AGNICO EAGLE

Meadowbank Division

Greenhouse Gas Reduction Plan

APRIL 2020
VERSION 3

EXECUTIVE SUMMARY

Agnico Eagle Mines Limited – Meadowbank Division (Agnico Eagle) is proposing an expansion to the Whale Tail Pit and Haul Road Project, a Meadowbank satellite deposit located on the Amaruq property. As an expansion to the Approved Project (Nunavut Impact Review Board (NIRB) Project Certificate No. 008 and Nunavut Water Board (NWB) Type A Water License 2AM-WTP1826) Agnico Eagle is proposing to expand and extend the Whale Tail Pit operations to include a larger Whale Tail open pit, development of the IVR open pit, and underground operations while continuing to operate and process ore at the Meadowbank Mine. This plan has been updated for the Expansion Project in support of the Nunavut Impact Review Board (NIRB) review process.

The impacts of climate change have the potential to affect a wide range of environmental, social and economic systems of value to Inuit, as indicated by the observations and changes experienced by Baker Lake traditional land users. Climate change is a global issue caused by emissions of greenhouse gases (GHG).

This document presents the Greenhouse Gas Reduction Plan as per Nunavut Impact Review Board (NIRB) Project Certificate No.008, Condition 3. It discusses predicted emissions for the Project, sources of GHG, as well as monitoring measures and energy reduction initiatives.

Greenhouse emissions from the Whale Tail Pit Expansion Project will total 164.2 kt $CO_{2e.}$ By adding the Meadowbank mill and camp activities (180 kt CO_{2e}) the total emissions for the Project will be 344.2 kt CO_{2e}. When compared to Canada's national emissions (714,000 kt CO2e/yr), the Project contributes to a less than 0.048% increase in national GHG emissions (Agnico Eagle, 2016). Three (3) main sources of GHG emissions have been identified for the Whale Tale Pit – Expansion Project: off-road vehicle exhaust, generators and heaters, and the incinerator.

Emissions of GHG for the Whale Tail Pit - Expansion Project and Meadowbank Mine will be calculated on a monthly basis and reported annually through Environment and Climate Change Canada's Greenhouse Gas Emissions Reporting Program (GHGRP) and NIRB Annual Report. This report will also include a discussion on the monthly variations of GHG emissions, as well as a comparison with FEIS emission predictions.

Several initiatives are planned to reduce project-related GHG emissions over the Project lifecycle. Some strategies have already been implemented while others are currently being assessed.

DOCUMENT CONTROL

Version	Date (YM)	Section	Page	Revision
1	May 2018	ALL	-	Comprehensive plan for the Whale Tail Pit Project.
2_NIRB	December 2018	ALL	-	Greenhouse Gas Reduction Plan as supporting Document submitted to Nunavut Impact Review Board for review and approval as part of Whale Tail Pit – Expansion Project.
3	April 2020	ALL		Per Commitment 18 (ECCC-FWS-9) made during the Whale Tail Expansion Project NIRB Review Process, plan was reviewed to include an analysis on details of the alternative energy sources methods assessed.

TABLE OF CONTENTS

List of Figures in Text

List of Tables in Text

ACRONYMS

Agnico Eagle	Agnico Eagle Mines Limited – Meadowbank Division
ANFO	Ammonium nitrate/fuel oil
ECCC	Environment and Climate Change Canada
FEIS	Final Environmental Impact Statement
GHGRP	Greenhouse Gas Emissions Reporting Program
NIRB	Nunavut Impact Review Board
OBPS	Output Based Pricing System
Project	Whale Tail and Haul Road Project
TSM	Towards Sustainable Mining
CO_2	carbon dioxide
CH_4	methane
N_2O	nitrogen dioxide

UNITS

<=	less than
%	percent
CO_2e/yr	carbone dioxide equivalents per year
kt CO_2e	kilotonnes of carbone dioxide equivalents
kt CO_2e/yr	kilotonnes of carbone dioxide equivalents per year
t CO_2e/yr	tonnes of carbone dioxide equivalents per year
L	liters
km	kilometre(s)
km^2	square kilometre(s)
kW	kilowatt

SECTION 1 • INTRODUCTION

Agnico Eagle Mines Limited – Meadowbank Division (Agnico Eagle) has received approval from the Nunavut Impact Review Board (NIRB) to move ahead with an expansion to the Whale Tail Pit and Haul Road Project, a Meadowbank satellite deposit located on the Amaruq property. As an expansion to the Approved Project NIRB Project Certificate No. 008 and Nunavut Water Board (NWB) Type A Water License 2AM-WTP1826) Agnico Eagle will expand and extend the Whale Tail Pit operations to include a larger Whale Tail open pit, development of the IVR open pit, and underground operations while continuing to operate and process ore at the Meadowbank Mine. Table 1.1 presents the phases of development.

The general mine site location for the Project is shown in Figure 1.1. Mine development will include the following major infrastructures:

- industrial area (camp and garage);
- crusher;
- ore stockpiles;
- rock and overburden storage facilities;
- landfill;
- landfarm;
- incinerator and composter;
- haul and access roads;
- open pit and underground mines; and
- dewatering dikes.

Table 2.1 Overview of Timeline and General Activities

Phase	Year	General Activities
Construction	2020	• Construct site infrastructure • Develop open pit mine • Stockpile ore
Operations	2019-2025	• Open pits and underground operations • Transport ore to Meadowbank Mine • Stockpile ore • Discharge Tailings in Meadowbank TSF
	2026	• Complete transportation of ore to Meadowbank Mine • Complete discharge tailings in Meadowbank TSF
Closure	2026-2042	• Remove non-essential site infrastructure • Flood mined-out open pits and underground operations • Re-establish natural Whale Tail Lake level
Post-Closure	2043-2045	• Site and surrounding environment monitoring

TSF = Tailings Storage Facility

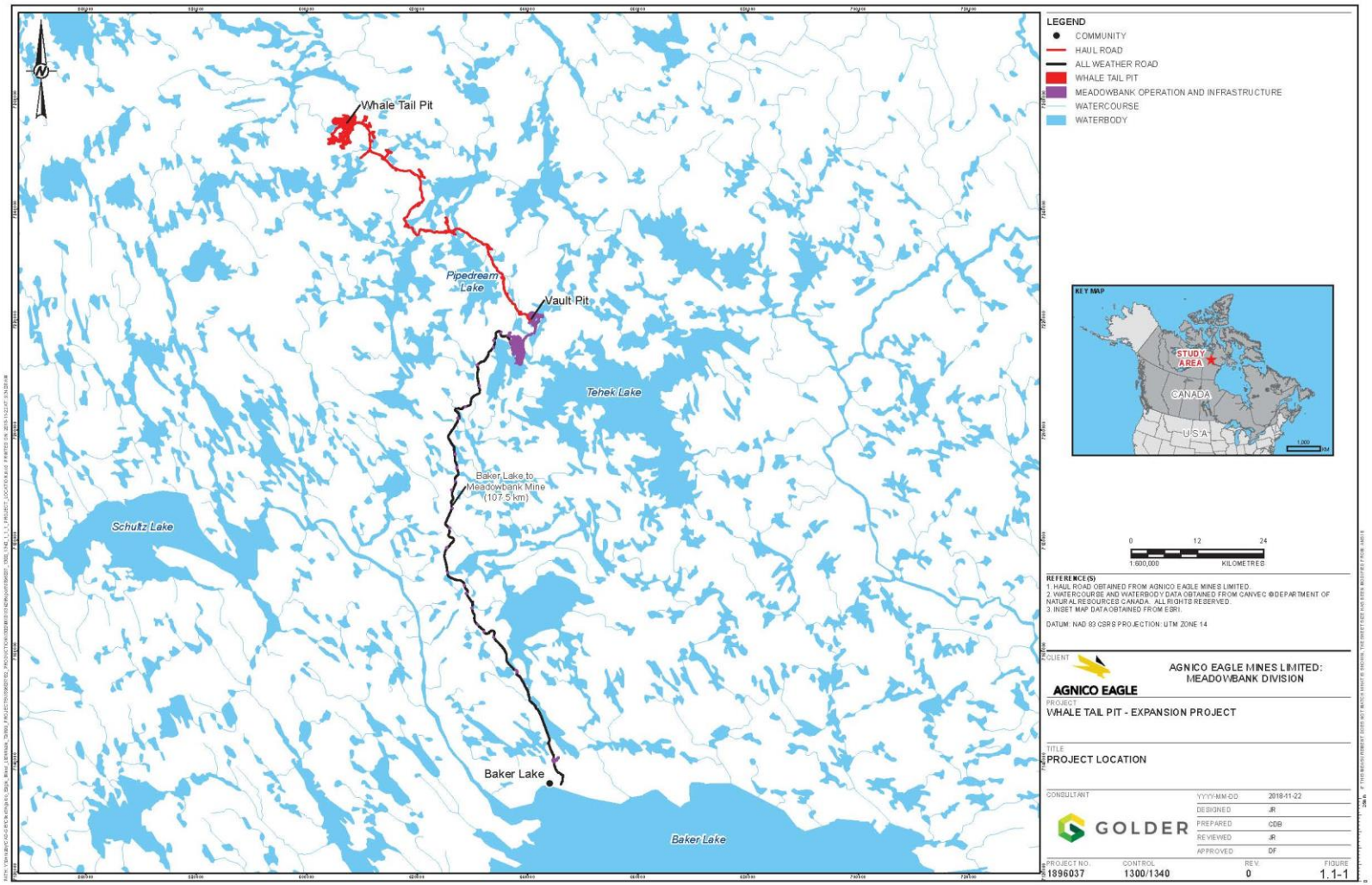

Figure 1.1 Location of the Whale Tail Pit and Expansion Project

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The impacts of climate change have the potential to affect a wide range of environmental, social and economic systems of value to Inuit, as indicated by the observations and changes experienced by Baker Lake traditional land users. Climate change is a global issue caused by emissions of greenhouse gases (GHG). Changes to weather and climate have the potential to affect environmental, social and economic systems of value to the Inuit and other regional stakeholders.

Weather and climate have been identified as valued components (VCs) in the Whale Tail Final Environmental Impact Statement (FEIS) Amendment, Volume 4 – Atmospheric Environment, Section 4.1.2 (Agnico Eagle, 2016 and 2018). Community elders are concerned about climate change and recent unpredictability in weather (Agnico Eagle, 2016).

This document presents the Greenhouse Gas Reduction Plan. The purpose of this Plan is to provide consolidated information on the management and monitoring of GHG for the Project, by presenting predicted emissions for the Project, sources of GHG, followed by monitoring measures and initiatives taken to reduce emissions.

As per Nunavut Impact Review Board (NIRB) Whale Tail Pit Project Certificate No.008 Condition 3, the Greenhouse Gas Reduction Plan must include:

- An estimate of the Project's GHG baseline emissions;
- A description of monitoring measures to be undertaken, including the methods, frequency, parameters, and a description the analysis;
- A description of reduction initiatives planned and taken, to reduce project-related GHG emissions over the Project lifecycle.

SECTION 2 • PROJECT BASELINE EMISSIONS

2.1 Project Baseline Emissions Predictions

As presented in the Whale Tail FEIS Addendum, Volume 4 – Atmospheric Environment, Section 4.2.3.1 (Agnico Eagle, 2016 and 2018), an assessment was completed in order to estimate the GHG emissions related to the Project.

Table 2.1 presented below summarizes predictions of GHG emissions for the Project for the peak year of production in 2022 (Agnico Eagle, 2018). Mining production will likely be at its highest, meaning that most of the heavy and light equipment will be in operation, and that camp occupancy will be at its maximum. Therefore, the predictions, estimated at 164.2 kilotonnes of carbon dioxide equivalent per year (kt CO_2e/yr), are considered to be the maximum expected for the expansion Project. Table 2.1 also summarizes predictions from the Project plus those from the existing Meadowbank mine in 2022. As the ore material from the Whale Tail Pit and Expansion Project will be hauled to the approved infrastructures at the Meadowbank mill for processing and tailings deposition, the predicted emissions for Meadowbank are included with the Whale Tail Pit and Expansion Project predicted emissions. Total estimated emissions for 2022 are estimated at 344 kt CO_2e/yr.

Since the ore throughput for the Meadowbank mill from the Whale Tail Pit Expansion Project is predicted to be 15% to 20% lower than current throughput when processing ore from the Whale Tail Pit Project, it is estimated that the GHG emissions rate for the meadowbank mine will be 180 kt CO_2e/yr. This is considered a conservative estimate for the Meadowbank mill processing the Whale Tail Pit and Expansion Project ores, as presented in Table 2.1.

Table 2.1 Greenhouse Gas Summary for the Whale Tail Pit and Expansion Project and the Meadowbank mill (2022)

Emission Source	Greenhouse Gas Emissions (kt CO2e)
Off-road mobile equipment exhaust	142
Generators and heaters	19.9
Incinerator	2.3
Whale Tail Pit and Expansion Project Total [(a)]	164.2
Meadowbank mill	180
Whale Tail Pit and Expansion Project plus Meadowbank Total	**344.2**

(a) Project Total includes emissions from the Whale Tail and Haul Road Project.
kt CO2e = kilotonnes of carbon dioxide equivalents; % = percent; <= less than
Source: Modified from Whale Tail FEIS, Volume 4 – Atmospheric Environment (Agnico Eagle 2016, Agnico Eagle, 2018)

SECTION 3 • DESCRIPTION OF MONITORING MEASURES

3.1 Greenhouse Gas Emission Monitoring

Emissions of GHG for the Whale Tail Pit and Expansion Project and Meadowbank Mine will be calculated on a monthly basis. Emissions related to the four (4) main sources described in Section 2 will be calculated. Although considered minimal compared to the other sources, emissions produced by the following activities will also be calculated and compiled:

- aviation (commercial charter planes required for the transportation of employees and cargo freight);
- light truck transportation using gasoline;
- used oil burned in the furnaces;
- blasting (use of emulsion - ammonium nitrate/fuel oil (ANFO));
- heating using propane.

Quantity of diesel (in liter) used for the generation of electricity and for light and heavy equipment will be recorded on a monthly basis for the Project. The quantities of aviation fuel (liter), propane (liter) and ANFO explosive (tonne) will also be recorded on a monthly basis. From those quantities, the direct emissions based on ``Standard Emissions Factors`` will be calculated. For each source, carbon dioxide (CO_2) emissions are calculated (in tonnes), as well as methane (CH_4) and nitrogen dioxide (N_2O) in tonnes of carbon dioxide equivalent (CO_2e tonnes). Emissions calculated for each source are added to obtain a monthly total Project related emission in tonnes of carbon dioxide equivalents (t CO_2e/yr).

3.2 Data Analysis and Reporting

Estimated GHG emissions for the Project will be compiled and analysed on a monthly basis. Data will be reviewed, and variations will be correlated to factor of causes such as seasonal climate, production activities or other factors of influence identified.

GHG emissions will be reported on an annual basis, as per the requirements of the Whale Tail NIRB Project Certificate No.008, in the Whale Tail Annual Report. The NIRB Annual Report will also include a discussion on GHG emissions monthly variations, as well as a comparison with FEIS emission predictions. Emissions related to aviation, blasting, propane heating, and light truck transportation using gasoline will also be presented and analysed. A separate report will be submitted to Environment and Climate Change Canada (ECCC) via the GHGRP and will comply with reporting requirements.

Mining operations in Nunavut are subject to the federal *Output Based Pricing System Regulations* which came into effect July 1, 2019. The Output Based Pricing System (OBPS) prices emissions from facilities emitting 50 kt CO_2e/yr or more. An Annual Report and supporting Verification Reports, are

required as part of the OBPS. These reports are in addition to GHGRP reporting, and will be submitted through ECCC's One Window System.

SECTION 4 • REDUCTION INITIATIVES

Several reduction initiatives are planned to reduce project-related GHG emissions over the Project lifecycle. While some have already been implemented others are currently being assessed.

4.1 Strategy to Replace Fuel Consumption by Alternative Energy

Alternative energy strategies are continuously evaluated using the criteria described in Appendix A. The Whale Tail Pit Expansion Project will have operations through 2026. Solar and wind technologies have been evaluated using the criteria set in Appendix A for the Whale Tail Pit Expansion, part of the Meadowbank Mine site. Historically, trials were conducted in 2015 to assess maintenance needs and reliability of solar panels at Meadowbank. A total of nine (9) solar panels were ordered to assess their performance in a northern environment during the 2015 and 2016 winter months. The trials were successful.

After evaluation of renewable technologies using the criterial in Appendix A, we have concluded that wind or solar are not feasible alternatives to current diesel generated power at the site due to:

- Return on Investment: As solar panels and wind-diesel turbines are capital intensive, the return on investment (ROI) for solar at the Whale Tail Pit Expansion/Meadowbank Mine is 20 years, while wind is 7 years.
- Timeline: The Whale Tail Pit Project will operate until 2026 while the design life of wind turbines and solar panels are typically between 20 and 30 years. Although wind turbines are more feasible than solar due to their faster ROI, it would take approximately 3 years from the time an investment decision has been made to build a wind-diesel project, which reduces the use of wind at the Whale Tail Pit project to 3 years. The ROI for both solar and wind exceed the remaining operational life of the Whale Tail Project.

We continue to evaluate renewable energy opportunities in the mid term in the Nunavut region. For example, we are evaluating the use wind-diesel micro-grid and other renewable technologies to supplement power requirements for our operations at the Meliadine Mine. The current assessment is evaluating the potential ROI for different renewable technologies which would reduce Meliadine's reliance on diesel fuel for power generation and provide GHG savings.

Additional alternative energies evaluated to reduce GHG emissions include implementing energy efficiency measures and reduction of fuel consumption, and are discussed in the sections below.

4.2 Strategies to Reduce Fuel Consumption

4.2.1 Heat recovery system – promote cogeneration to increase efficiency and convert to glycol

The heat recovery system was not performing as expected, resulting in additional operating costs, higher GHG emissions, and low comfort level for workers in certain buildings. Cogeneration is recognized as an efficient way of using fossil energy by recovering heat generated from a facility that is usually exhausted into the environment. The optimization of the power plant efficiency was completed in two (2) main phases; increasing cogeneration plant heat production through recovery and synchronizing heat consumption with heat production.

At Meadowbank, the service building heating system was synchronized with the recovered heat (exhaust of generators), further increasing heat production efficiency of the cogeneration plant through heat recovery. The average recovered heat increased by over 50%, replacing the need for auxiliary electric heating at Meadowbank. The power plant consumes now approximately two million (2,000,000) liters less of diesel per year than originally planned, which represents a GHG reduction of approximately 5,600 t CO_2e/yr.

Furthermore, a glycol system, replacing the electric one, was installed in the service building at Meadowbank and is fed by the heat recovery system. This results in diesel consumption reduction and GHG emissions reduction.

A similar cogeneration system and usage of glycol is being evaluated at the Whale Tail Pit - Expansion Project, resulting in further GHG emissions reduction if implemented.

4.2.2 Energy Diagnostic Page

The implementation of an ``Energy Diagnostic Page`` on the operation screens of the power plant would allow the energy leader staff to monitor the performance of the heating system daily. This new monitoring tool would also allow the setting of power consumption targets for specific areas of the facilities and of alarms with automated emails when consumption is over the fixed target. This tool would promote rapid identification and diagnostic of problems in the heating system, which is a large contributor to the GHG emissions. The implementation of this device is being evaluated at the moment.

4.2.3 Optimization integrated with mining plan

The Mine and Mill departments are the main energy consumers for the Project, and therefore the main GHG emissions contributors. Both departments are continuously assessing ways to increase their efficiency, whether by reducing the number of trucks or by optimizing cycle time of the fleet. The dispatch system used to monitor the production activities in the open pits and during hauling of the material also contributes to increase the efficiency of the production equipment. Finding optimal

rock fragmentation for rock blasting in the pits is also among the ways to reduce rock grinding required at the Mill, reducing energy consumption. These optimizations, along with others, can reduce the energy used for production activities, and therefore reduce GHG emissions and overall costs.

4.2.4 Incinerator capacity and alternative

The optimization of the incinerator cycles to increase capacity with the same energy consumption, while respecting the protocols and procedures to ensure proper operation of the facility, has been completed with success at Meadowbank. The optimization will continue when the incinerator receives waste from the Whale Tail Pit - Expansion Project.

The potential of food waste composting instead of burning at the incinerator is being evaluated at the moment, to assess its global impact on GHG emissions reduction. This would potentially reduce the amount of waste sent to the incinerator, and therefore reduce the facilities' burning and energy needs, and related GHG emissions. In addition to reducing emissions, composting would consist in an innovative project in the North.

4.3 Strategy Development and Awareness

4.3.1 Energy saving staff committee

This committee is formed by a group of employees from various departments, who work together to identify areas of improvement for energy consumption savings and to find innovative ideas to improve energy consumption and reduce GHG emissions. For example, the committee initiated the idea of composting food waste on site rather than using the incinerator.

4.3.2 Towards Sustainable Mining flow chart

The Towards Sustainable Mining (TSM) flowchart has been implemented with the Strategic Optimization Group and intends to create a visual approach for employees to understand the energy system and consumption on site, in order to create a venue for discussing energy-savings opportunities.

4.3.3 Raising Awareness

On a regular basis, the Environment and Camp Departments send emails and memos, or install posters to remind employees about the importance of saving energy. For example, the Camp Department staff place individual reminders in rooms during cleaning when the lights are left on by guests. The Environment Department sends regular communications about the ``no idling policy`` for vehicles on site, to avoid having vehicles left on idle mode while not in use. Inspections on site are also completed to raise awareness and enforce this policy.

SECTION 5 • REFERENCES

Agnico Eagle, 2016. Final Environment Impact Statement (FEIS) Volumes 1 to 8, Whale Tail Project, Meadowbank Division. Volume 4 – Atmospheric Environment, Volume 7 – Human Environment.

Agnico Eagle, 2018. Final Environment Impact Statement (FEIS) Volumes 1 to 8, Whale Tail Pit - Expansion Project, Meadowbank Division. Volume 4 – Atmospheric Environment, Volume 7 – Human Environment.

APPENDIX A – ALTERNATIVE ENERGY GUIDANCE

Introduction

Agnico Eagle Mines continues to work on initiatives that reduce our greenhouse gas footprint through the use of alternative energies. This appendix summarizes the process and criteria used to assess the viability of different alternative energies throughout our operations.

Alternative Energy Criteria

At Agnico Eagle, we are committed to operating in an environmentally responsible manner while contributing to the prosperity of our employees, their families and communities in which we operate. Our commitment to responsible energy and GHG management utilizes a combination of strategies that reduce energy and/or GHG emissions in our fleet and equipment, our processes, and the electricity we consume. These strategies include:

- implementing sustainable energy cost and efficiency improvements;
- evaluating measures to reduce fuel consumption; and
- utilizing innovative technology such as renewable energy where possible.

As we aspire to a zero-diesel mine, we evaluate alternative energies, which are sources of energy that have a lower intensity and GHG footprint than that of diesel. For project operations, the following parameters are considered in determining the feasibility of different alternative energy projects:

- Timeline: the projected economic life of an alternative energy investment relative to project life. This includes the renewable energy investments, for example, evaluating the life span of solar panels relative to the remaining operational life of a project.
- Energy reduction: the potential for a project to reduce energy through fuel consumption, processes, or electricity consumption. We incorporate design principles aimed at electrifying our operations, eliminating waste energy, increasing the use of renewables, and developing sustainable energy systems that benefit the site and community.
- GHG Emissions: the evaluation of potential GHG emissions reduced from reducing energy, switching fuels to lower-emission fuels, or use of renewable energies.
- Return on investment: the potential financial return on investment for investing in alternative energy. ROI includes future operational costs (or savings) for carbon taxes where applicable.
- Community Impact: the impact the investment may have on the community, particularly for renewable energy investments. Community impact can be measured using a variety of metrics; for example, bringing reliable electricity to communities we operate in.

All potential alternative energy projects are reviewed against the parameters set above on a case by case basis.