoing.

REASON FOR THE REPORT

Council approval is required to receive for funding under grants or contribution programs.

IMPLICATIONS OF THE RECOMMENDATIONS

The installation of a geothermal HVAC system is estimated (class 3) to cost $300,000, but will also substantially reduce related operating costs. Pay-back time is estimated to be 10-15 years depending on energy costs and what federal and provincial incentives apply.

One strategy to reduce the greenhouse gas emissions from City-owned buildings is to eliminate the dependency on natural gas. The installation of a geothermal HVAC system will be the first such construction for the City and, as such, it is a critical learning opportunity for future construction and HVAC building retrofits.

HISTORY/DISCUSSION

Case for Geothermal Heating, Ventilation, and Air Conditioning (HVAC) Solutions

Preliminary design work and cost estimates for the St. Boniface Industrial Area and Windsor Park station consolidation were based on traditional mechanical heating and cooling designs using natural gas for heating and rooftop air conditioning units for cooling. Burning gas is the primary source of greenhouse gas emissions in City buildings.

An alternative to fossil fuel heating is the use of heat pumps, which circulate air through condensers or radiators. This option results in no greenhouse gas emissions, but can be expensive due to the electrical demands of these systems. A class 3 quantity survey for the new station 9 estimated that the geothermal solution for a 18,500 sqf building will cost approximately $300,000 to install.

According to the Government of Canada, ground-source systems will reduce heating and cooling costs substantially. Heating energy cost savings compared with electric furnaces are around 65%. Until recently, ground-sourced systems, or geothermal systems, were more efficient than other electrical heat pump systems such as radiators and air conditioning units but could not compete with natural gas costs for heating.

The implementation of the federal carbon tax means that on every cubic tonne of carbon produced, building owners will pay up to $170 by 2031. Greenhouse gas emissions for the new station were estimated at between 30-35 tonnes, at a minimum cost of $5,100 annually in carbon tax.

In addition to the carbon tax, there have been significant gas price increases this year due to changes in the price Manitoba Hydro pays for natural gas from Alberta. In February 2021, the residential gas rate was $0.1012 $/m^3. In May, it went up to $0.1323 and in November it increased by a further 17% to $0.1916. While gas prices have historically fluctuated, it is likely there will be progressive increases in gas rates in response to federal government pressures to reduce greenhouse gas emissions.

Based on the carbon tax, gas and electricity rate increases and information from the federal government, it is possible to compare the net present value of installing a traditional gas heating system with a geothermal option. The total cost of ownership for the geothermal investment will be less than a traditional gas solution within 15 years. Precise calculations are difficult due to uncertainty in Manitoba Hydro pricing and other variables. The 15 year pay-back estimate does not factor in federal and provincial incentives that could be applied towards the installation cost. If received, these incentives could reduce the pay-back time to under 10 years.

The use of heat pump solutions is in-line with the Winnipeg Climate Action Plan (2018). For the community as a whole, buildings are the second-largest source of GHGs (35% of total GHGs) and 99% of these arise from the consumption of natural gas. In order to reduce these fuel emissions, switching to zero-emission energy sources, coupled with enhanced energy efficiency, is required. Note, it is easier and cheaper to build new facilities without fossil fuel-dependent systems than to retrofit them.

With geothermal in place, this building will be eligible for The Efficiency Manitoba 'New Building program 2.2'. This will provide $10,000 towards the energy modelling which is already funded by the project and $2/sqf to achieve enhanced energy targets totalling $37,000. Other federal funding opportunities that can be applied to include the Government of Canada's Low Carbon Economy Fund, which will fund up to 40% ($123,000) of the geothermal costs provided the City pays the upfront investment.

Property owners who install a geothermal heat pump system in Manitoba can receive tax credits from the Manitoba Government. A 7.5% tax credit on geothermal heat pumps that are manufactured in Manitoba for use in Manitoba, plus a 15% tax credit on the remainder of the capital costs of the geothermal system (excluding the heat pump) if the installer is certified by the Manitoba Geothermal Energy Alliance Inc. (see www.mgea.ca). This comes to approximately $29,000.

FINANCIAL IMPACT

Financial Impact Statement **Date:** April 5, 2022

Project Name:

Request for Approval to Apply for Third-party Funding for a Geothermal Option for St. Boniface Industrial Area and Windsor Park Station Consolidation Project

COMMENTS:

The recommendation to apply for third party funding for alternative heating and ventilation options does not generate financial implications.

It should be noted that the recommendation opens the potential for third party funding to become available later as a result of the application for funding, should a more sustainable option be chosen.

Original signed by
John Hall FCMA, CGMA
Financial Controller
Fire Paramedic Service

CONSULTATION

This Report has been prepared in consultation with:

- Assets and Project Management Department
- Office of Sustainability, Water and Waste Department

OURWINNIPEG POLICY ALIGNMENT

02-1 Sustainability: Leading by Example
02-2 Environment: Reduce the environmental impact of our activities, through strategies such as planning for sustainable energy use and greenhouse gas reduction.

WINNIPEG CLIMATE ACTION PLAN ALIGNMENT

City of Winnipeg's Community Energy Investment Plan (CEIP)
Winnipeg's 2018 Climate Action Plan: Planning for Climate Change GHG emission reduction

WINNIPEG POVERTY REDUCTION STRATEGY ALIGNMENT

N/A

SUBMITTED BY

Department: Winnipeg Fire Paramedic Service
Division: Finance
Prepared by: Linda Hathout
Date: April 5, 2022