

Subject: Meridian Centre Backup Power Generator Options and Potential for Solar Power System Installation

Recommendation:

BE IT RESOLVED THAT Council receive Report #2022-0016 Meridian Centre Back Up Power Generator Options and Potential for Solar Power System Installation for information.

Background:

In 2021, Council directed staff to investigate the potential for installing solar power generators at the Meridian Community Centre (MCC) and other municipal structures, and prepare a report with respect to providing backup power generation at the MCC. This report serves to inform Council of the options and costs associated with providing backup power and the possibility of installing solar panels at the MCC.

Analysis:

Solar Power Generation for the MCC

Staff contacted Petroff Partnership Architects to provide technical information and guidance regarding capability of the roof structure to handle the additional weight load of solar panels at the MCC. It was confirmed that on the existing building structural scope, the roof was not designed to support additional roof mounted items or equipment including solar panels.

Staff have been in contact with industrial solar system providers to determine what other Municipal facilities may be suited for solar installations, however this information was not yet available at the time of this report. Once the information has been compiled, Staff will bring a report to Council outlining the potential sites, upfront costs, investment pay-back timelines, solar panel lifespan, grant availability, as well as system maintenance and replacement requirements for consideration during future capital budget preparation.

Emergency Backup Generator for MCC

Public Works and Recreation Culture & Wellness Facility Staff worked together with a local electrical consultant to determine a number of options for providing

emergency backup power to the MCC during power failures. The Backup Emergency Generator Consultant Report is attached as Appendix A. The options are as follows:

Option #1

Based on the original Community Centre design plans, the electrical system was built to support a 600A (623kW) emergency backup power system, intended to support the warm areas of the MCC. The warm areas can be defined as everything west of the atrium main stairway. This includes the atrium, the gymnasiums, the Accursi Room, the RCW offices and the main floor concession. To allow for the future installation of a generator, a 600a breaker and transfer switch was installed into the building's electrical system at the time of construction. The estimated costs of supplying and installing a generator capable of providing the required output ranges from \$780,000 to \$1,000,000 (plus HST). This option does not include providing power or lighting to dressing rooms, arenas, and other cold side areas. The Main Single Line Diagram and electrical panel circuit break down is attached as Appendix B.

Option #2

A second option would be to provide power to the entire building with the exception of the ice making plant. This requires a larger generator, new transfer switch and electrical equipment. The estimated cost of supply and installation of a 1500kW generator ranges from \$1,500,000 to \$1,650,000 (plus HST).

Option #3

In the Corporate Climate Change Adaptation Plan, the Town identified 45 adaptation action items. Item 7.3 reads "Invest in new power support systems (e.g. generator for MCC) for Town's built infrastructure to support seamless services during extreme events".

It is entirely possible to procure a generator and electrical switching equipment that will provide uninterrupted power during extended outages that would support seamless service delivery at the MCC including ice making. The estimated costs of supplying and installing this system ranges from \$3,680,500 to \$4,000,000 (plus HST).

The generators specified in all three options are natural gas burning and are supplied with insulated silencers to meet sound pressure levels of 65db (A) at 10m. The annual maintenance costs are not included in the estimates above but can be predicted to range from 3% to 5% of the original equipment cost. Natural Gas powered generators have a live span between 20 and 25 years.

The installation of a generator at the MCC will require the removal of parking spaces to accommodate their size. Depending on the size of the generator and location required for installation, it is possible to lose up to 7 or more parking spaces, given their footprint.

Winter ice can be maintained without power for approximately 3 days. In the summer this is reduced to 1.5 days, however while the ice making plant is inoperable, the ice cannot be used. The ice making plant must be running during ice maintenance and flooding operations.

Both Option #1 and #2 are similar in that the ice surface could not be used during a power outage resulting in the potential lost rental revenue of \$4500 per day of power disruption during a typical ice season. Power outages over 3 days would result in the loss of the ice surface and would require the complete removal and reinstatement of the ice at a cost of \$15,500 as has been previously reported. The ice can be reinstated over the course of 7 days resulting in an additional \$31,500 in lost rental revenue. Ice cannot be reinstated until the power is returned. For example, a four day loss of power would result in \$49,500 loss of rental revenue plus the \$15,500 of ice reinstatement for a total cost of \$65,000.

Option #1 provides enough power to maintain offices for staff administrative functions and provides space in the gymnasium and Accursi room for emergency shelter as well as washrooms, shower facilities, and food preparation areas if necessary. Staff are investigating the potential for renting a mobile 500kW to 623kW generator that could be available in emergency situations.

Option #2 provides power and lighting to the entire facility, with the exception of the ice making plant and increases the space that may be utilized during prolonged power outages but does not allow for the use of the ice rentals.

Option #3 provides seamless service during extreme weather events but is also the most expensive. Extreme weather or long term system wide power outages may cause the cancelling of services at the MCC for safety reasons regardless if the power is available to continue providing recreational or cultural programs. The annual operating costs of a generator the size required for this option exceeds the lost revenue and expenditure required for ice reinstatement for a month long power outage.

Financial Considerations:

The installation of a backup generator at the MCC is identified in the 20 year Capital Facilities Budget in 2025. The budget has been identified at \$750,000 and is based on Option 1. Council could instruct staff to increase the budget to provide an increased level of service and facility use during power outages and emergency events. (See Table 1 – Summary of Estimated Capital and Operating Costs). In any event, the Capital Facilities Budget will have to be amended to reflect an increased cost for this item.

Table 1 – Summary of Estimated Capital and Operating Costs

Option	Est. Supply and Installation Cost	Est. Annual Maintenance Cost (4%)
Option 1	\$780,000 to \$1,000,000	\$31,200 to \$40,000
Option 2	\$1,500,000 to \$1,650,000	\$60,000 to \$66,000
Option 3	\$3,680,500 to \$4,000,000	\$147,220 to \$160,000

Alternatives Reviewed:

The alternatives have been provided in the Analysis section of this report.

Strategic Plan Relationship: Strong Organization

Providing emergency backup power generation to the MCC will increase the Town's capacity to adapt and respond to events related to extreme weather and climate change. It will contribute to becoming a more resilient and sustainable community while ensuring that public service facilities meet the present and future needs of the community.

Consultation:

Petroff Partnership Architects, Power Tech Consultants, the Supervisor of Recreation Programs and Facilities, the Recreational Facilities Coordinator, the Facilities Tradesperson, the Manager of Public Works, the Director of Public Works, the Director of Recreation Culture and Wellness, the Director Corporate Services/Treasurer, and the Fire Chief all contributed to the drafting of this report.

Other Pertinent Reports/Attachments:

Appendix A - Backup Emergency Generator Consultant Report

Appendix B - Main Single Line Diagram and electrical panel circuit break down

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