

Energy Retrofit Project

Date: November 25, 2021

To: Board of Management of the Toronto Zoo

From: Director, Facilities & Infrastructure

Wards: All

SUMMARY

This report will recommend the Zoo modify the scope of the Energy Retrofit Project Phase II based on recommendations from the City of Toronto Energy & Environment Office. The modifications will result in significant greenhouse gas emissions reductions and align with the Toronto Zoo's environmental and natural resources conservation platform and City of Toronto's TransformTO objectives.

RECOMMENDATIONS

The Director of Facilities & Infrastructure recommends that:

1. The Board of Management approve modifications to the heat pump and the associated costs to the Energy Retrofit Project Concept Design.

FINANCIAL IMPACT

The cost of the project with modified scope and inflation is \$8,373,073 with an Enbridge incentive of \$21,290. The project is expected to produce annual utility savings of \$936,880.

Original Project Cost with inflation:	\$6,700,900
Heat Pumps:	\$1,672,173
Total Project Cost:	\$8,373,073

All expenses are expected to be reimbursed by the utilities savings generated by the project over a 10-year period.

DECISION HISTORY

In April 2018, the Toronto Zoo released a Request for Proposals - RFP 18 (2018-03) to complete a site-wide Energy Retrofit Project that will target energy and water consumption.

At the 2019-02-15 meeting, the Board approved the Energy Retrofit Project to be awarded to Ecosystems Energy Services Inc. (ZB2.6) The project included the development of a Detailed Concept Design for the project, Engineering Design, Implementation, Commissioning, and Monitoring and Verification. At the time of approval, the proposal submitted by Ecosystem Energy Services Inc. had an estimated cost up to \$4.7 million with a simple payback period of less than 6 years, with the capital investment made by Ecosystem Energy Services Inc. and reimbursed by the Zoo with the utility savings generated by the project. The proposal was submitted based on the information provided by the Zoo during the RFP process about energy and water consumption, facility services, and infrastructure and maintenance requirements.

At the 2021-06-15, the Board approved the Detailed Concept Design presented by Ecosystem Energy Service Inc. with modified scope and costs. The project cost was \$5.58M with \$21,290 incentive rebates and \$828,615 annual utilities savings and included annual peak shaving opportunities, replacement of the Americas Pavilion heating and distribution system and installation of filtration for the River hippo and pygmy hippo habitats. The financial term for Ecosystems Energy Services to carry the capital investment is 6.25%, \$2.5M over a 10-year payback period. All capital and financing costs are covered by utility savings realized by the project.

COMMENTS

The Toronto Zoo applied for the City of Toronto's Better Building Partnership (BBP) Energy Retrofit Loan Program to cover the cost of the project. The financing rate for the City's Energy Retrofit Loan average between 1.5 and 2.0%, a potential savings of \$1.9M in financing fees at a rate of 2.0%. All project costs and financing through the loan will also be reimbursed using the realized utility savings from the project.

During the technical review of the project City of Toronto staff identified the potential for additional greenhouse gas emission savings and encouraged the Zoo to look further into it. By including heat pumps as the primary source of heating in the Americas Pavilion heating system replacement component of the project, the Zoo would see an additional 102 tonnes of greenhouse gas emission reduction annually and proactively retrofit the pavilion to meet the electrification objectives of the TransformTO report. The Americas Pavilion heating system would retain the boiler system as originally proposed by Ecosystems Energy Service Inc., however this natural gas system would be used to meet heating requirements on the colder days in the winter as well as an emergency back up for periods of electricity disruptions. The additional cost for the heat pump system is \$1,672,173 bringing the total cost of the project to \$8,373,073 which also includes inflation rates on the original project costs recently seen associated with COVID-19. The modified scope would also result in an increase in annual utilities savings to \$936,880 which will cover the additional cost within a simple payback period of 8.0 years (an increase of 11 months). The additional greenhouse gas emission savings as a result of the heat pumps would better align the Energy Retrofit Project with

the objectives of the Energy Retrofit Loan program and therefore more likely to be approved. Even with an increase in cost, with the Energy Retrofit Loan from the City and the lower interest rate, the Zoo would save money because of the difference in financing terms between the Loan and Energy Ecosystem Services Inc.

The Toronto Zoo has also submitted a grant application to Infrastructure Canada's Green and Inclusive Buildings Fund for the Energy Retrofit Project. The grant request is for a total project cost of \$6,239,000 with a federal contribution of \$4,619,192 (80% of the eligible costs). The Zoo is still waiting to hear about the grant. The grant criteria requires the applicant to cover the capital investment up front with reimbursement from the grant annually upon submission of a report, thus the grant would be used to payback the Energy Retrofit Loan at an accelerated rate to reduce the overall financing costs. The grant application does not include the additional costs associated with this change to the project scope, the \$1,672,173 for the heat pumps.

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SIGNATURE

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