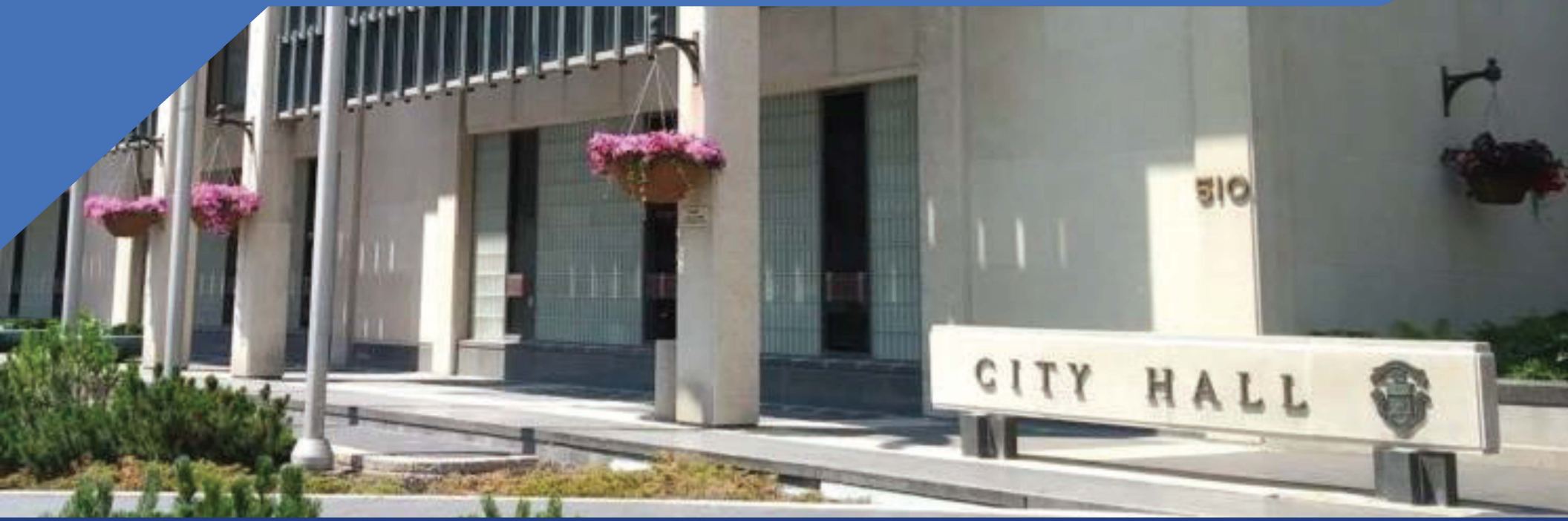
# Building Emissions Reduction Strategy

A Strategic Framework for Sustainable Management of City Owned Buildings in Winnipeg

April 2025




Winnipeg

## Land and Water Acknowledgement

Winnipeg is located in Treaty No. 1 Territory, the home and traditional lands of the Anishinaabe (Ojibwe), Ininew (Cree), and Dakota peoples, and in the National Homeland of the Red River Métis. Our clean drinking water comes from Shoal Lake 40 First Nation, in Treaty No. 3 Territory.

# Executive Summary



The Building Emissions Reduction Strategy (BERS) outlines the City of Winnipeg's roadmap to lowering emissions in City owned buildings. Through energy efficiency retrofits, electrification, and renewable energy integration, the strategy targets significant greenhouse gas reductions while enhancing building performance and operational savings. Anchored by clear targets, actionable recommendations, and a phased implementation plan, BERS prioritizes innovation, sustainability, and resilience. This strategy ensures Winnipeg's leadership in climate action, aligning with global sustainability goals and securing a greener, more livable city for future generations.

## Scope of Facilities

The Building Emissions Reduction Strategy (BERS) for the City of Winnipeg covers a wide range of municipal facilities, focusing on reducing energy consumption and greenhouse gas (GHG) emissions through efficiency improvements, electrification, and low-carbon technologies. The scope of facilities included in the strategy typically encompasses:

1. Municipal Facilities
2. Winnipeg Fire and Police Service Buildings
3. Transit Buildings
4. Water and Waste Buildings

The strategy prioritizes high-energy-consuming and high-emission facilities, identifying opportunities for energy retrofits, electrification, and operational efficiency improvements. It aligns with Winnipeg's broader sustainability goals, ensuring municipal buildings transition toward net zero carbon over time.



## Strategic Priorities

The Building Energy Reduction Strategy (BERS) is divided into three strategic priorities to ensure a comprehensive, focused, and effective approach to achieving sustainability goals.

1. ***Building Management System (BMS) Upgrades and Retro-Commissioning***
2. ***Building Energy Optimization and Sustainable Practices***
3. ***Comprehensive End-of-Life Planning***



## Targets and Impacts

The strategy establishes clear benchmarks to align with the City's OurWinnipeg 2045 and Community Energy Investment Roadmap.

By implementing BERS, Winnipeg will realize:

- **Emissions Reductions:** Lower carbon emissions through employing energy efficient technology.
- **Operational Savings:** Lower utility bills through efficient energy use.
- **Health and Resilience Co-Benefits:** Improved indoor air quality and greater resilience to extreme weather events.

## Call to Action

The Building Emissions Reduction Strategy represents a vital step in aligning Winnipeg's infrastructure with its climate commitments. By embracing energy efficiency, innovation, and sustainability, Winnipeg can position itself as a leader in municipal climate action, creating a healthier, more resilient community for future generations.

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# Introduction

## City Building Energy Use and Emissions



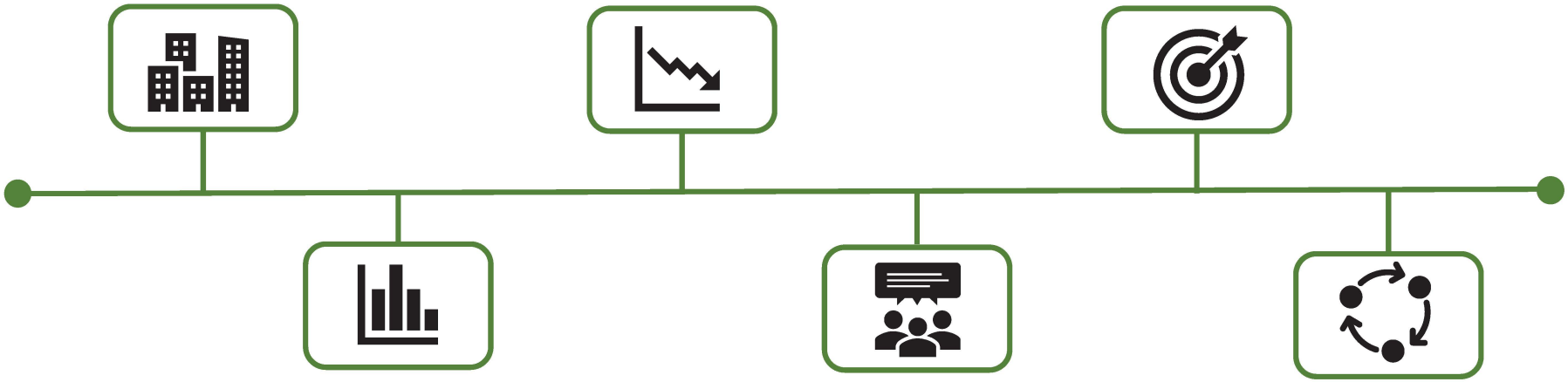
City-owned buildings are a significant contributor to Winnipeg's overall greenhouse gas (GHG) emissions and energy consumption. In 2022 alone, energy use in these facilities accounted for over 34% of total municipal energy consumption and 21% of all GHG emissions. This underscores the critical importance of reducing energy use and emissions across the City's building portfolio to meet its climate commitments.

Historical data reveals trends shaped by operational changes and external factors, such as the COVID-19 pandemic and weather:

| Year | Energy Consumption (GJ) | Emissions (Tonnes $CO_2$) |
|---|---|---|
| 2020 | 770,193 (-21%) | 22,376 (-24%) |
| 2021 | 761,654 (-1%) | 21,660 (-3%) |
| 2022 | 925,462 (+22%) | 27,635 (+28%) |
| 2023 | 952,162 (+3%) | 28,925 (+5%) |

The pandemic caused temporary decreases in energy use and emissions due to shutdowns. However, energy consumption has rebounded, exacerbating cost pressures and emissions growth.

# A Timeline of City Climate Action



**2010-2011**

### Green Building Policy

All new city-owned buildings over 500 square meters must achieve LEED, and comply with Manitoba Hydro Power Smart standards.

**2016**

### City of Winnipeg Corporate GHG Inventory

Tracks emissions from infrastructure and services of the City of Winnipeg. Includes buildings, vehicles, equipment, water and waste infrastructure, and streetlights.

**2018**

### Climate Action Plan Launched

The plan outlines a GHG emissions reduction target of 20% by 2030 and 80% by 2050 (relative to 2011 levels).

**2020**

### Building Energy Disclosure Project

Initiated to monitor and publicly report energy consumption and GHG emissions for city-owned as well as voluntary private buildings.

**2022**

### OurWinnipeg 2045

Our Winnipeg2045 sets out the City's climate target of net zero emissions by 2050.

**2022**

### Community Energy Investment Roadmap (CEIR)

The roadmap identifies City and community-wide systems level actions to achieve net zero emissions by 2050

# Winnipeg's Climate Action Commitments

The **OurWinnipeg 2045** development plan establishes a net-zero target for Winnipeg by 2050, aligning with federal and global climate goals. To support these targets, the **Community Energy Investment Roadmap (CEIR)** identifies actions and investments required across municipal and community systems.

Key drivers for the strategy include:

- **Economic** Benefits: Reducing energy costs and leveraging external funding.
- **Operational Resilience:** Enhancing the reliability and performance of City assets.
- **Environmental Responsibility:** Addressing the growing urgency of climate action.



# Winnipeg's Climate Action Commitments

The Building Emissions Reduction Strategy (BERS) priorities align closely with the Community Energy Investment Roadmap (CEIR) and OurWinnipeg 2045 by translating its city-wide decarbonization goals into specific, actionable steps for city-owned buildings. The Building Emissions Reduction Strategy (BERS) priorities align closely with the Community Energy Investment Roadmap (CEIR) and OurWinnipeg 2045 by translating its city-wide decarbonization goals into specific, actionable steps for city-owned buildings.

BERS is the part of CEIR's climate plan that focuses on reducing emissions from city-owned buildings through energy efficiency, electrification, and sustainable planning. They also emphasize the importance of technology, data transparency, and skill development to ensure continuous improvement and accountability in energy management. Additionally, both plans highlight the benefits of transparency, resilience, and improved public health, helping Winnipeg's infrastructure support both environmental and social sustainability.





# Background and Context

## Challenges in Building Infrastructure

Winnipeg's municipal building portfolio includes over 1,200 facilities, many of which are aging and inefficient. The majority were constructed more than 50 years ago and require substantial modernization to meet today's energy performance and carbon reduction standards.

Key challenges include:

- **Outdated Systems:** Aging HVAC systems, lighting, and building envelopes result in high energy use and maintenance costs.
- **Reliance on Fossil Fuels:** Natural gas heating remains a dominant source of emissions in many facilities.
- **Limited Transparency:** Gaps in accessing real-time energy data from individual buildings hinder accountability and limit opportunities for performance improvement. Relying on monthly energy bills delays the detection of inefficiencies or equipment failures, preventing timely interventions and optimization.
- **Cost of Electricity Versus Natural Gas:** Transitioning from natural gas to electricity is one of the most effective strategies for reducing building-related emissions in Manitoba. However, natural gas has historically been less expensive than electricity, influencing its continued use for heating.
- **Electricity Grid Infrastructure:** Manitoba Hydro has acknowledged the requirement for significant upgrades to its grid infrastructure to effectively manage increasing energy demand and maintain a reliable power supply. https://www.hydro.mb.ca/corporate/operations/system-renewal



# Existing Efforts and Progress

The City of Winnipeg has set a goal to achieve net-zero energy consumption by 2050. To meet this target, substantial emissions reductions are needed across both new and existing buildings. The City is implementing actions from the CEIR for new construction while work is being completed to update the Green Building Policy for New City-Owned Buildings and Major Additions.

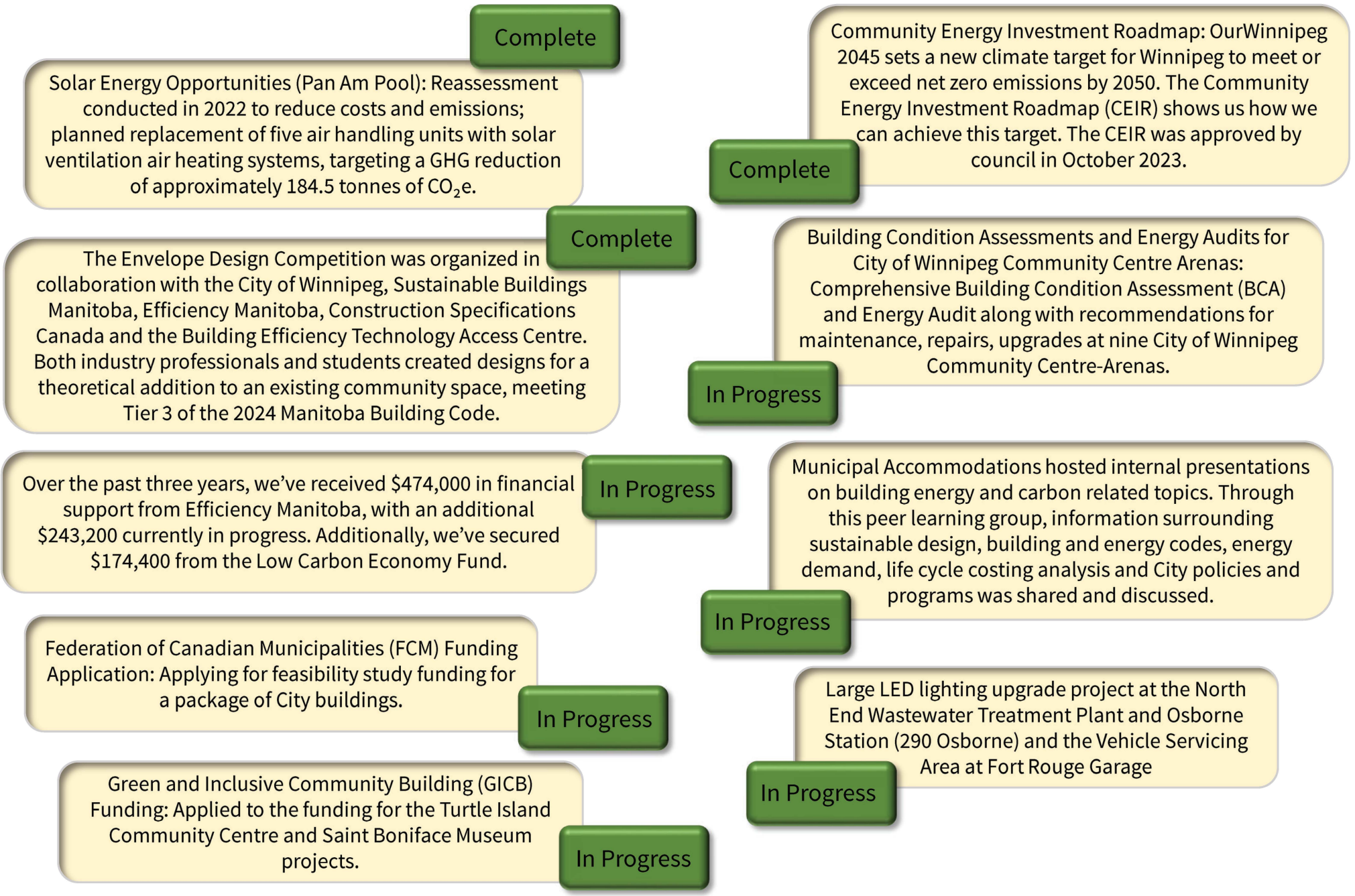
While it is important to reduce emissions in new projects, the bigger challenge in reducing emissions from the building sector lies with the large number of existing buildings across the city. The City owned buildings consumed 761,654 GJ of energy (electricity and natural gas) in 2022, resulting in 21,660 tonnes of $CO_2$ emissions.

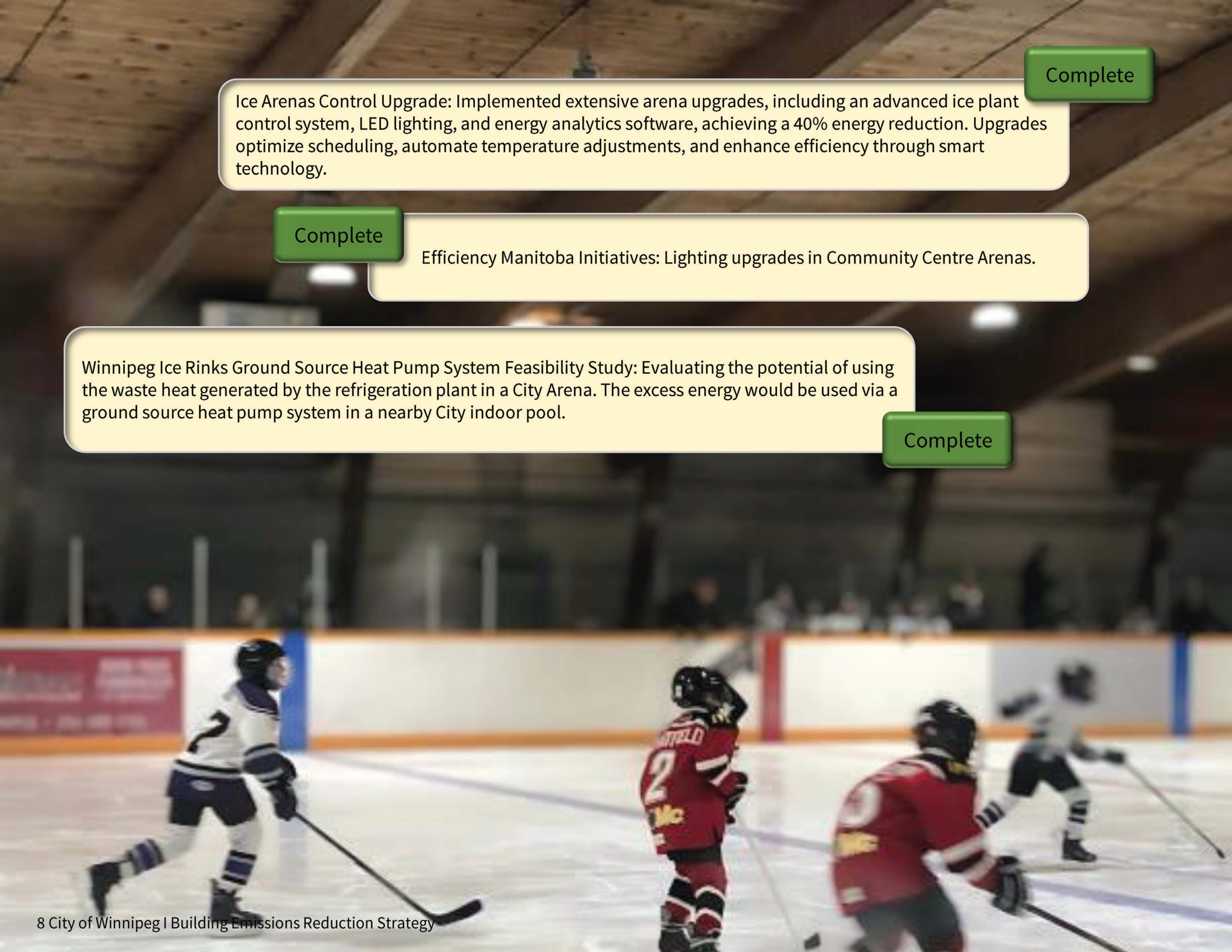
The Building Emissions Reduction Strategy represents a chance to not only address greenhouse gas emissions, but to fix critical maintenance issues, improve occupant health and wellbeing, lower operating costs, and build in resilience measures to better manage risks from extreme weather. By adopting proactive strategies, Winnipeg will position itself as a leader in sustainable city management.

A summary of current building energy and emission reduction approaches can be found in Figure 1.

While these initiatives demonstrate progress, the scale of effort needed to achieve net-zero emissions necessitates a more strategic, coordinated approach.

## Figure 1. Summary of Current Building Energy and Emission Reduction Approaches





Complete

Ice Arenas Control Upgrade: Implemented extensive arena upgrades, including an advanced ice plant control system, LED lighting, and energy analytics software, achieving a 40% energy reduction. Upgrades optimize scheduling, automate temperature adjustments, and enhance efficiency through smart technology.

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Efficiency Manitoba Initiatives: Lighting upgrades in Community Centre Arenas.

Winnipeg Ice Rinks Ground Source Heat Pump System Feasibility Study: Evaluating the potential of using the waste heat generated by the refrigeration plant in a City Arena. The excess energy would be used via a ground source heat pump system in a nearby City indoor pool.

Complete



Complete

Saint Boniface Museum Energy Audit: Completed an energy audit along with building air tightness testing.

# Existing Efforts and Progress:
## New Construction

The East of the Red RecPlex is being designed to be Net Zero Carbon Ready and is registered under the Canada Green Building Council's (CaGBC) Zero Carbon Building – Design Standard™. This certification ensures that the facility is built with the capacity to achieve net zero carbon emissions through high-performance energy efficiency measures, low-carbon energy sources, and strategies to minimize greenhouse gas emissions over its lifecycle.

Several other Net Zero Carbon Ready projects are also underway, including the South Winnipeg Recreation Campus, St. James Civic Centre Facility Expansion, Winnipeg Fire Paramedic Service Amalgamated Station 9, and the North Transit Garage replacement project. These initiatives reflect the City of Winnipeg's commitment to reducing its carbon footprint and enhancing energy efficiency across municipal infrastructure. Additionally, the Low Carbon Economy Fund (LCEF) has provided funding support for the Winnipeg Fire Paramedic Service Amalgamated Station 9, further reinforcing efforts to transition toward a low-carbon future.

Net Zero Carbon Ready refers to buildings designed to lower operational carbon emissions, with the potential to reach net zero through future transition to 100% electricity and/or renewable energy.



# The Need for a Comprehensive Strategy

Winnipeg's building portfolio presents both challenges and opportunities. While aging infrastructure poses hurdles, it also provides a unique chance to align renewal cycles with low-carbon technologies and future-proof investments.

The **Building Emissions Reduction Strategy (BERS)** aims to:

- Build on existing successes by scaling proven energy saving practices.
- Prioritize high-impact retrofits and operational improvements.
- Leverage data transparency and funding opportunities to drive continuous improvement.

This strategy is essential to meeting Winnipeg's climate goals, reducing operational costs, and positioning the City as a leader in sustainable building management.



# Strategic Priorities

The strategy identifies three key priorities to guide implementation efforts:

## Priority 1: Building Management System Upgrades and Retro-Commissioning

i. Continue implementing or upgrading Building Management Systems (Metasys) and SkySpark analytics across all City-owned buildings. These systems will deliver real-time data and insights to optimize building performance.
ii. Implement retro-commissioning for selected buildings to ensure they operate at optimal efficiency and identify any immediate improvements.

## Priority 2: Building Energy Optimization and Sustainable Building Practices

i. Optimize Building Energy Use and Efficiency: Focus on high energy use buildings, replace outdated equipment with efficient alternatives, and implement impactful energy saving measures.
ii. Increase Transparency, Funding, and Training: Track and publish energy data, leverage funding sources like Efficiency Manitoba and the Green Municipal Fund, and train facility managers on energy systems and sustainability goals.

## Priority 3: Comprehensive End-of-Life Portfolio and Strategic Planning

i. Engage a consultant to develop an end-of-life portfolio that aligns low-carbon improvement activities with each building's infrastructure renewal cycles, planned upgrades, and maintenance projects.
ii. Ensure transparency of energy use for accountability and continuous improvement, and plan for future electrification to phase out fossil fuel reliance.

# Priority 1: Building Management System Upgrades and Retro-Commissioning

Investing in user-driven loads and occupancy-based optimization is one of the most cost-effective ways to improve energy efficiency and reduce carbon emissions. When paired with a Building Management System (BMS) for real-time monitoring and control, and supported by recommissioning to ensure continuous alignment with occupancy patterns and user needs, these measures become even more impactful—making them a prudent addition to any upgrade package.

The City of Winnipeg has adopted Metasys software from Johnson Controls to centralize the management of building operations. Metasys streamlines the control of various building functions, making operations more efficient and easier to manage across multiple facilities. To further improve this system, the City has added SkySpark, an advanced analytics software that works with Metasys. SkySpark analyzes data from building systems to provide insights that help optimize performance, detect issues, and improve energy efficiency.

Additionally, the City of Winnipeg has initiated a retro-commissioning program across as many buildings as possible. This process focuses on fine-tuning operational procedures to align with actual building usage, continuously improving energy performance.

Once systems are commissioned or retro-commissioned, SkySpark continues to monitor and report on their performance, ensuring sustained energy savings and reduced maintenance needs.

In 2017, the Standing Policy Committee on Innovation approved $225,483.88 to be used for the Retro Commissioning of City Buildings, however with over 1,200 of City owned assets, additional funding is needed to continue with the work.

A notable example of RCX success is found in the City-operated ice arenas. With support from Efficiency Manitoba, new ice plant control systems have been implemented, resulting in a 40% reduction in pump energy consumption. These advanced systems regulate ice temperature based on demand, ensuring efficient operation. They also integrate arena heaters to maintain consistent temperatures effectively. Additionally, dehumidifiers are optimized to achieve ideal humidity levels, which enhances both comfort and energy efficiency. Ongoing upgrades to LED lighting are further contributing to improved energy usage.

The first identified priority is Building Management System Upgrades and retro-commissioning. Stage 1 steps are:

a. **BMS Installation: Install Building Management Systems across priority buildings to automate control over HVAC, lighting, and other systems:** Many buildings in the City of Winnipeg portfolio have Building Management Systems (BMS), such as Metasys, in place. However, these systems often do not monitor all building systems comprehensively. For instance, in some buildings, only alarm systems, such as fire and security alarms, are connected to Metasys. Meanwhile, critical energy consuming systems like HVAC, lighting, and water systems remain unmanaged or manually controlled. Additionally, buildings like City Hall and the Susan A. Thompson Administration Building rely on outdated control systems with components that are no longer available. A lack of comprehensive monitoring limits the ability to identify and address real-time issues. Overconsumption, equipment malfunctions, and suboptimal performance often go unnoticed, leading to missed opportunities for optimization and greater inefficiency within the portfolio.

To maximize energy efficiency, operational control, and cost savings, the installation of Building Management Systems (Metasys) across the City of Winnipeg's portfolio should be prioritized for high-energy-consuming and high-emission facilities, as well as buildings with outdated or inefficient systems that would benefit most from automation and optimization.



b. **SkySpark Integration: Continue to roll out SkySpark to analyze building data for performance anomalies and inefficiencies:** SkySpark is an advanced analytics platform that helps the City of Winnipeg optimize building performance and achieve its sustainability goals. Designed to support diverse building portfolios, the platform integrates with existing systems to provide comprehensive energy management. By leveraging real-time data, historical trends, and predictive analytics, it delivers actionable insights to facility managers, energy auditors, and decision-makers. The City has already purchased SkySpark, and its rollout has begun, though progress has been slow due to limited resources. Despite this, the platform is gradually being implemented across municipal buildings to enhance data-driven energy management. By analyzing data from systems such as HVAC, lighting, and energy consumption, SkySpark identifies inefficiencies, detects faults, and highlights optimization opportunities in real time. This enables proactive maintenance, reduces energy waste, and drives significant cost savings, supporting Winnipeg's broader Building Emissions Reduction Strategy and sustainability commitments.

c. **Retro-Commissioning: Conduct retro-commissioning audits to optimize existing systems, recalibrating equipment, and addressing operational inefficiencies:** Retro-commissioning is a valuable strategy for the City of Winnipeg to optimize the performance of its building portfolio. By systematically evaluating and fine-tuning systems such as HVAC, lighting, and controls, the city can address inefficiencies, reduce energy consumption, and lower operational costs. Retro-commissioning ensures buildings operate as intended, identifying issues like equipment malfunctions, improper system settings, and unnecessary energy use. This process also extends equipment life and improves occupant comfort by maintaining optimal indoor conditions. Additionally, recommissioning supports the city's sustainability goals, helping reduce greenhouse gas emissions.



Table 1 highlights priority projects for installing or upgrading Metasys, implementing SkySpark, and identifying buildings suitable for retro-commissioning. These buildings were selected based on their high energy consumption, significant emissions, and outdated or inefficient systems, making them strong candidates for optimization and improved performance. All cost estimates are Class 5.

**LEGEND**

Stage Completed:

✘ 0% complete
● ○ ○ 10 - 40% complete
● ● ○ 50 - 90% complete
✓ 100% complete

As of April 1, 2025, the consumer carbon tax has been removed, and all costing reflects this change. Escalation of utility costs has been estimated as 2%.

| Building Name | Priority | BMS Installation Status | SkySpark Implementation Status | Retro-Commissioning Status | MetaSys Project Costs* | Retro-Commissioning & SkySpark Project Costs * | Projected Energy Savings (GJ) | Projected Yearly Utility Cost Savings ($) | Utility Cost Savings Over 10 Years ($) |
|---|---|---|---|---|---|---|---|---|---|
| **Bonivital Pool** (1215 Archibald St) | 2 | ✓ | ✘ | ✘ | N/A | $13,400 | 474 | $3,111 | $34,070 |
| **Cindy Klassen Recreation** (Complex (999 Sargent Ave) | 2 | ✓ | ✘ | ✘ | N/A | $31,400 | 756 | $11,428 | $125,129 |
| **Elmwood Kildonans Pool** (909 Concordia Avenue) | 2 | ✓ | ✘ | ✘ | N/A | $15,400 | 377 | $9,886 | $108,247 |
| **Kinsmen Sherbrook Pool** (381 Sherbrook Street) | 2 | ✓ | ✘ | ✘ | N/A | $9,100 | 270 | $5,000 | $54,751 |
| **Margaret Grant Pool** (685 Dalhousie Drive) | 2 | ✓ | ✘ | ✘ | N/A | $5,300 | 204 | $2,127 | $23,291 |
| **Pan Am Pool** (25 Poseidon Bay) | 1 | ✓ | ✘ | ✘ | N/A | $54,600 | 1,829 | $13,686 | $149,855 |
| **Seven Oaks Pool** (444 Adsum Drive) | 2 | ✓ | ✘ | ✘ | N/A | $15,400 | 652 | $9,809 | $107,401 |
| **Sergeant Tommy Prince Place** (90 Sinclair Street) | 2 | ✓ | ✘ | ✘ | N/A | $15,100 | 596 | $5,278 | $57,795 |
| **St. James Assiniboia Centennial** (644 Parkdale St) | 2 | ✓ | ✘ | ✘ | N/A | $18,500 | 487 | $4,529 | $49,596 |
| **Transcona Kinsmen Centennial Pool** (1101 Wabasha Street) | 2 | ✓ | ✘ | ✘ | N/A | $5,700 | 171 | $1,445 | $15,821 |
| **Freight House Outdoor Pool** (200 Isabel St) | 3 | ● ○ ○ | ✘ | ✘ | $50,000 | $13,200 | 165 | $2,611 | $28,586 |

*Budgets are subject to Council approval

| Building Name | Priority | BMS Installation Status | SkySpark Implementation Status | Retro-Commissioning Status | MetaSys Project Costs* | Retro-Commissioning & SkySpark Project Costs * | Projected Energy Savings (GJ) | Projected Yearly Utility Cost Savings ($) | Utility Cost Savings Over 10 Years ($) |
|---|---|---|---|---|---|---|---|---|---|
| **Kildonan Park Outdoor Pool** (2015 Main St) | 3 | ● ● ○ | ✗ | ✗ | $50,000 | $15,500 | 349 | $1,363 | $14,923 |
| **St. Vital Outdoor Pool** (5 rue des Meurons) | 3 | ● ○ ○ | ✗ | ✗ | $50,000 | $1,600 | 52 | $489 | $5,353 |
| **Westdale Outdoor Pool** (550 Dale Blvd) | 3 | ● ○ ○ | ✗ | ✗ | $50,000 | $1,000 | 68 | $987 | $10,811 |
| **St Vital Library** (6 Fermor Ave) | 2 | ● ○ ○ | ✗ | ✗ | $75,000 | $5,800 | 54 | $568 | $6,219 |
| **Osborne Library** (625 Osborne St) | 2 | ✓ | ✓ | ● ● ○ | N/A | $1,400 | 35 | $4,625 | $50,642 |
| **Sir William Stephenson Library** (765 Keewatin St) | 2 | ● ● ○ | ✗ | ✗ | $75,000 | $4,700 | 74 | $1,476 | $16,162 |
| **Munroe Library** (489 London St) | 2 | ● ● ○ | ✗ | ● ● ○ | $75,000 | $2,700 | 37 | $569 | $6,230 |
| **Millenium Library** (251 Donald Street) | 2 | Outdated | ✗ | ✗ | $700,000 | $58,800 | 897 | $12,705 | $139,115 |
| **St John's Leisure Centre** (601 Aikins St) | 2 | ✓ | ✗ | ✗ | N/A | $3,500 | 39 | $328 | $3,590 |
| **Magnus Eliason Recreation Centre** (430 Langside St) | 1 | ✓ | ✗ | ● ● ○ | N/A | $3,900 | 55 | $1,107 | $12,124 |
| **Turtle Island Neighbourhood Centre** (510 King St) | 1 | ✓ | ✓ | ● ● ○ | N/A | $4,300 | 89 | $1,174 | $12,851 |
| **Civic Centre Complex** (510 Main St) | 2 | Outdated | ✓ | ✗ | $750,000 | $69,300 | 1,567 | $17,300 | $189,432 |
| **Confederation Building** (457 Main St) | 1 | ✓ | ✗ | ✗ | N/A | $26,000 | 637 | $5,239 | $57,362 |
| **Mandarin Building** (185 King St) | 2 | Outdated | ✗ | ● ● ○ | $50,000 | $27,600 | 382 | $6,833 | $74,815 |
| **Public Works & Water and Waste** (1155 & 1199 Pacific Ave) | 1 | Outdated | ✗ | ✗ | $100,000 | $43,500 | 545 | $8,008 | $87,681 |
| **Public Works** (1220 Pacific Avenue) | 2 | ● ● ○ | ✗ | ✗ | $75,000 | $15,500 | 449 | $5,123 | $56,096 |
| **East Yard Complex** (960 Thomas Ave) | 2 | ✓ | ✗ | ✗ | N/A | $35,300 | 672 | $6,180 | $67,668 |

*Budgets are subject to Council approval

| Building Name | Priority | BMS Installation Status | SkySpark Implementation Status | Retro-Commissioning Status | MetaSys Project Costs* | Retro-Commissioning & SkySpark Project Costs * | Projected Energy Savings (GJ) | Projected Yearly Utility Cost Savings ($) | Utility Cost Savings Over 10 Years ($) |
|---|---|---|---|---|---|---|---|---|---|
| **Parks North Main Street Yard** (2170 Main) | **2** | ✓ | ✗ | ✗ | N/A | $6,000 | 96 | $754 | $8,255 |
| **McGee Facility Maintenance Shop** (752 McGee Street) | **2** | ✓ | ✗ | ✗ | N/A | $9,100 | 151 | $1,520 | $16,646 |
| **Fleet Management, Repair Shop & Traffic Signals Branch** (Tecumseh St & Ross Avenue) | **2** | Outdated | ✗ | ✗ | $500,000 | $16,200 | 444 | $4,159 | $45,545 |
| **Animal Services Agency** (1057 Logan Ave) | **1** | ✓ | ✗ | ✗ | N/A | $8,400 | 90 | $965 | $10,564 |
| **Insect Control** (3 Grey St) | **1** | ✓ | ✗ | ✗ | N/A | $1,500 | 26 | $562 | $6,156 |
| **Winnipeg Fire & Paramedic Service** (2546 McPhillips St) | **2** | ✓ | ✗ | ✗ | N/A | $26,300 | 496 | $3,831 | $41,943 |
| **WPS Police Headquarters** (245 Smith St) | **1** | ✓ | ✗ | ✗ | N/A | $189,800 | 6,322 | $57,265 | $627,039 |
| | | | | | **$2,525K** | **$774.8K** | **19,607** | **$212,040** | **$2,322K** |

*Budgets are subject to Council approval



A summary of the proposed initiatives for Priority 1 is presented in the Table 2 below. The number of buildings is determined by Table 1 on the previous page.

| Initiative | Description | Reduction Potential | Estimated Cost/Effort* | Key Performance Indicators | Participating Departments | Outcomes |
|---|---|---|---|---|---|---|
| **1a. BMS Installation** | Install Building Management Systems across priority buildings to automate control over HVAC, lighting, and other systems. | 5-10% reduction in energy use for buildings with new BMS | $2,250,000 (Materials and Labour) | 13 buildings to be completed by end of 2028. | • Municipal Accommodations | • Optimized building operations<br>• Reduced energy consumption<br>• Improved occupant comfort |
| **1b. SkySpark Integration** | Continue to implement SkySpark to analyze building data for performance anomalies and inefficiencies. | 5-15% energy savings by identifying inefficiencies | Contractor Time: $100,000 Software license previously purchased. | 31 buildings to be completed by end of 2027. | • Municipal Accommodations | • Improved data analytics for decision-making<br>• Faster identification of inefficiencies<br>• Better decision-making with actionable data |
| **1c. Retro-Commissioning** | Conduct retro-commissioning audits to optimize existing systems, recalibrating equipment, and addressing operational inefficiencies. | 5-20% reduction in overall energy use | $674,800 (Materials) AND an Additional Permanent 3 FTE (1 Technologist & 2 Electricians) | 35 buildings to be complete by end of 2030 | • Municipal Accommodations | • Creation of a prioritized list of retrofit projects<br>• Improved understanding of building performance<br>• Actionable insights for long-term energy reduction |

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# Priority 2: Building Energy Optimization and Sustainable Building Practices

With an average lifecycle of over 50 years, much of the current City owned building stock is expected to remain in operation through 2050. Ensuring that these buildings achieve the highest standards of energy efficiency, carbon reduction, and climate resilience is critical.

To support these goals, the City has begun installing heat pumps and dual-fuel systems where feasible, gaining valuable insights into their operational performance. The City has also studied innovative energy solutions, such as utilizing waste heat from an arena's refrigeration plant to heat a nearby indoor pool via a proposed ground-source heat pump system.

Targeted upgrades across City buildings have led to a variety of energy efficiency improvements whenever systems required replacement. These enhancements include upgraded lighting, retrofitted building envelopes, HVAC system upgrades, optimized operational controls, and custom energy solutions tailored to specific buildings.

Funding from Efficiency Manitoba has played a key role, alongside support from the Province of Manitoba's Low Carbon Economy Fund. Additionally, two buildings have been submitted for further funding under the Green and Inclusive Community Building Fund. To support informed decision-making and sustainable improvements, the City is also working with the Green Municipal Fund to secure funding for energy audits on select buildings.

Although initial efforts have been started, achieving zero-carbon buildings will require substantial additional efforts. At a minimum, existing facilities must be made "net-zero energy ready," meaning they are highly efficient and prepared for future zero-carbon systems. This readiness includes the capacity for electric heating and renewable energy installations, such as rooftop solar, to enable buildings to produce at least as much energy as they consume.

The initiatives detailed below create a strategic pathway for energy and emissions reduction, enhance operational resilience, and support long-term sustainability goals for the City's building portfolio.

a. **Building Energy Audits:** Several building energy audits have already been completed, including comprehensive assessments of City of Winnipeg Community Centre Arenas and the Saint Boniface Museum. These audits provided insights into maintenance needs, energy efficiency opportunities, and GHG reduction strategies. However, to ensure a holistic understanding of the City's energy landscape, additional audits should prioritize buildings with high energy consumption and significant emissions. This approach will help assess energy consumption, GHG emissions, and the current reliance on fossil fuels for heating, cooling, and other energy systems.
b. **Energy Efficient Replacement Plan:** A structured replacement plan should prioritize aging equipment by integrating high-efficiency alternatives such as variable speed drives, air-source heat pumps, heat recovery ventilators, or high performance windows. The scope should be guided by factors like energy and cost savings potential, regulatory alignment, operational impact, and lifecycle costs.
c. **Immediate Energy Savings Initiatives:** These measures should be prioritized across municipal facilities, like improving insulation, sealing leaks, upgrading thermostats, or installing occupancy sensors. Efficiency Manitoba has already supported lighting upgrades in Community Centre Arenas, demonstrating the impact of targeted "quick win" projects.



d. **Implement Heat Pump Systems:** Replace natural gas heating with electric heat pumps (air-source or ground-source) or electric heating. Transitioning away from natural gas heating by installing electric heat pump systems—both air-source and ground-source—is a critical step toward electrification and carbon reduction goals. The ongoing Winnipeg Ice Rinks Ground Source Heat Pump System Feasibility Study explores utilizing waste heat from refrigeration systems to support nearby facilities, highlighting innovative approaches to sustainable heating.

e. **Install Renewable Energy Systems:** When cost-effective over the building's lifecycle, incorporate renewable energy systems such as solar PV, solar thermal, solar walls, and small wind turbines, into new construction or deep energy retrofits.

f. **Energy Use Transparency:** To enhance accountability and decision-making, the City should implement an energy use transparency framework. While the existing Building Energy Disclosure Project requires both internal and public reporting of annual energy performance, this initiative focuses on internal operational improvements. It emphasizes ongoing tracking, real-time reporting, and the use of interactive dashboards to support facility managers and stakeholders in optimizing energy use.

g. **Funding and Incentive Utilization:** The City should continue leveraging available funding opportunities to support energy retrofit projects. Strategic partnerships with organizations like Efficiency Manitoba, Federation of Canadian Municipalities (Green Municipal Funding), and Manitoba Hydro will ensure the City maximizes available resources to support long-term energy goals.



h. **Stakeholder Training:** Training facility managers and staff is crucial for effectively operating energy efficient systems and supporting sustainability goals. Programs should focus on using Building Management Systems (BMS) and SkySpark analytics to monitor and optimize energy performance in real time. Staff should also learn to interpret energy data, recognize trends, and make informed decisions to improve efficiency and reduce costs. Aligning daily operations with sustainability goals ensures ongoing energy conservation efforts. Past initiatives, such as Municipal Accommodations' peer learning sessions, have provided a solid foundation for expanding knowledge-sharing and continuous improvement in energy management.

i. **Implement M&V Process:** Implementing a Measurement and Verification (M&V) process involves establishing comprehensive monitoring and tracking mechanisms aligned with the International Performance Measurement and Verification Protocol (IPMVP®). This process ensures accurate measurement of energy savings, carbon emission reductions, and cost performance, providing valuable insights into the effectiveness of energy efficiency initiatives. Regular data collection, analysis, and reporting are essential to track progress, identify areas for improvement, and support informed decision-making. Transparent reporting to stakeholders enhances accountability, builds confidence in sustainability efforts, and helps demonstrate compliance with regulatory requirements and organizational goals. Continuous review and optimization further maximize long-term energy performance and financial benefits.



A summary of the proposed initiatives for Priority 2 is presented in the Table 3 below. A supportive initiative may not directly reduce energy consumption or emissions but plays a crucial role in enabling and enhancing reduction efforts.

| Initiative | Description | Reduction Potential | Estimated Cost/Effort* | Key Performance Indicators | Participating Departments | Outcomes |
|---|---|---|---|---|---|---|
| **2a. Building Energy Audits** | Conduct energy audits on high energy use buildings to assess energy use, GHG emissions and the current reliance on fossil fuels for heating, cooling, and other energy systems. | Supportive Initiative | Consultant Time: $300,000-$400,000 | 10 buildings to be completed by end of 2027 | • Municipal Accommodations | • Creation of a prioritized list of retrofit projects<br>• Improved understanding of building performance<br>• Actionable insights for long-term energy reduction |
| **2b. Energy Efficient Replacement Plan** | Develop a structured replacement plan that prioritizes aging equipment by integrating high-efficiency alternatives. | Supportive Initiative | Consultant Time: $50,000-$100,000 depending on scope | Complete by end of 2026 | • Municipal Accommodations | • Lower energy use<br>• Lower GHG emissions<br>• Reduced operational energy costs<br>• Improved equipment lifespan and performance |
| **2c. Immediate Energy Savings Initiatives** | Prioritize immediate energy saving measures like improving insulation, sealing leaks, upgrading thermostats, or installing occupancy sensors. | 5-20% building energy and carbon reduction depending on building and upgrades performed. | Consultant Time: $100,000-$150,000 | Complete by end of 2030 | • Municipal Accommodations<br>• Transit<br>• Waste and Water | • Lower Energy Use<br>• Lower GHG Emissions<br>• Lower utility costs<br>• Reduced operating hours leading to longer equipment life and reduced maintenance. |
| **2d. Implement Heat Pump Systems** | Replace natural gas heating with electric heat pumps (air-source or ground-source) where feasible. | 40-100% facility natural gas/carbon reduction, 5-20% energy reduction. | $10,000-$100,000 per unit depending on building size and system complexity | On going | • Municipal Accommodations<br>• Transit<br>• Waste and Water | • Lower energy use<br>• Lower GHG emissions<br>• Eliminating on-site combustion reduces pollutants such as NOx and particulate matter.<br>• Long-term cost savings achieved when implemented with effective control strategies. |

*Budgets are subject to Council approval

| Initiative | Description | Reduction Potential | Estimated Cost/Effort* | Key Performance Indicators | Participating Departments | Outcomes |
|---|---|---|---|---|---|---|
| **2e. Install Renewable Energy Systems** | When cost-effective over the building's lifecycle, incorporate renewable energy systems. | 1-5% energy reduction. | $50,000+ per system depending on building size and system complexity. | On going | • Municipal Accommodations<br>• Transit<br>• Waste and Water | • Lower energy use<br>• Lower GHG emissions<br>• Long-term cost savings achieved when implemented with effective control strategies. |
| **2f. Energy Use Transparency** | Implement a system to regularly track and publish energy consumption data across buildings, using dashboards for facility managers and stakeholders. | 5-15% energy savings by identifying inefficiencies | Software cost: $50,000, plus Consultant Time: $50,000-$100,000 | Complete by end of 2027 | • Municipal<br>• Accommodations | • Improved transparency in energy usage.<br>• Enhanced accountability and progress tracking toward energy goals.<br>• Engagement of stakeholders through public reporting |
| **2g. Funding and Incentive Utilization** | Include methods for the City to leverage incentive funding streams for retrofit projects. Partner with organizations like Efficiency Manitoba, Federation of Canadian Municipalities (Green Municipal Funding), and Manitoba Hydro to gain additional resources. | Supportive Initiative | Consultant Time: $50,000-$100,000 for researching and applying for incentives | Ongoing | • Office of Sustainability<br>• Municipal Accommodations | • Enhanced funding availability for energy and carbon reduction initiatives. |
| **2h. Stakeholder Training** | Provide training for facility managers and staff on the new systems (BMS, SkySpark), energy reporting tools, and sustainability goals. | Supportive Initiative | Training materials and sessions Consultant Time: $20,000-$75,000 | Complete by end of 2027 | • Municipal Accommodations<br>• Transit<br>• Waste and Water | • Improved facility operation efficiency<br>• Staff empowered with skills for energy saving practices<br>• Enhanced collaboration among stakeholders |
| **2i. Implement M&V Process** | Implement monitoring aligned with IPMVP® to track energy savings, emissions reductions, and costs. Regularly review and report progress to ensure transparency and accountability. | Supportive Initiative (Maintains Energy Reductions) | Software cost ($5,000–$15,000 annually) + Staff training ($60,000) | Complete by end of 2028 | • Municipal Accommodations<br>• Transit<br>• Waste and Water | • Ensures projects meet their efficiency goals.<br>• Uncovers operational issues.<br>Supports behavior change<br>Lower energy use<br>Lower GHG emissions<br>• Lower utility costs |

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The following buildings were previously identified in the Retrofits to Reduce Carbon Tax Payment Obligations administration report. Additionally, other buildings were selected through consultations with operations staff on a case-by-case basis. Each building includes one or more energy and carbon-saving projects aimed at improving efficiency and reducing costs. Investments include heat recovery installation, boiler replacement, building air leakage testing and repair, fresh air/ventilation system recalibration, air handling unit replacements, solar wall installation, window, walls and roof upgrades, replacement of motors and pumps, installation of LED lighting, installation of lighting control and updated building controls.

As of April 1, 2025, the consumer carbon tax has been removed, and all costing reflects this change. Escalation of utility costs has been estimated as 2%.

| Building | Project Description | Priority | Cost of Retrofit Investments* | Carbon Savings (Tonnes) | Energy Savings (GJ) | Annual Cost Savings ($) | Cost Savings Over 10 Years ($) |
|---|---|---|---|---|---|---|---|
| **Confederation Building** (457 Main) | Boiler Controls Update, & Lighting Upgrade | 1 | $50K | 40 | 814 | $4,278 | $46,846 |
| **Mandarin Building** (185 King St) | Boiler Replacement | 2 | $250K | 43 | 1,321 | $15,039 | $170,197 |
| **Public Works Yard & Administrative Offices** (1539 Waverly) | Boiler Replacement | 3 | $300K | 48 | 980 | $10,240 | $114,904 |
| **Westdale Outdoor Pool** (550 Dale Blvd) | Pool Boiler Replacement | 4 | $50K | 89 | 1,795 | $11,787 | $129,065 |
| **Winnipeg Fire Paramedic Service Academy** (2546 McPhillips) | Boiler Replacement | 5 | $250K | 54 | 1,102 | $5,427 | $59,422 |
| **Transcona Kinsmen Centennial Pool** (1101 Wabasha Street) | DHW Heaters & Pool Boiler Replacement | 6 | $100K | 22 | 441 | $2,170 | $23,762 |
| **Fort Garry Lions Outdoor Pool** (969 Dowker Ave) | Steam to Electric Boiler Replacement | 7 | $100K | 52 | 774 | $2,170 | $23,762 |
| **WPS Police Headquarters** (245 Smith St) | Heat Recovery Installation, Air Distribution Upgrade & Cooling Tower Replacement | 8 | $8M | 565 | 14,455 | $129,382 | $1,454,520 |
| **Animal Services Agency** (1057 Logan Ave) | Boiler Replacement, & Heat Recovery Installation | 9 | $250K | 20 | 470 | $3,429 | $38,270 |
| **Civic Centre Complex** (510 Main St) | Steam Boiler Replacement, & Lighting Upgrade | 10 | $8M | 201 | 6,311 | $74,072 | $838,884 |
| **Pan Am Pool** (25 Poseidon Bay) | Air Handling Unit Replacement | 11 | $5M | 185 | 4,376 | $33,776 | $377,750 |

*Budgets are subject to Council approval

| Building | Project Description | Priority | Cost of Retrofit Investments* | Carbon Savings (Tonnes) | Energy Savings (GJ) | Annual Cost Savings ($) | Cost Savings Over 10 Years ($) |
|---|---|---|---|---|---|---|---|
| **Cindy Klassen Recreation Complex** (999 Sargent Ave) | DHW Heaters | 12 | $200K | 11 | 216 | $1,064 | $11,652 |
| **Fort Garry Library** (1360 Pembina Hwy) | Boiler Replacement | 13 | $250K | 6 | 149 | $1,190 | $13,327 |
| **Public Works East Yards Complex** (960 Thomas Ave) | Air Handling Unit Replacement & Air Distribution Upgrade | 14 | $5M | 81 | 2,253 | $23,072 | $260,385 |
| **St. James-Assiniboia Library** (1910 Portage Ave) | Boiler & Air Handling Unit Replacement | 15 | $1M | 14 | 332 | $2,698 | $30,232 |
| **Turtle Island Neighbourhood Centre** (510 King St) | Air Handling Unit Replacement NG to Electric | 16 | $1M | 78 | 1,008 | $1,119 | $11,165 |
| **Winnipeg Transit Fort Rouge Garage** (421 Osborne St) | Recommissioning of Whole Building & Verify Outdoor Rates | 17 | $1M | 160 | 8,467 | $143,251 | $1,634,069 |
| **North End Sewage Treatment Plant** (2230 Main St) | Air Handling Unit , Lighting and Boiler Replacement | 18 | $5M | 1,320 | 28,446 | $258,542 | $2,942,757 |
| | | | $35.8M | 2,989 | 73,710 | $723K | $8.2M |

*Budgets are subject to Council approval



# Priority 3: Comprehensive End-of-Life Portfolio and Strategic Planning

To achieve GHG reductions, the City must move beyond isolated system improvements and adopt a more holistic approach to retrofit project planning. This comprehensive strategy enables deeper, sustainable enhancements across a building's entire lifecycle, addressing all aspects of performance, such as energy efficiency, water use, air quality, and occupant comfort, to ensure upgrades work in harmony rather than creating inefficiencies. It allows for more strategic investment by aligning short- and long-term goals, future-proofing buildings through resilience to changing technologies, regulations, and environmental conditions.

A Comprehensive End-of-Life (EOL) Portfolio and Strategic Planning approach is essential for reducing energy use and emissions over time. By proactively phasing out outdated systems, the City of Winnipeg can allocate resources toward efficient technologies, cutting emissions while minimizing maintenance costs. This structured EOL strategy reduces the risk of unexpected failures and directs investment toward meaningful upgrades.

When a major piece of equipment is near the end of its useful life, it represents the chance to rethink entire systems. This is especially true for buildings with original systems that are inherently inefficient. Retrofit triggers occur infrequently in the building's lifetime and it is critical that these opportunities are used to ensure the building evolves and remains competitive with newer facilities.

Long-term planning requires a holistic approach that accounts for equipment lifecycles and future-proofs each building for electrification. Given that projects require substantial investment, it is critical to leverage external funding schemes and create a self-sustaining cycle to reduce dependence on external capital. These strategies build resilience, lower costs, and align with climate goals, providing long-term benefits for the City and community.

The following initiatives outline the strategic approach needed for a successful long-term plan:

a. **Creation of Long-Term End-of-Life Portfolio:** The creation of a long-term end-of-life portfolio involves hiring an experienced energy consultant to develop a strategic plan that integrates energy efficient equipment upgrades with building infrastructure renewal initiatives. Using insights from energy audits and existing building assessment data, the consultant will identify systems nearing the end of their useful life and prioritize them for replacement with high-efficiency alternatives. This approach ensures that energy efficiency measures are systematically incorporated into the broader asset management strategy, optimizing both performance and cost-effectiveness. Instead of focusing on isolated improvements to individual systems, the portfolio will take a holistic view by grouping energy and carbon-saving projects across entire building systems. By adopting this comprehensive approach, the City can achieve greater synergies between upgrades, maximizing energy savings and long-term sustainability. Coordinating these initiatives with existing capital planning efforts will help minimize disruptions, align with budget cycles, and ensure that sustainability goals are achieved efficiently.

b. **Electrification Roadmap:** Developing an electrification roadmap involves creating a long-term phased plan to transition from fossil-fuel-based heating systems to electric alternatives. This process includes assessing existing infrastructure to identify required upgrades, collaborating with utility providers to address grid constraints, and aligning implementation with budget cycles. Designing for dual-fuel flexibility in the near to mid-term allows buildings to use both fossil fuels and electricity, ensuring resilience and cost-effectiveness during the transition. Future-proofing electrical infrastructure is essential to accommodate future energy needs and working closely with utility providers helps optimize grid capacity for electrification. A well-structured roadmap provides a clear and strategic approach to achieving sustainability goals while maintaining operational efficiency and financial feasibility.



c. **Financing Opportunities:** Exploring financing opportunities for energy and carbon reduction initiatives requires a comprehensive approach that considers various funding mechanisms to support the successful implementation of projects. Traditional financing methods, such as capital budgets and government grants, may not always be sufficient to cover the upfront costs of large-scale retrofits and infrastructure upgrades. Therefore, it is essential to look into innovative and alternative financing options that can help bridge the financial gap and accelerate the adoption of energy efficient technologies. An example of this is an ESCO (Energy Service Company) is a business that provides energy efficiency-related services, including energy audits, retrofits, financing, and performance contracting. ESCOs typically develop, design, and implement projects that improve energy efficiency, reduce energy consumption, and lower operational costs for buildings, industrial facilities, and municipalities.

d. **Dedicated Energy Savings Reinvestment Plans:** Establishing an Energy Savings Reinvestment Plan is a strategic approach that enables future energy efficiency projects to be internally self-funded, creating a sustainable financial cycle for continuous improvements. These plans are designed to capture the financial savings generated from completed energy efficiency projects and allocate a portion of those savings into a dedicated energy fund. This fund is then used to finance subsequent projects, ensuring that energy efficiency initiatives can continue without relying solely on external funding sources or new budget allocations. The remaining portion of the savings is typically returned to the city's general fund, contributing to broader municipal financial priorities while demonstrating fiscal responsibility.



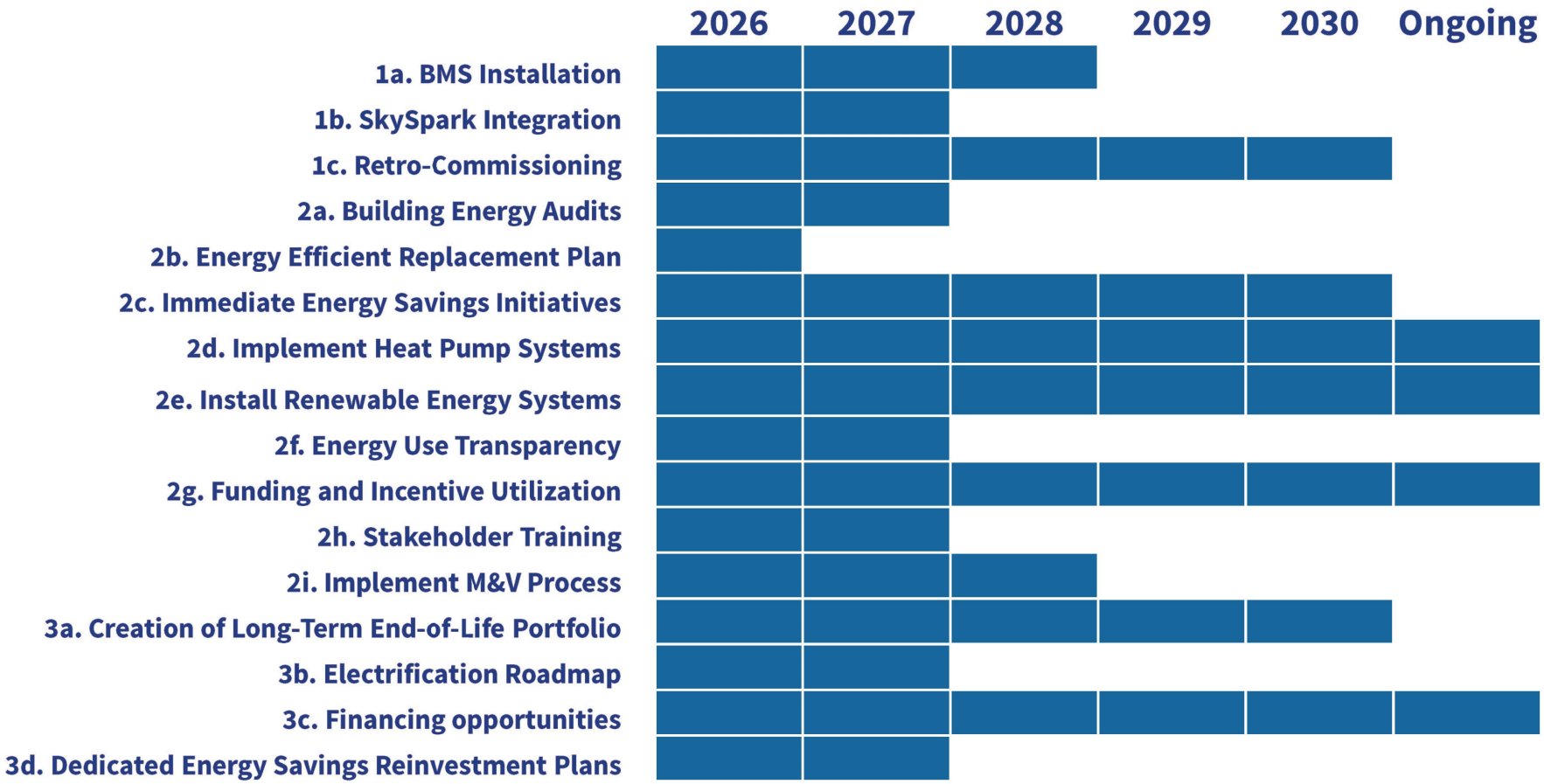
A summary of the proposed initiatives for Priority 3 is presented in the Table 4 below. Supportive Initiative (Maintains Energy Reductions) refers to an initiative that helps sustain previously achieved energy reductions These initiatives may not directly reduce energy consumption further, but they ensure that past energy efficiency gains are maintained, preventing regression.

| Initiative | Description | Reduction Potential | Estimated Cost/Effort* | Key Performance Indicators | Participating Departments | Outcomes |
|---|---|---|---|---|---|---|
| **3a. Creation of Long-Term End-of-Life Portfolio** | Hire an energy consultant to develop a long-term portfolio integrating energy efficient upgrades with infrastructure renewal plans, using audit data. Shift from single-system improvements to a holistic approach for retrofit project planning. | Supportive Initiative | Consultant Time: $220,000 to $550,000 | Complete by end of 2030 | • Finance<br>• Procurement<br>• Infrastructure Services | • Pilot projects are implemented and lessons learned applied.<br>• City adopts an LCA program<br>• Total corporate energy use (GJ)<br>• Total corporate GHG emissions (tCO2e) |
| **3b. Electrification Roadmap** | Develop a phased plan to replace fossil-fuel heating with electric systems, upgrading electrical capacity as needed. Incorporate dual-fuel flexibility, future-proof infrastructure, plan for renewables, and collaborate with utilities. | Supportive Initiative | Consultant Time: $100,000-$150,000 | Complete by end of 2027 | • Infrastructure Services<br>• Municipal Accommodations<br>• External Consultants | • Reduced reliance on natural gas<br>• Clear roadmap for achieving emissions targets |
| **3c. Financing Opportunities** | Look into new methods of financing. Develop a funding strategy to support the implementation of the identified energy and carbon reduction measures. | Supportive Initiative | Consultant Time: $20,000-$50,000 | Ongoing | • Finance Department<br>• Grant Agencies<br>• Financial Institutions | • Increased funding opportunities for projects<br>• Lower cost barriers to implementation |
| **3d. Dedicated Energy Savings Reinvestment Plans** | Establish an Energy Savings Reinvestment Plan which uses project savings to fund future efficiency projects, with a portion allocated to the energy fund and the rest returned to the general fund. | Supportive Initiative (Maintains Energy Reductions) | Consultant Time: $30,000-$75,000 | Complete by end of 2027 | • Financial Services<br>• Municipal Accommodations<br>• Transit<br>• Waste and Water | • Funds reinvested into energy efficiency projects<br>• Improved long-term sustainability of energy programs |

*Budgets are subject to Council approval

# Implementation Summary

The Building Emissions Reduction Strategy (BERS) outlines a plan for lowering emissions across City-owned buildings through energy efficiency retrofits, electrification, and renewable energy integration. This implementation plan provides a phased approach with key actions, timelines, responsibilities, and success metrics. The summary below outlines the planned milestones and initiatives.



# Conclusion

The Building Emissions Reduction Strategy (BERS) represents a critical step forward in Winnipeg's journey toward sustainability and climate leadership. By focusing on measurable targets, actionable recommendations, and a phased implementation plan, the City is committed to addressing the environmental and operational challenges posed by its building portfolio.

The transition to energy efficient, net-zero municipal buildings will not only reduce greenhouse gas emissions but also create cost savings, improve building performance, and enhance the resilience of City infrastructure. Key initiatives, such as deep energy retrofits, electrification, and renewable energy integration, underscore Winnipeg's commitment to innovation and responsible stewardship of public resources.

To ensure the strategy's success, robust governance, transparency, and engagement with stakeholders will be essential. Regular monitoring and reporting will allow for accountability and continuous improvement, enabling the City to adapt as technologies evolve and new opportunities arise.

Ultimately, the BERS is more than a climate strategy—it is a vision for a sustainable future, ensuring Winnipeg remains a livable, vibrant, and resilient city for generations to come. By implementing the recommendations in this strategy, Winnipeg can lead by example, setting a standard for other municipalities to follow in their efforts to combat climate change and create sustainable communities.

