

# DEMAND BASED VENTILATION

**Project:**  
Demand Based  
Ventilation Controls

**Location:**  
DNA Building, Life and  
Health Sciences

**Estimated Savings:**  
Natural Gas: 156,721m<sup>3</sup>  
Electricity: 713,447kWh  
GHGs: ~328t CO<sub>2e</sub>



Large buildings use mechanical HVAC (Heating, Ventilation and Air Conditioning) systems to bring fresh air inside to ventilate space. Ventilating is typically based on a calculated need for fresh air that, to ensure we are ready for the 'worst case scenario', almost always exceeds actual amount needed. The issue with this is that all of the air coming in directly from outside needs to be conditioned. Conditioning can include heating, cooling and removing humidity. These activities use a lot of electricity and natural gas. If we are conditioning more air than is really needed then we are wasting energy, wasting money and creating unnecessary greenhouse gas emissions (GHGs).

The concept of Demand Based Ventilation, or DBV, is to measure how much air is actually needed to ventilate the building based on the conditions in the building. For example, a building with 10 people likely needs far less fresh air than one with 100. If we measure the impact that the extra people have on the air quality, we can adjust the amount of ventilation to what is actually needed, rather than treating each space the same.

For this project, Trent is meeting the ventilation needs of lab space using a high-tech system call AirCuity. This system continuously tests samples of air from our labs for air quality. Based on the results, ventilation increases or decreases automatically. This way we are only conditioning the air that we actually need, saving money and reducing GHGs.