Agenda – Council – July 21, 2022

Report – Standing Policy Committee on Water and Waste, Riverbank Management and the Environment – June 28, 2022

Item No. 6 Community Energy Investment Roadmap to Reach Net Zero Emissions by 2050

STANDING COMMITTEE RECOMMENDATION:

On July 13, 20022, the Executive Policy Committee concurred in the recommendation of the Standing Policy Committee on Water and Waste, Riverbank Management and the Environment and submitted the following to Council:

1. That the Public Service implement the Community Energy Investment Roadmap and analyze and research how to include climate change impact in the operating and capital investment processes and decisions.

2. That the results of the Community Energy Investment Roadmap, including the Community GHG Inventory, modelling results, and implementation framework be used to inform the updates to the Winnipeg Climate Action Plan and development of the Climate Resiliency Strategy.

3. That the impacted departments be directed to prepare an annual Departmental submission to the Multi-Year Budget Process to support implementation of the Community Energy Investment Roadmap.

4. That the following positions and required estimated annual salary and benefits, increasing annually in accordance with the Collective Agreement, be referred to the 2023 Operating Budget:

    A. One Senior Planner (1.0 FTE, WAPSO 4) to lead high level strategies and projects, namely the Winnipeg Climate Action Plan update and the Climate Resiliency Strategy ($121,651).

    B. One Green Building Specialist (1.0 FTE, WAPSO 3) to support the Winnipeg Climate Action Plan update, Climate Resiliency Strategy, and policy and program development related to reducing building sector emissions ($108,142).

5. That delegated authority be provided to the Chief Administrative Officer to apply and accept external grants and enter into partnerships and agreements of up to $500,000 each, to support implementation of the Winnipeg Climate Action Plan and the Community Energy Investment Roadmap.

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

Report – Standing Policy Committee on Water and Waste, Riverbank Management and the Environment – June 28, 2022

DECISION MAKING HISTORY:

EXECUTIVE POLICY COMMITTEE RECOMMENDATION:

On July 13, 20022, the Executive Policy Committee concurred in the recommendation of the Standing Policy Committee on Water and Waste, Riverbank Management and the Environment and submitted the matter to Council.

STANDING COMMITTEE RECOMMENDATION:

On June 28, 20022, the Standing Policy Committee on Water and Waste, Riverbank Management and the Environment concurred in the recommendation of the Winnipeg Public Service and submitted the matter to the Executive Policy Committee and Council.

Curtis Hull, Project Director, Climate Change Connection, submitted a communication dated June 28, 2022 in support of the matter.

ADMINISTRATIVE REPORT

Title: Community Energy Investment Roadmap to Reach Net Zero Emissions by 2050

Critical Path: Standing Policy Committee on Water and Waste, Riverbank Management and the Environment – Executive Policy Committee – Council

AUTHORIZATION

Author	Department Head	CFO	CAO
B. Raddatz, RPP Manager, Office of Sustainability	T. W. Shanks, M. Eng., P.Eng., Director, Water and Waste	K. Lemoine, Acting CFO	M. Jack

EXECUTIVE SUMMARY

This report presents the Community Energy Investment Roadmap (CEIR), which updates the City's greenhouse gas emissions inventory, and defines the actions and investments needed to meet the OurWinnipeg 2045 Climate Action Targets for reduced emissions.

The Public Service engaged Sustainability Solutions Group Workers Cooperative to produce the CEIR (Appendix A), which contains financial, energy, and emissions modelling and analysis, updates the 2011 emissions inventory, and defines actions and investments required to meet these goals. The CEIR builds on actions already identified in other plans, including OurWinnipeg 2045, Winnipeg's Climate Action Plan, and the Winnipeg Transit Master Plan.

The CEIR can be used to inform the development of strategic City policies, infrastructure plans, and investments, by establishing targets and objectives for each sector. It provides annual greenhouse gas (GHG) emissions targets against which progress can be tracked. Additionally, it will represent an economic development roadmap for the city, by identifying opportunities for new and existing businesses. The CEIR highlights the cost and benefits of actions, laying a foundation for the development of regulations, policies, and incentives to prioritize and accelerate action.

Meeting the Council-approved target of net zero emissions by 2050 will require action across the city, together with national and global level efforts. The findings of this modelling and analysis can be used in decision-making by the City of Winnipeg, as well as by organizations, businesses and community groups across sectors, both in collaboration with the City, as well as in their own planning processes, to reach net zero emissions by 2050.

RECOMMENDATIONS

1. That the Public Service implement the Community Energy Investment Roadmap and analyze and research how to include climate change impact in the operating and capital investment processes and decisions.

2. That the results of the Community Energy Investment Roadmap, including the Community GHG Inventory, modelling results, and implementation framework be used to inform the updates to the Winnipeg Climate Action Plan and development of the Climate Resiliency Strategy.

3. That the impacted departments be directed to prepare an annual Departmental submission to the Multi-Year Budget Process to support implementation of the Community Energy Investment Roadmap.

4. That the following positions and required estimated annual salary and benefits, increasing annually in accordance with the Collective Agreement, be referred to the 2023 Operating Budget:

    A. One Senior Planner (1.0 FTE, WAPSO 4) to lead high level strategies and projects, namely the Winnipeg Climate Action Plan update and the Climate Resiliency Strategy ($121,651).
    B. One Green Building Specialist (1.0 FTE, WAPSO 3) to support the Winnipeg Climate Action Plan update, Climate Resiliency Strategy, and policy and program development related to reducing building sector emissions ($108,142).

5. That delegated authority be provided to the Chief Administrative Officer to apply and accept external grants and enter into partnerships and agreements of up to $500,000 each, to support implementation of the Winnipeg Climate Action Plan and the Community Energy Investment Roadmap.

6. 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

The Winnipeg's Climate Action Plan – Year 1 Update report included the following recommendation, which was adopted by Council January 30, 2020:

> *That as per Direction 1.2 of Winnipeg's Climate Action Plan (WCAP), the Public Service undertake detailed financial, energy and emissions mapping and modeling to understand the costs and benefits of implementing the Plan. The funding to conduct this modeling, $200,000, be referred to the 2020 Budget process.*

On March 20, 2020 Council adopted the 2020 Preliminary Operating Budget which included $200,000 of one-time funding for mapping and modeling for the Climate Action Plan.

Council approval is required to direct the Public Service to implement the roadmap and to provide delegated authority to apply for, and accept grants.

IMPLICATIONS OF THE RECOMMENDATIONS

Approval of this report will provide the Public Service authorization to apply the Community Energy Investment Roadmap to meet the OurWinnipeg 2045 target of net zero emissions by 2050.

Funds for the estimated total of $229,793 for the two FTEs will be considered as part of the 2023-2026 multi-year budget process.

Any financial implications regarding potential changes to City resources will be considered as part of the 2023-2026 multi-year budget process.

HISTORY/DISCUSSION

In September 2018, *Winnipeg's Climate Action Plan: Planning for Climate Change, Acting for People* (WCAP) was adopted by Council. The Public Service was then directed to conduct greenhouse gas and economic modelling of the WCAP to understand the estimated costs and benefits of implementation.

In 2020, Sustainability Solutions Group Workers Cooperative was hired to undertake this work, titled Winnipeg's *Community Energy Investment Roadmap* (CEIR).

In 2021, Council gave *OurWinnipeg 2045* second reading, which included an updated target of net zero emissions by 2050, in alignment with federal and international targets, which replaced the WCAP target of 80 percent reductions in greenhouse gas compared to 2011 levels. The CEIR process was updated to reflect the new target. *OurWinnipeg* 2045 was given third reading and approved by Council on May 26, 2022.

Purpose

The purpose of the CEIR is to identify City and community-wide systems level actions and investments required to achieve emissions reduction targets as outlined in the WCAP, as well as additional actions that will be necessary to meet the *OurWinnipeg 2045* target of net zero emissions by 2050. This technical analysis identifies actions and investments to decarbonize the city; however, it does not specify policies, resources, or mechanisms to operationalize these actions.

The CEIR can be used to inform the development of strategic City policies, infrastructure plans, and investments by establishing targets and objectives for each sector. It provides modelled annual GHG emissions against which progress can be tracked. Additionally, it may represent an economic development roadmap for the city, by identifying opportunities for new and existing businesses. The report highlights the cost and benefits of actions, laying a foundation for the development of regulations, policies, and incentives to prioritize and accelerate action.

Overview

The CEIR is a robust modelling exercise to investigate energy consumption in the city and the resulting emissions, today and into the future. This analysis informed the development of a pathway to net zero emissions.

Three scenarios for the period from 2016 to 2050 were assessed, each one with increasing ambition. The scenarios are:

- **The Business-As-Usual**: Illustrates energy consumption and GHG emissions if Winnipeg makes no major changes into the future.
- **The Business-as-Planned**: Includes changes expected from Federal and Provincial policies and regulations, as well as existing plans underway in Winnipeg to improve efficiency and reduce emissions.
- **The Net-Zero Scenario:** Details the pathway to achieving the City's emissions target. This scenario was added on top of the Business-as-Planned scenario, where fossil fuels are removed entirely from the city, systems are retrofitted and replaced with more efficient versions, and clean electricity is the primary fuel source.

Data

The CEIR includes a new, community-wide, GHG emissions inventory based on the Global Protocol for Community-Scale GHG Emissions (GPC), the globally accepted standard for municipal emissions. This inventory measures emissions in 2016, as it is the most recent census year; the quality of census data allows for better modelling of emissions that are not directly measurable, as well as more robust projections of future levels.

The GPC protocol for inventories is different from the emissions reporting protocol used for the 2011 inventory in the 2018 WCAP. The GPC protocol reflects updated methodology and global comparability, providing a modernized community GHG inventory. Using this new protocol, in 2016, community greenhouse gas emissions totaled 4,525,026 tonnes of CO2e. The City's previous 2011 community GHG inventory completed using the ICLEI Local Governments for Sustainability protocol was 5,379,024 tonnes of CO2e. Although there were some system changes that resulted in lower emissions in some areas, such as the installation of the landfill gas capture and flaring system, and leaf and yard waste composting, the difference in the 2011 and 2016 community GHG inventories is due to the change in the protocol used to measure emissions.

The CEIR modelling and analysis drew upon the latest data from federal, provincial, and municipal sources, as well as up-to-date industry projections. Climate change projections, such as heating and cooling demand days, census data, land-use modelling, and national pollution reporting data, were incorporated to develop a robust pathway toward the City's climate goals. City policies and plans were also incorporated into the modelling and analysis.

The CEIR modelling and analysis also drew upon the expertise of internal and external targeted stakeholder groups to help determine achievable scenarios to model for the Winnipeg context (CEIR Appendix B). The City Internal Working Group involved representation from key City departments that would have a stake in project outcomes and implementation of the recommended programs or policies. The Technical Advisory Group involved external stakeholders with technical expertise in climate change mitigation or sector area knowledge (Appendix C).

Through the engagement process, the project team was able to identify gaps in data collection, review and confirm Business-As-Planned and Net-Zero scenario assumptions, and review and provide feedback on financial assumptions. Through both internal and external stakeholder groups, the project team was able to identify barriers, opportunities, or challenges to implementing recommended actions.

Additionally, the CEIR modelling and analysis drew upon the experiences of other Canadian and North American cities. Viable actions and best practices are highlighted in the report and have been used to identify potential next steps in climate action implementation.

Limitations

Systems excluded from the scope of the CEIR include those beyond the City, such as supply chains, human resources, and major energy systems, such as Manitoba Hydro infrastructure. Additional engagement and collaboration will be necessary next steps in addressing these limitations. This is why ongoing accurate, up-to-date data, and expert stakeholder engagement is critical in project decision-making.

The CEIR also does not take Winnipeg to net zero emissions – there is a small gap to address. The majority of the residual emissions in the Net-Zero scenario come from landfilled waste. Opportunities for carbon sequestration and offset are currently underdeveloped and will require more research as systems evolve.

Key Findings

A summary of the key findings is listed below: Further details of the key findings of CEIR can be found on pages 11-12 in the attached report (Appendix A):

- Climate action requires a systematic transformation, where climate considerations are embedded into every policy and expenditure, both within government administration and across the city. This will require collaboration across all sectors to meet stated goals.

- The pathway to net zero emissions takes a 'reduce, improve, switch' framework to transitioning to zero emissions energy systems. This approach looks at reducing the need for energy inputs (land use that supports active transportation, moderately sized homes), improving the energy performance of existing systems (improved building insulation and lighting, increased transit use) and then switching to zero emissions options (zero emission vehicles, heat pumps). This approach improves performance, while reducing the overall load on electrical and other energy systems during transition to net zero.

- From a GHG emissions perspective, switching heating and transportation systems from fossil fuels to electricity is the primary strategy in reducing GHG emissions and achieving the net-zero target. This is built atop land use that enables these energy and emissions reductions.

- In the buildings sector, retrofits reduce the impact on the electrical grid. Combined with local solar generation and battery storage, building retrofits reduce annual electricity consumption to create space on the electrical grid for electrifying heating and transportation. This approach can be applied to move City buildings off natural gas, through deep energy retrofits, and designing and building new City facilities to net zero standards. Renewable Natural Gas is identified as a transitional fuel during this process.

- Modelling shows that system changes to meet net zero by 2050 will require significant capital investment from both public and private sectors, but will be a net positive economic outcome, through the reduction in money spent on fuel, the avoidance of

carbon tax, and new jobs and industry. The net economic benefit calculated does not include the additional benefits related to quality-of-life improvements.

- At the macroeconomic scale of the whole city, the financial investment of the net zero scenario pays for itself two times over, generating savings of $53.7 billion from avoided carbon costs, reduced energy costs, and avoided maintenance costs and revenues of nearly $5 billion until 2050. An average household in 2050 would spend 56 percent less on fuel and electricity in the Net-Zero scenario than they would in the Business-As-Usual scenario.

- Any investments or policies that the City undertakes which result in increased emissions will become stranded investments that are costly to undo (this is referred to as malinvestments). The City can evaluate investments to identify their contributions to reaching net zero climate goals. For example, all new facilities could be designed to a net zero standard with minimal incremental investment to avoid the future cost of retrofitting a natural gas heating system.

- Beyond the benefits in dollar terms, the analysis demonstrates that the CEIR advances multiple city and societal objectives, in addition to achieving deep GHG emissions reductions. These include greater access to transportation options, improved indoor and outdoor air quality, and more comfortable buildings. Additionally, implementation strategies can be designed with an equity lens. Decisions on the type, order, and magnitude of any actions implemented will impact not only emissions reductions, but also how people experience physical, social, and economic impacts of climate change and climate policy.

How to use the CEIR

The CEIR findings can be used to inform city-wide decision-making to achieve Net Zero goals. For the City of Winnipeg, these findings can contribute to departmental planning, programs and policies, including updating the Winnipeg Climate Action Plan beginning in 2023.

The economic benefits and investments described in the CEIR can inform business case development and asset management decision-making for the City of Winnipeg. For example, results and targets for buildings outlined in the implementation section of the CEIR can be used to inform asset management strategy development for converting new and existing City-owned buildings and infrastructure to renewable energy.

The CEIR can also be used by community, industry and stakeholders in specific and collaborative climate action. Access to this data also supports consistency between stakeholders in the discussion of projects and long-range actions. Included in the report are these publicly available resources:

- *Modelling Scope, Method and Process* (CEIR Appendix A) includes details on the modelling approach and scenario assumptions used to provide community energy and emissions benchmarks. It also illustrates the scope of data required for future modelling efforts and can be used to inform other modelling efforts.
- *Modelling Results and Assumptions* (CEIR Appendix B) provides details of the key energy use and GHG assumptions used to model the three scenarios, as well as the model results. This information can be used as a reference for more sector specific modelling or planning.

- Guidance for the near-term implementation of the CEIR is provided in *Implementation Framework* (CEIR Appendix C). Options for collaborative actions are identified, with potential for greater efficiency and effectiveness across neighbouring municipalities, levels of government, and organizations.
- The *GPC Tables* (CEIR Appendix D) is the 2016 Community GHG Inventory and the central data of the report. The tables use the Global Protocol for Community-Scale GHG Emissions to list emission values associated with the different sectors at different scope levels, and allow analysis of impact sources, comparison with other municipalities, and estimation of the impact of actions suggested in the report.

As a companion to the written report*, The CEIR Dashboard* is a web-based tool that provides interactive viewing of the energy and emissions modelling of the three scenarios out to 2050. The data is available for download and can be used for further analysis. The dashboard is publicly accessible from the City of Winnipeg website (Winnipeg.ca/CEIR) and allows for investigating the makeup of the emissions inventory and projections.

City Resources

To take the next steps and incorporate the results of the CEIR on working toward the climate goal of net zero emissions by 2050, two (2) Full Time Equivalents are required. One Senior Planner will lead high level strategies and projects, namely the WCAP update and the Climate Resiliency Strategy. One Green Building Specialist will support the WCAP update, Climate Resiliency Strategy, and policy/program development related to reducing building sector emissions. Any financial implications regarding potential changes to City resources will be considered as part of the 2023-2026 multi-year budget process.

FINANCIAL IMPACT

Financial Impact Statement

Date: June 15, 2022

Project Name:

Community Energy Investment Roadmap to Reach Net Zero Emissions by 2050

First Year of Program **2023**

	2023	2024	2025	2026	2027
Capital					
Capital Expenditures Required	$ -	$ -	$ -	$ -	$ -
Less: Existing Budgeted Costs	-	-	-	-	-
Additional Capital Budget Required	$ -	$ -	$ -	$ -	$ -
Funding Sources:					
Debt - Internal	$ -	$ -	$ -	$ -	$ -
Debt - External	-	-	-	-	-
Grants (Enter Description Here)	-	-	-	-	-
Reserves, Equity, Surplus	-	-	-	-	-
Other - Enter Description Here	-	-	-	-	-
Total Funding	$ -	$ -	$ -	$ -	$ -
Total Additional Capital Budget Required	$ -				
Total Additional Debt Required	$ -				
Current Expenditures/Revenues					
Direct Costs	$ 229,793	$ 237,138	$ 240,646	$ 245,043	$ 249,944
Less: Incremental Revenue/Recovery	-	-	-	-	-
Net Cost/(Benefit)	$ 229,793	$ 237,138	$ 240,646	$ 245,043	$ 249,944
Less: Existing Budget Amounts	-	-	-	-	-
Net Budget Adjustment Required	$ 229,793	$ 237,138	$ 240,646	$ 245,043	$ 249,944

Additional Comments:

Direct costs include the salaries and benefits for the "Senior Planner" WAPSO 4, Step 21 (1 FTE) and "Green Building Specialist" WAPSO 3, Step 21 (1 FTE). These costs are being referred to the 2023 budget process for the amount in the Net Budget Adjustment Required. The ability to proceed and incorporate the results of the Community Energy Investment Roadmap on working toward the climate goal of net zero emissions by 2050 is contingent on the additional positions being approved.

Lucy Szkwarek, CPA, CGA

Lucy Szkwarek, CPA, CGA
Manager of Finance and Administration

CONSULTATION

This Report has been prepared in consultation with:

N/A

OURWINNIPEG POLICY ALIGNMENT

This report is in accordance with the OurWinnipeg 2045 policies through:

OurWinnipeg Goal: Leadership and Good Governance

- Objective:
  - Establish and implement priority actions through evidence-informed decision-making processes.
- Policies:
  - Responsive Change Management
    - Monitor and evaluate municipal investment and divestment, activities and risk of action or inaction, and outcomes for effectiveness, through a relevant set of sustainability goal indicators, benchmarks and targets, and analysis of local and global community trends.

OurWinnipeg Goal: Environmental Resilience

- Objectives:
  - Prioritize the transition to a resilient, low-carbon future through demonstrated organizational community leadership, and collaborative actions that mitigate and adapt to a changing climate.
  - Prioritize sustainable transportation as the mobility options of choice.
  - Promote low-carbon energy efficient buildings through low-energy building design, construction and retrofitting.
- Policies:
  - Climate Action Targets
    - Meet and exceed greenhouse gas emissions reduction targets of 20 percent by 2030, relative to 2011, and net zero by 2050, by working towards partnerships with the community, businesses, and government bodies including Indigenous, Federal and Provincial governments.
  - Climate Action Investment
    - Prioritize the long-term economic benefits of sustainability and climate action in municipal decision-making processes, including the budget, investment planning and procurement processes.
  - Climate Action Leadership
    - Demonstrate municipal environmental leadership through an integrated, proactive organizational culture that applies innovative practices, including piloting new initiatives and evaluating and sharing results to eliminate the use of fossil fuels and enhanced climate resilience in the natural and built environment.
  - Eliminate Fossil Fuel Dependence
    - Reduce greenhouse gas emissions from existing and new buildings, including municipally-owned buildings and facilities, and associated infrastructure, through the promotion of renewable energy sources; energy efficiency use and performance measures; and low-carbon construction, retrofit, and demolition methods that maximize the lifecycle of buildings.

WINNIPEG CLIMATE ACTION PLAN ALIGNMENT

Key Direction 1.2 - Understand and Integrate Business and Economic Implications of Climate Action into Decision-Making Processes

- Action: Undertake detailed greenhouse gas and economic modelling of the Climate Action Plan to understand the estimated costs and benefits to the City of implementing the plan

WINNIPEG POVERTY REDUCTION STRATEGY ALIGNMENT

The Community Energy Investment Roadmap (CEIR) aligns with the Winnipeg Poverty Reduction Strategy as both place focus on building a more resilient, sustainable, and equitable city for all residents. The CEIR and the Winnipeg Poverty Reduction Strategy both represent the intention for increased resiliency of our communities, municipalities, and the city as a whole, while also placing emphasis on providing increased support to residents experiencing poverty related to the effects of climate change.

SUBMITTED BY

Department: Water and Waste
Division: Office of Sustainability
Prepared by: Becky Raddatz, Acting Manager
Date: June 15, 2022
File No: O-001

Attachments:

Appendix A: CEIR Report

Appendix B: CEIR Report appendices

Appendix C: CEIR Stakeholder Engagement Summary Report