



Community Planning and Development Department

Wednesday, November 06, 2024

Subject: Investigation of Rooftop Solar Panel Installation at the Meridian Community Centre

Recommendation:

BE IT RESOLVED THAT Council receive Report # 2024-0256 Investigation of Rooftop Solar Panel Installation at the Meridian Community Centre, for information;

AND THAT Council include the Meridian Community Centre (MCC) Rooftop Solar Panel Project of \$423,278.98 as a red circle item in the 2025 capital budget, pending successful feasibility and implementation grant applications.

Background:

In May 2024, Council passed a motion for staff to investigate the feasibility and benefits of installing rooftop solar panels and a parking lot solar canopy at the MCC. Specifically, the motion passed stated:

WHEREAS there is a growing need for sustainable and environmentally friendly energy solutions;

AND WHEREAS solar energy presents a viable avenue for reducing carbon emissions, alleviating energy costs, and generating revenue for the Meridian Community Centre (MCC), thereby offsetting operating costs, and advancing Council's green agenda;

AND WHEREAS Council identified Environmental and Climate Adaptation as a primary focus in the 2023-2027 Town of Pelham Strategic Plan;

AND WHEREAS the prospective installation of solar panels aligns with the Town's commitment to environmental stewardship and sustainability initiatives;

NOW THEREFORE BE IT RESOLVED THAT Council hereby directs staff to investigate the feasibility and benefits of installing rooftop solar panels and a parking lot solar canopy at the MCC and report back to Council in Q3 of 2024;

AND THAT this investigation include the suitability of the MCC's rooftop to host solar panels, an analysis of installation costs and potential return on investment, the environmental benefits, as well as an exploration of available incentives and grants for renewable energy projects;

AND THAT staff be further directed to share a draft of the report with the Utility Sustainability Working Group before its presentation to Council.

In response to Council's directive, Town staff have now investigated the feasibility of installing rooftop solar panels at the MCC in Fonthill. This investigation included a structural review of the MCC roof, an analysis of potential environmental and economic benefits, and exploration of various grant opportunities to minimize the financial burden of the potential project. A parking lot solar canopy at the MCC was not reviewed at this time.

This report outlines the findings of this investigation and provides a clear recommendation for the next step in advancing this project.

Analysis:

Structural Review of MCC Rooftop

Hallex Engineering Ltd. was hired by the Town to conduct a structural review to determine whether the MCC roof could support the additional load from solar panels. The review focused on the main trusses, columns, and footings and confirmed that the roof structure can handle the estimated load of 2 pounds per square foot (0.10 kPa).

While some trusses are near full capacity (up to 98% utilization), this is considered safe within standard engineering practices. The columns and footings are well within acceptable limits, ensuring the overall structure can safely support the solar panels. A more exhaustive analysis will be required at the design stage to assess the final panel layout, connection points, and distribution load.

Project Benefits

To better understand the potential impact of the rooftop solar panel installation, the Town hired a consultant, Knowenergy, to conduct a RetScreen analysis - a

necessary component of the funding applications detailed later in this report. RetScreen is a software tool used to assess the energy production, cost savings, emissions reductions, and overall financial viability of renewable energy projects.

The RetScreen analysis provided key data on the estimated greenhouse gas (GHG) emissions reductions, energy savings, and cost savings for this project. The main results from the RetScreen analysis are provided below:

Greenhouse Gas Emissions Reductions: The analysis projected that the installation of solar panels at the MCC would reduce GHG emissions by 15.4 tonnes of CO₂ annually, equivalent to a 3.8% reduction in the facility's total emissions. This supports Pelham's climate action targets and aligns with national efforts toward net-zero emissions.

Energy Savings and Electricity Consumption: The proposed solar panel system would generate energy that is used directly by the MCC, reducing the need to draw electrical power from the grid. The energy produced would be consumed on-site, powering the facility's operations, including lighting heating and other energy needs. From the RetScreen analysis, the proposed solar panel system is estimated to save approximately 573,342 kWh of electricity annually, reducing the MCC's electricity consumption by 44.4%, meaning nearly half of the facility's energy needs will be met by the solar panels, significantly reducing its reliance on external energy sources from the grid. This also equates to a 13.1% reduction in the facility's total energy usage.

Cost Savings: The project is expected to result in an annual savings of \$68,801 in electricity costs, representing a 20.9% reduction in overall energy expenses for the MCC. These savings stem from an estimated annual operations and maintenance cost of \$259,666 for the solar panel system, compared to the projected electricity cost savings of \$328,467, due to reduced reliance on grid electricity. This reduction in external energy use will provide long-term cost efficiency and contribute to a more sustainable operational budget for the facility.

In addition to the benefits outlined above, this project aligns with several of Pelham's strategic priorities. Specifically, it supports the **Environmental & Climate Adaptation** priority by contributing to the Town's goal of protecting natural resources and promoting sustainability through a reduction in greenhouse gas emissions and reliance on non-renewable energy sources.

The project also aligns with **Infrastructure Investment & Renewal**, ensuring that Pelham's community infrastructure incorporates innovative, energy-efficient technologies to meet future needs. Furthermore, it supports **Enhancing Capacity & Future Readiness** by leveraging renewable energy solutions that prepare the municipality for future environmental and economic challenges.

By integrating solar energy into a key community facility, the project also complements Pelham's **Financial Health** priority, as it has the potential to reduce long-term operational costs through significant energy savings.

Next Steps

A priority next step is to conduct a comprehensive feasibility study, which is crucial for validating the technical, structural, and financial aspects of the project. This study is essential to refine project details and design, as well as ensure a successful implementation. Pending successful grant applications, the feasibility study can begin in early 2025.

Financial Considerations:

The RetScreen analysis evaluated the financial viability of the MCC rooftop solar panel project based on an estimated initial investment of \$1.4 million. The analysis showed a negative cash flow of \$38,798 in Year 1 due to initial costs. However, cumulative savings grow over a 20-year lifespan of the project, gradually recouping expenses. The simple payback period is estimated at 20.3 years, indicating that the project will take longer to pay off its costs without grant support, emphasizing the importance of securing funding for financial viability.

To support the project, the Town has applied for two major grants:

Feasibility Study Grant: The Town has applied for a \$70,000 grant under the Green Municipal Fund's Adaptation in Action program, which would cover most of the \$90,000 feasibility study cost. The remaining \$20,000 would be funded by the Town. This grant will support a comprehensive analysis of the structural, technical, and financial aspects of the solar panel installation. The Town of Pelham is expected to receive a decision on this grant by February 2025.

Implementation Grant: For the installation phase, the Town has applied for the Green and Inclusive Communities Grant under Infrastructure Canada. The total cost for project implementation through this grant would be \$2,016,394.90. If successful, this grant would cover 80% of the eligible project costs, providing \$1,613,115.92 in funding. The Town's contribution to the project would be \$403,278.98. This includes a 30% contingency percentage to account for potential unforeseen costs during the project, which is why the costing is a higher amount than the initial project estimate. A decision on this grant is expected by Summer 2025.

Alternatives Reviewed:

Council could direct staff to hire a consultant to conduct a comprehensive feasibility study, regardless of whether the grant applications are successful. In this scenario, Council would need to include an additional \$70,000 in the recommended red circle item in the 2025 capital budget, to cover the full cost of the feasibility study.

Strategic Plan Relationship: Environmental and Climate Change Adaptation

This project strongly aligns with Pelham's **Environmental & Climate Adaptation** priority by reducing the Town's reliance on non-renewable energy and reducing greenhouse gas emission. The installation of solar panels directly contributes to environmental stewardship and climate resilience by generating clean energy on-site, lowering the carbon footprint of municipal operations and ensuring energy dependence. This approach not only minimizes the vulnerability to energy supply disruptions and price fluctuations, but also sets a sustainable example for the community, fostering a broader adoption of green practices and technology.

Additionally, this project supports the Town's **Infrastructure Investment & Renewal** priority by incorporating innovative, energy-efficient technology into a key community facility. By investing in solar energy, the Town ensures that its infrastructure is not only sustainable but also prepared to meet future energy needs, while contributing to **Financial Health** through potential long-term cost savings.

Consultation:

In preparation for this project, consultations were held with Hallex Engineering Ltd. for the structural review, and Knowenergy for the RetScreen analysis. Town staff have also consulted with municipal partners and relevant stakeholders to explore funding opportunities and ensure that the project aligns with broader community goals. Further consultations will be held during the feasibility study phase, including detailed design discussions with solar energy experts.

The Town of Pelham's Utility Sustainability Working Group was also consulted on this report. A verbal presentation of the report was provided to the Working Group in late October 2024, where members expressed support for moving forward with submitting the full report to Council.

Other Pertinent Reports/Attachments:

N/A

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