

# 2019 LEED Performance

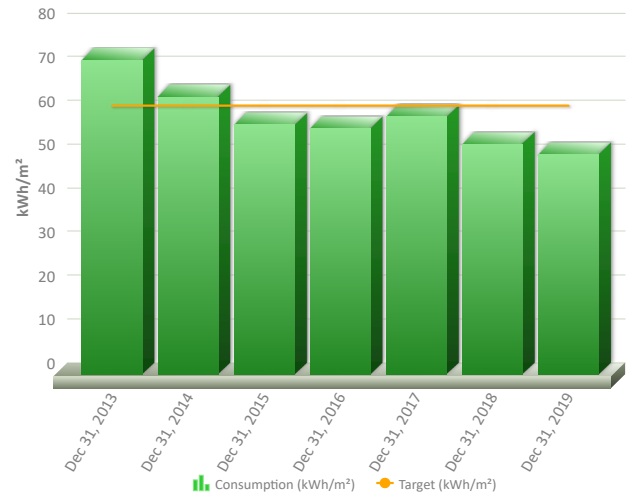
## Reliable Controls Corporation - South Annex

Reliable Controls has occupied the LEED platinum South annex for over seven years now, with a steadily growing number of occupants. During that period, many improvements have been made to the sequence of operation of mechanical and electrical systems. The flexibility of the MACH-System means that changes are easy to implement, and the results are easy to monitor.

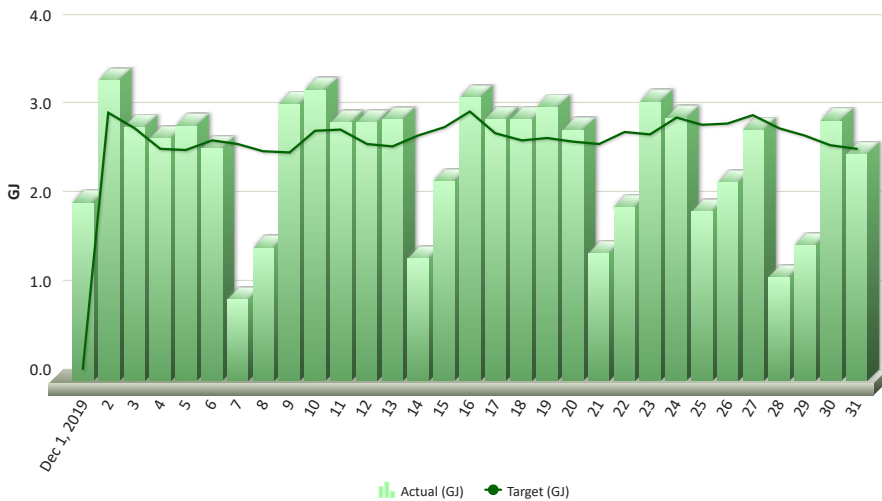
The chart to the right shows the track record for energy consumed from 2013 to 2019, expressed in units of Energy Use Intensity (EUI). In 2019, the EUI was well below the design goal (58.8 kWh/m<sup>2</sup>), ending with **50.2 kWh/m<sup>2</sup>**.

Although we 'squeezed some more blood out of the stone' in 2019, energy savings are definitely getting harder to find after 7 years of operation.

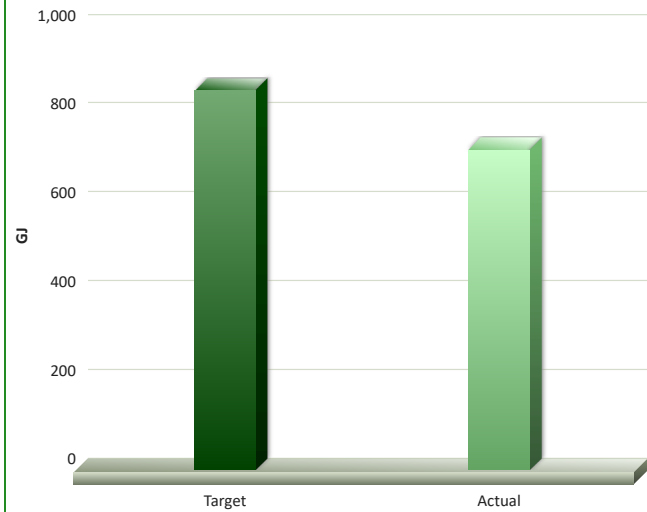
### Energy Use Intensity (EUI)



### Daily Energy Consumption



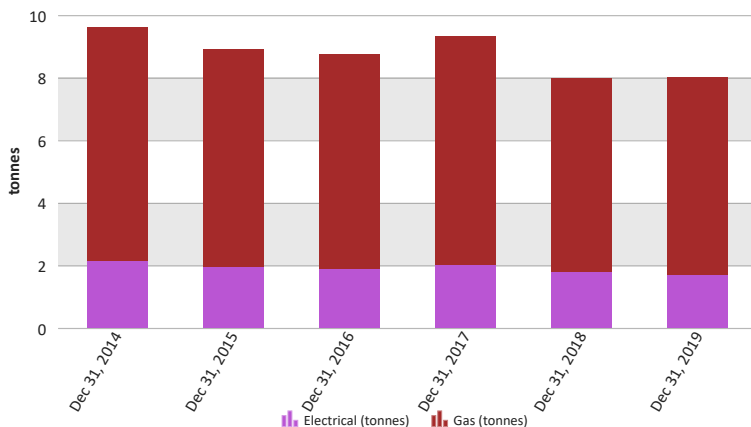
### YTD Energy Consumption vs Target



Reliable Controls MACH system calculates a daily target for energy consumption, based on 50% of 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 in our geographical region.

In 2019, the actual energy consumed was **42.1%** of ASHRAE 90.1, a new record for the South Annex.

### Greenhouse Gas Emissions (CO<sub>2</sub>e tonnes)



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

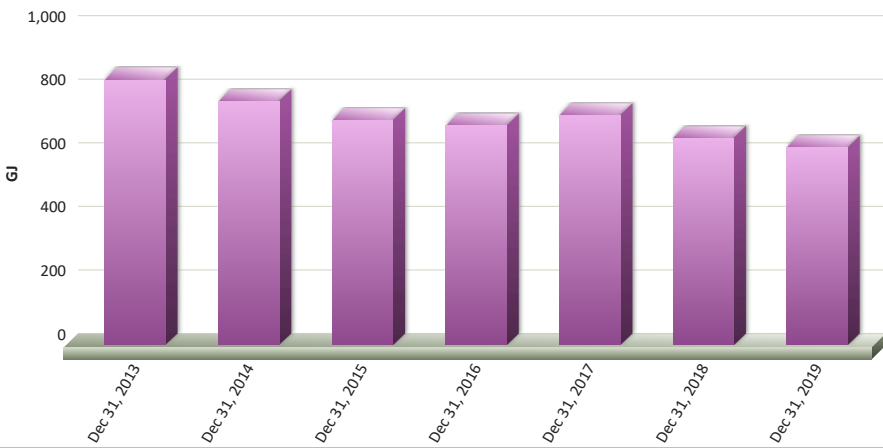
The chart on the left shows the total greenhouse gas emitted by the energy consumed by the South Annex, expressed in tonnes of CO<sub>2</sub> equivalent ( CO<sub>2</sub>e). CO<sub>2</sub> equivalent is used by the industry to compare the overall Global Warming Potential of the greenhouse gases emitted by different processes.

The South Annex has achieved a reduction of 16.7% of greenhouse gas generation from 2014 to 2019. One remaining improvement that can be made to the South Annex that will have an impact on greenhouse gas emissions is to replace our existing Force Flow heaters with electrical heaters. The existing Force Flow heaters use hot water from gas-fired boilers, so switching the units to using electricity will reduce greenhouse gas significantly.

# 2019 LEED Performance

## Electricity

### Annual Electrical Consumption

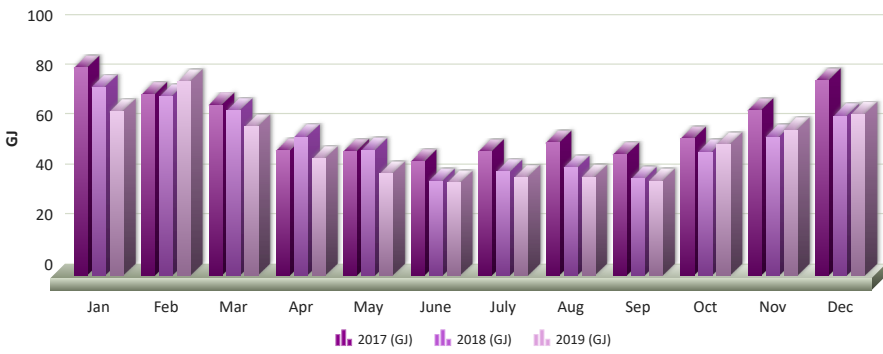


Electrical energy was reduced again in 2019.

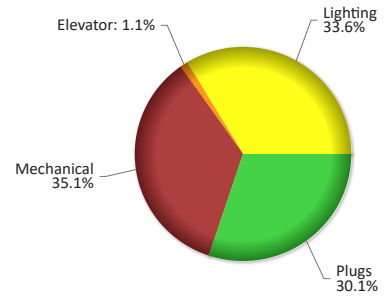
Opportunities for reduction in 2020 include replacing the fluorescent lights with LED lights, and instituting plug load control where possible.

### Monthly Electrical Consumption

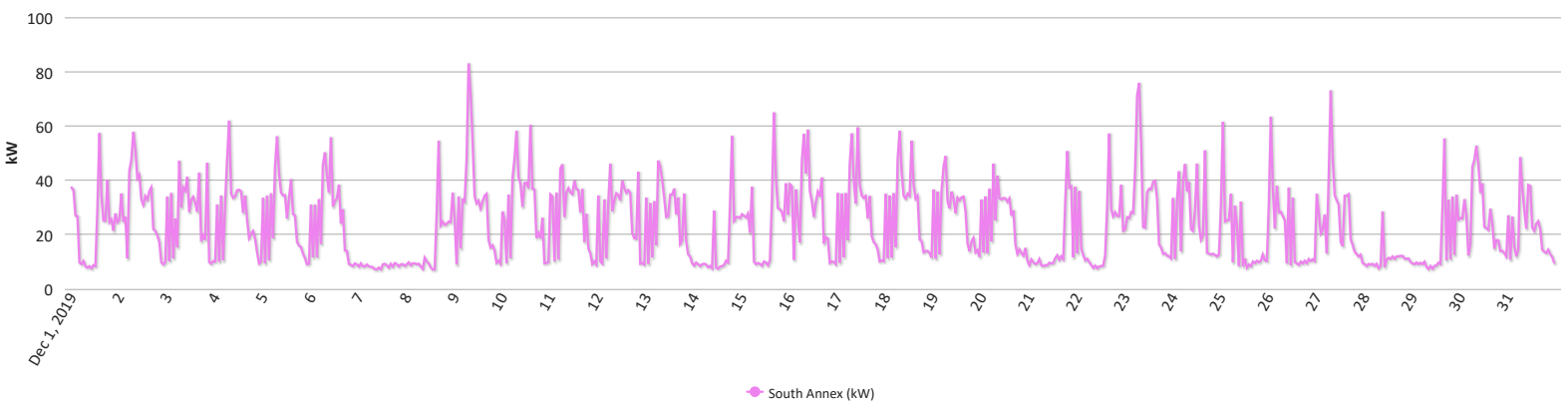
2017 through 2019



### Electrical Consumption Breakdown



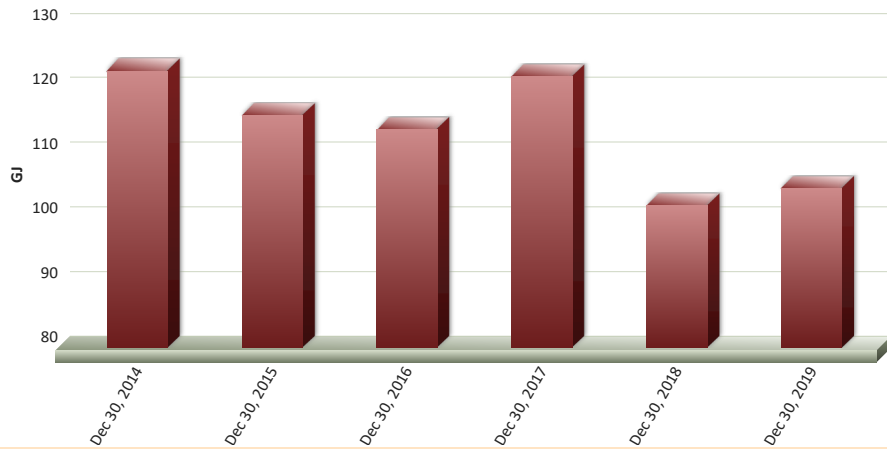
### Daily Electrical Demand



# 2019 LEED Performance

## Natural Gas

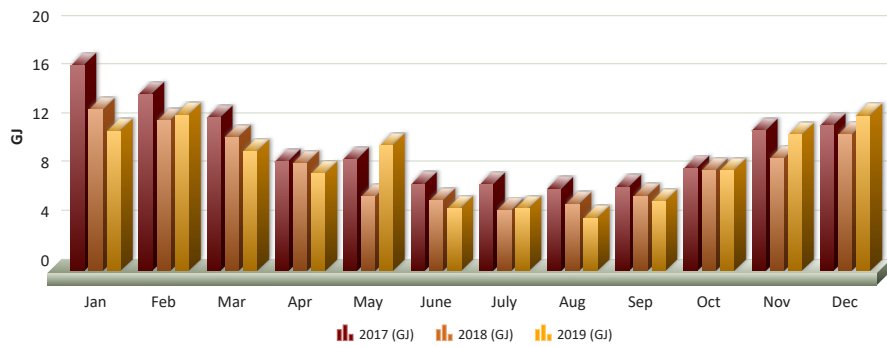
### Annual Gas Consumption



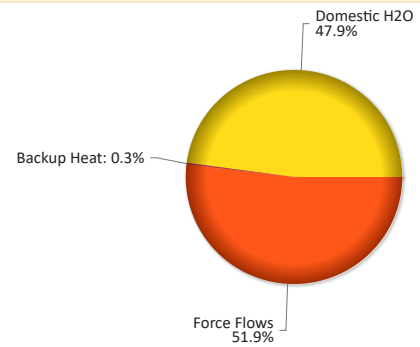
Gas consumption rose slightly in 2019 compared to 2018, but is still very low for the South Annex, because all of the floor and ventilation heat is generated with electrical energy, using air source and heat reclaim heat pumps.

We have an outstanding plan to replace the three hydronic entrance force-flow units with electric units. This change will save only a small amount of energy, but will reduce the greenhouse gas emissions from the South Annex by a significant percentage.

### Monthly Gas Consumption 2017 through 2019



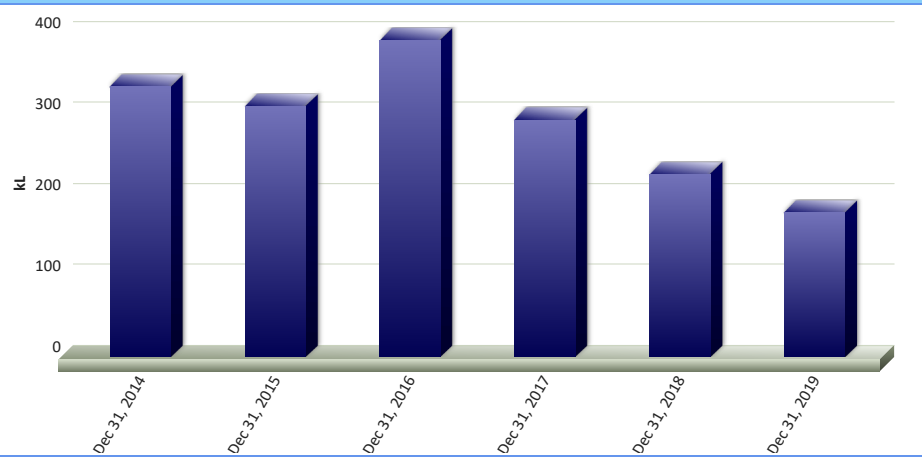
### Gas Consumption Breakdown



# 2019 LEED Performance

## Water

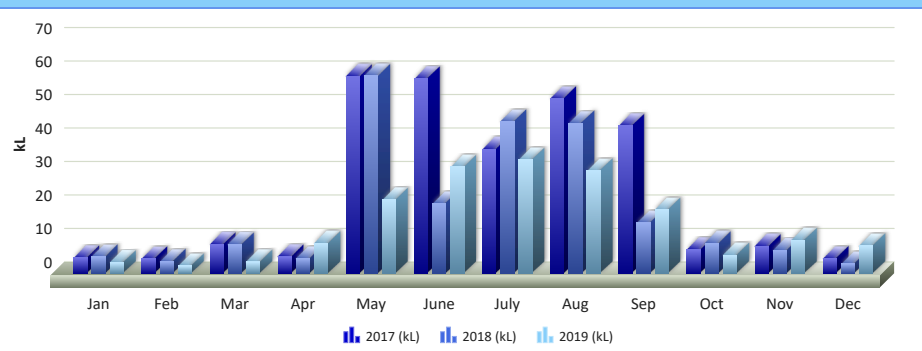
### Annual Potable Water Consumption



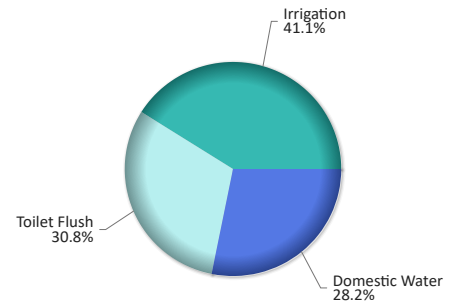
Hurray! We really nailed our domestic water usage this year, chiefly by not making any operational errors, but also due to more regular rainfall than the previous two years.

2019 domestic water consumption was almost half of what it was during the first year we occupied the building (2012), when we had many operational problems that took years to work out.

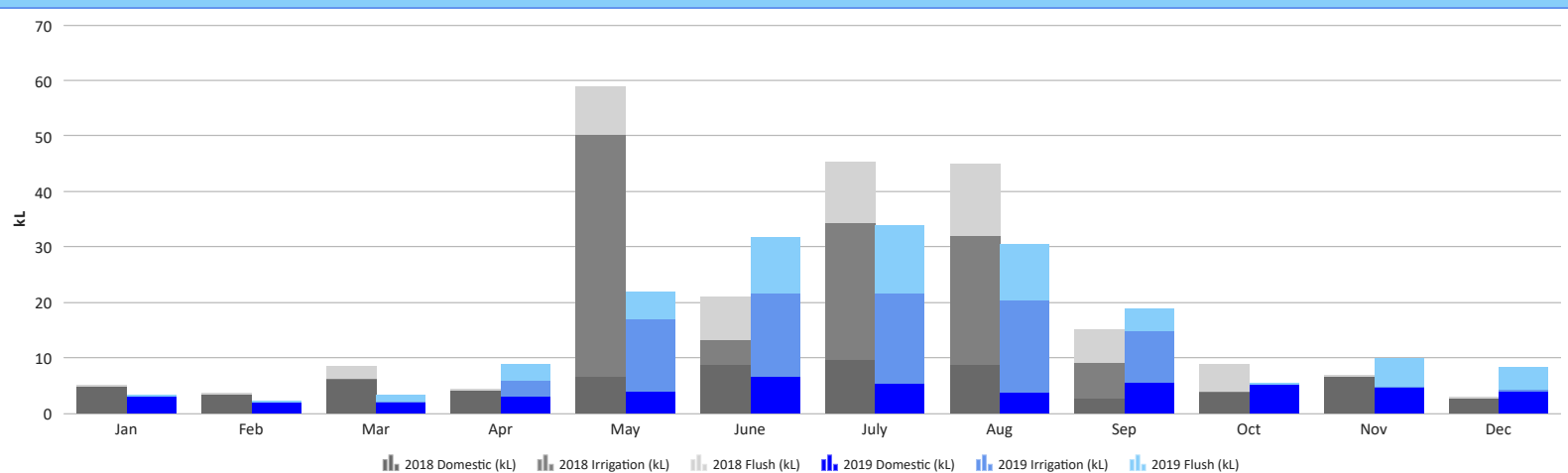
### Monthly Potable Water Consumption 2017 through 2019



### Potable Water Consumption Breakdown



### Potable Water Monthly Breakdown 2018 vs 2019



# 2019 LEED Performance

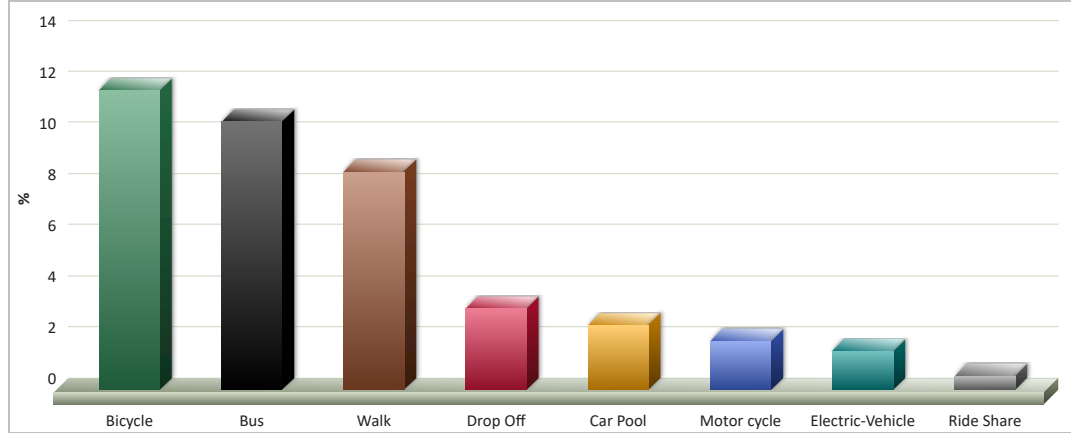
## Transportation

### Reliable Controls Employee Alternative Transportation Methods

2019

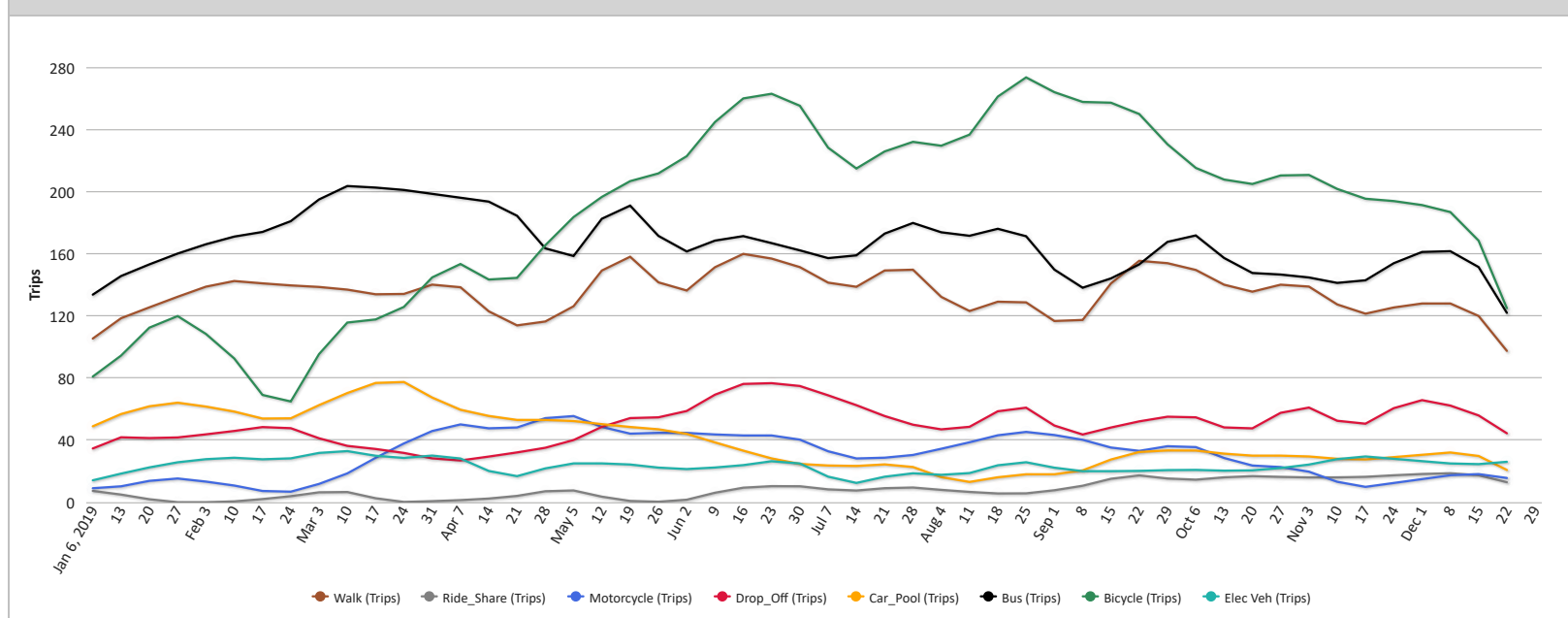
Reliable Controls encourages employees to use alternative forms of transportation to get to work, and even provides daily compensation for utilizing these methods.

On average, 41% of trips to and from work use alternative forms of transportation, thereby reducing traffic congestion, reducing parking requirements, and decreasing greenhouse gas generation.



### Alternative Transportation Methods Trend

Past 12 Months

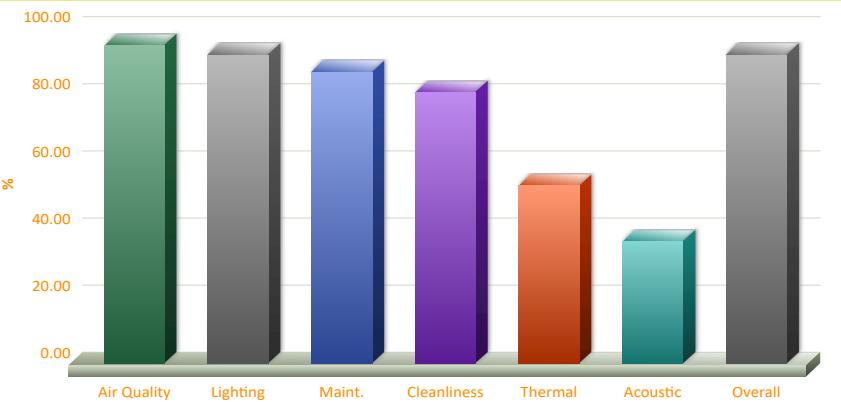


# 2019 LEED Performance

## Occupant Comfort

### Employee Comfort Survey Results

October 2018



Displayed in the two charts to the left are the results of Reliable Controls first two occupant comfort surveys, carried out in October 2018 and June 2019.

The overall satisfaction rating for the South Annex was 91.7% in October, falling to 83.8% in June, so unfortunately not going in the right direction. Both results are over the company's comfort goal of 80%, as measured by a standard comfort survey. The South building also met goal in four of the six individual comfort categories.

Thermal comfort, acoustic comfort, and building cleanliness all improved from October to June, while lighting quality, air quality, and maintenance all fell according to the survey results.

With regards to acoustic comfort, we were disappointed to learn that employees are still not happy with ambient noise, even after Reliable Controls spent significant funds recently to enclose all of the private offices. The remaining complaint is all about employees having audible conversations in the vicinity of other employees who are trying to focus. We attempted to improve this situation with a note circulated to all employees, urging them to be cognizant of their co-workers when engaging in social conversations. Employees need to carry out non-work related conversations in private offices, lunchrooms, and conference rooms... away from those who are focusing on tasks at their workstations.

### Employee Comfort Survey Results

June 2019

