
To: Mayor Watters and Members of Council

Report: IS2025-26

Prepared By: Martin Tamlyn, Climate Change Coordinator

Date: 14 Jul 2025

RE: Operations Centre - Solar Panel Update

Recommendation:

THAT the Council of the Township of Centre Wellington endorses the recommended solar panel system at the new Operations Centre, described as Option 1 and outlined in Report No. IS2025-26.

AND THAT Council authorizes Township staff to receive competitive bids, through the General Contractor for the project, for the inclusion of a solar panel system to an upset limit of \$1.2 million as outlined in Report No. IS2025-15.

Summary:

As part of Centre Wellington's commitment to climate mitigation strategies and sustainability design considerations already adopted for the new Operations Centre, Township staff were directed to report on recommendations for solar panel installation options. After review, a net-metered rooftop system was the preferred choice. This design utilizes existing infrastructure, can accommodate energy needs throughout the year, and provides the most significant net return and GHG reduction.

Report:

Background

Through Report No. [IS2025-15](#), Township Council approved the following recommendation related to the new Township Operations Centre:

THAT Council directs staff to further investigate solar power generation opportunities for the site and report back to Council with a recommended option and financial analysis.

The purpose of this report is to present a detailed evaluation of solar panel options, recommend a preferred option, and seek Township Council endorsement of the preferred option.

Solar Panel Benefits

Alongside the sustainable design features incorporated into the new Operations Centre (as outlined in Report No. [IS2025-15](#)), solar panels will provide additional environmental and financial benefits to the Township while also supporting global initiatives to reduce emissions and limit global warming to within 1.5-2 °C.

Advantages of onsite renewable energy generation include:

- Reduced and stable energy cost over its lifecycle;
- Contributes to Provincial and Federal goals and global efforts toward decarbonization;
- Significantly contributes to the Township's own climate goals and energy conservation measures;
- Increases the diversification and stability of the Ontario electrical grid's energy mix as electricity needs are expected to double over the next 25 years; and
- Solar panel installations are low maintenance and have a long lifespan of up to 30 years.

Solar Panel Options and Evaluation

The sections below provide an overview of the options and evaluation.

Net-Metering (NM)

Net-metering enables a larger solar panel array system to offset energy use throughout the year, particularly during winter when solar energy production is reduced. In this setup, excess energy is sent back to the grid and credited on the utility bill. Grid power remains available whenever needed and is only used when solar energy isn't available.

Option 1 - Net Metered Rooftop Mounted Solar Panel System

Under this option solar panels are mounted directly to the building roof.

Advantages and disadvantages:

- Highest lifecycle energy cost savings of all options;
- Efficient use of existing space and infrastructure;
- Good solar orientation;
- Could compromise the integrity of the garage roofing system; and,
- Rooftop access and maintenance can be more challenging.

Option 2 - Net Metered Carport Solar Panel System

Under this option, solar panels are mounted to a carport that would cover the public and staff parking area.

Advantages and disadvantages:

- Smaller system than the rooftop installation, although panels may also be added to the administration building rooftop;

- Carports are dual-purpose, providing shade, shelter, reduced need for snow maintenance, reduced salt use, and potential rainwater capture, and stormwater management;
- High visibility regarding showcasing sustainable design efforts; and,
- Higher upfront costs and longer payback times compared to rooftop-mounted systems.

Load Displacement (LD) System

A solar load displacement system is designed for time-of-use applications to offset electricity consumption, ideally in commercial, industrial, or agricultural settings where energy use is high and consistent. Systems are designed not to generate excess energy beyond the site's load demands or battery storage capacity. In the case of the Operations Centre, the system would be undersized to prevent excess energy waste, especially on weekends.

Load displacement systems are best paired with a Battery Energy Storage System (BESS). Excess energy produced is stored in the BESS systems for later use (e.g., during peak hours or at night) and they enable time-of-use optimization to offset peak demand and associated charges.

Option 3 - LD with BESS Rooftop Mounted Solar Panel System

Under this option, a load displacement system with BESS is installed on the building roof.

Advantages and disadvantages:

- LD systems in conjunction with BESS can provide time-of-use energy, offset peak demand costs, and reduce the demands on the electrical grid;
- LD and BESS qualify for the 50% Save ON Energy rebate as well as the clean electricity tax incentive;
- The system is designed only to provide total energy needs at their peak and does not offset energy costs over the entire year;
- Although capital costs are reduced, BESS systems, depending on their cycles, may need to be replaced every 10 years;
- BESS needs to be monitored and would require dedicated space and ventilation; and,
- The projected power output of the LD/ BESS system is only 36% at most of the NM system, and all other energy will need to be purchased from the grid. The cost of grid energy is predicted to double in the next 25 years.

Option 4 - Net Metered Rooftop Mounted Solar Panel System - Power Purchase Agreement

A Power Purchase Agreement (PPA) for solar panel installation is a financial arrangement where a third-party developer installs, owns, and maintains a solar energy system on a customer's property, and the customer agrees to purchase the electricity generated by the system at a predetermined rate for a fixed period (typically 15–25

years). Under this option, a net-metered system would be installed and owned by a third party on the building roof.

Advantages and disadvantages:

- No upfront capital cost: ideal for homeowners or organizations without capital for solar investment;
- Predictable energy costs: locks in electricity rates, often lower than utility prices;
- Maintenance-free: the provider is responsible for maintaining the system's upkeep and performance;
- Long-term commitment: contracts can be for up to 25 years and may include escalator clauses (rate increases, 2% on a 25-year term);
- Less savings over time: compared to owning a system outright, PPAs may offer lower long-term savings.

Grant Funding

Both the Net-Metering and Load-Displacement with Battery Energy Storage Systems qualify for the Federal Clean Electricity Investment Tax Credit. The Load- Displacement and Battery Energy Storage System additionally qualify for the Save ON Energy incentive, which covers 50% of the cost. These deductions have been incorporated into the evaluation of each option below.

Evaluation of Options

The table below provides a comparison of the financial, social, and environmental costs and benefits of each option.

Note that energy savings have been calculated based on a predicted average hourly usage of 165 kilowatt hours (kWh), 10 hours a day, 5 days a week. Net energy savings were calculated over a 30-year lifespan with capital and operational costs also considered.

Solar Panel System	Annual Energy Produced (kWh)	Estimated Capital Cost for Supply and Installation	Annual Savings on Energy	Annual Operating and Maintenance Cost	Estimated Time to Payback Capital Cost	Net Energy Savings Over 30 years	Environmental Benefits (Emissions Reduction over 30 years)	Social Benefits
Option 1	390,000	\$613,500	\$66,300	\$4000	9.2 years	\$1,250,000	468 Ton CO2	Moderate Public Visibility
Option 2	258,000	\$790,500	\$43,860	\$3000	18 years	\$435,300	310 Ton CO2	High Public Visibility
Option 3	143,000	\$160,000	\$24,310	\$1500	6.6 years	\$524,300	172 Ton CO2	Moderate Public Visibility
Option 4	390,000	\$0	\$23,400	\$0	N/A	\$702,000	468 Ton CO2	Moderate Public Visibility

After reviewing the various options, Option 1 - Net Metered Rooftop Mounted Solar Panel System, is the preferred choice as this design utilizes existing infrastructure, can accommodate energy needs throughout the year, and provides the most significant net return and GHG reduction. Therefore, staff recommend proceeding with the inclusion of a Net Metered Rooftop Solar Panel System as part of the construction of the new Operation Centre to an upset limit of \$1.2 million.

Corporate Strategic Plan:

Championing environmental stewardship

Provide innovative & sustainable governance

Financial Implications:

As outlined in Report No. [IS2025-15](#), the approved financial plan for construction of the new Operations Centre includes an upset limit of \$1.2 million for the capital cost of implementing a solar panel generation system. Through this report, Township staff are seeking Council authorization to receive competitive bids, through the General Contractor for the project, for the inclusion of a solar panel system to an upset limit of \$1.2 million. As such, there are no financial implications as a result of this report. Note that the estimated capital cost to implement the preferred option (Option 1) is \$613,500.

Consultation:

This report was prepared in consultation with Dan Wilson, Chief Administrative Officer, Colin Baker, Managing Director of Infrastructure Services, Adam Gilmore, Manager of Engineering, and Brandon Buehler, Operations Centre Project Manager.

Attachments:

- [CW Solar Panel Update Presentation - Report IS2025-26](#)



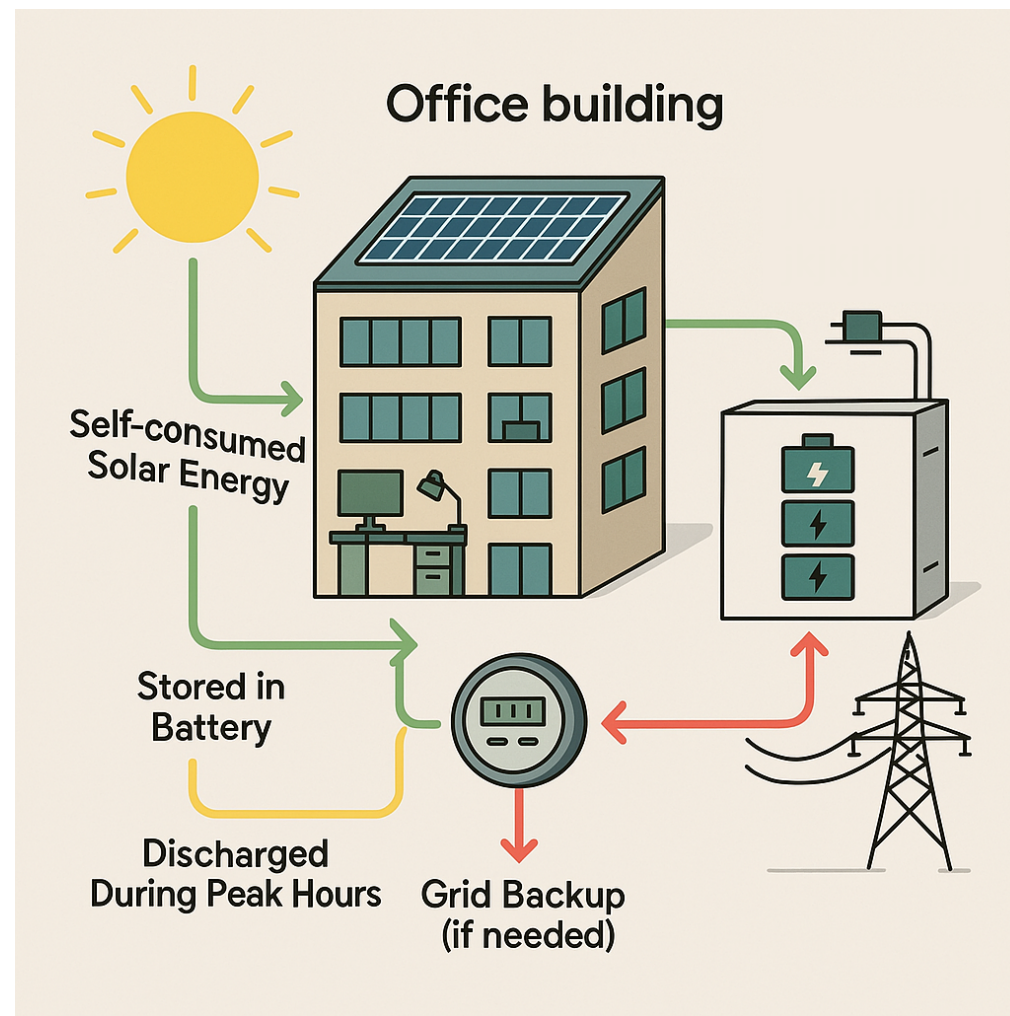
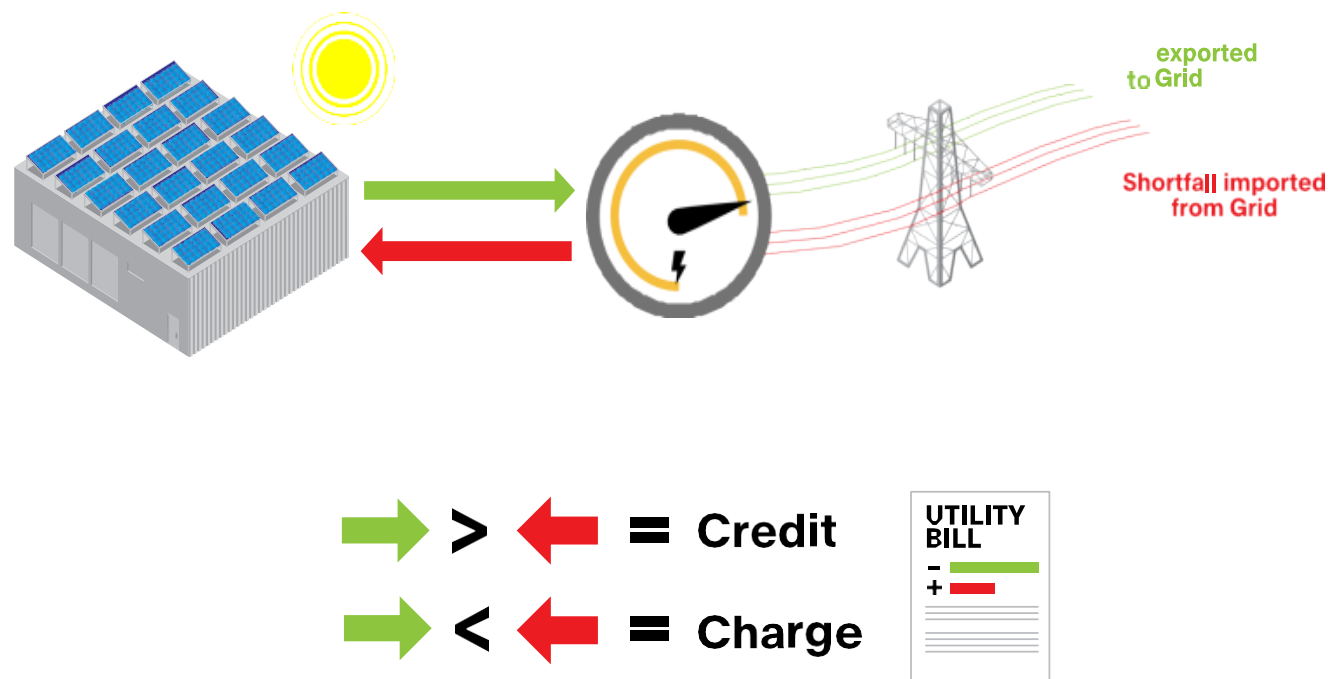
Operations Centre Solar Panel Update

Martin Tamlyn
Climate Change Coordinator

July 14, 2025

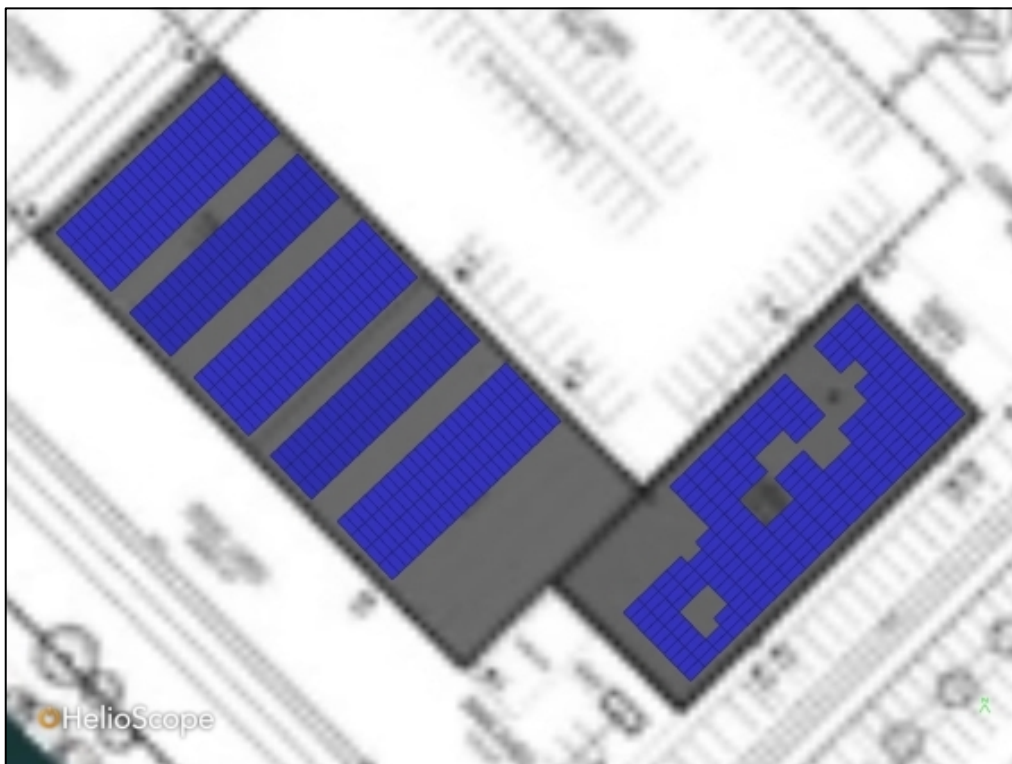


- Reduced and stable energy cost over its lifecycle.
- Contributes to the goals of the IESO and global efforts toward decarbonization.
- Significantly contributes to the Township's own climate goals and energy conservation measures.
- Increases the diversification and stability of the grid's energy mix as electricity needs are expected to double.
- PV Solar installations are low-maintenance and have a long lifespan of up to 30 years.

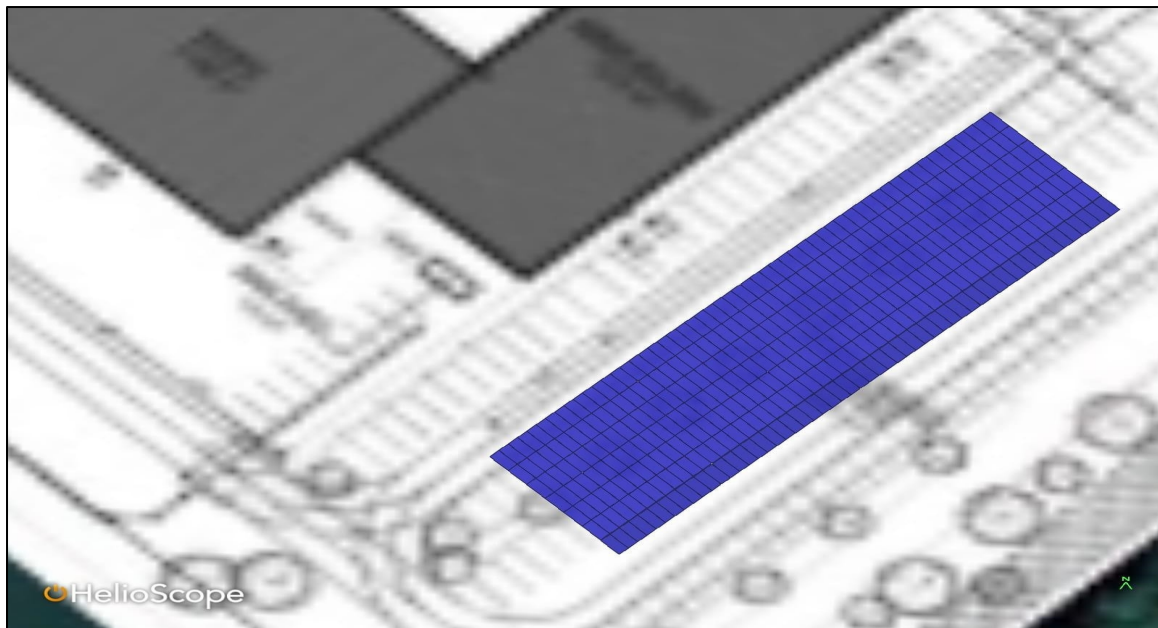




Option 1: Net Metering Rooftop Mounted Solar Panel System



- Efficient use of existing space and infrastructure
- Good solar orientation
- Could compromise the integrity of the garage roofing system
- Rooftop access and maintenance can be more challenging

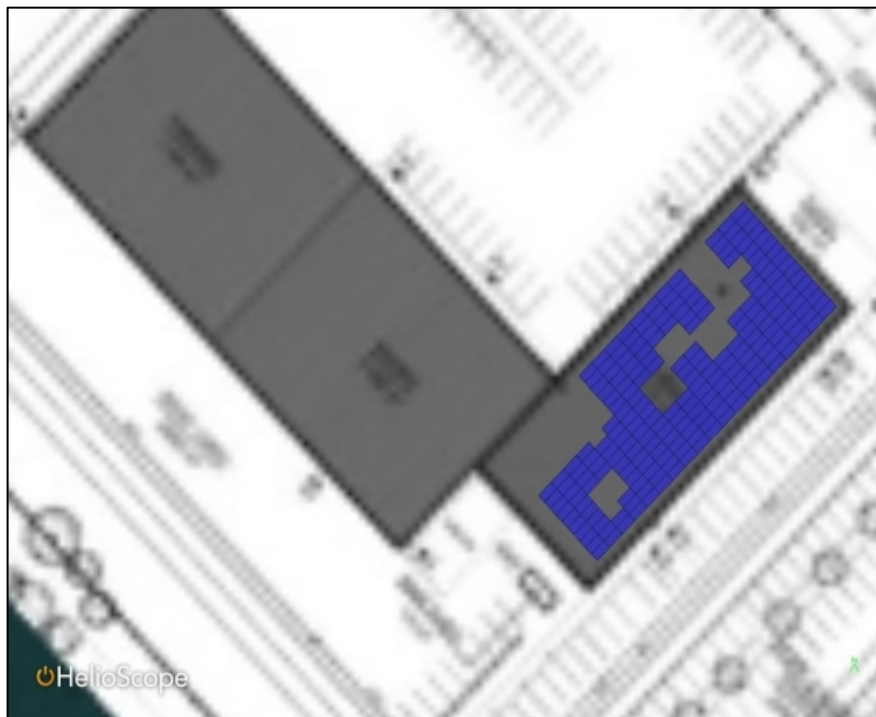


- Smaller system than the rooftop installation.
- Carports are dual-purpose, providing shade, shelter, reduced snow maintenance, reduced salt use, and potential rainwater capture and stormwater management.
- High visibility for showcasing sustainable design efforts.
- Higher upfront costs and longer payback times compared to rooftop-mounted systems

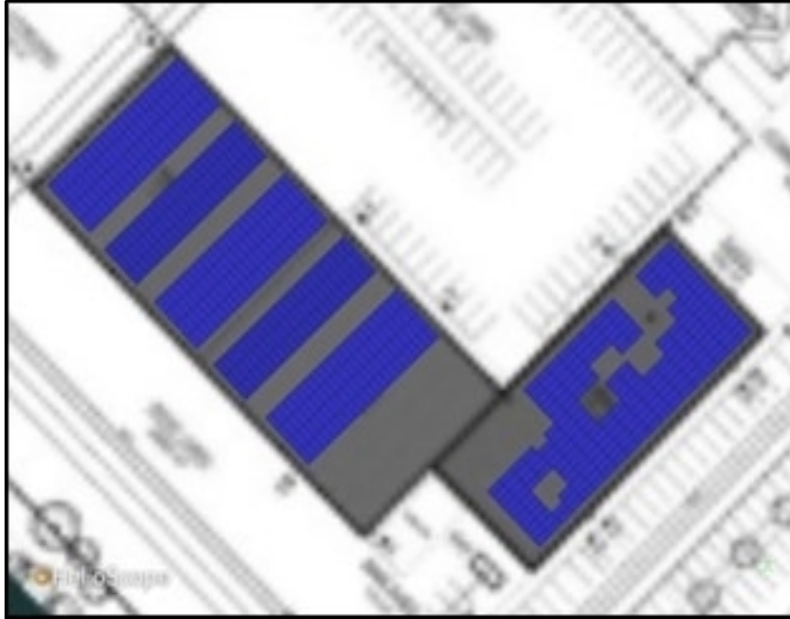




Option 3: Load Displacement with Battery Energy Storage Rooftop Mounted



- Load Displacement (LD) systems in conjunction with Battery Energy Storage System (BESS) can provide time-of-use energy, offset peak demand costs, and reduce the demands on the electrical grid
- LD and BESS qualify for the 50% Save ON Energy rebate as well as the clean electricity tax incentive.
- BESS systems, depending on their cycles, may need to be replaced every 10 years
- BESS needs to be monitored and would require dedicated space and ventilation



- No Upfront Costs: Ideal for homeowners or organizations without capital for solar investments.
- Predictable Energy Costs: Lock in electricity rates, often lower than those of utilities.
- Maintenance-Free: The provider is responsible for maintaining the system's upkeep and performance.
- Contracts can be for up to 25 years and may include escalator clauses (rate increases, 2% on a 25-year term).
- Less Savings Over Time: Compared to owning a system outright, PPAs may offer lower long-term savings.
- No owner benefits – Clean electricity incentive tax credit: 15% off the cost to the vendor.



- Net Metering and Load Displacement systems qualify for Federal Clean Electricity Investment Tax
- Load Displacement with Battery Energy Storage Systems qualify for the Save ON Energy Incentive covering 50% of the costs





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After review, **Option 1** was the preferred choice as this design utilizes existing infrastructure, can accommodate energy needs throughout the year, and provides the most significant net return and GHG reduction. Therefore, staff recommend proceeding with the inclusion of a Net Metered Rooftop Solar Panel System as part of the construction of the new Operation Centre to an upset limit of \$1.2 million.



Thank You! Questions?

