

# Energy Use in Buildings



## HOW MUCH ENERGY DO BUILDINGS CONSUME?

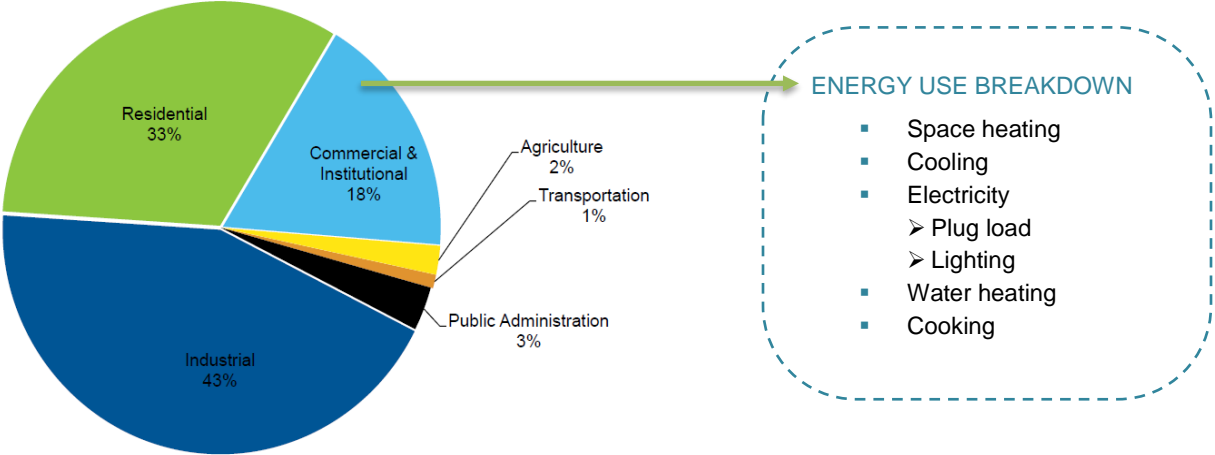
Most of us spend the majority of our working and leisure time within buildings – whether the office, retail stores, or home – it may be as no surprise to learn that approximately one third of global energy end use is associated with buildings.

Nearly 60% of the world’s electricity is consumed in residential and commercial buildings (varies by geographical location)<sup>i</sup>. In Canada, commercial and institutional buildings (e.g., office use) account for 18% of energy demand, while the residential sector as much as 33% (see pie-chart image)<sup>ii</sup>.

In office buildings, energy use is typically a combination of space heating and cooling; water heating; and electricity. Large commercial buildings with food retail will also have associated natural gas consumption for cooking.

The energy use is divided between what is referred to as ‘base building operation’ – the energy consumed by equipment that helps a building run. The remaining portion of energy used is associated with tenant use, such as electricity for lighting, computers, office equipment and kitchen appliances.

ELECTRICITY DEMAND IN CANADA BY SECTOR, 2013<sup>iii</sup>



## WHY DOES REDUCING ENERGY-USE MATTER?

### 1. Energy production leads to increased Greenhouse Gases (GHGs) in the atmosphere

The majority of energy production in Canada has a GHG footprint. Even cleaner energy choices such as hydroelectricity have associated emissions, as well as negative environmental effects. In other words, our energy footprint is associated with GHGs, which cause climate change.

The acceleration use of solar, wind, tidal and geothermal generation of energy will help reduce future reliance on fossil fuels and thus reduce the GHG emissions associated with energy use.



## 2. Energy Use is linked with Increased Water Consumption

The increased reliance on data storage in large “data farms” has increased the use of energy and water use to maintain the large facilities that house the required computers. Data farms require energy and water to cool hundreds of servers. Many, such as California based data farms are built on desert land where water is cheap but grows increasingly scarce.

Microsoft’s Project Natick submerged a large tube with servers inside off the coast of California to test the viability of long-term underwater data centre<sup>iv</sup>.

## WHAT CAN WE DO ABOUT IT?

To reduce the total amount of energy used through building operations and in-suite use, both tenant and landlord must take steps to find ways to reduce energy, increase efficiency in fixtures and equipment, as well as maintain conservation awareness among occupants.

In Canada, the commercial building sector has decreased its energy use over the past decade with continued efforts among leading building owners and managers to implement retrofits in existing buildings, conduct regular audits and invest in outreach campaigns to help change habits among occupants.

There are several actions individuals can take at home and work. To learn more [click here](#).

### ENERGY USE AT COMMERCE COURT

Did you know that Commerce Court reports on its energy use annually? Performance data can be found in our Sustainability Scorecard.

To learn more, [click here](#).

## MORE INFORMATION

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## END NOTES

<sup>i</sup> United Nations Environmental Programme (UNEP) (2011) Towards a Green Economy: Investing in Energy and Resource Efficiency. <http://web.unep.org/greeneconomy/resources/green-economy-report>

<sup>ii</sup> Canadian Electricity Association. Canada’s Electricity Industry. <http://www.electricity.ca/media/Electricity101/Electricity101.pdf>

<sup>iii</sup> Ibid

<sup>iv</sup> City Lab, from The Atlantic (2016) Why Data Farms Are Heading Underwater, by Julian Spector. <http://www.citylab.com/tech/2016/02/microsoft-cloud-ocean-project-natick/459318/>