Slide 1

Environmental Insights Explorer
Google
An Outlook of London Ontario's Transportation Emission

Slide 2 — Outline

- 2018 GHG Measurements strategies
- London's Climate Emergency
- EIE Data for London
- How We Compare & Recommendation

Slide 3

GHG Measurements

Existing transportation systems has been implicated as a major source of greenhouse gas emissions

Photo Credit: Scott Web Photography

City of London GHG Inventory Report
Environmental Insights Explorer

Slide 4 — Strategies for 2018 data

GHG Inventory Report

- London 2018 Inventory Report Reference (released Oct. 2019)
- Sums emissions based on:
  - Fuel sold at gas stations
  - Road freight transport
  - Corporate fleets
  - London Transit
  - Railway freight transport
  - Domestic aviation

Environmental Insights Explorer

- Trips across 4 modes that are locally and continuously measured by Google
- Sums all trips
  - Taken within a city boundary
  - Crossing the city boundary,
- Then applies the CURB tool's regional estimate for fuel use to measure emissions.
- Zero (0) emissions for walking and cycling
- Car and Transit trips have emission numbers

Slide 5 — Emission Values for 2018

GHG Inventory Report

1380 $KtCO_2e$

- Includes fuel sold at gas stations, that may be burned outside city boundaries
- Domestic aviation included

Environmental Insights Explorer

1200 $ktCO_2e$

- Trips within boundary only
- Domestic aviation not measured

Slide 6 — Environmental Insights Explorer

- We can be comfortable with the EIE emission report values
- The EIE data validated well with Ground Truth Road Sensors sampling 120,000 vehicles in Boulder, CO and Mountain View, CA (0.91 – 0.99 Correlation)
- More cities are getting added – a great basis for comparison

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Climate Emergency

London, Ontario is one of over 1,200 jurisdictions across the world that have declared a climate emergency

Photo Credit: Scott Web Photography

The Climate Emergency declaration
The Climate Emergency aligns with the TAC Mandate

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The Climate Emergency

- "WHEREAS climate change is currently contributing to billions of dollars in property and infrastructure damage…

- BE DECLARED by the City of London for the purposes of naming, framing, and **deepening our commitment to protecting** our economy, our eco systems, and our community from climate change.

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Climate Emergency Declaration Aligned with TAC Mandate

- Mandate is to advise and support City Council in the implementation of the City's Transportation Master Plan (TMP)

- The 5 TMP smart moves:
  - **Rethinking Growth** to Support the Transportation Master Plan
  - Taking **Transit** to the Next Level
  - Actively **Managing Transportation Demand**
  - Greater **Investment in** Cycling and **Walking Infrastructure**
  - More **Strategic Program of Road Network Improvements**

- The 5 Smart Moves provides overall environmental benefits towards our Climate Emergency Declaration Goals

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CO_2

The EIE Data for London

London, Ontario is the first city in Ontario and one of few in Canada to have emission estimates on the Environmental Insights Explorer.

2018 Transportation Emission Data from the EIE

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2018 Transportation Emissions

Transportation emissions
Google estimate

1,200,000
Total tCO₂e per year

Total combined # of trips
332,000,000

Total combined vehicle kilometers traveled
4,590,000,000

In-boundary emissions

Google estimate

412,000
Total tCO₂e per year

Mode	Total distance traveled	Average vehicle efficiency	Average city emissions factor
	1,530,000,000	8.64	0.002
Automobile	1420000000	8.8	0.002
Bus	45300000 2	2.3	0.002
Cycling	12200000	-	0
On foot	51300000	-	0

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2018 EIE Data - Trips and Emissions

Breakdown of trips across modes and associated emission (CO_2e)

	Number of trips	Emission CO_2e	% of Emissions
Automobile	252,175,533	1,135,444.14	95%
Transit	9,278,506	47,086.03	4%
Rail*	388,581	14,952.72	< 1%
Cycling	4,168,745	0	0%
Walking	65,140,316	0	0%

* Freight only

Distribution (Trips)

20%
1%
0%
3%
76%
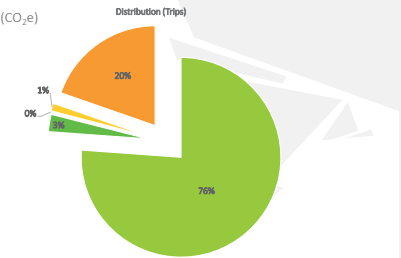
76% of trips (Automobile) responsible for 95% of Transportation emissions.
- Make fewer automobile trips
- Increase share of zero or lower emission modes
- Adopt greener automobile options

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What else?

A look at opportunities from the EIE data and my recommendations for this TAC

How we compare

Recommendation

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Victoria, BC, Calgary, AB and Saskatoon, SK

London 2018 Emission Data compared to select Canadian Cities

	All Trips (All Modes)			In-boundary Trips			
	Trips	Emissions kCO$_2$e	Largest Emission Mode/%/Value	Trips (All modes)	Emissions kCO$_2$e	Automobile Emission / %	% Emissions
London ON	332,000,000	1,200	Auto / **95%** / 1,135	283,000,000	412	365 / 89%	34%
Victoria BC	150,000,000	4,900	Ferry / **95%** / 4,662	86,200,000	32.7	25 / 77%	< 1%
Calgary AB	1,150,000,000	3,410	Auto / **95%** / 3,240	1,040,000,000	2,040	1,870 / 92%	60%
Saskatoon SK	241,000,000	800	Auto / **98%** / 784	204,000,000	295	278 / 94%	37%

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Boulder, USA, Dublin, Ireland, and Melbourne, Australia

London 2018 Emission Data compared to select US and International Cities

	All Trips (All Modes)			In-boundary Trips			
	Trips	Emissions kCO$_2$e	Largest Emission Mode/%/Value	Trips (All modes) /%	Emissions kCO$_2$e	Automobile Emission / %	% of Total Emissions
London ON	332,000,000	1,200	Auto / **95%** / 1,135	283,000,000	412	365 / 89%	34%
Boulder, USA	199,000,000	741	Auto / **97%** / 721	118,000,000	91	86.5 / 96%	12%
Dublin, Ireland	859,000,000	1,480	Auto / **59%** / 877	614,000,000	240	150 / **63%**	16%
Melbourne, Australia	538,000,000	1,010	Auto / **64%** / 651	281,000,000	38	38 / 100%	4%

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London, Ontario v Melbourne, Australia

	Trips	Emissions kCO$_2$e	Largest Emission Mode/%/Value	Automobile Emission / %	Population	Area (sq. miles)	Density
London ON	332,000,000	1,200	Auto / **95%** / 1,135	365 / 89%	380,000	803	6,180/sq mi
Melbourne, Australia	538,000,000	1,010	Auto / **64%** / 651	38 / 100%	4,970,000	162	2,365/sq mi

Other Transport Modes in Melbourne:
- In-Tram: 0% Direct Emissions
- Rail: 35% of Emissions
- Bus: 4% of emissions

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Emerging Questions

1. What level of reduction in transportation related emissions best meets the city's overall targets under the Climate Emergency?

2. What mix of transportation modes best help to meet the objectives of current and future transportation master plans?

3. **How can the Transportation Advisory Committee aid Council and the city to answer the first two questions?**

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Recommendation

Establish a **collaborative working group** together with the other committee(s) having direct/indirect interests on transportation-related greenhouse gas emissions

Timeframe
- Current time until the next TMP

Strategic Alignment
- Building a Sustainable City

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