

# Net Energy Savings Process

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## Recommendation

That the October 2, 2018, Financial and Corporate Services report CR\_6075, be received for information.

## Previous Council/Committee Action

At the May 22, 2018, Urban Planning Committee, the following motion was passed:

That Administration provide a report that outlines a process to determine and capture the net energy savings resulting from energy reduction initiatives (both capital and operating), and utilize those savings for future investments in other energy reduction initiatives, including funding an accelerated municipal building retrofit program.

## Executive Summary

This report provides a high level outline of how revolving funding can be established to capture savings generated by energy reduction initiatives and used as a mechanism to provide future funding for the measures outlined in the Greenhouse Gas Management Plan for Civic Operations 2019-2030. Based on the outcomes of this approved plan, the City is working to put actions in place that will enable a greater understanding of the energy performance of facility and non-facility assets that consume power, gas, and water creating a measured GHG footprint. As such, prior to implementing a revolving funding approach, a well defined process for capturing energy savings needs to be implemented, including facility level utilities budgeting, energy use forecasting and more robust monitoring and verification at the energy conservation measure level.

## Report

### History

#### The ME first! Program

ME first!, a provincial program launched in September 2003, supported innovative projects that promoted energy savings. Overall approximately \$30 million in interest free loans for 60 projects were provided to municipalities to increase energy efficiency in municipal buildings. The Program reportedly resulted in greenhouse gas reductions of an unquantified amount while helping municipalities save over \$2.8 million a year in operating costs. ME first! loans were provided through the Alberta Capital Financing

Authority (AFCA). Projects were reviewed by a committee representing the Alberta Urban Municipalities Association, the Alberta Association of Municipal Districts and Counties, Climate Change Central, Alberta Environment, Alberta Municipal Affairs and the ACFA.

The ME first! Program was formally cancelled in 2008 and faced a variety of challenges. The review committee focused on projects with shorter investment horizons, which inhibited the fund from being used for deep retrofits. The Program was also challenged with monitoring and verifying energy savings and greenhouse gas reductions, with only estimates being provided to ACFA and the provincial government. This lack of accurate monitoring and verification was a significant shortfall of the Program. Also, repayment of the loans did not come directly from harvested operational savings, although that was the original intent. This is attributable to the program requirement for immediate loan repayment - prior to the realization of cost savings.

### Energy Management Revolving Fund

In 1995, the City of Edmonton created a revolving fund to finance energy retrofits of City facilities. This fund started at \$1 million and increased to \$5 million in 1999. In 2002, City Council approved an increase in the fund limit of up to \$30 million to be financed from the ACFA. The \$30 million borrowing capacity was earmarked for energy conservation projects such as upgrades to lighting, heating, cooling and ventilation systems and building envelope upgrades. The amount borrowed for these projects was to be repaid over a period of up to eight years (up to 10 years by exception) out of the utility savings, making this money available for other energy projects.

The fund was formally closed in 2009 shortly after the cancellation of the ME first! Program. The remaining funds of \$378,000 were transferred to the Financial Stabilization Reserve (FSR).

### Jurisdictional Review

Administration performed a jurisdictional review of similar programs. Jurisdictions reviewed include American jurisdictions with information available through the Urban Sustainability Directors Network (USDN): Johnson County, Park City, City of Sacramento, and City of Santa Monica.

### Key Learnings From Other Jurisdictions:

- **Internal Documentation:** all reviewed jurisdictions have documentation in place to describe a fund, and how it works. Documentation is in the following forms: policy and procedures guide, council report, fund summary/description report.

- **Fund Purpose:** All jurisdictions provide a background reasoning for the fund as well as a general goal for the fund. Some funds are energy specific while others allow for water conservation retrofits as well.
- **Eligible Projects:** Some jurisdictions provide high level ideas or guidelines for the types of projects that could be eligible while others are quite specific. For example, some state that an eligible project must be “unique from standard retrofits” and “the fund will use prudent selection criteria to ensure tangible benefits are provided to the City and environment.” Some jurisdictions formally state that the projects must have a “forecasted payback over their lifetime in order to ensure the sustainability of the revolving loan fund.” Other documents include a specific list of measures that can be funded such as “electrical systems and controls...” and “studies, staff time, and other activities that are needed to accomplish these improvements.”
- **Roles and responsibilities:** All documents identify internal responsible parties for individual parts of the fund management or, at minimum, for the fund as a whole.
- **Decision Making:** Some fund documents provide specific criteria to be used in determining which projects receive funding, such as kWh of electricity saved. In some cases this includes a scorecard. Other jurisdictions simply note who (what groups and processes) will be in charge of determining where the funding goes and providing a required payback for eligible projects.
- **Fund Management:** Some jurisdictions provide additional clarity on the mechanics of the fund including: annual general fund contributions, rebate and incentive funding, avoided energy costs, and exact mechanisms for revolving the funds.
- **Fund Set Up:** Some jurisdictions include a full analysis and recommendations to council for what needs to be formally allowed to set up the fund, such as permission to re-direct funding, and giving specific groups approval to adjust funding allocation as the fund requires. Most jurisdictions provide information on where the initial capital for the fund comes from, such as a one time funding opportunity, general fund reserves, re-allocated budget, and energy conservation grants.
- **Measurement and Verification (M&V):** Most jurisdictions include M&V statements that, at a minimum, outline who is in charge of completing the M&V. Some suggest the use of audits and benchmarking of facilities, while others require specific tracking of items such of CO<sub>2</sub>e reductions. For example, Santa Monica suggests using a Portfolio Manager to track savings (note that the City of Edmonton is moving towards using this tool for all facilities).

### Establishing a Fund

A fund of this nature could be managed through a reserve and would require City Council approval. Based on learning and experience gained from the Energy Management Revolving Fund and the ME first! Program, the purpose and scope of the

reserve should be defined by policy and should include clear and specific requirements for the eligibility of projects, as well as a clearly defined process for the tracking and collection of associated cost savings to be captured in the reserve. As a result, a formal policy should be established for this fund.

The previous Energy Management Revolving Fund was financed through borrowings from the AFCA. Amounts borrowed against this fund were to be repaid over a period of up to eight years (10 years by exception) from the utility savings generated by the project, therefore making this money available for other energy projects. Without a clear mechanism for capturing savings, amounts borrowed were not ultimately repaid in full by energy savings. To limit the risk associated with the fund, it is not advisable to utilize borrowing to establish a fund of this nature. Rather, the initial capital projects should be funded using traditional capital funding sources (grant funding, pay-as-you-go, tax-supported debt funded by the tax levy), with relevant energy cost savings from future operating budgets directed into the reserve, thereby providing a future capital funding source for energy savings projects. Financial incentives or rebates associated with relevant projects can also be redirected to the fund. If prioritized, initial capital funding in the 2019-2022 capital budget cycle could be earmarked for the reserve to expedite the program. This could be accommodated through budget reallocations in subsequent Supplemental Capital Budget Adjustment reports.

### Fund Growth

At project inception and throughout the life of the projects, estimated ongoing savings would be harvested from the approved base budgets for utilities. These budgets would be redirected into the fund when savings are realized. Over time as more energy efficiency projects are completed, the fund would accumulate additional one-time and ongoing fund contributions through reallocation of future energy savings to the fund. These budget reallocations would have no impact to the net operating budget; rather, the savings would be earmarked for future energy efficiency capital projects.

For a fund of this nature to operate as intended, an effective monitoring and verification process for all eligible projects is critical.

### Project Eligibility

Project eligibility for the reserve should initially align with the scope of projects outlined in the GHG Management Plan for Civic Operations (2019-2030). This would focus on projects associated with building retrofits, solar photovoltaics, electric buses, and LED streetlights. As noted earlier, if the reserve begins with a zero balance, significant savings are not projected to accumulate into the fund in the near term. This would not adequately fund the initiatives identified in the GHG Management Plan, meaning that additional funding would be required to achieve the goals outlined in the Plan.

### Monitoring and Verification

#### **Current State / Challenges**

Through the Office of Energy Management (OEM), the City tracks estimations of the total billed consumption of utilities and the total costs of the billed consumption. Work is underway to track cost savings/cost avoidance for City facilities that have attracted specific energy conservation measures. To achieve the desired outcomes, formal mechanisms will be developed to generate detailed facility based utilities budgeting and energy use forecasting, combined with available monitoring and measuring tools to be applied over the measures lifetime.

Beyond the current system constraints, there are inherent challenges associated with isolating energy related cost savings. Costs typically increase each year as the City grows and there are a multitude of variables that have no direct relationship to energy use. Energy cost savings associated with specific projects must be extracted from these numerous other variables.

To address these challenges, it will be necessary to develop and implement a measurement and reporting framework for energy use. The desired outcomes of this framework are to:

- introduce ongoing performance reporting on utilities (power, gas, water) and energy use (power, gas and GHG) for City facilities,
- adopt use of measurement and verification plans (MVPs) and inclusion in project plans managed by Integrated Infrastructure Services, and for facilities preventative maintenance programs managed by City Operations,
- implement the use of building control systems data to track utilities use identified in MVPs and export data to support energy performance monitoring, analysis and reporting, and
- adopt the use of sub-meters to supplement the measurement and verification of utilities savings and energy use outcomes.

Regardless of whether it is a facility or non-facility energy conservation project, the project plans must identify the target date by which the energy conservation measure will be completed. It is from that date forward that energy use can be reliably tracked and included in validation reporting.

#### **Next Steps**

Administration plans to move forward with the following actions:

- Develop and implement a reporting measurement and evaluation framework for energy use

- Return to Council with a detailed draft policy and request to establish an energy efficiency reserve

The anticipated timeline for completion of the framework is 2019 and full implementation in 2020. This timeline aligns with the requirements of the GHG Management Plan for Civic Operations 2019-2030. In the transition period prior to implementation, the City can collaborate with third parties to develop MVPs for initial projects in scope.

The detailed policy will be brought forward for discussion and approval in 2019 once the reporting measurement and evaluation framework is established. The policy will provide specific detail on process and scope for Council consideration.

**Budget / Financial**

The intent of a proposed energy savings revolving fund is to measure and isolate energy savings resulting from projects associated with the approved Greenhouse Gas Management Plan for Civic Operations. The estimated savings will be harvested from the approved base budgets for utilities (power, gas, and water) and redirected into the fund. There will be no net impact on the operating budget. The harvested cost savings will provide a dedicated funding source for future energy retrofit projects and support the City of Edmonton’s emission reduction targets outlined in the Plan. Financial incentives or rebates associated with relevant projects can also be redirected to the fund.

Initial cost estimates to develop an effective measurement and evaluation framework are approximately \$250,000. Implementation would include system enhancements as well as internal process adjustments. Funding for this initiative will be managed within previously approved budgets provided for the implementation of the Community Energy Transition Strategy.

**Corporate Outcomes and Performance Management**

<b>Corporate Outcome(s): The City of Edmonton’s operations are environmentally sustainable</b>			
<b>Outcome(s)</b>	<b>Measure(s)</b>	<b>Result(s)</b>	<b>Target(s)</b>

<p>8. The City of Edmonton's operations are environmentally sustainable. Leading by example, the City of Edmonton strives to minimize significant adverse environmental impacts caused by its operations.</p>	<p>8.1 City operations greenhouse gas emissions</p>	<p>Target for 2016 (2012 Plan): 252,000 tonnes Actual for 2016: 308,000 tonnes See Attachment 3 for context.</p>	<p>Targets under the 2012 Plan to be replaced with yearly targets to achieve 50 percent reduction below 2005 by 2030 under the Plan. This fund will support the financial requirements of the plan by harvesting some of the avoided costs of the projects for future projects.</p>
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## Others Reviewing this Report

- G. Cebryk, Deputy City Manager, City Operations
- A. Laughlin, Deputy City Manager, Integrated Infrastructure Services
- P. Ross, Acting Deputy City Manager, Urban Form and Corporate Strategic Development