



City of London Cycling Master Plan Review

Master Plan Review Working Group



Timeline of Key Events



The Need to Review the CMP

Based on the timeline of events since the CMP was adopted, the CMP requires a detailed review based on:

→ Climate Emergency

Are the mode share targets upon which the CMP is based consistent with the need for 45% reduction in CO₂ emissions? If not, what mode split targets are required? Is the CMP consistent with achieving these targets?

→ Vision Zero

Is the CMP consistent with the Vision Zero principles that no loss of life is acceptable, that we all make mistakes, and that traffic fatalities and serious injuries are preventable and that eliminating them is a shared responsibility between road users and those that design/maintain them?

Climate Emergency

UN Special Report on Global Warming of 1.5°C (SR15)

- *Global net human-caused emissions of carbon dioxide (CO₂) would need to fall by about 45 percent from 2010 levels by 2030, reaching 'net zero' around 2050*

Canada's Changing Climate Report 2019

- *Both past and future warming in Canada is, on average, about double the magnitude of global warming*
- *Canada and the rest of the world reduce carbon emissions to near zero early in the second half of the century and reduce emissions of other greenhouse gases substantially*



City of London Statement on Climate Emergency

1. Acknowledgement of the Situation

Whereas climate change is currently contributing to billions of dollars in **property and infrastructure damage** worldwide, **stressing local and international economies**; Whereas climate change is currently **jeopardizing the health and survival** of many species and other natural environments worldwide, **stressing local and international eco systems**; Whereas climate change is currently harming human populations through **rising sea levels** and other extraordinary phenomena like **intense wildfires** worldwide, stressing local and international communities;

City of London Statement on Climate Emergency


2. The Need for Action

Whereas recent **international research** has indicated a need for **massive reduction in carbon emissions in the next 11 years** to avoid further and **devastating economic, ecological, and societal loss**; Whereas the climate in **Canada is warming at twice the rate of the rest of the world**, as per Canada's Changing Climate report; **Whereas current initiatives such as the green of the city's fleet and energy reduction initiatives are not sufficient to meet the targets as defined by the IPCC scientists**

City of London Statement on Climate Emergency

3. The Declaration of Climate Emergency

Whereas an emergency can be defined as "an often dangerous situation requiring immediate action"; Whereas municipalities such as Kingston, Vancouver and Hamilton have already declared climate emergencies; Therefore, **a climate emergency 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.**



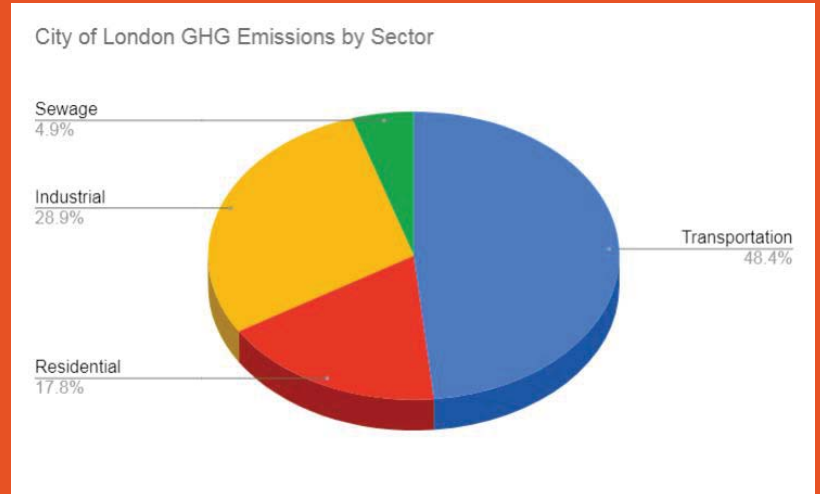
The City of London recognizes that there exists a Climate Emergency and that current initiatives are insufficient to reach scientifically-based emissions targets.

2017 Community Energy and Greenhouse Gas Report

London's total carbon emissions in 2017 were 2870 kilotonnes (kt) CO₂ equivalent (CO₂e)

Largest source of emissions is transportation sector

Around 70% of transportation sector emissions is from personal vehicles



London's Climate Emergency declaration acknowledges carbon reduction targets required by science (i.e. SR15); therefore London's carbon budget for 2030 is 1925 kt CO₂e (45% reduction from 2010 levels).

Scenario Analysis of Carbon Emissions

Methodology

Different scenarios are analyzed, considering:

- Variable electrification of the automotive sector
 - Complete electrification of the transit sector
 - Variable mode split scenarios
 - No changes in residential, industrial, and sewage emissions are assumed due to longer lifecycles of equipment, which is unlikely to be significantly changed by 2030 (also outside our scope as a committee)
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Scenario Analysis of Carbon Emissions

TMP-Based Mode Split

TMP considers scenarios with two different growth patterns:

- **Scenario A:** population growth of 73,800 to a total population of ~430,000 by 2030 (21% increase from 2007)
 - **Scenario B:** population growth of 140,000 to a total population of ~493,000 by 2030 (39% increase from 2007)
 - No change in vehicle electrification assumed
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Transportation Master Plan (TMP) Mode Split Targets

Mode	2009 Mode Split	2030 Target
Automobile	76%	60%
Transit	11%	20%
Active Transportation	9%	15%
- Cycling	~1%	5%
- Walking	~8%	10%
Other	5%	5%

TMP-Based Mode Split Analysis

	Scenario A (pop 430,000)	Scenario B (pop 493,000)
Change in transportation emissions (kt CO ₂ e)	-61	+133
% Change in transportation emissions relative to 2010	-4%	+10%
Total 2030 Carbon Budget kt CO ₂ e	1925	1925
Residential kt CO ₂ e	510	510
Industrial kt CO ₂ e	830	830
Sewage kt CO ₂ e	140	140
Transportation as % of allowable GHG in 2030	68%	78%
Total Emissions (% of 2030 Target)	145%	155%

Scenario Analysis of Carbon Emissions

TMP-Based Mode Split with Electrification

The effects of electrification are examined:

- Full electrification of transit fleet assumed
- Variable electrification of vehicles considered
- International Energy Agency estimates ~30% electrification of personal vehicles by 2030
- Lifecycle emissions of EVs are on average 50% of conventional vehicles (potentially as low as 30% for carbon-free energy supply)

TMP-Based Analysis with Electrification

	100% EVs (pop 430,000)	50% EVs (pop 430,000)	25% EVs (pop 430,000)
Change in transport emissions (kt CO2e)	-716	-388	-225
% Change in transport emissions relative to 2010	-52%	-28%	-16%
Total 2030 Carbon Budget kt CO2e	1925	1925	1925
Residential kt CO2e	510	510	510
Industrial kt CO2e	830	830	830
Sewage kt CO2e	140	140	140
Transportation as % of allowable GHG in 2030	34%	51%	59%
Total Emissions (% of 2030 Target)	111%	128%	136%

Scenario Analysis of Carbon Emissions

Variable Mode Split without Electrification

The effects of mode split are examined:

- Reduce vehicle mode split
- Assume 5% "other" mode split
- Assume remaining share is equally split between active transportation and transit
- Assume Scenario A for population growth
- No change in vehicle electrification assumed

Variable Mode Split Analysis without Electrification

Parameter	Mode Split 5	Mode Split 15	Mode Split 30	Mode Split 45	Mode Split 60
Automobile Mode Share (%)	5	15	30	45	60
Transit Mode Share (%)	45	40	30	25	20
Active Transport Mode Share (%)	45	40	30	25	15
Other Transport Mode Share (%)	5	5	10	5	5
Transportation GHG (kt CO ₂ e)	109	327	654	982	1309
GHG Non-Transport (kt CO ₂ e)	1480	1480	1480	1480	1480
GHG-All (kt CO ₂ e)	1589	1807	2134	2462	2462
Change in GHG from 2009	-92%	-76%	-52%	-28%	-4%
2030 Emissions Budget (kt CO ₂ e)	1925	1925	1925	1925	1925
Transport Fraction of 2030 C Target	6%	17%	34%	51%	68%
Total GHG Relative to Target (kt CO₂e)	-336	-118	209	537	864
Total Emissions (% of 2030 Target)	83%	94%	111%	128%	145%

Scenario Analysis of Carbon Emissions

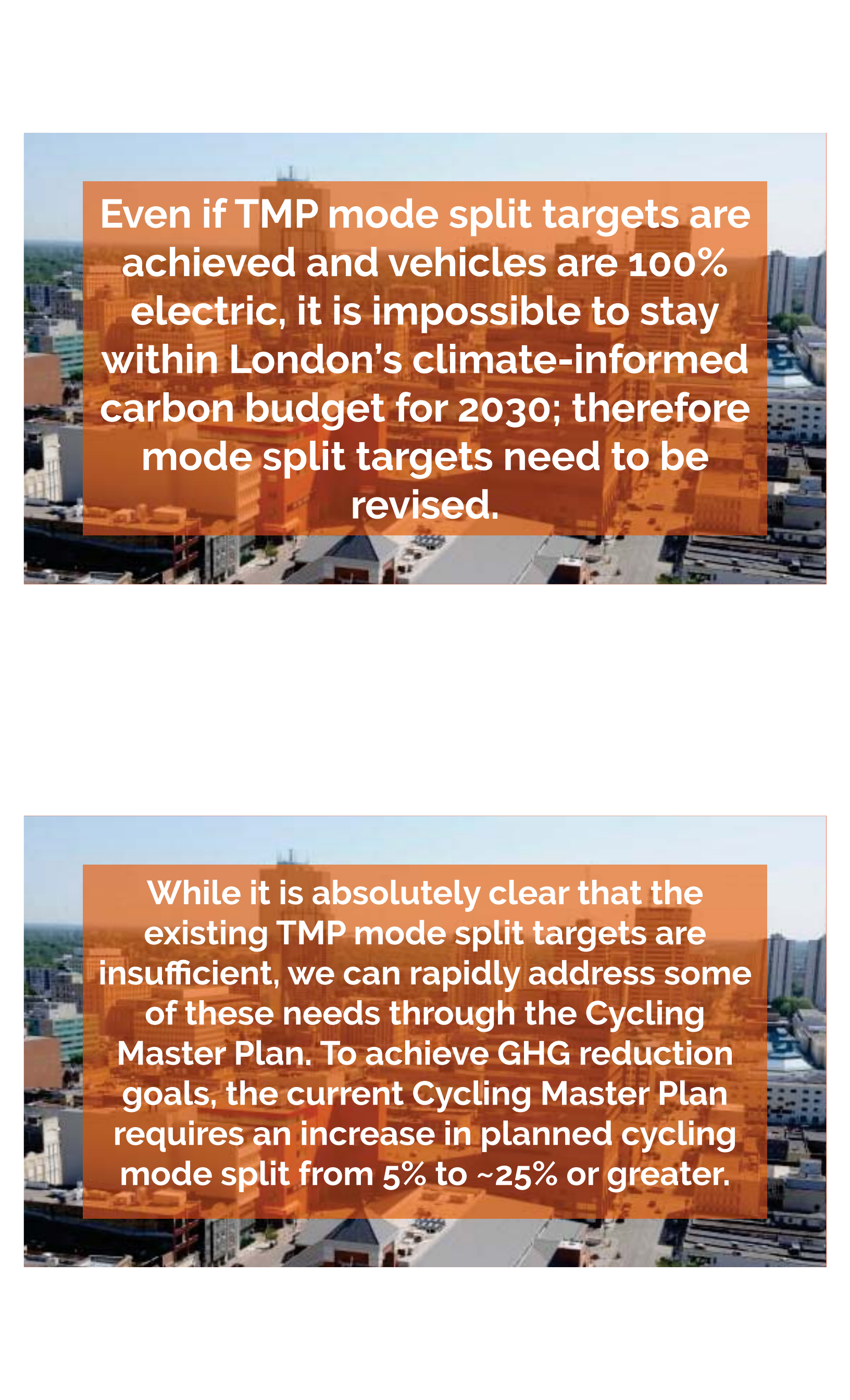
Variable Mode Split with Electrification

The effects of mode split are examined:

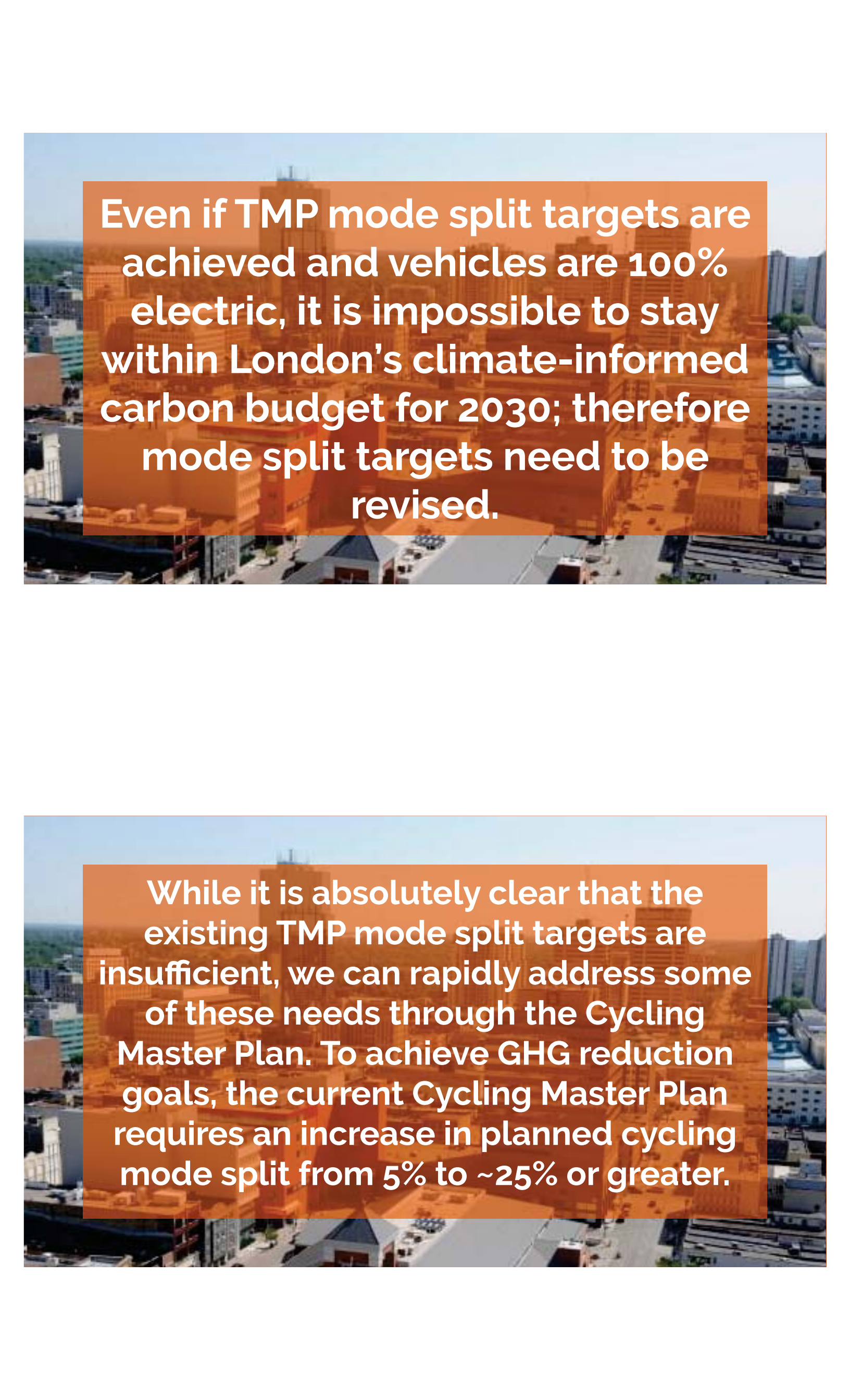
- This analysis represents “best of both worlds”; significant mode split changes with variable electrification
- Considers Scenario A for population growth

Variable Mode Split Analysis with Electrification

Parameter	TMP (Mode Split 60)	Mode Split 30 0% EV	Mode Split 30 25% EV	Mode Split 30 100% EV	Mode Split 45 25% EV
Automobile Mode Share (%)	60	30	30	30	45
Transit Mode Share (%)	20	35	35	35	25
Active Transport Mode Share (%)	15	30	30	30	25
Other Transport Mode Share (%)	5	5	5	5	5
Transportation GHG (kt CO ₂ e)	1309	654	573	327	859
GHG Non-Transport (kt CO ₂ e)	1480	1480	1480	1480	1480
GHG-All (kt CO ₂ e)	2462	2134	2053	1807	2339
Change in GHG from 2009	-4%	-52%	-58%	-76%	-37%
2030 Emissions Budget (kt CO ₂ e)	1925	1925	1925	1925	1925
Transport Fraction of 2030 C Target	68%	34%	30%	17%	45%
Total GHG Relative to Target (kt CO₂e)	864	209	128	-118	414
Total Emissions (% of 2030 Target)	145%	111%	107%	94%	121%

An aerial photograph of a city skyline, likely London, showing various buildings and streets. A semi-transparent orange rectangular box is overlaid on the center of the image, containing white text.

Even if TMP mode split targets are achieved and vehicles are 100% electric, it is impossible to stay within London's climate-informed carbon budget for 2030; therefore mode split targets need to be revised.

An aerial photograph of a city skyline, likely London, showing various buildings and streets. A semi-transparent orange rectangular box is overlaid on the center of the image, containing white text.

While it is absolutely clear that the existing TMP mode split targets are insufficient, we can rapidly address some of these needs through the Cycling Master Plan. To achieve GHG reduction goals, the current Cycling Master Plan requires an increase in planned cycling mode split from 5% to ~25% or greater.

Climate-Informed Mode Split Target


- 100% Electrification of London Transit Vehicles
 - 25% Electrification of Private Cars and City Vehicles
 - Mode Split:
 - 25% Automobile
 - 35% Transit
 - 35% Active Transportation (walking 10%, cycling 25%)
 - 5% Other
 - Net GHG Emissions for this outcome: 1957 kt CO₂e, ~102% of permitted emissions
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Financial Benefit of Acting Now

- With a rising price on emitting carbon in Canada, London will benefit economically from acting sooner rather than later on climate emergency
 - Canada's price on carbon is not a tax, but a fee and dividend system, which charges excessive polluters and reward those who cut emissions faster and deeper
 - As individuals and as a city we can collect dividend payments by lowering our overall carbon footprint
 - If London acts earlier than other cities on decreasing emissions, it will represent a significant wealth injection into the city on the order of tens of millions of dollars per year
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TMP-Based Analysis with Electrification

Price of 1t CO ₂ e emitted in 2022:	\$50
Price of 1t CO ₂ e emitted in 2030 (PBO estimate):	\$102
Current emissions (tonnes CO ₂ e):	2,870,000
TMP emissions (tonnes CO ₂ e):	2,789,000
Mode Split 30 emissions + 25% EV (tonnes CO ₂ e):	2,053,000
Difference [MS30-ev25 - TMP] (tonnes CO ₂ e):	736,000
2022 [MS30-ev25 - TMP] Difference x Carbon Dividend (annual):	\$36,800,000
2030 [MS30-ev25 - TMP] Difference x Carbon Dividend (annual):	\$75,072,000



It is clear that major changes in cycling mode split targets are required to meet carbon reduction targets. We must then determine how we can achieve a much more aggressive shift in mode split.

Vision Zero

On May 16, 2017, Municipal Council adopted the following principles as its Vision Zero declaration:

- No loss of life is acceptable
- Traffic fatalities and serious injuries are preventable
- We all make mistakes
- We are all physically vulnerable when involved in motor vehicle collisions
- Eliminating fatalities and serious injuries is a shared responsibility between road users and those who design and maintain our roadways



Vision Zero vs. London Road Safety Strategy

Vision Zero

Traffic deaths are preventable, and the loss of life is not negotiable

London Road Safety Strategy

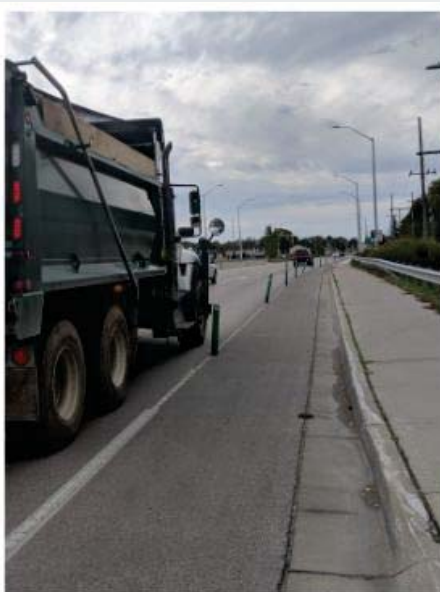
Reduce injury and death on roads by 10% within five years

Vision Zero holds transportation systems designers and policy-makers accountable and responsible for road safety, rather than individual road users

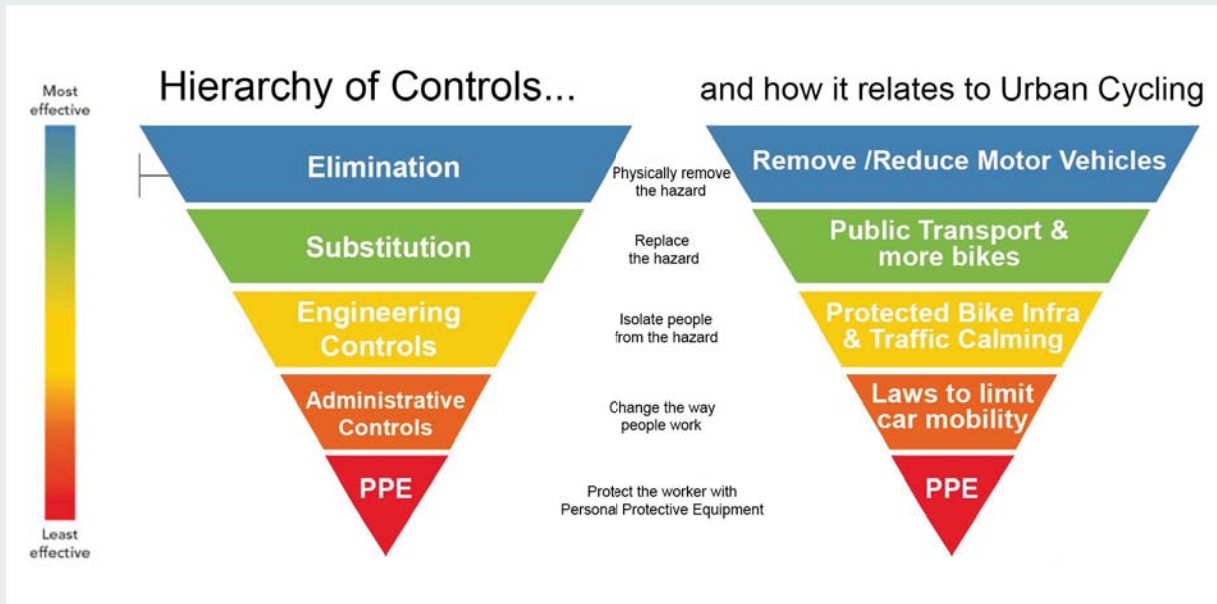
London's Interpretation of Vision Zero

- London's goal accepts:
 - More than 1000 injuries and deaths on our roads are inevitable
 - Programs (i.e. not safe systems) will reduce injury and death
 - Vision Zero requires focus on **system failure**
 - Safe system design focuses on building better roads, improving vehicle safety technologies, and managing kinetic energy (speed reduction) to reduce risk of injury
 - Strives to create road system designs that anticipate human error, and that are forgiving when errors are made
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Representative Non-Safe Systems



Hierarchy of Controls



Of the major initiatives in the CMP, the majority of planned initiatives are considered to be Administrative or Behavioural Controls. Less than 1% of planned interventions (protected bike lanes, 7.5 km out of 799 km of “facilities”) could be considered Engineering controls, and 0% of the CMP could be considered Substitution or Elimination.

Cycling Infrastructure Assessment

Achieving the required GHG reductions is possible, and other cities of similar size have already done this

- It is important to note the role of great transit and land use policy in achieving these goals
- Here, we focus on how cycling infrastructure plays a role in achieving GHG reduction goals



Mode Split in Winter Cities

City	Population	Area (km ²)	Bike Share (%)	Transit Share (%)
London, CAN	355,000	232 sub/urban 402 incl. south rural	~1%	11%
Montreal, CAN	1,780,000	431	3%	19%
Toronto, CAN	2,930,000	630	1%	24%
Vancouver, CAN	675,000	115	12%	17%
Copenhagen, DEN	602,000	88	62%	27%
Utrecht, NL	1,285,000	99	33%	28%
Uppsala, SWE	168,000	49	28%	20%
Munster, GER	310,000	302	39%	11%
Freiburg, GER	227,000	153	13%	12%
Bremen, GER	557,000	326	25%	24%

Achieving High Cycling Mode Split

- Attaining high modal splits for cycling and transit is possible in winter cities
 - Attaining high modal split in relatively lower density cities is also possible (e.g. Bremen, Munster)
 - High transit usage and high cycling mode split are not necessarily coincident (e.g. Munster); both require different infrastructure investments that are complementary when done well (e.g. Utrecht)
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The Four Types of Bicyclists

Strong and Fearless

People willing to bicycle with limited or no bicycle-specific infrastructure

Enthused and Confident

People willing to bicycle if some bicycle-specific infrastructure is in place

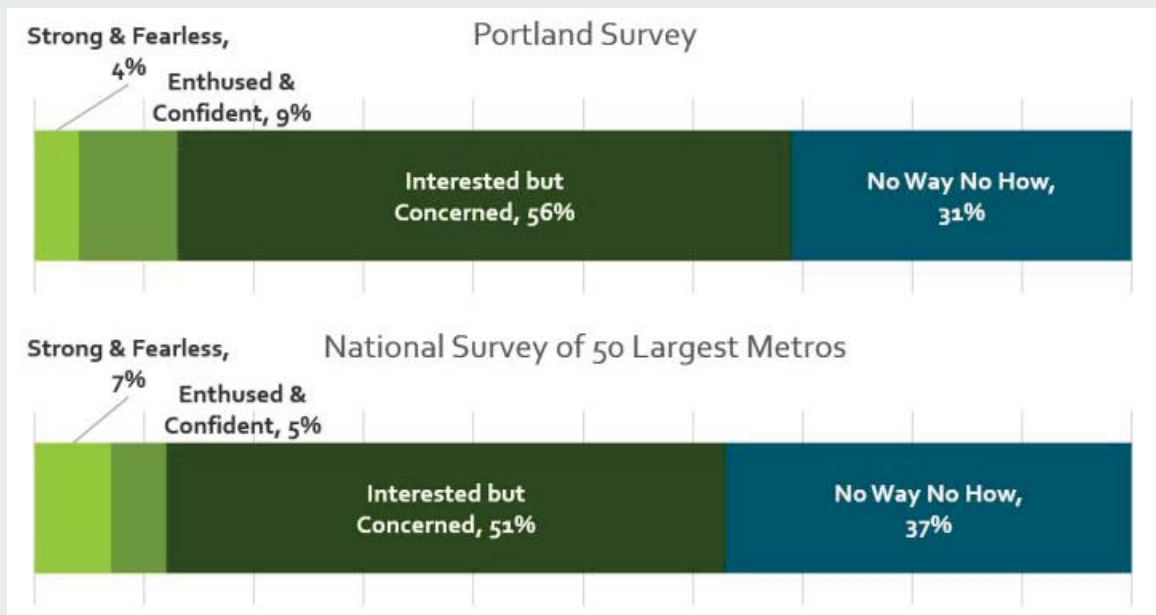
Interested but Concerned

People willing to bicycle if high-quality bicycle infrastructure is in place

No Way, No How

People unwilling to bicycle even if high-quality bicycle infrastructure is in place

Distribution of the Four Types of Bicyclists



London, ON: A Major Outlier?

- "The market for commuter based cycling infrastructure is approximately 9% of the overall population" - City of London Transportation Master Plan
- London's CMP is based on the premise that only 9% of the general population has a willingness to cycle; this is suspiciously similar to the "Strong and Fearless" and "Enthused and Confident" groups
- It is with virtually certainty that we conclude that London's potential cycling market share is not a measly 9%, but given proper infrastructure, greater than 60% of the total population would choose cycling for many trips

Infrastructure Requirements for AAA




To achieve high mode split of cycling, engaging “Interested But Concerned riders,” high-quality, connected, maintained infrastructure must be in place throughout the city.

AAA Infrastructure in the CMP

	Existing in 2016 (km)	Proposed in CMP (km)	Total (km)
Cycle Track (Protected Bike Lane)	0	7.5	7.5
In-Boulevard Multi-use Pathway	42	28.2	70.2
Multi-use Pathway	166	78.7	244.7
Total	208	114.4	322.4


- Of the 799 km of facilities proposed in the CMP, only 7.5 km (less than 1%) are cycle tracks
- This represents <1% of arterial road network
- The value of multi-use pathways is acknowledged for recreational cycling; however these are less effective for shifting mode share since they do not directly access many key destinations

An aerial photograph of a city street scene, showing buildings, roads, and a clear sky. A semi-transparent orange text box is overlaid on the center of the image.


Only 4% of London's planned bike routes over the next four years meet AAA quality standards. Stated differently, London's approach builds 96% of its cycling infrastructure to serve existing cyclists (Strong and Fearless, Enthused and Confident) marginally better, rather than planning streets for a wider ridership demographic, which represents more than 90% of the population.

Who Are We Building Bike Lanes For?

- Building for the “Fearless” and “Enthusied and Confident” groups may allow London to meet the TMP-based 5% mode share goal
 - However, it will never be able to grow beyond 5-10% mode share without accessing the “Interested but Concerned” group of riders
 - Most people don't consider cycling as an option for because they have never seen, let alone used, quality AAA bike infrastructure
 - Once people see and try AAA infrastructure, they will choose a bike for many trips; until that point, citizens will never ask for it, because they don't know that it is even possible
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Building a City-Wide Network of All Ages and Abilities bike facilities is a necessary part of achieving our GHG reduction targets. We cannot achieve our GHG targets without this investment, and stand to greatly benefit as a city by building the network as soon as possible.



Focusing on increasing cycling mode split is a cost effective and quick way of achieving GHG reduction targets as compared to transit, which requires much larger infrastructure investments and longer timelines for completion.

Comparison with Other Cities

London's Cycling Master Plan was compared with the plans from similar cities around Canada: Halifax (2014), Waterloo Region (2014), Ottawa (2013), Waterloo (2011), Victoria Capital Regional District (2011), and K (2010)



How Does London Differ?

- Addressing “Interested but Concerned” Cyclists
 - Each of the other cities recognizes this as an important group to target
- Identifying Goals and Expected Outcomes
 - Every other city identifies significantly increasing the cycling mode share and reducing cycling collisions as a metric for evaluating the cycling policies and actions
- Criteria for Evaluating the Success of Projects
 - The best plans consider methods for evaluating the success and gauging the potential for projects to increase mode share
- Data and Demographics Collection
 - Other cities address the need for and the means for collecting the data that their planning and evaluative processes require in order to facilitate data-driven decision-making

Conclusions

London's CMP states its vision of “providing infrastructure which is considered comfortable, safe, and convenient...for all Londoners.”

→ **Climate Emergency**

The target mode share of the CMP does not allow for sufficient reductions in GHG emissions

→ **Vision Zero**

The current CMP is inconsistent with the Vision Zero safe systems design principles

→ **Metrics of Success**

Kilometres of lanes is the metric of success in the current CMP; the degree to which it provides infrastructure that is “comfortable, safe, and convenient” is not evaluated

Recommendations

We RECOMMEND that council:

- request a detailed evaluation of the greenhouse gas emissions implications of the City of London Transportation Master Plan in accordance with the City of London's Declaration of Climate Emergency.
- request a detailed evaluation of the greenhouse gas emissions implications of the City of London Transit Master Plan in accordance with the City of London's Declaration of Climate Emergency.
- request a detailed evaluation of the greenhouse gas emissions implications of the City of London Official Plan or The London Plan in accordance with the City of London's Declaration of Climate Emergency.
- request a detailed evaluation of the greenhouse gas emissions implications of the City of London Parking Strategy in accordance with the City of London's Declaration of Climate Emergency.

Recommendations

We RECOMMEND that council:

- request a detailed evaluation of the greenhouse gas emissions implications of the City of London Accessibility Strategy in accordance with the City of London's Declaration of Climate Emergency.
- request a detailed evaluation of the City of London Road Safety Strategy in accordance with the City of London's Adoption of Vision Zero
- direct staff to undertake major revisions to the City of London's Cycling Master Plan infrastructure implementation in accordance with the Declaration of Climate Emergency. The revised plan should be singularly focused on building All-Ages-and-Abilities infrastructure to achieve climate-informed modal split targets, while achieving cost allocation and social equity for basic affordable transportation by 2030.

Recommendations

We RECOMMEND that council:

- direct staff to design and construct an emergency city-wide minimum grid of protected bike lanes designed for All-Ages-and-Abilities to be completed by July 1, 2021.
- enact a moratorium on all currently planned and future road widening. Presently budgeted funds for road widening (\$75M/year) should be reallocated to transit and cycling for maximum mitigation of climate disruption.
- fund continued investment in active transportation (including walking, accessibility, and micro mobility) at a rate of \$50/person/year, or ~\$20M/year, comparable to the scale of investments in major cycling cities.
- decrease speed limits on all residential streets to 30 km/h.



Thank you for your attention!

**We now invite personal
statements from the Working
Group members**