

2022 LEED Performance

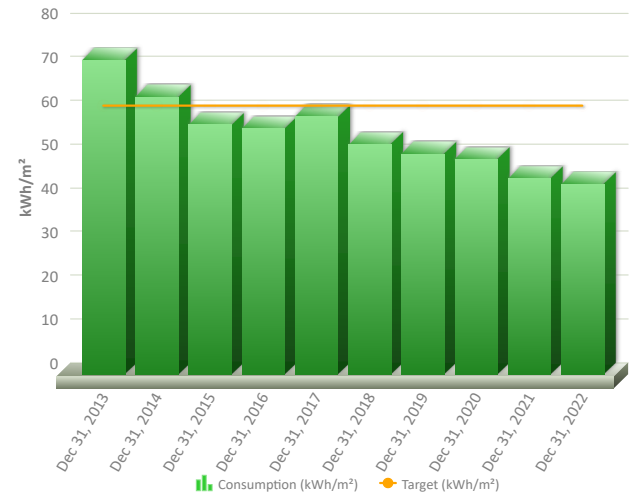
Reliable Controls Corporation - South Annex at 120 Hallowell Road

Since October 2012, Reliable Controls has occupied this LEED platinum-certified facility located at 120 Hallowell Road, in Victoria, British Columbia, Canada. Throughout its history, the building has witnessed a steadily changing number of occupants as well as many improvements to the operations of its mechanical and electrical systems, specifically the HVAC, lighting, and security systems. The simple, flexible, and sustainable hallmarks of the Reliable Controls BAS means optimizing the building operations is simple to do, and the results are easy to monitor.

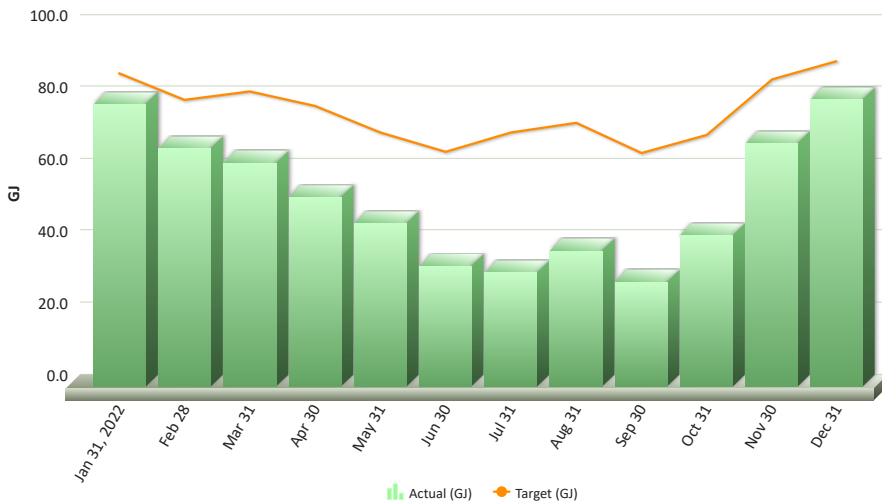
The chart to the right displays a track record of the energy consumed by the annex for each full year of occupancy since 2013, expressed in units of Energy Use Intensity (EUI). A commercial building is considered *green* if its EUI is 110 kWh/m² or lower. As can be readily seen in the chart, the EUI for the Reliable Controls LEED platinum South annex has consistently been well within the green building range and in the year 2022, the EUI was **43.0 kWh/m²**, well below the building's design target of **58.8 kWh/m²**.

In 2022, the occupancy of the South annex remained low, as employees who execute most of their work through network terminals switched to hybrid work weeks. For most, that meant working from home for more than 70% of the time. The Vancouver Island climate was cool and wet into July, then hot and very dry through October, and unseasonably cold in December. As predicted by climate change models, British Columbia weather is increasingly subject to wider swings of temperature and rainfall.

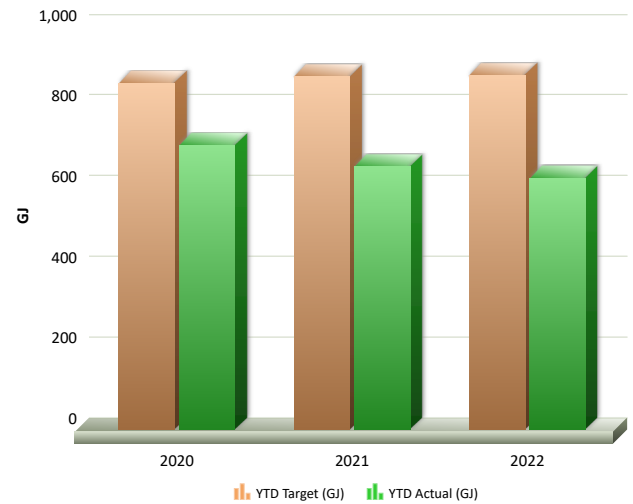
Energy Use Intensity (EUI)



Monthly Energy Consumption

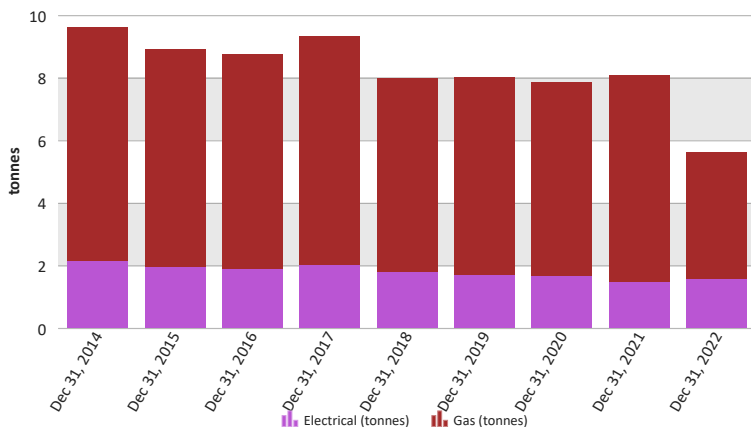


Total Annual Consumption Target vs Actual



The Reliable Controls BAS calculates a daily energy consumption target in gigajoules (GJ), based on 50% of the ASHRAE standard 90.1 (1999), adjusted for actual heating and cooling degree days. Standard 90.1 is used to predict the energy consumption of an energy efficient building within a specified geographical region.

Greenhouse Gas Emissions (CO₂e tonnes)



In the province of British Columbia, over 90% of the electricity consumed is produced by hydroelectric generation. That means using electricity, rather than methane, results in far fewer tonnes of greenhouse gas per GJ of energy, in fact, about 95% less.

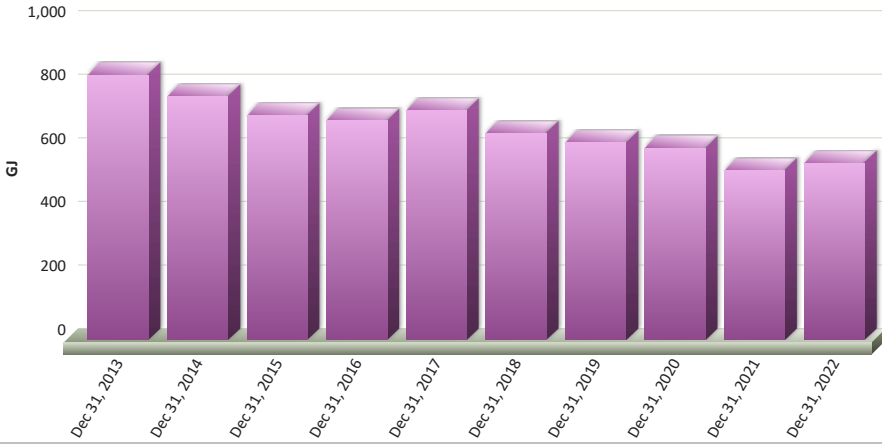
The chart on the left shows the total greenhouse gas emissions from the energy consumed by the South annex, expressed in tonnes of CO₂ equivalent (CO₂e). CO₂e is used by many industries to compare the overall global warming potential (GWP) of the greenhouse gases emitted by different processes.

Methane consumption decreased markedly in 2022 due to intermittent failure of both methane fired boilers throughout the year. Those boilers are the sole consumers of methane in the South building. In December, facilities engineers were able to use heat pump energy to replace the heat normally produced by the boilers, with the happy consequence of reducing greenhouse gas generation for the whole month!

2022 LEED Performance

Electricity

Annual Electrical Consumption



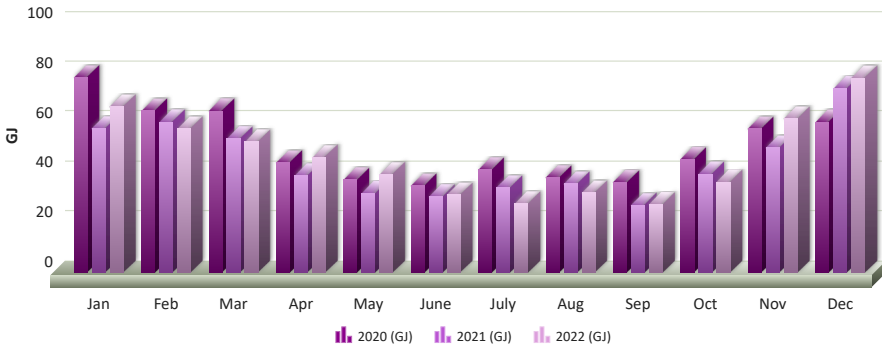
In August 2020, all of the existing T5 fluorescent fixtures in the South annex were retrofitted with new LED tubes and drivers. This change led to an instant and ongoing drop in electricity consumption, however, the impact was hidden by occupancy reductions attributable to COVID-19.

The MACH-System receives occupancy data from a fully integrated BACnet card access system. When a space is unoccupied, the heating/cooling equipment serving that space operates in standby mode, and the overhead light(s) remain off. This means that the energy consumption of the South annex is closely linked to the number of occupants.

In December 2022, the failure of both boilers resulted in facilities staff overriding systems to use heat pump energy to make up for the heat normally provided by the methane fired boilers. This led to an unusually high electrical consumption (and low methane consumption) for the month of December.

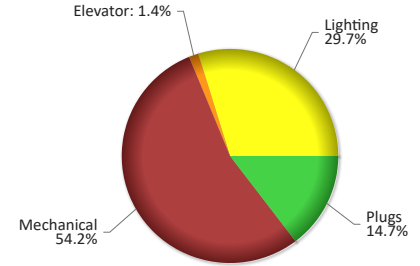
Monthly Electrical Consumption

2020 through 2022

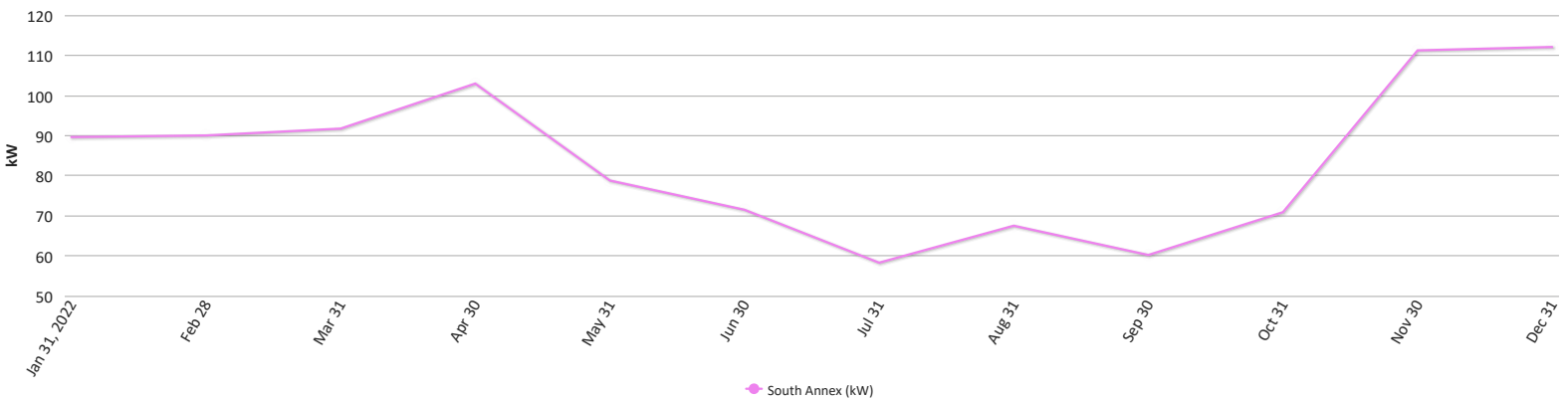


Electrical Consumption Breakdown

2022



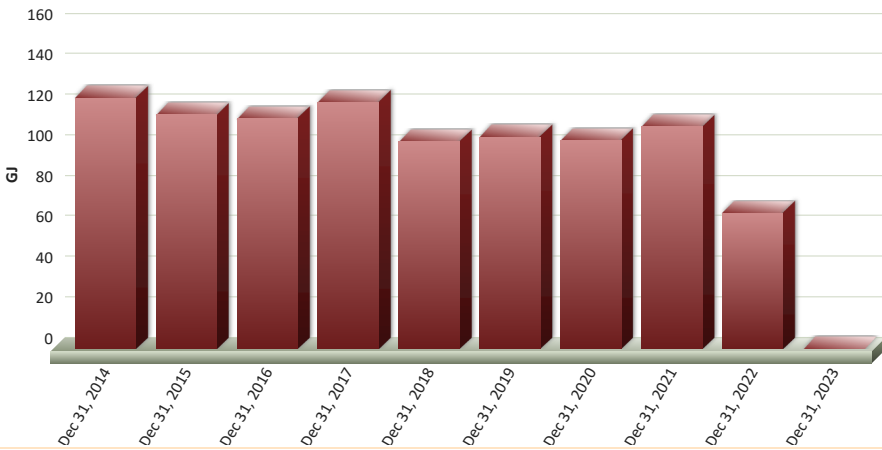
Peak Monthly Electrical Demand



2022 LEED Performance

Natural Gas

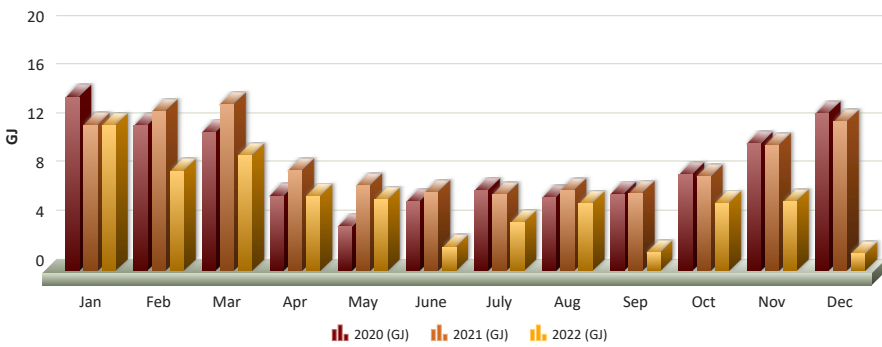
Annual Gas Consumption



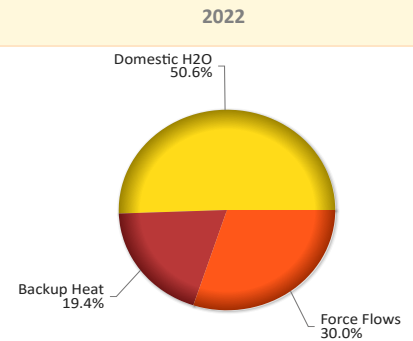
Annual gas consumption is very low for the South annex because all of the radiant floor heating and ventilation heat is generated by electrical energy, using air-source heat pumps and heat reclaim from exhaust air. Two small methane fired boilers provide hydronic heat for domestic hot water, force flow entrance heaters, and back-up for the heat pump systems during the heating season.

Throughout 2022, both methane boilers were subject to intermittent mechanical failures. In December, facilities staff were forced to use hot water from the heat pump systems to operate the domestic hot water and force flow entrance heaters. Both boilers are awaiting repair parts to be installed in early 2023. The 'silver lining' associated with the boiler failures is that the South building used far less methane than in previous years!

Monthly Gas Consumption 2020 through 2022



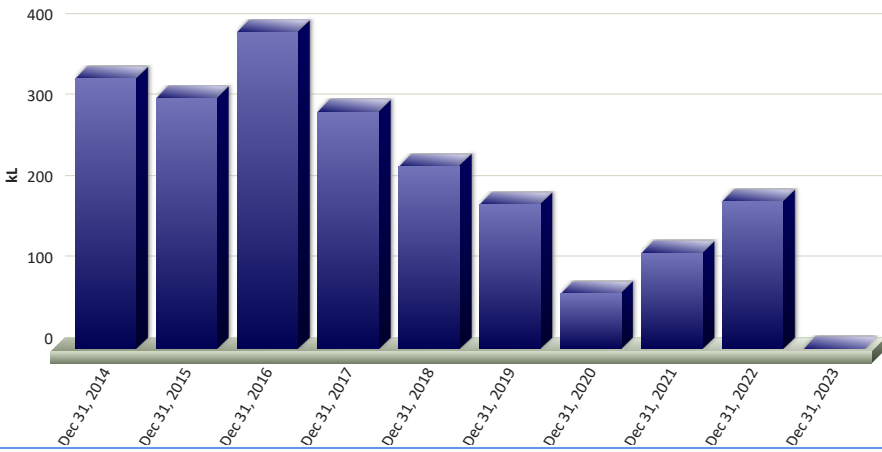
Gas Consumption Breakdown



2022 LEED Performance

Water

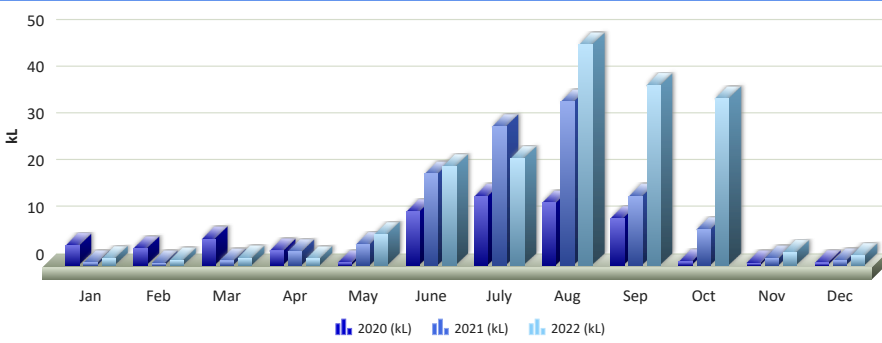
Annual Potable Water Consumption



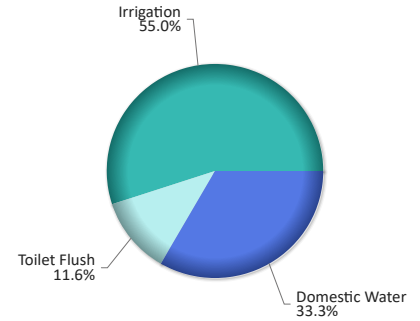
Collecting and using rainwater for landscape irrigation and sewage conveyance can significantly reduce the demand (and expense) of annual potable water consumption. The South annex has two large cisterns used to store rainwater. The water collected in one cistern is used to flush toilets, and the water in the other cistern is used for landscape irrigation during the summer months. In general, the site is planted with drought tolerant local plants. The irrigation schedule is controlled by the building automation system, considering outdoor air temperature and rainfall. Despite these measures, irrigation is the largest single user of domestic water.

In 2020, potable water consumption fell to an all time as the initial round of COVID-19 kept staff working at home for most of the year. In 2021 and 2022, water consumption was higher due to additional consumption by the irrigation system during two hot and dry summers. In 2022, facilities staff were forced to keep irrigating well into October!

Monthly Potable Water Consumption 2020 through 2022



Potable Water Consumption Breakdown (2022)



Potable Water Monthly Breakdown 2021 vs 2022

