

Background Notes for presentation regarding Official Plan: Earth Works, West Grey, Aug 15, 2023

These notes are provided in order to give background information and references for the information presented in the slides.

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<https://yaleclimateconnections.org/2023/07/the-world-just-broke-a-stunning-slew-of-heat-records-why-right-now/>

* Canadian Interagency Forest Fire Centre, <https://globalnews.ca/news/9824581/canada-wildfires-10-million-hectares-burned/>

Diagrams - Warming Stripes

Global change: baseline from 1850 to 1900. Average global temperature increase since then has been 1.09°C from the baseline to the period 2011 to 2020.

Canada: good records are only available from 1901 in the south, and 1948 in the north. The average annual temperature in Canada has increased by 1.7°C from 1948 to 2016. This is twice the increase in the global average over that period. In the north the increase has been 3 times the global rate, and was 2.3°C over the same period.

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University of Quebec, Hydrology, Climate and Climate Change Laboratory, Professors of Construction Engineering – Poulin, Brissette, Arsenault and Baraer.

This will mean stronger lake effect snowstorms off the Great Lakes

Last year Ontario dairy farmers had to drain 1000s of litres of milk and faced 1000s\$ of losses due to storm.

Rainfall extremes will become more frequent and intense – ‘a good portion of existing water management infrastructure... will adapt poorly to these extremes’¹

This means, for example, that temperatures exceeding 35°C will become much more frequent as we move through the century, from 6 to 10 times a year to up to 25 days per year. The implications for summer health issues are severe.

Snowfall in the winter will be much less frequent, thaws will occur regularly, and accumulations will be much lower. As you can imagine, this will severely hurt the winter tourist industry in West Grey.

The rug is an illustration of the historical weather on the Bruce Peninsula from 1890 to the present. It was woven last year by Ann Schneider of Georgian Bluffs to create a graphic illustration of climate change in our region. There have been periods of colder and warmer weather through that time, but since the 1970s, there have been no more large extended drops in average temperature. The current 30-year average is 0.6°C warmer than the average in the first 100 years of record-keeping.

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As of July 18th, a preliminary estimate is that 1,420 million metric tons of CO₂ equivalent have been emitted. By comparison, all other sectors in Canada released 670 million metric tons of CO₂e in 2021, the last period when full numbers have been calculated.

<https://montrealgazette.com/commodities/agriculture/wildfires-double-canada-climate-emissions>. Data from Werner Kurz, senior research scientist with Natural Resources Canada.

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Using the Official Plan we can do a lot here in West Grey to mitigate climate change by leaving carbon on the landscape where it resides in abundance in natural areas, and continues to absorb more carbon dioxide every year at a significant rate. Our economy can be based on continuing agriculture in this rich landscape and tourism – people are always looking to spend time in nature

For example: Wetlands in West Grey store about 539 tC per hectare in relatively undisturbed wetlands, and even 195 tC / ha in lightly disturbed wetlands.

Developing in a wetland area is equivalent to driving 2200 km per hectare of wetland developed. Building on farmland in contrast releases the equivalent of driving 41 km per ha of land developed.

Woodlands store about 250 to 300 tC/ha in West Grey, including belowground root biomass. (Danijela Puric-Mladenovic ; Estimating Carbon storage in Southern Ontario Forests, Science and Research Branch, MNRF)

These data highlight the need to protect wetlands and woodlands to mitigate the risk of avoidable contributions to climate change. From Carbon Storage in US Wetlands by M.S. Fennessey and A.M. Nahlik

Wetlands contain a disproportionate amount of the earth's total soil carbon; holding between 20 and 30% of the estimated 1,500 BT of global soil carbon² despite occupying 5–8% of its land surface³. <https://www.nature.com/articles/ncomms13835>

Sothe *et al.* (2022). The accompanying journal article is published in Global Biogeochemical Cycles ([DOI: 10.1029/2021GB007213](https://doi.org/10.1029/2021GB007213)) and the [data](#) can be accessed online. Map of carbon stocks in the land of Canada from 1m down in the soil and including above ground biomass. <https://wwf.ca/carbon-stocks/>

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*These values do not include carbon sequestration and storage values.

3. Troy and Bagstad, 2009. Estimating Ecosystem Services in Southern Ontario

4. Austin et al. 2012. Valuing Natural Capital and Ecosystem Services.

5. Lanthier, Tim 2018. The Value of our Natural Areas.

By protecting the wetlands and woodlands in West Grey using official plan policy and by-laws, West Grey is supporting Grey County's climate goals for reducing greenhouse gas emissions.

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Note that the last line in the climate change section says: “policies addressing climate change will be found in other areas of this Plan including section C1.” and yet they are not

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Instead of, or as well as, mentioning that roads in the area should be able to handle increased traffic, encourage high density housing near the downtown core, near essential services. Maybe mention active transportation in the plan, with road design to encourage this.

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We thank you for this opportunity to speak with you about the Official Plan and how it can be written to help West Grey mitigate and adapt to Climate Change.