



Report

Subject: Building Modernization and Energy Saving Collaboration

Department: Corporate Services

Division: CPS

Report #: CPS-2021-022

Meeting Date: 2021-04-26

Recommendations

That report CPS-2021-022, Building Modernization and Energy Savings Collaboration, be received;

And that Council approve report CPS-2021-022 and that staff be authorized to initiate a procurement process to identify and work with a strategic partner on a “self-funded” building modernization and energy savings program and subsequently execute a performance-based contract, reporting back in the process with updates.

Background and Analysis

Council has identified financial sustainability and digital transformation as key priorities. As part of those initiatives a review was undertaken to understand what the highest value programs for the Town would be. Building system and equipment modernization, as well as, enabling a comprehensive automated building portfolio management system was identified as a top opportunity.

Buildings represent one of the most significant capital and operating costs of a municipality. Currently, the Town has a significant portfolio with a broad mix of buildings with assets that require significant capital upgrades to improve performance, reduce operating costs and improve energy efficiency.

While the Town has made a lot of progress, such as in the recreation facilities and at the Town Hall building; staff recognize there are still significant opportunities to improve building operations, reduce costs and reduce the Town’s energy consumption across the broader building portfolio.

The Town's building portfolio has a long list of near to medium term capital investment requirements, this includes a number of pieces of equipment that are either approaching end of life or would benefit from facility/equipment renewal. Basically, an aging building portfolio is more expensive to operate, is less energy efficient, and may require significant capital investment to modernize.

While there are a number of opportunities to improve components of the facilities that would result in a positive benefit, financial resources are finite and the significant upfront capital costs can be prohibitive. Additionally, a piece-by-piece approach takes away from an opportunity for a wholistic review and at times causes other issues.

Given the overall current state of the assets contained in the building portfolio and the Town's commitment to supporting climate change, staff have been looking at both the impact of facility renewal as well as potential partnership models that would reduce the Town's upfront capital investments.

Staff are recommending a strategic partnership whereby the Town would partner with an experienced, external vendor in a performance based, and effectively "self-funded" program. The Town would, through a competitive process, work with external vendors to receive proposals that would enable a long-term partnership that would produce the highest value for Orangeville.

The approach is expected to start with a number of Town facilities in parallel to increase returns and enable a portfolio approach. As part of this initiative the strategic partner would be accountable for funding the upfront capital costs of upgrading equipment in the facilities such as:

Sustainable Mechanical and Refrigeration systems at Alder Recreation Centre, Replacement of HVAC equipment at Town Hall, continued replacement of inefficient lighting with LED systems across all Town buildings where necessary, etc.

Current challenges:

There are a number of current challenges based on how the building systems have evolved and been implemented over time. The portfolio is complex and a new approach provides the opportunity to look at a more comprehensive building and equipment management program, rather than simply looking at site specific issues or by individual pieces of equipment in isolation. The Town would benefit from the ability to understand the overall performance of each site, including at the equipment level.

Summary of the current building portfolio challenges:

Capital expenditures in isolation – given the buildings have expanded overtime, systems have been added in without necessarily reviewing the overall impact to the broader building system performance. Often when a system fails

staff are simply replacing the units with similar replacement options, never having the opportunity to review the overall opportunity to improve a site. i.e. HVAC system expansion during Town Hall renovations that impacted flow of air in the building and are not collectively monitored.

Energy footprints – The Town doesn't have the ability to effectively monitor the building portfolios energy impact by site or at the equipment level against a predetermined baseline. This impacts the Town's ability to react and plan in a timely fashion. (The Town is initiating a pilot in three facilities to enhance site/equipment monitoring, which will be referenced in an upcoming report).

Standardization – Every site within the town has differing requirements for solutions and equipment. Some of the equipment is very out of date, which impacts operating costs and increases our energy footprint. Recognizing sites do not have the same requirements i.e., for heating and cooling, making any practical option of one size fits all solution impossible, there should be more standardization for overall maintenance and performance improvements. The current state increases the overall operating costs. It should also be noted a number of the Town's assets are nearing end of life.

Operational insight – Without the ability to understand how systems are behaving staff are unable to identify anomalies in advance and plan proactively for repairs or replacement. Operators can only create basic plans for controlling systems, such as turning on heating at 5:30 a.m.

Carbon footprint – Currently the Town is not in a position to leverage modern best practices of building portfolio management to reduce our carbon footprint.

Internal roles and responsibilities – Until the first quarter of 2021, the oversight and maintenance of the Town's building portfolio was split between Infrastructure Services who oversaw their own facilities and Community Services who oversaw the rest of the facilities. This structure did not easily enable a corporate wide approach for building portfolio management and has resulted in a fragmented approach. (This has now been addressed by the CAO with Community Services becoming accountable for all facility structural envelopes and maintenance).

Moving forward with the Building Modernization and Energy Savings Program provides an opportunity for the Town to make significant progress on the above challenges.

Opportunity:

This program would replace a number of the outdated capital assets in the Town's portfolio, enabling a modernized building portfolio that leverages best practices.

Enterprise level planning would support a redesign of the way the systems function collectively, as well as enabling more individualized equipment monitoring to optimize performance.

The buildings and the portfolio would be capable of being monitored through common reporting tools/dashboards in a move towards a single view of operations. This would allow for data driven decisions that enable proactive interventions and can support a move towards predictive maintenance.

The Town would improve its energy usage, including repurposing energy that currently may be lost in the production process. This would save money and reduce our environmental footprint.

The Town would not need to make the upfront capital investment in the program, the risk would be transferred to the partner in a performance-based contract. This would reduce the Town's projected capital requirements for the years to come. Grant opportunities can still be leveraged to offset the ongoing program. Key performance indicators would be monitored throughout the project to drive successful results.

Replacing and installing modern equipment will improve heating and cooling to improve user experience; as well as being able to account for each building energy signature and plan accordingly for upgrades/retrofits and adjustments in building usage.

Moving Forward

The Town has a few options that can lead to opportunities for increased efficiencies, adjustment in capital requirements, reduction in operating expenses, improving user experiences, informing space allocations and supporting maintenance programs.

Option 1:

Continue to proceed on the course we are on, replacing the equipment as it fails, add some Building Automation Solutions (BAS) improvements and sensors:

Costs:

- Continual capital investments as per the current process
- Opportunities to access grants is status quo

Efficiencies:

- Minor improvements in energy savings through enhanced BAS and improvements in system monitoring

Risks:

- Missed operational efficiencies

- Standardization issues, opportunities to improve maintenance schedules is reduced
- Missed opportunities to reduce our carbon footprint and reduce energy costs/consumption
- Risk of being site specific with missed opportunities to standardize, due to significant capex requirements and implementation timeline

Option 2

Engage energy and HVAC specialists to understand building current state(s), energy needs, assets and opportunities to create a plan forward that is internally funded.

Costs:

- Capital intensive with an extended payback period
- Enhanced resource requirements for program implementation and operational maintenance
- Flexibility on the breadth of the implementation
- Opportunities to access grants may be enhanced and can potentially accelerate payback window

Efficiencies:

- Increases energy savings opportunities
- Improves operating costs
- Increases energy efficiency and supports climate change goals
- Increases data driven decision making

Risks:

- Self-funded program would require upfront capital investment
- Risk of being site specific with missed opportunities to standardize, due to significant capex requirements and implementation timeline
- Completing high value items individually will reduce the opportunity to make upgrades across the broader portfolio with a partner in future (decreasing the broader business case)
- Risk of missing targets in the near term (due to implementation cycle)
- Potential for lack of resources and capacity to impact the implementation cycle
- Town absorbs the project risk on performance targets. As an example, the Town will make the upfront investment and if savings aren't fully realized the operational payback will be delayed
- Potential length of the procurement cycles

Option 3

Engage an industry leading partner to invest in a significant capital upgrade across the building portfolio that is self/funded paid back through operational savings in a 10–15 year agreement. The portfolio is expected to be monitored through a common platform that enhances monitoring and delivers data driven insights.

Costs:

- Partner absorbs capital upgrade costs for the building portfolio
- The program is fully self-funded through operational savings
- Once the project has recovered costs through savings, the savings will be shared between the Town and the partner
- Opportunity to access grants may be enhanced, applications can be supplemented by partner resources and may accelerate progress to shared savings

Efficiencies:

- Optimizes opportunities for efficiencies and savings across the building portfolio
- Standardization of equipment and leveraging best practices for oversight and maintenance
- Comprehensive building dashboards modernized monitoring of performance including enhancing maintenance capabilities – allowing a one window view for monitoring the performance of each building and their equipment – enabling identification of issues and anomalies
- Data driven preventative maintenance that can drive to predictive maintenance
- Working with a long-term partner that is leader in a space, allowing Town to focus on operational priorities
- The partnership model requires a hands-on, proactive approach to execution to realize operational savings more quickly on a continual basis

Risk:

- Potential length of the procurement cycle
- Contract needs to be clearly defined and well managed

Recommendation:

Staff are recommending proceeding with option three. This option would require a competitive procurement in a project to be jointly delivered by Community Services and Corporate Services.

The portfolio is expected to be looked at in stages based on highest needs first. When successful, this is expected to result in an offset in the Town's current capital budget

needs of an estimated \$3.2 million dollars with additional offset to follow as identified in the program. The Town would also work with the vendor to pursue federal and provincial grant funding which would be offset in the contract if successful.

The “self-funded” model would require the strategic partner to shoulder the up-front capital costs, and then be paid back through energy savings over a multi-year contract expected to be between 10-15 years. Once the capital investment is recovered the operating savings would be shared with the partner.

The program would be monitored through a common platform with performance dashboards and clear key performance indicators that are regularly reported on.

Strategic Alignment

Orangeville Forward – Strategic Plan

Priority Area: Municipal Service

Objective: Effective and efficient, respectful of cost and impact to the community

Sustainable Neighbourhood Action Plan

Theme: Climate change and energy

Strategy: Encouraging emission reductions through energy efficiency, conservation and renewable energy generation

Notice Provisions

Not Applicable

Financial Impact

Immediate-medium term capital investments staff estimate this to offset would include the following:

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| 1. Alder Recreation Centre RTU 8 Pool HVAC Unit replacement | \$ 800,000 |
| 2. Alder Recreation Centre Sustainable Refrigeration System | \$ 2,000,000 |

3. Town Hall HVAC Unit Replacements (\$60,000 per yr./5 yrs.)	\$ 300,000
4. Theatre HVAC Unit Replacement –2021	\$ 125,000
5. Town Hall HVAC Chiller Replacement-2022	\$ 20,000

Respectfully submitted

Reviewed by

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Attachment(s): Not applicable