

GREENHOUSE GAS EMISSIONS

Greenhouse gases (GHGs) are chemicals such as water vapour, carbon dioxide, methane, nitrous oxide, and aerosols which trap heat in the atmosphere. Sunlight can still enter the atmosphere freely, but when sunlight strikes the Earth's surface some of it is reflected back towards space as heat. Of this emitted heat, some is intercepted and absorbed by greenhouse gases in the atmosphere. This is because of their molecular structure which allows them to absorb some of the escaping heat and then re-emit it towards the Earth which increases global temperaturesⁱ. This process is called the Greenhouse Effect.

The Greenhouse Effect is evident from observations of increased global average air and ocean temperatures, widespread melting of snow and ice and the rising global average sea level. Since the mid-20th century, most of the observed increase in global average temperatures is very likely due to the observed increase in human-caused GHG concentrations. Richmond's community-wide emissions result in roughly 4.5 tonnes of CO₂e per resident each year, with most of the measured GHG emissions a direct result of burning fossil fuels (e.g. coal, oil and natural gas) to drive vehicles, and heat and power buildings. A lesser quantity of emissions results from the decomposition of the solid waste generated by the community.

Producing 43% of the community's GHG emissions, the use of electricity and natural gas to heat and cool Richmond's buildings is one of the main contributors of GHGsⁱⁱ. To mitigate this issue and reduce building emissions, the City continues to connect new buildings to renewable district energy systems, and further conducts studies to identify multi-unit residential buildings that may be retrofitted to district energy systems in the future.

By harvesting renewable energy through district energy systems, the Lulu Island Energy Company supports the City of Richmond's battle to lower GHG emissions, and meet its community GHG targets of 33% below 2007 levels by 2020, and 80% by 2050 that it set in the Official Community Plan.



i What's Your Impact: <http://whatsyourimpact.org/greenhouse-gases>

ii City of Richmond (2014) *Community Energy and Emissions Plan*