

Climate
change

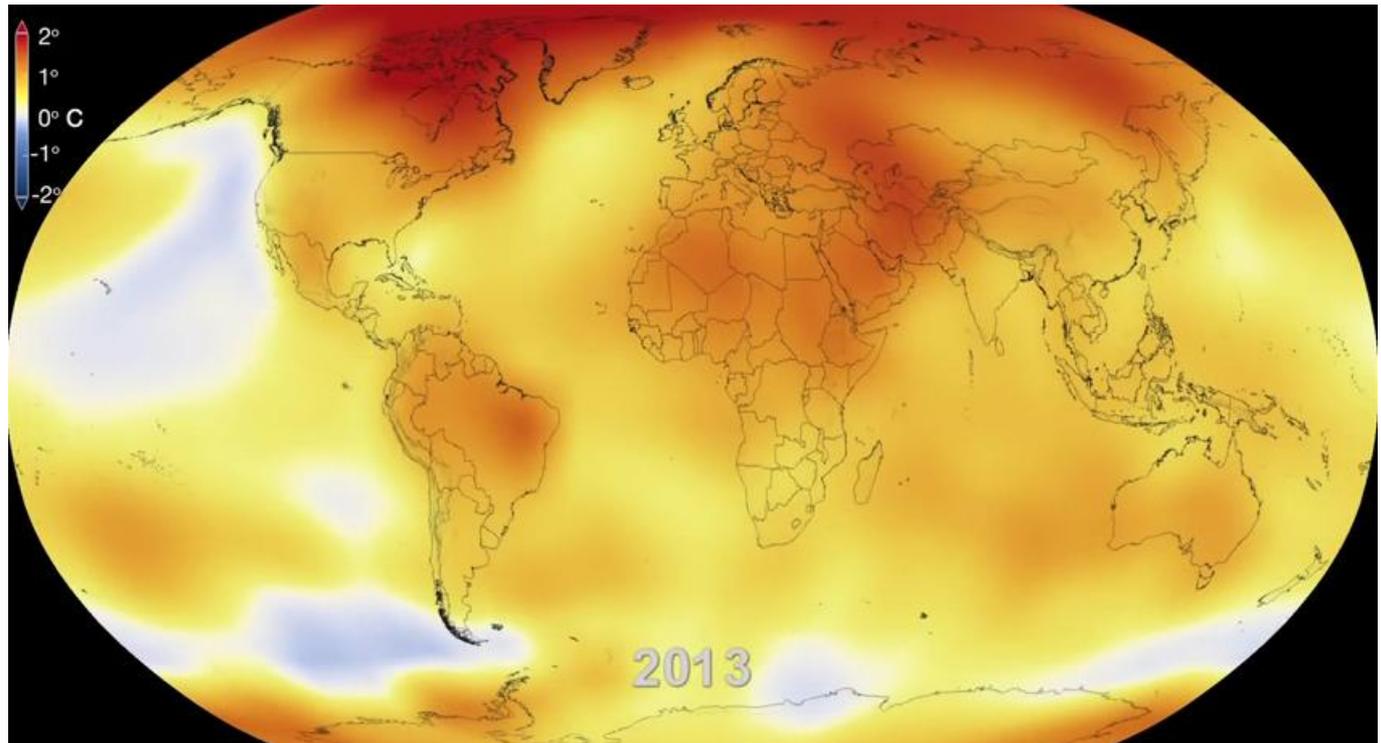


THE CITY OF
WINDSOR
ONTARIO, CANADA



What is Climate Change?

Climate change refers to a long-term shift in weather conditions. It is measured by changes in climate indicators like temperature, precipitation and wind

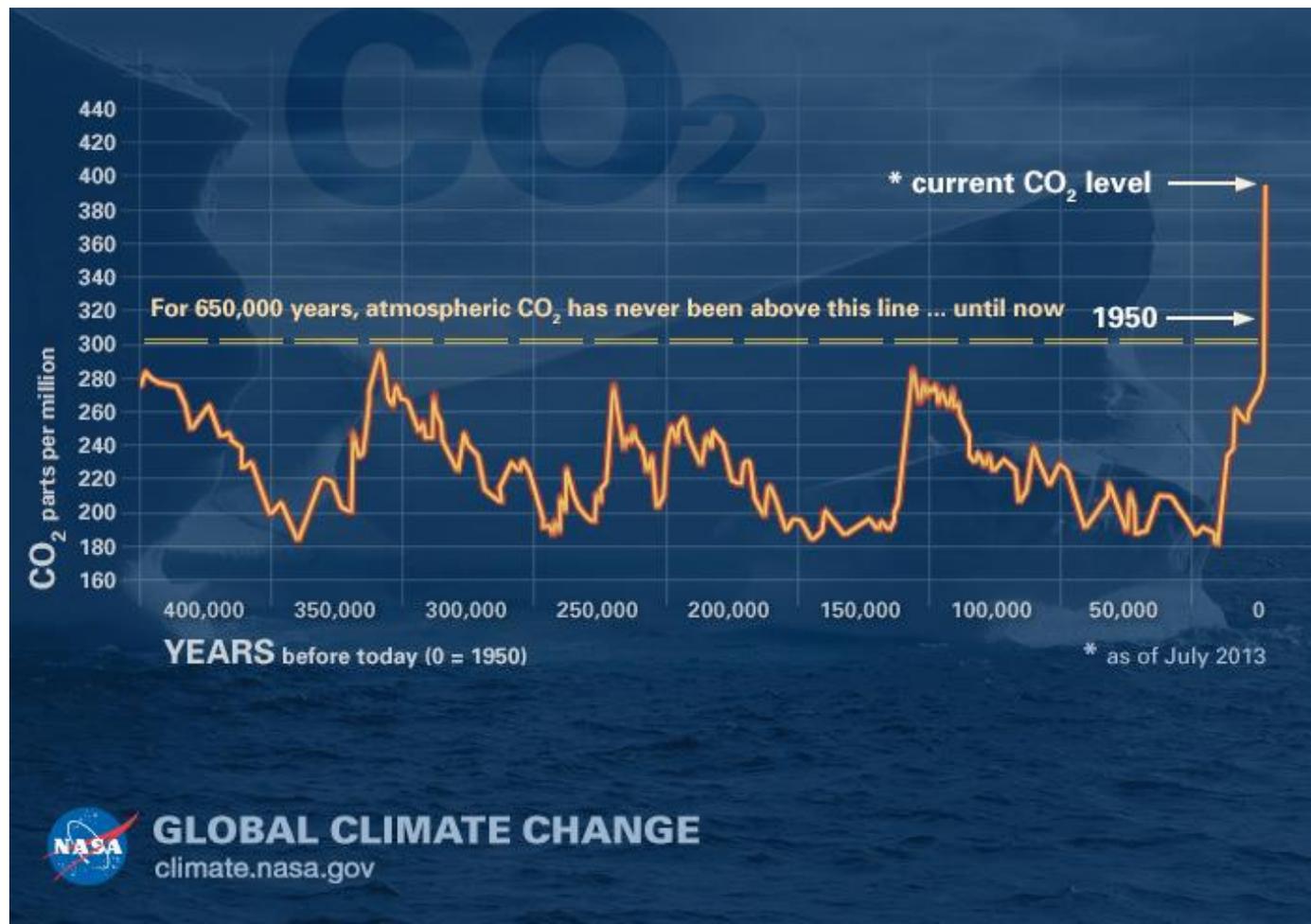


Is Climate Change Natural?

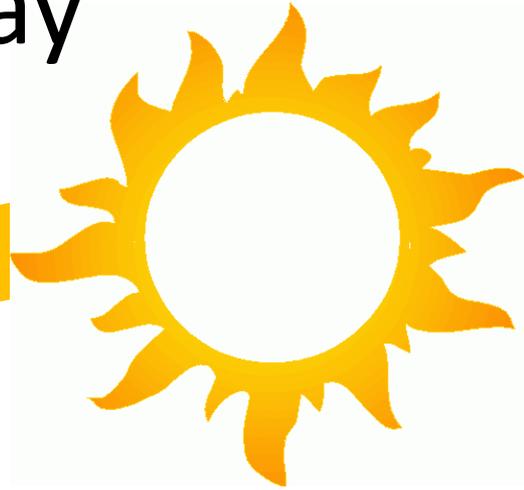
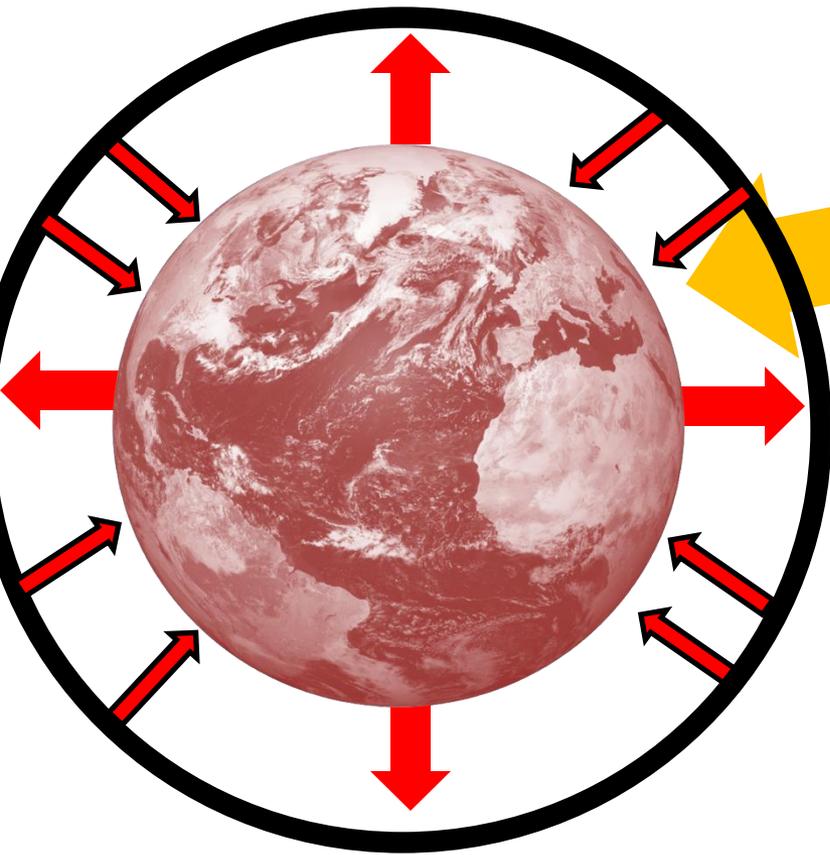
The climate has changed many times before, from ice ages where glaciers sat on top of what is now Windsor to the times of the dinosaurs, where the Earth was so warm that ice did not exist at the poles.



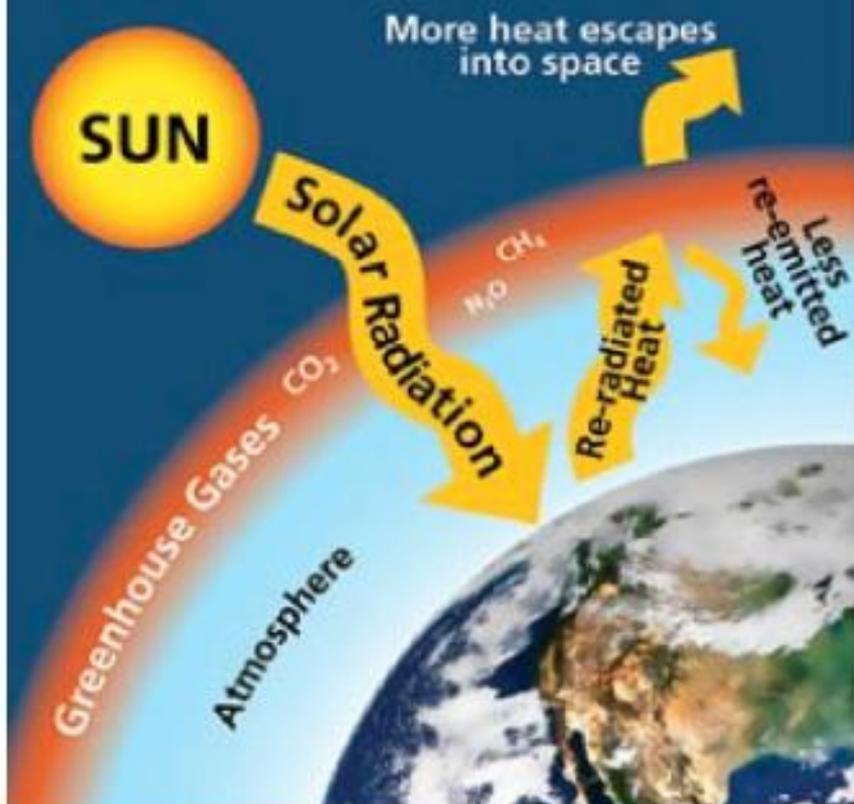
Most of the climate changes in Earth's history have been naturally caused – driven by the sun or events like asteroids. However, in the last 200 years, that responsibility has changed and people are now the primary cause.



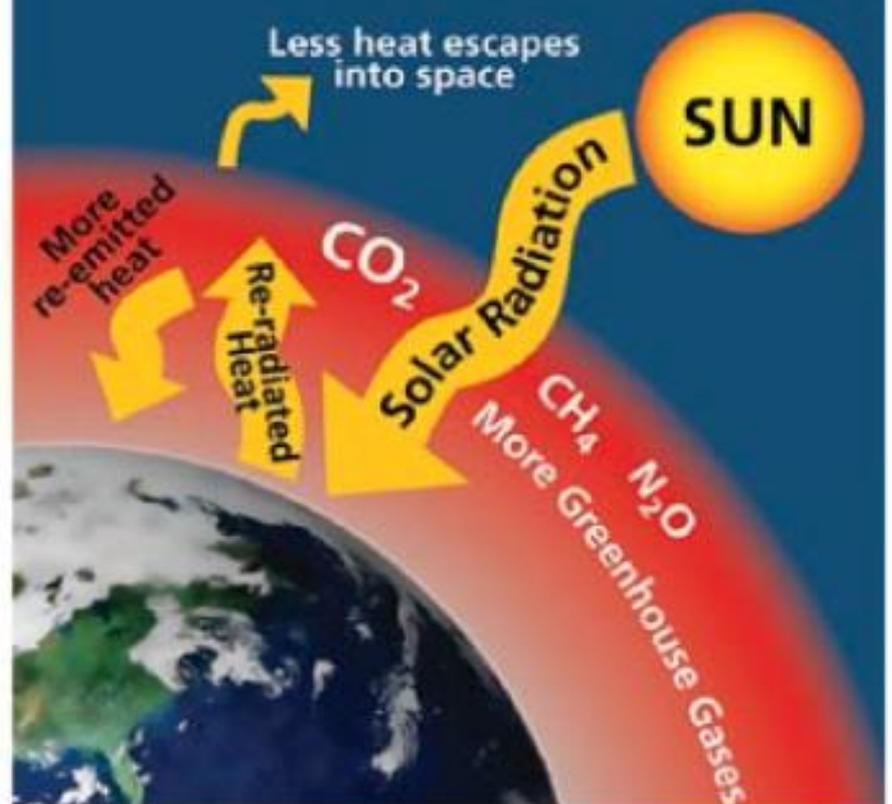
Climate Change Today



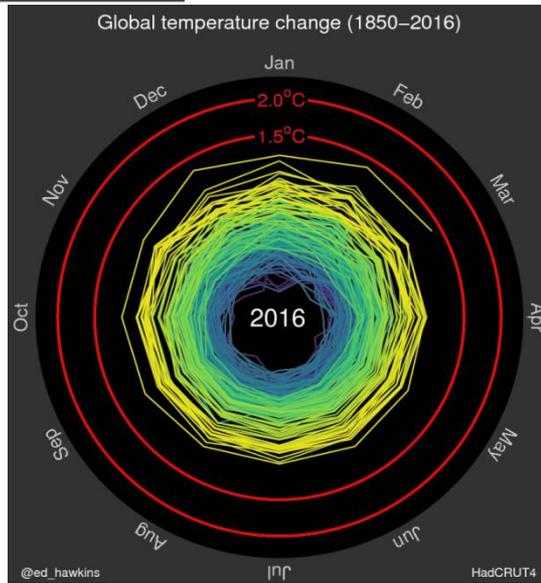
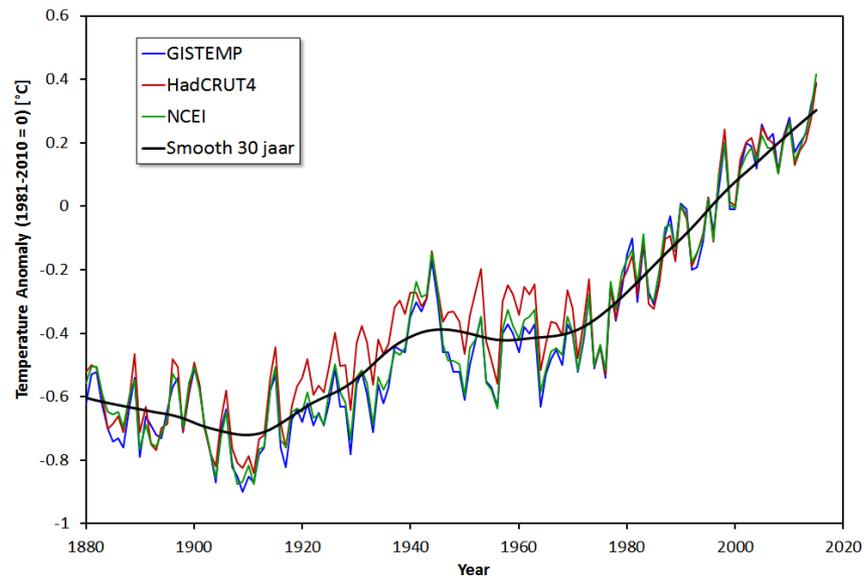
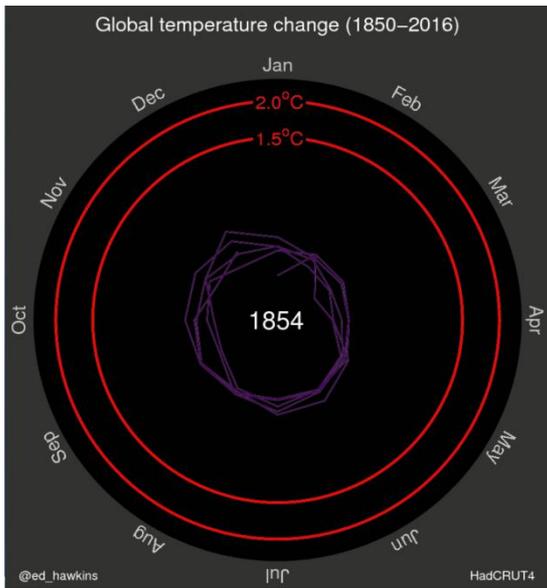
Natural Greenhouse Effect



Human Enhanced Greenhouse Effect



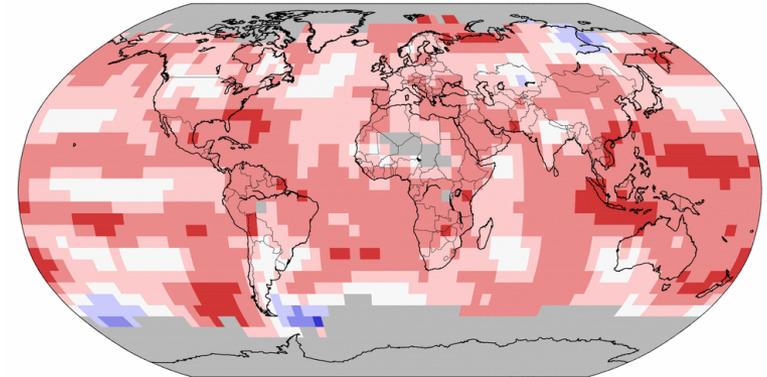
Source: National Park Service



Land & Ocean Temperature Percentiles Jul 2016

NOAA's National Centers for Environmental Information

Data Source: GHCN-M version 3.3.0 & ERSST version 4.0.0



Mon Aug 15 07:11:32 EDT 2016

http://www.climate-lab-book.ac.uk/files/2016/05/spiral_optimized.gif

The Planet is Warming; So What?

Extra heat in the Earth system drastically affects the climate system and the weather we experience. We can tie this extra heat to:



Stronger Storms



Flooding



Heat Waves



Melting Sea Ice



Disease Vectors

And much more

What Can We Do?

Climate change actions are typically separated into two broad categories: adaptation and mitigation.

The City of Windsor is working on both mitigation and adaptation.



Results of the ongoing drought in California, which scientists say is more likely to occur in a warming climate

Mitigation

Mitigation – reducing climate change – involves reducing greenhouse gases into the atmosphere.



Electric cars run off electricity, which can be produced from clean sources, rather than gas



Solar panels produce clean energy from the sun

Adaptation

Adaptation – developing ways to protect people and places from a changing climate



A raised house that will not flood

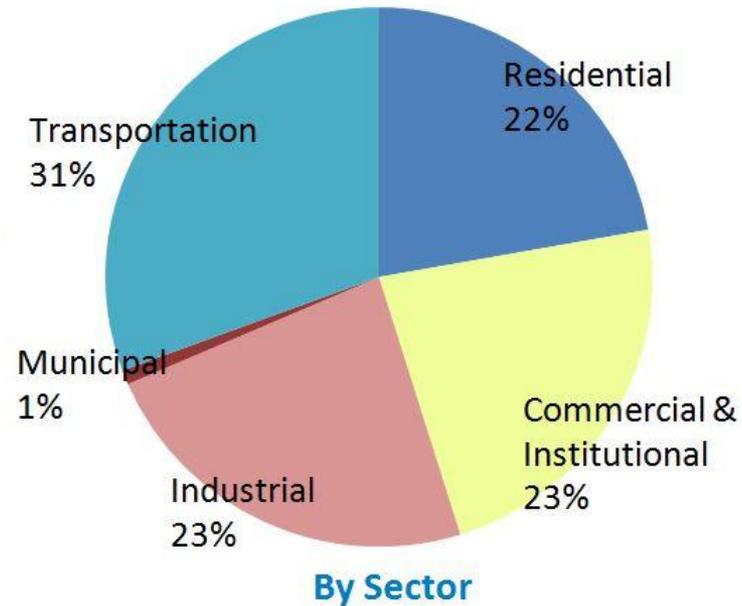
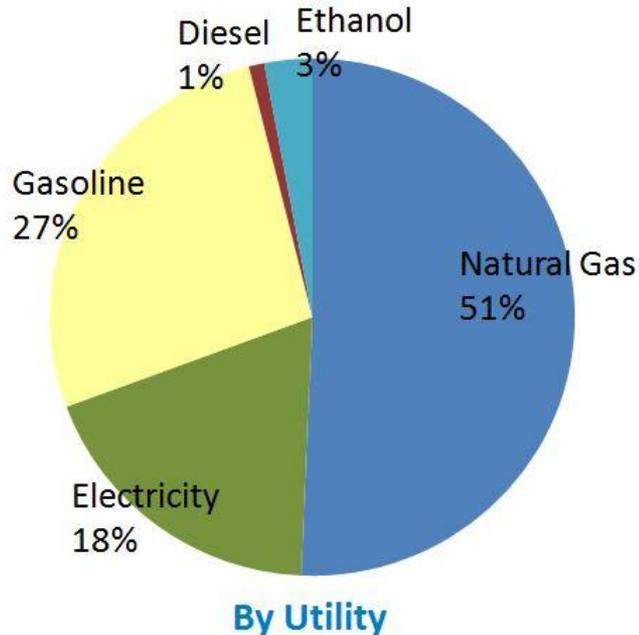


Towns in Germany can rapidly set up walls that prevent homes from flooding

Controlling our Emissions: Climate Mitigation

Where does our Greenhouse Gas Emissions come from?

2014 Greenhouse Gas Emissions



The majority of Windsor's emissions come from buildings

Mitigation Actions

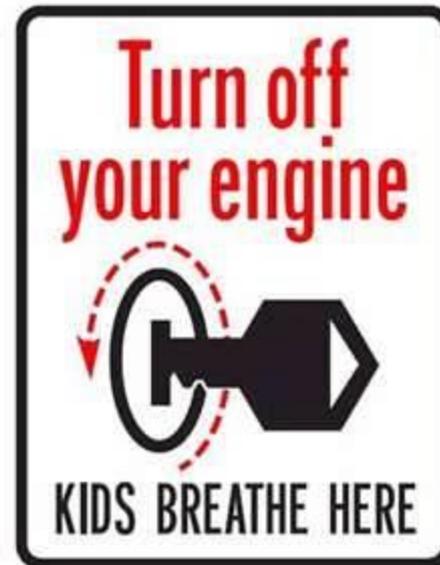
To reduce emissions, the City has developed initiatives such as an Anti-Idling Bylaw to reduce emissions from transportation



Idling Gets You Nowhere

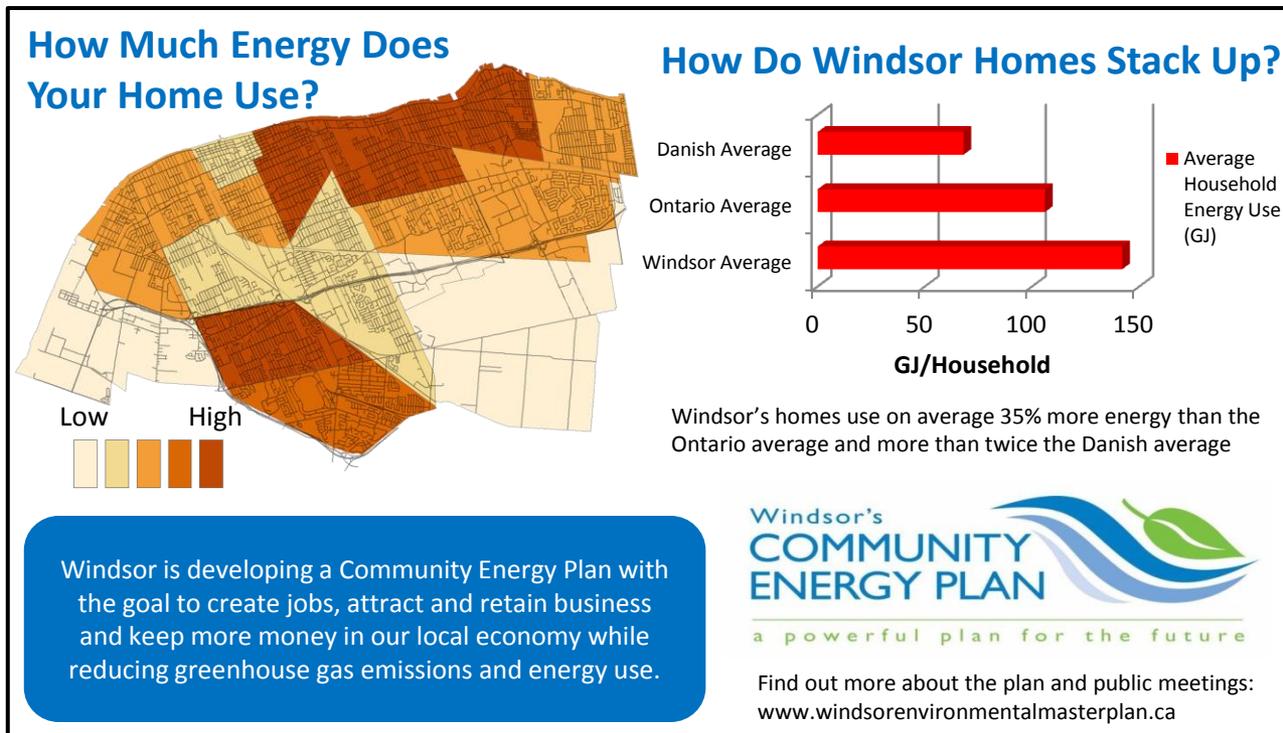
Residents of Windsor spent almost \$400 million on gasoline and diesel in 2014, more than on any other type of fuel. Because you get zero mpg gas mileage when idling, it is the biggest waste of gas there is.

If every vehicle in Windsor avoided idling for 3 minutes a day, it would save \$15,480 per day (that's over 5.7 million dollars each year!)

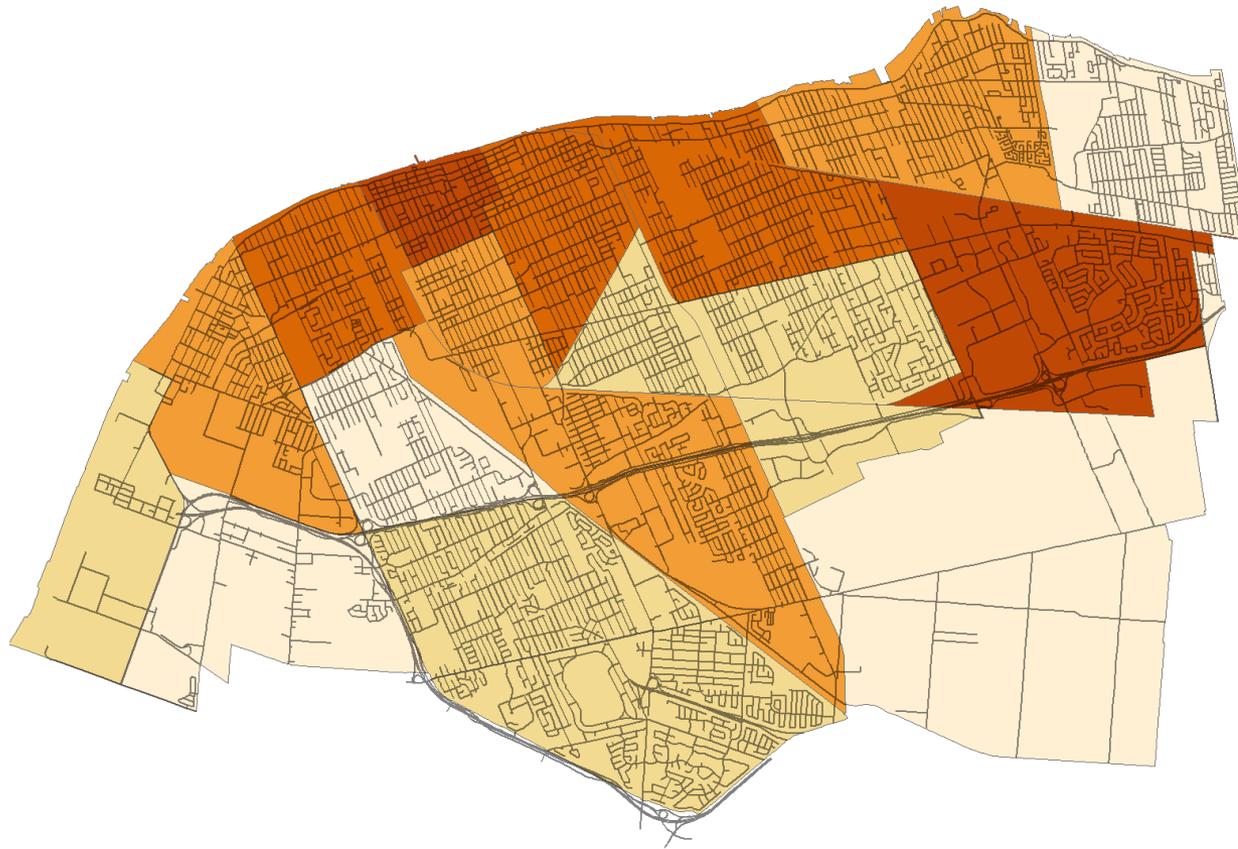


Community Energy Plan

To better manage how energy is used throughout Windsor, the City is working on a Community Energy Plan and Climate Change Action (Mitigation) Plan



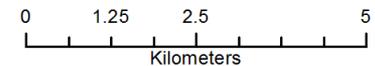
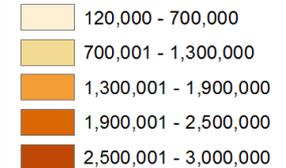
How does your school neighbourhood compare?



WINDSOR COMMUNITY ENERGY PLAN

Total Energy Consumption (GJ)

Total Energy Consumption (GJ)



Garforth International llc
Energy Productivity Solutions

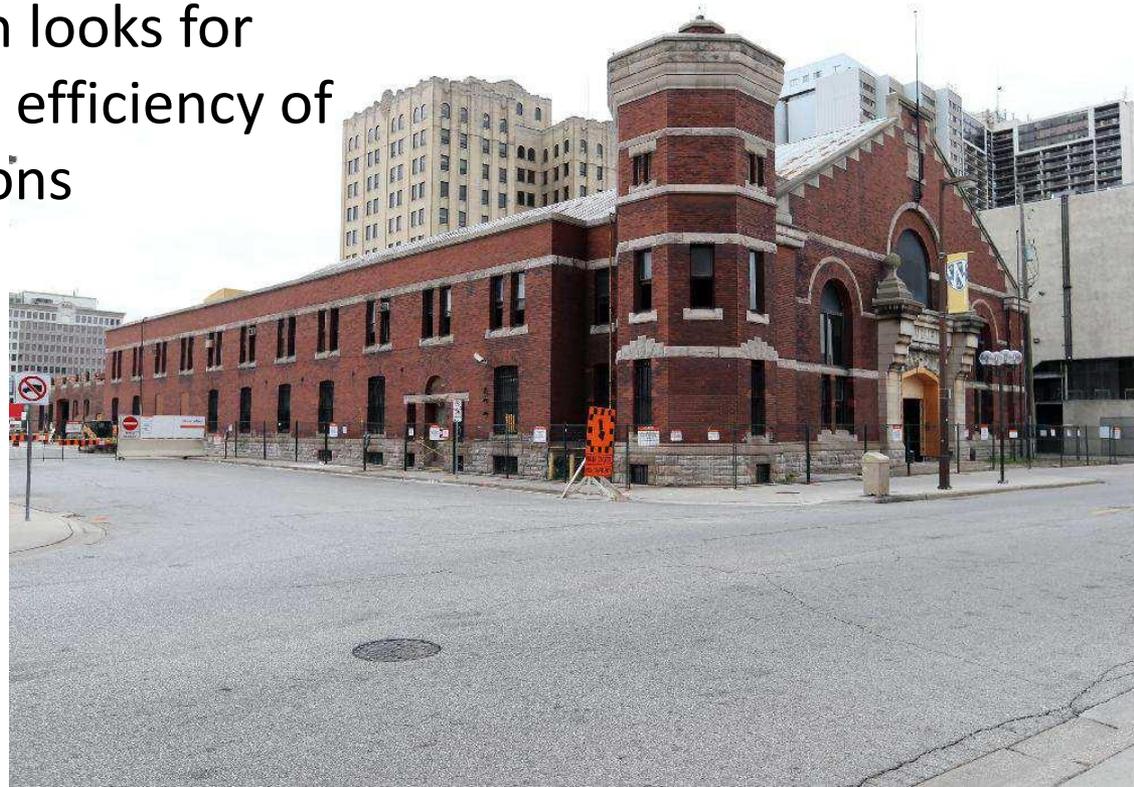
As a community, Windsor spent **\$841 million on energy** (electricity, gasoline, diesel and natural gas) in 2014, or **nearly \$4000 per person**

Mitigation Actions

Buildings are the largest consumer of energy in Windsor, and the largest source of greenhouse gas emissions.



The Community Energy Plan looks for ways to improve the energy efficiency of buildings, leading to emissions reductions



Mitigation Actions

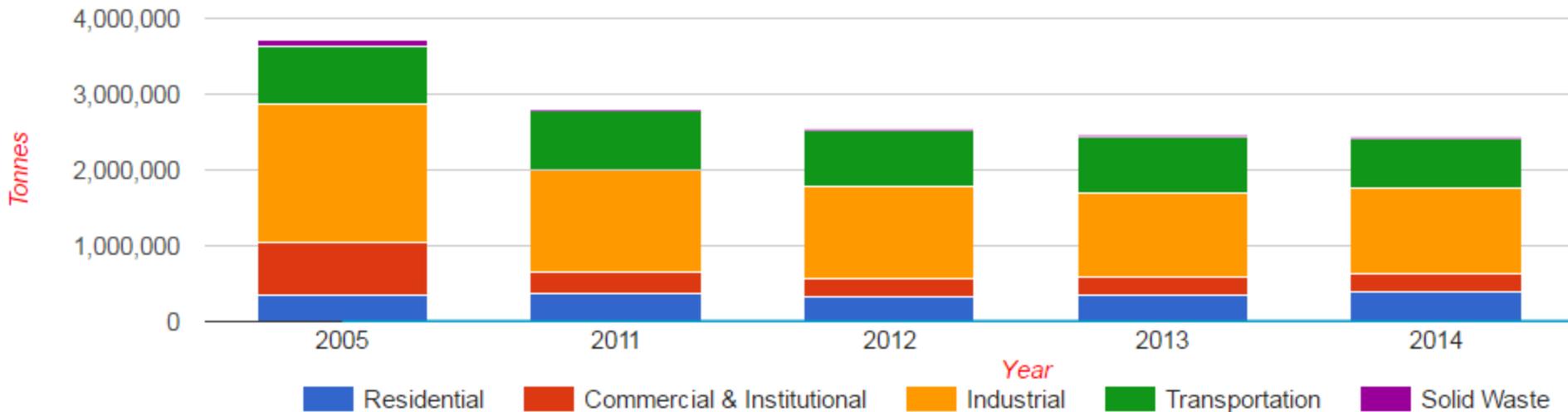
Transportation is also a large source of emissions.

Electric vehicle, taking public transit, using a more fuel-efficient vehicle, or walking or biking instead of driving are all ways that greenhouse gas emissions can be reduced



Coordinated Action

Windsor is participating in national and international programs to report on emissions and coordinate action. Progress is being made!



Why Adapt?

Even with mitigation efforts we will have to adapt. Some of Windsor's risks include:



Low/Warm Lake Levels



Algae Blooms



Air Quality Concerns



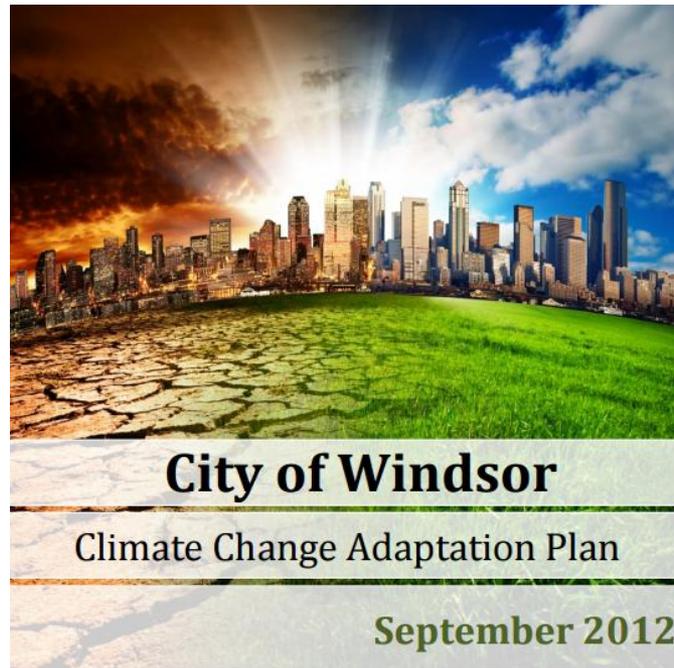
Lyme Disease



Flooding

Preparing for the Storm: Climate Adaptation

The City of Windsor has a Climate Change Adaptation Plan



Adaptation Actions

Windsor is already acting!



Downspout Disconnection

- Disconnecting downspouts reduces the amount of stormwater entering the sewer system reducing the risk of combined sewer overflows and basement flooding.



Basement Flooding Subsidy Program

- The city is subsidizing the costs of installing back-water valves and sump pumps on household sewer connections in order to provide additional protection against basement flooding.



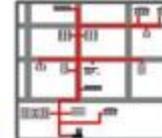
Stay Cool Windsor Essex

- Heat Alert and Response Program
- The Windsor Essex County Health Unit and the City of Windsor work with numerous agencies to prevent heat-related illness and death.



Urban Forestry

- By-law 135-2004 restricts the planting of certain trees and protects all trees on City property. Fines may be applied.
- City operated tree nursery allows for larger stock trees to be planted.



District Energy

- The availability of District Energy in the downtown core reduces the peak electricity demand on hot summer days, reducing the risks of brownouts and blackouts during heat waves.
- Co-benefit reduction of 5000 tonnes of CO₂ annually.



Bicycle Use Master Plan

- Implementation of the BUMP incorporates expanding the cycling infrastructure, education and awareness to promote active transportation, establishes Transit Links and installs end of use facilities.
- The City of Windsor earned a BRONZE Bike Friendly Communities Designation in 2011.

Figure 12: Examples of how the City of Windsor is already adapting to climate change.

What can the You do?

Home flooding has been the most consistent disaster cause in Windsor history



Programs like the Downspout Disconnect program and sewer investments help reduce the chance of basement flooding.

The Long View

Understanding how the climate will change is necessary to knowing how to deal with that change.

Flooding is a major risk to Windsor, and the systems put in place today to drain floodwater will be in the ground for 100 years.

Windsor has partnered with regional municipalities and the Essex Region Conservation Authority to see how flood-causing storms will change this century so that we can start preparing for them.



Leaves and Roots

Trees are one of a City's best options to help fight climate change. Not only do they absorb carbon dioxide to grow, but the shade they provide helps keep cities cool, and their roots can help drain water into soil more quickly, reducing the risk of flooding



Climate change is happening, humans are causing it, and I think this is perhaps the most serious environmental issue facing us.

- Bill Nye, The Science Guy



The City of Windsor understands this, and is committed to all reasonable efforts to mitigate and adapt to our changing climate, and hopes that you will too.