

Technical Appendix - GHG Emissions Reduction Calculations

331
Total MTCO₂e Reduced
for 2025-2030

2,603
Total MTCO₂e Reduced
for 2025-2050

[input] **Number of bikes**

Year	E bikes & Conversions (600 total)	Bikes (600 total)
2025	100	100
2026	125	125
2027	125	125
2028	125	125
2029	125	125

[value] **Number of trips per bike**

59.71 (trips/bike)

Source: All trip data was sourced from the MassBike Worcester E-Bike program.

<https://www.massbike.org/ebikeworcester>

[value] **Average miles per trip**

3.92 (miles/trip)

Source: All trip data was sourced from the MassBike Worcester E-Bike program.

[value] **Emissions avoided compared to gasoline passenger vehicle**

404.00 (g CO₂/mile)

Source: EPA Greenhouse Gas Emissions from a Typical Passenger Vehicle, March 2018. Electricity associated with charging is assumed to come from renewable energy sources and not included in the calculation.

<https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockkey=P100U8YT.pdf>

[calc] **Grams of CO₂ per year in first year**

18,934,408 (g CO₂/year)

[calc] **Emissions reductions per year in first year**

18.93 (MTCO₂/year)

[calc] **Emissions reductions per year in subsequent years for different number of bikes**

23.67 (MTCO₂/year)

Calculations remain the same with a different number of bikes

[FINAL] **Cumulative emissions reductions for 2025-2030**

331.35 (MTCO₂/year)

(MTCO₂e/year * 5 years) + (MTCO₂e/year * 4 years) +

[FINAL] **Cumulative emissions reductions for 2025-2050**

2,603.48 (MTCO₂/year)

(MTCO₂e/year * 25 years) + (MTCO₂e/year * 24 years) +

