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:

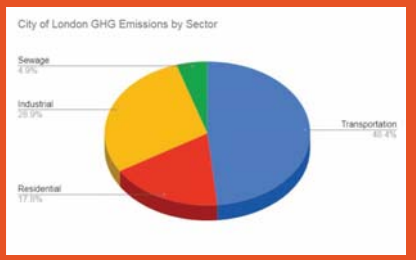
- **Climate Emergency**
  Are the mode share targets upon which the CMP is based consistent with the need for 45% reduction in CO2 emissions? If not, what mode split targets are required? Is the CMP consistent with achieving these targets?
- **Vision Zero**
  Is the CMP consistent with the Vision Zero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

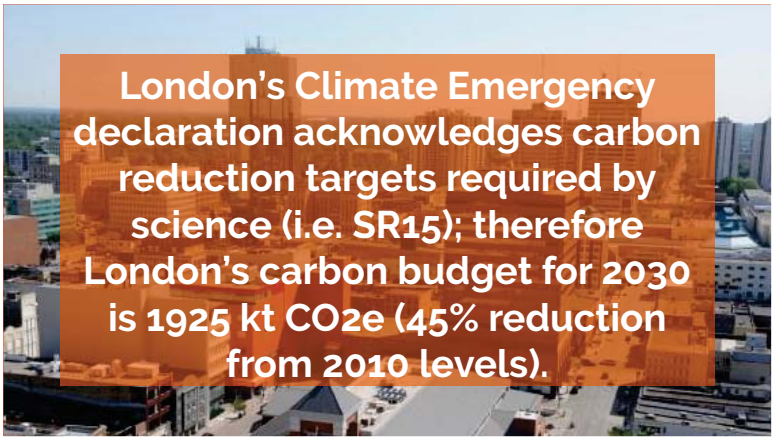
2017 Community Energy and Greenhouse Gas Report

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





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)

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

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 CO2e)	-61	+133
% Change in transportation emissions relative to 2010	-4%	+10%
Total 2030 Carbon Budget kt CO2e	1925	1925
Residential kt CO2e	510	510
Industrial kt CO2e	830	830
Sewage kt CO2e	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 CO2e)	109	327	654	982	1309
GHG Non-Transport (kt CO2e)	1480	1480	1480	1480	1480
GHG-All (kt CO2e)	1589	1807	2134	2462	2462
Change in GHG from 2009	-92%	-76%	-52%	-28%	-4%
2030 Emissions Budget (kt CO2e)	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

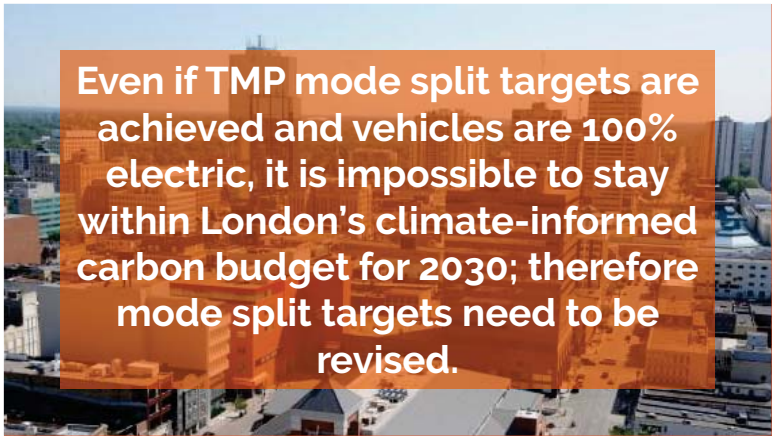
Variable Mode Split with Electrification

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 CO2e)	1309	654	573	327	859
GHG Non-Transport (kt CO2e)	1480	1480	1480	1480	1480
GHG-All (kt CO2e)	2462	2134	2053	1807	2339
Change in GHG from 2009	-4%	-52%	-58%	-76%	-37%
2030 Emissions Budget (kt CO2e)	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%**



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.

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

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

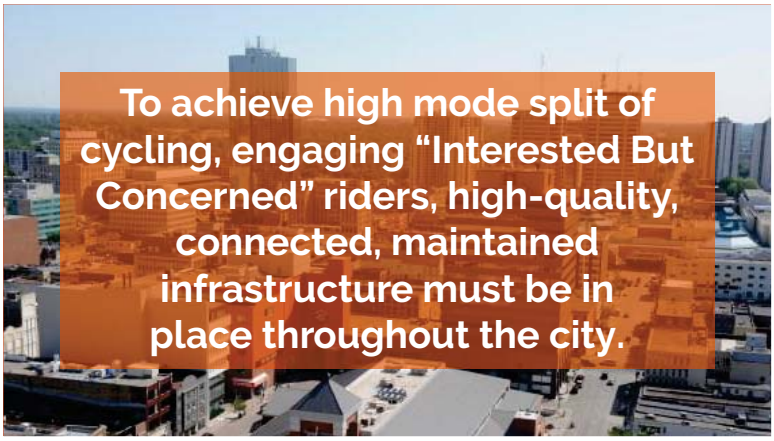
People willing to bicycle if high-quality bicycle infrastructure is in place

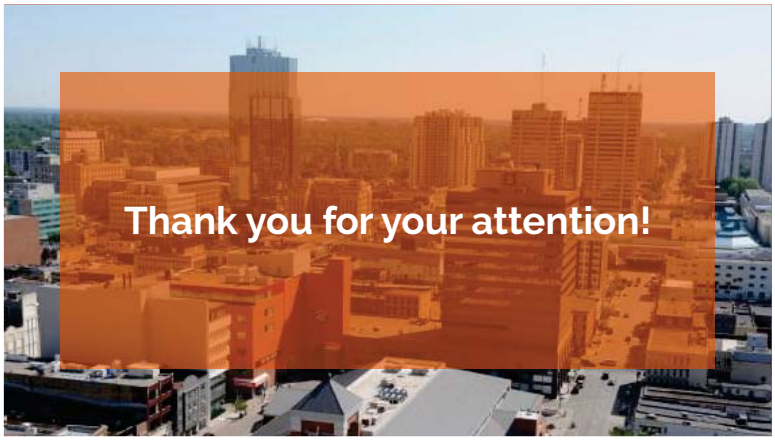
No Way, No How

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

Distribution of the Four Types of Bicyclists

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.


Thank you for your attention!