

Update on District Energy

Sustainable Return on Investment Framework

Recommendation:

That the July 3, 2013, Financial Services and Utilities report CR_324, be received for information.

Report Summary

This report provides a description of the Sustainable Return on Investment analysis and the approach to analyzing district energy alternatives for the Blatchford and Quarters projects.

Previous Council/Committee Action

At the April 29, 2013, Executive Committee meeting, the following motion was passed:

That the April 29, 2013, Financial Services and Utilities report 2013FS1881, be received for information.

Report

An interdepartmental team involving, Sustainable Development, Community Services and Financial Services and Utilities worked with an external consultant to develop a logical and consistent framework of eight core principles to evaluate the merits of potential district energy opportunities in projects like the Quarters and Blatchford. The principles are:

- 1) Sustainable Return on Investment
- 2) Greenhouse Gas Reduction
- 3) Cost Effective

- 4) Financially Sustainable
- 5) Risks and Risk Management
- 6) Ambient Air Quality
- 7) Service and Reliability
- 8) Cost Competitive

Sustainable Return on Investment

The first principle on which to evaluate the merits of potential district energy opportunities suggests that the City should only participate in (or approve) a district energy project if the total, full life cycle benefits of the project provide the best return to the City and the system's customers after evaluation of the combined financial, economic, social and environmental benefits and costs.

In other words, the project should have the best positive net present value from a Sustainable Return on Investment perspective in comparison to the alternatives, considering the quadruple bottom line.

Sustainable Return on Investment is an enhanced form of cost-benefit analysis - a systematic process for calculating and comparing financial benefits and costs of a project, and is generally conducted to validate an investment or compare projects.

While measuring the financial return on investment is a well-developed approach to analyzing the expected impact of projects, there is often uncertainty and confusion about the total public cost of ownership of infrastructure investments.

The Sustainable Return on Investment analysis includes the full range of environmental, social, financial, and

economic impacts in its comparison of the total public cost of ownership.

Sustainable Return on Investment determines the full value of a project by assigning monetary values to all relevant costs and benefits. This helps to consider the full value of the sustainable initiative including direct, indirect and non-cash costs and benefits, as well as the values of externalities that are generally overlooked in a financial assessment.

Sustainable Return on Investment also incorporates best-practice risk analysis and stakeholder elicitation techniques in identifying, quantifying, monetizing and incorporating the dollar values of relevant costs and benefits over the life of the project.

Approach

An in-depth Sustainable Return on Investment analysis of district energy applications in the Quarters and Blatchford redevelopment projects has been completed.

In this analysis, actual financial costs and benefits incurred by the City are accounted for, in addition to the monetized value of various social and environmental impacts to the district heating and renewable energy alternatives.

The Sustainable Return on Investment process involved four distinct steps:

- 1) Map out all relevant economic, social and environmental variables of the initiative starting from the basic division of costs and benefits.
- 2) Measure the impacts of the project by assigning monetary values and

probability distributions, where possible, to each variable.

3) Bring stakeholders together to evaluate and validate the structure of the model and the assigned values and probabilities of each variable. Stakeholders included team members from Sustainable Development, Community Services, Financial Services and Utilities, EPCOR, ENMAX, The Holmes Group and Stantec. Based on stakeholder discussion:

- Eight distinct district energy alternatives and one combined alternative relating to district energy alternatives and various other sustainability-related alternatives were identified for the Blatchford redevelopment
- Four distinct district energy alternatives were identified for The Quarters

4) After stakeholder consensus regarding the inputs detailed discussions regarding achieving the input, the net present value, discounted payback period, rate of return and the distribution of benefits were computed for the projects.

Presentation

HDR Engineering, the firm responsible for the Sustainable Return on Investment analysis, will provide a presentation to City Council on the model. The actual Sustainable Return on Investment evaluations for the Quarters and Blatchford will be provided to City Council as part of the private reports on the business cases for those two projects.

Policy

There is currently no City Policy on District Energy.

Corporate Outcomes

The Way Ahead, Edmonton's Strategic Plan 2009-2018:

- Transform Edmonton's Urban Form
- Preserve and Sustain Edmonton's Environment

Budget/Financial Implications

The planning and analysis being undertaken by Administration to conduct a comprehensive evaluation of the return on District Energy opportunities considers risks, as well as social, cultural, environmental, financial and economic sustainability perspectives.

Attachment

1. Sustainable Return on Investment

Others Reviewing this Report

R. G. Klassen, General Manager,
Sustainable Development