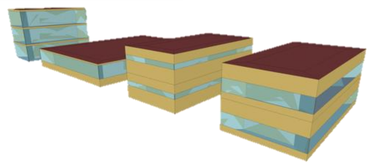
Natural Resources Canada | Ressources naturelles Canada

CanmetENERGY

Leadership in ecoInnovation

BTAP

Building **T**echnology **A**ssessment **P**latform



16 Building Archetypes

X

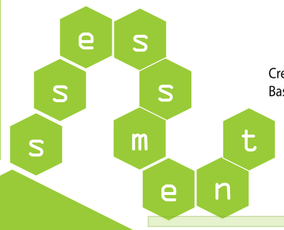
~70 Weather Data Locations Across Canada

=

~ 1120 Data points with total, Yearly, energy usage.

BTAP (Building Technology Assessment Platform) is an optimization platform, which will be used to provide an objective evaluation of how emerging technologies perform in Canadian buildings. The main objective of BTAP is to develop a technology assessment and optimization tool that allows industry to explore thousands of approaches to achieving energy savings in buildings [1]

BTAP's algorithms and procedures are used to predict the impact of emerging technologies on building energy use and occupant comfort [1]. BTAP is used for developing building archetypes, algorithms and energy conservation measures [1]. BTAP goes a step further, implementing a costing database, with data from RSMeans, for cost optimization analysis for commercial envelopes, electrical and mechanical systems



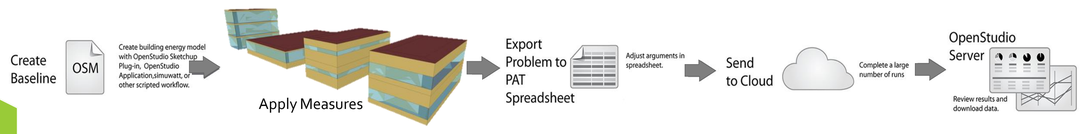


Figure 1: OpenStudio workflow to generate the results for the simulation

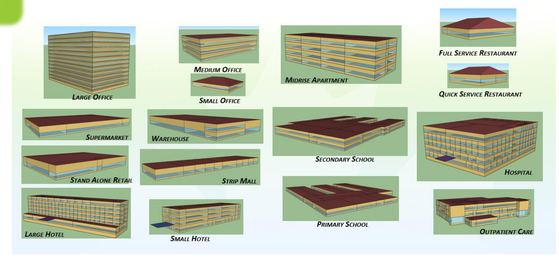
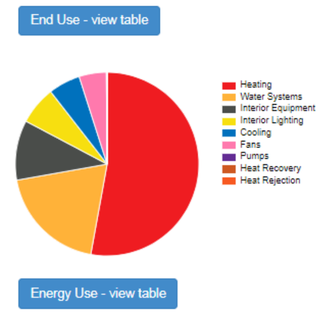


Figure 2: Building archetype geometries



Example of an OpenStudio report for a high-rise apartment building in Ottawa

APPLAMTFORM

BTAP is built on the OpenStudio/EnergyPlus building simulation platform, developed by the U.S. Department of Energy (DOE) and the National Renewable Energy Laboratory (NREL) [2]. BTAP uses OpenStudio's Amazon Cloud computing scaling capabilities, to allow for tens of thousands of simulations to be run in a single hour. OpenStudio is used to simulate the energy consumption of archetypical buildings models in over 70 cities across Canada. The data generated from the simulations will be used to support researchers, government initiatives, architects, and building designers to develop net-zero energy buildings in Canada

My Contributions:
- Run full weekly national simulations with NECB 2011/2015 building code vintages
- Conduct weekly optimization runs
- Perform QAQC on output results of simulations
- Report, and debug errors in results
- Write/modify various Ruby scripts
- Provide support on project in various other capacities

RSMeans data from GORDIAN

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Buildings and Renewables Group

References
[1] M. Stylianou, "Project Proposal for Addressing the Barriers to the Design of High Performance Housing and Buildings," Office of Energy Research and Development - Natural Resources Canada, Ottawa, 2015-November.
[2] NREL, "OpenStudio," [Online]. Available: https://openstudio.net. [Accessed April 2018].

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