

Summary of assumptions for projecting vehicle population & emissions in 2030 & 2035

The assumptions for projecting vehicle population and emissions, categorized by vehicle class, are listed as follows:

Sector	Emission Source	Assumptions																	
Road Transportation	Private Car (PC)	<p>By 2030:</p> <ol style="list-style-type: none"> 1. Use 2019 as the base year to project population 2. Set 12% of new PCs in 2020 are electric, which is estimated according to 2020 licensed vehicle information from Transport Department. 3. Assume that 20% and 100% of new PCs are electric in 2021 and 2032, respectively, and linear growth in sales rate of electric PCs during 2021-2032. <p>By 2035:</p> <ol style="list-style-type: none"> 1. Assume that 100% of new PCs are electric during 2032-2035. 																	
	Franchised Bus (FB): Double Deck (DD) / Single Deck (SD)	<p>By 2030:</p> <ol style="list-style-type: none"> 1. Assume that a total of 1076 retiring FBDDs will be replaced by electric buses between 2023 – 2030. 2. Assume that a total of 130 retiring FBSDs will be replaced by electric buses between 2026 – 2030. 3. Assume that there will be 10 hydrogen fuel cell (HFC) FBDDs by the end of 2025 and 15 HFC FBDDs joining the bus fleet each year from 2027, i.e. a total of 70 HFC FBDD in 2030, and that the HFC FBDDs will replace the oldest diesel buses. <p>As a result, the bus population by emission standard in 2030 are as follows (population by manufacture year are provided in the Appendix A):</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">FBDD</th> <th style="text-align: center;">Electric</th> <th style="text-align: center;">Euro V</th> <th style="text-align: center;">Euro VI</th> <th style="text-align: center;">HFC</th> <th style="text-align: center;">Total</th> </tr> </thead> <tbody> <tr> <td style="text-align: left;">Number</td> <td style="text-align: center;">1076</td> <td style="text-align: center;">3706</td> <td style="text-align: center;">951</td> <td style="text-align: center;">70</td> <td style="text-align: center;">5803</td> </tr> <tr> <td style="text-align: left;">Percentage</td> <td style="text-align: center;">18.54%</td> <td style="text-align: center;">63.86%</td> <td style="text-align: center;">16.39%</td> <td style="text-align: center;">1.21%</td> <td style="text-align: center;">100%</td> </tr> </tbody> </table>	FBDD	Electric	Euro V	Euro VI	HFC	Total	Number	1076	3706	951	70	5803	Percentage	18.54%	63.86%	16.39%	1.21%
FBDD	Electric	Euro V	Euro VI	HFC	Total														
Number	1076	3706	951	70	5803														
Percentage	18.54%	63.86%	16.39%	1.21%	100%														

	<table border="1"> <tr> <td>FBSD</td> <td>Electric</td> <td>Euro V</td> <td>Euro VI</td> <td>HFC</td> <td>Total</td> </tr> <tr> <td>Number</td> <td>170</td> <td>52</td> <td>55</td> <td>0</td> <td>277</td> </tr> <tr> <td>Percentage</td> <td>61.37%</td> <td>18.77%</td> <td>19.86%</td> <td>0%</td> <td>100%</td> </tr> </table> <p>By 2035:</p> <ol style="list-style-type: none"> Assume that 100% of new FBDDs are HFC or electric FBDDs from 2030 onward. 	FBSD	Electric	Euro V	Euro VI	HFC	Total	Number	170	52	55	0	277	Percentage	61.37%	18.77%	19.86%	0%	100%										
FBSD	Electric	Euro V	Euro VI	HFC	Total																								
Number	170	52	55	0	277																								
Percentage	61.37%	18.77%	19.86%	0%	100%																								
Public Light Bus (PLB)	<p>By 2030:</p> <ol style="list-style-type: none"> Use 2019 as the base year to project population. Assume that there are 20 new e-PLBs in each of 2023 to 2030, there are 160 e-PLBs in total in 2030. <p>By 2035:</p> <ol style="list-style-type: none"> Assume that there are 180 e-PLBs in total in 2031, and the total number of e-PLBs increase by 20 per year from 2031 to 2040, i.e., 260 e-PLBs in total in 2035. <p>In summary,</p> <table border="1"> <tr> <td>Year</td> <td>2023</td> <td>2024</td> <td>2025</td> <td>2026</td> <td>2027</td> <td>2028</td> <td>2029</td> <td>2030</td> <td>2031</td> <td>2032</td> <td>2033</td> <td>2034</td> <td>2035</td> </tr> <tr> <td>e-PLBs in total</td> <td>20</td> <td>40</td> <td>60</td> <td>80</td> <td>100</td> <td>120</td> <td>140</td> <td>160</td> <td>180</td> <td>200</td> <td>220</td> <td>240</td> <td>260</td> </tr> </table>	Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	e-PLBs in total	20	40	60	80	100	120	140	160	180	200	220	240	260
Year	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035																
e-PLBs in total	20	40	60	80	100	120	140	160	180	200	220	240	260																
Taxi	<p>By 2030:</p> <ol style="list-style-type: none"> Use 2019 as the base year to project population. Assume that new sales of e-Taxi from 2023 to 2027 are 200, 500, 1000, 1500, and 800. If the new sales under natural replacement do not get enough numbers of new taxis to fulfill the e-Taxis requirement, mandatory retirement/subsidy scheme of oldest Taxis would be employed in the projection. Assume that 20% of new Taxi are electric in each of 2028, 2029, and 2030. <p>In summary,</p> <table border="1"> <tr> <td>Year</td> <td>2023</td> <td>2024</td> <td>2025</td> <td>2026</td> <td>2027</td> <td>2028</td> <td>2029</td> <td>2030</td> </tr> <tr> <td>New Sales of e-Taxi</td> <td>200</td> <td>500</td> <td>1000</td> <td>1500</td> <td>800</td> <td>20%</td> <td>20%</td> <td>20%</td> </tr> </table>	Year	2023	2024	2025	2026	2027	2028	2029	2030	New Sales of e-Taxi	200	500	1000	1500	800	20%	20%	20%										
Year	2023	2024	2025	2026	2027	2028	2029	2030																					
New Sales of e-Taxi	200	500	1000	1500	800	20%	20%	20%																					

By 2035:

1. Assume that the percentage of new e-Taxi to new Taxi from 2031 to 2034 are 30%, 40%, 60%, and 80%.
2. Assume that 100% of new Taxi are electric from 2035 onward.

In summary,

Year	2031	2032	2033	2034	2035
New Sales of e-Taxi	30%	40%	60%	80%	100%

Light Goods Vehicle (LGV)

By 2030:

1. Use 2019 as the base year to project population.
2. Assume that the percentage of e-LGV to total LGV is 0.3% in 2022.
3. Assume that there are 80 new e-LGVs in 2023.
4. Assume that 0.5% and 3.5% of new LGVs are electric in 2024 and 2030, respectively, and the sales rate of e-LGV increase by 0.5% per year during 2024-2030.

By 2035:

1. Assume that 5% of new LGVs are electric in 2031, and the sales rate of e-LGV increase by 2.5% per year from 2031 to 2033, and increase by 5% per year from 2033 to 2039.

In summary,

Year	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
New Sales of e-LGVs	0.5%	1.0%	1.5%	2.0%	2.5%	3.0%	3.5%	5.0%	7.5%	10%	15%	20%

Heavy Goods Vehicle (HGV)	<p>By 2030:</p> <ol style="list-style-type: none"> Assume that there are 4 HFC special purpose vehicles (HFC SPVs, e.g., refuse truck) / heavy goods vehicles (HFC HGVs) by end of 2025, and 10 HFC SPVs / HFC HGVs joining the government fleet each year from 2027 to 2030, i.e., a total of 44 HFC SPVs/HGVs in 2030. <p>In summary,</p> <table border="1"> <thead> <tr> <th>Year</th> <th>2025</th> <th>2026</th> <th>2027</th> <th>2028</th> <th>2029</th> <th>2030</th> </tr> </thead> <tbody> <tr> <td>Total HFC SPV/HGV</td> <td>4</td> <td>4</td> <td>14</td> <td>24</td> <td>34</td> <td>44</td> </tr> </tbody> </table> <p>By 2035:</p> <ol style="list-style-type: none"> Assume that there are 240 HFC or electric HGVs/SPVs in total in 2031, and the total number increase by 240 per year from 2031 to 2035, i.e., a total of 1200 HFC or electric HGVs/SPVs in 2035. <table border="1"> <thead> <tr> <th>Year</th> <th>2031</th> <th>2032</th> <th>2033</th> <th>2034</th> <th>2035</th> </tr> </thead> <tbody> <tr> <td>Total HFC or electric HGV/SPV (including government fleet)</td> <td>240</td> <td>480</td> <td>720</td> <td>960</td> <td>1200</td> </tr> </tbody> </table>	Year	2025	2026	2027	2028	2029	2030	Total HFC SPV/HGV	4	4	14	24	34	44	Year	2031	2032	2033	2034	2035	Total HFC or electric HGV/SPV (including government fleet)	240	480	720	960	1200
Year	2025	2026	2027	2028	2029	2030																					
Total HFC SPV/HGV	4	4	14	24	34	44																					
Year	2031	2032	2033	2034	2035																						
Total HFC or electric HGV/SPV (including government fleet)	240	480	720	960	1200																						
Non-franchised Bus (NFB)	<p>By 2030:</p> <ol style="list-style-type: none"> Use 2019 as the base year to project population. Assume that the percentage of e-NFB to total NFB is 0.09% in 2022. Assume that there are 20 new e-NFBs in 2023. Assume that 0.5% and 3.5% of new NFBs are electric in 2024 and 2030, respectively, and the sales rate of e-NFB increase by 0.5% per year during 2024-2030. <p>By 2035:</p> <ol style="list-style-type: none"> Assume that 5% of new NFBs are electric in 2031, and the sales rate of e-NFB increase by 2.5% per year from 2031 to 																										

2033, and increase by 5% per year from 2033 to 2039.

In summary,

Year	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
New Sales of e-NFBs	0.5%	1.0%	1.5%	2.0%	2.5%	3.0%	3.5%	5.0%	7.5%	10%	15%	20%

Private Light Bus (PrLB)

By 2030:

1. Use 2019 as the base year to project population.
2. Assume that the percentage of e-PrLB to total PrLB is 0.17% in 2022.
3. Assume that there is one new e- PrLB in 2023.
4. Assume that 0.5% and 3.5% of new PrLBs are electric in 2024 and 2030, respectively, and the sales rate of e- PrLB increase by 0.5% per year during 2024-2030.

By 2035:

1. Assume that 5% of new PrLBs are electric in 2031, and the sales rate of e-PrLB increase by 2.5% per year from 2031 to 2033, and increase by 5% per year from 2033 to 2039.

In summary,

Year	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
New Sales of e-PrLBs	0.5%	1.0%	1.5%	2.0%	2.5%	3.0%	3.5%	5.0%	7.5%	10%	15%	20%

Motorcycle (MC)

By 2030:

1. Use 2019 as the base year to project population.
2. Assume that 1% of new MCs are electric during 2020 – 2030.

By 2035:

1. Assume that 1% of new MCs are electric during 2031 – 2035.

	Government Vehicle	<p>By 2030:</p> <ol style="list-style-type: none">1. Assume that the adoption rate of electric vehicle in PC fleet is 50% in 2030.2. For HGV/SPV fleet, please refer to the “Heavy Goods Vehicle” section. <p>By 2035:</p> <ol style="list-style-type: none">1. Assume that the adoption rate of electric vehicle in PC fleet is 73% in 2035.2. For HGV/SPV fleet, please refer to the “Heavy Goods Vehicle” section.
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Appendix A.

Table 1. Franchised Bus Population by emission standard & manufacture year

Calendar Year	Vehicle Class	Standard	Manufacture Year																							
			2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
2025	FBDD	Electric															53	81	122	217						
		Euro IV	13	41	14																					
		Euro V			93	244	198	428	439	828	836	666	550	18	1											
		Euro VI							6			13	97	295	288	125	122			5						
		HFC																		10						
	FBSD	Electric				4				5	5	10	4			16										
		Euro IV		44	8																					
		Euro V			13	45	50	24		24	4															
Euro VI											5						3	7	6							
2030	FBDD	Electric															53	81	122	217	13	41	107	244	198	
		Euro IV																								
		Euro V						368	439	828	836	666	550	18	1											
		Euro VI							6			13	97	295	288	125	122			5						
		HFC																		10			15	15	15	15
	FBSD	Electric								5	5	10	4			16							38	16	36	40
		Euro IV																								
		Euro V						24		24	4															
Euro VI											5							3	7	6		6	5	13	10	