USING RETSCREEN TO IDENTIFY CLEAN ENERGY AND EFFICIENCY OPPORTUNITIES

Introduction

Utilities and waste make up the largest component of facility costs for Ontario colleges, at just over 30%, with total costs for electricity, natural gas, and water at $78.5 million in 2016-2017[1]. This represents an enormous opportunity for energy efficiency and conservation efforts that can lead to huge cost and emission savings that are captured annually.

Energy efficiency and renewable resource projects continue to rise in popularity as technology becomes more cost effective and climate change continues to become a larger, more pressing issue. Unfortunately, it can be difficult and costly to undertake efficiency feasibility work and identify associated cost savings in order to help build an accurate business case for technology improvements.

RETScreen Expert is a clean energy management software for energy efficiency and project feasibility analysis as well as ongoing project monitoring. Developed by Natural Resources Canada, the decision support software is meant to inform and empower professionals and key decision-makers regarding clean energy and efficiency opportunities. The software significantly reduces the financial and time costs of identifying and assessing potential renewable energy and energy efficiency projects.

Walk Through and Key Features

RETScreen has developed a series of informative, step-by-step videos to provide users with project feasibility support. This document summarizes the types of energy projects the software is capable of analyzing with recommendations for videos to support self-paced training.

Area of Emphasis	Length (minutes)	Description and Link
RETScreen Overview	3	A brief, high-level overview of RETScreen Expert's capabilities. Find the link to this video here.
Benchmarking Analysis	86	Learn how to identify and set reference climate conditions at campus location(s) and make comparisons to other facilities. Find the link to this video here.
Feasibility Analysis	81	Guides users through identifying and assessing the viability of potential energy efficiency and renewable energy projects. Find the link to this video here.
Performance Analysis	83	Helps users monitor, analyze, and report energy performance data to facilities staff, managers, and senior decision-makers. Find the link to this video here.
Portfolio Analysis	83	Allows users to manage multiple facilities under one portfolio. This video will explore the software's ability to rank buildings based on energy performance, create sub portfolios, and manage multiple project categories. Find the link to this video here.
Photo Voltaic (PV) Part 1: Overview	14	Walks users through a pre-feasibility and financial analysis of a grid-tied PV project. Find the link to this video here.
Photo Voltaic Part 2: Energy Modelling for PV Projects	11	Expanding on Part 1, this video allows for refining of project assumptions in order to create more accurate cost savings and energy generation capacity. Find the link to this video here.

Photo Voltaic Part 3: PV Module Selection	9	This video helps guide the user through examining and supporting decision making with different types of solar PV options. Find the link to this video here.
Photo Voltaic Part 4: Cost and Tariff Analysis	12	This short video provides additional detail on PV costs as well as feed-in-tariff projects. Find the link to this video here.
Wind Analysis Part 1: Overview	13	Users will determine, at a high level, the feasibility of a grid-tied wind project. Find the link to this video here.
Wind Analysis Part 2: Energy Modelling for Wind Projects	21	This video helps to refine and build on assumptions made in Part 1, including incorporating local weather information for the proposed project for improved accuracy. Find the link to this video here.
Wind Analysis Part 3: Cost and Tariff Analysis	16	This video outlines how to specify wind project costs in detail, including a monthly breakdown and conditions needed for profitability. Find the link to this video here.
Wind Analysis Part 4: Wind Resource Assessment and Turbine Selection	9	Added detail, including blade length and tower height are considered to help identify best-case scenarios for wind projects. Find the link to this video here.
Hydro Power Part 1: Overview	12	Work to quickly understand the financial viability of a grid-tied hydro project via a pre-feasibility study. Find the link to this video here.
Hydro Power Part 2: Energy Modelling	18	Help refine and improve the accuracy of hydro project assumptions. Find the link to this video here.
Hydro Power Part 3: The Cost of Hydro power Dams	12	This video helps users create more refined cost estimates for their hydro project and outlines costing methodology. Find the link to this video here.
Hydro Power Part 4:	4	This video explains the Specific Runoff Hydrology Method for hydro projects. Find the link to this video here.

Potential Challenges

- The potential for a steep learning curve (regarding terminology and knowledge) for individuals who may not have significant technical knowledge of renewable and energy efficiency projects.

- Dedicated time may be required to become better acquainted with the software.

Conclusion

Utility costs for post-secondary institutions continue to make up a substantial component of facilities budgets, with costs estimated to increase without conservation efforts. Accurately identifying energy and efficiency projects with added quantitative data to support annual costs, potential profitability, and energy savings, will help make efficient use of resources. It should also drive strategy, and inform key decisions from a facilities and sustainability perspective.

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[1] McEvoy, R. (2018). 2016/2017 Facilities Benchmarking Report. Ontario College Facilities Management Association.