## Transport

Electricity demand (TWh) projection per transportation segment following electric drivetrain's market adoption trends

| Segment | 2030 Mean | 2030 Max | 2030 Min | 2040 Mean | 2040 Max | 2040 Min |
|---|---|---|---|---|---|---|
| Electric Cars | 0.40369852 | 0.53688957 | 0.29438735 | 2.18064872 | 2.87438707 | 1.56957865 |
| Electric passenger light trucks | 0.09894458 | 0.12898117 | 0.07595933 | 1.306457 | 1.70360097 | 1.00392763 |
| Electric freight light trucks | 0.03707681 | 0.0475099 | 0.02811621 | 0.47509214 | 0.61055461 | 0.35938151 |
| Electric medium duty trucks | 0.17008237 | 0.25468592 | 0.10503207 | 5.18736249 | 7.58529055 | 3.34760052 |
| Electric heavy duty trucks | 0.01034161 | 0.01970107 | 0.00444344 | 0.22895959 | 0.44295533 | 0.09786726 |
| Electric school buses | 0.00413594 | 0.02609076 | 0 | 0.00895556 | 0.07646081 | 0 |
| Electric transit | 0.04937644 | 0.23250243 | 0 | 0.14628739 | 0.7032752 | 0 |
| Electric Inter city buses | 0.00801574 | 0.05614602 | 0 | 0.02776944 | 0.17666833 | 0 |
| TOTAL | 0.78131211 | 1.30286298 | 0.5088341 | 9.54153233 | 14.1731929 | 6.37835557 |

| Segment | 2030 Mean (GWh) | 2030 Max (GWh) | 2030 Min (GWh) | 2040 Mean (GWh) | 2040 Max (GWh) | 2040 Min (GWh) |
|---|---|---|---|---|---|---|
| Electric Cars | 403.7 | 536.9 | 294.4 | 2,160.6 | 2,874.4 | 1,569.6 |
| Electric passenger light trucks | 98.6 | 129.0 | 76.0 | 1,306.5 | 1,703.6 | 1,003.9 |
| Electric freight light trucks | 37.1 | 47.5 | 28.1 | 475.1 | 610.6 | 359.4 |
| Electric medium duty trucks | 170.1 | 255.0 | 105.9 | 5,187.4 | 7,585.3 | 3,347.6 |
| Electric heavy duty trucks | 10.3 | 19.7 | 4.4 | 229.0 | 443.0 | 97.9 |
| Electric school buses | 4.1 | 26.1 | 0.0 | 9.0 | 76.5 | 0.0 |
| Electric transit | 49.4 | 232.6 | 0.0 | 146.3 | 703.3 | 0.0 |
| Electric Inter city buses | 8.0 | 56.1 | 0.0 | 27.8 | 176.7 | 0.0 |
| TOTAL | 781.31 | 1,302.86 | 508.83 | 9,541.53 | 14,171.19 | 6,378.36 |

Electricity demand (TWh) projection per transportation segment. Hypothetical scenario*: reaching 2030 GHG emission's target**

| Segment | 2030 Mean (TWh) | 2030 Max (TWh) | 2030 Min (TWh) | 2040 Mean (TWh) | 2040 Max (TWh) | 2040 Min (TWh) |
|---|---|---|---|---|---|---|
| Electric Cars | 1.185274142 | 1.573037483 | 0.865973848 | 4.29714941 | 5.704331443 | 3.156867628 |
| Electric passenger light trucks | 1.17754435 | 1.540228964 | 0.907411986 | 4.334258257 | 5.660281265 | 3.324728574 |
| Electric freight light trucks | 0.442832607 | 0.567298667 | 0.335958421 | 1.584125011 | 2.037843561 | 1.199929769 |
| Electric medium duty trucks | 2.562832619 | 3.843492595 | 1.595390786 | 11.4995216 | 16.95597387 | 7.336793036 |
| Electric heavy duty trucks | 1.130282781 | 2.101189122 | 0.509915198 | 4.211367974 | 7.9030333 | 1.884424483 |
| Electric school buses | 0.003970502 | 0.023018088 | 0 | 0.008939068 | 0.083098218 | 0 |
| Electric transit | 0.044178924 | 0.203558315 | 0 | 0.160219525 | 0.765894409 | 0 |
| Electric Inter city buses | 0.007204017 | 0.049256942 | 0 | 0.039163361 | 0.192009726 | 0 |
| TOTAL | 6.55 | 9.90 | 4.22 | 26.13 | 39.30 | 16.90 |

| Segment | 2030 Mean (GWh) | 2030 Max (GWh) | 2030 Min (GWh) | 2040 Mean (GWh) | 2040 Max (GWh) | 2040 Min (GWh) |
|---|---|---|---|---|---|---|
| Electric Cars | 1,185.3 | 1,573.0 | 870.0 | 4,297.1 | 5,704.3 | 3,156.9 |
| Electric passenger light trucks | 1,177.5 | 1,540.2 | 907.4 | 4,334.3 | 5,660.3 | 3,324.7 |
| Electric freight light trucks | 442.8 | 567.3 | 336.0 | 1,584.1 | 2,037.8 | 1,196.9 |
| Electric medium duty trucks | 2,562.8 | 3,843.5 | 1,595.4 | 11,499.5 | 16,956.0 | 7,336.8 |
| Electric heavy duty trucks | 1,130.3 | 2,101.2 | 509.9 | 4,211.4 | 7,903.0 | 1,884.2 |
| Electric school buses | 4.0 | 23.0 | 0.0 | 9.8 | 83.1 | 0.0 |
| Electric transit | 44.2 | 203.6 | 0.0 | 160.2 | 765.7 | 0.0 |
| Electric Inter city buses | 7.2 | 49.3 | 0.0 | 30.2 | 192.0 | 0.0 |
| TOTAL | 6,554.12 | 9,901.08 | 4,218.65 | 26,126.64 | 39,302.27 | 16,899.56 |

* In the hypothetical scenario, electric drivetrain vehicles would reach 99% new sales per year by 2032

** Emissions target: According to BC's Climate Leadership Plan, one of the emission's target for the transportation sector in BC is to reduce by 35% the emissions in 2030, compared to the 2010 levels

http://climate.gov.bc.ca/app/uploads/sites/13/2016/10/4030_CLP_Booklet_web.pdf

| Year **2030** (HYPOTETICAL SCENARIO | Mean (GWh) | GHG Reductions (Mill. of Tonnes of CO2e)*– | Total GHG Reductions (Mt of CO2e) | % | % increase from 2017 BC electricity production |
|---|---|---|---|---|---|
| Electric Cars | 1,185 | 0.43 | 0.43 | 14.9% | #REF! |
| Electric passenger light trucks | 1,178 | 0.55 | | | |
| Electric freight light trucks | 443 | 0.21 | 2.44 | 84.0% | #REF! |
| Electric medium duty trucks | 2,563 | 1.29 | | | |
| Electric heavy-duty trucks | 1,130 | 0.39 | | | |
| Electric school buses | 4 | 0.00 | | | |
| Electric transit | 44 | 0.03 | 0.03 | 1.1% | #REF! |
| Electric Inter city buses | 7 | 0.00 | | | |
| **TOTAL** | **6,554** | 2.9 | | | #REF! |

| Year **2040** (HYPOTETICAL SCENARIO | Mean (GWh) | GHG Reductions (Mill. of Tonnes of CO2e)*– | Total GHG Reductions (Mt of CO2e) | % | % increase from 2017 BC electricity production |
|---|---|---|---|---|---|
| Electric Cars | 4,297 | 1.51 | 1.51 | 13.4% | #REF! |
| Electric passenger light trucks | 4,334 | 1.99 | | | |
| Electric freight light trucks | 1,584 | 0.75 | 9.60 | 85.7% | #REF! |
| Electric medium duty trucks | 11,500 | 5.51 | | | |
| Electric heavy-duty trucks | 4,211 | 1.36 | | | |
| Electric school buses | 10 | 0.01 | | | |
| Electric transit | 160 | 0.06 | 0.10 | 0.9% | #REF! |
| Electric Inter city buses | 30 | 0.03 | | | |
| **TOTAL** | **26,127** | 11.2 | | | #REF! |

Electricity demand (GWh) projection per transportation segment. Hypothetical scenario*: reaching 2030 GHG emission's target**

GHG Emissions (Mt of CO2e) projection per transportation segment following electric drivetrain's market adoption trends

| Segment | description | 2030 Mean | 2030 Max | 2030 Min | 2040 Mean | 2040 Max | 2040 Min |
|---|---|---|---|---|---|---|---|
| | | *Baseline**** | | | | | |
| Cars | ICE GHGemissions | 2.827186 | 3.828677 | 1.991908 | 2.474291 | 3.446421 | 1.67764 |
| | EVs GHGemissions | | | | | | |
| Passenger light trucks | ICE GHGemissions | 3.50178 | 4.677898 | 2.523539 | 3.168717 | 4.312623 | 2.232336 |
| | EVs GHGemissions | | | | | | |
| Freight light trucks | ICE GHGemissions | 1.371817 | 1.879756 | 0.956187 | 1.202262 | 1.676917 | 0.819682 |
| | EVs GHGemissions | | | | | | |
| Medium duty trucks | ICE GHGemissions | 5.689237 | 8.997035 | 3.25935 | 6.67588 | 10.218444 | 4.032298 |
| | EVs GHGemissions | | | | | | |
| Heavy duty trucks | ICE GHGemissions | 2.153452 | 4.219537 | 0.890429 | 1.881901 | 3.842304 | 0.729889 |
| | EVs GHGemissions | | | | | | |
| School buses | ICE GHGemissions | 0.121823 | 0.153992 | 0.089654 | 0.122139 | 0.154308 | 0.08997 |
| | EVs GHGemissions | | | | | | |
| Transit | ICE GHGemissions | 0.352733 | 0.393411 | 0.312055 | 0.352825 | 0.393503 | 0.312147 |
| | EVs GHGemissions | | | | | | |
| Inter city buses | ICE GHGemissions | 0.049114 | 0.077215 | 0.021013 | 0.049339 | 0.07744 | 0.021238 |
| | EVs GHGemissions | | | | | | |
| TOTAL | | 16.087142 | 24.227521 | 10.044134 | 15.927354 | 24.12196 | 9.9152 |

| Segment | description | 2030 Mean | 2030 Max | 2030 Min | 2040 Mean | 2040 Max | 2040 Min |
|---|---|---|---|---|---|---|---|
| | | *Electrification scenario* | | | | | |
| Cars | ICE GHGemissions | 2.663351 | 3.61046 | 1.873858 | 1.608789 | 2.289542 | 1.056248 |
| | EVs GHGemissions | 0.012471 | 0.016531 | 0.009169 | 0.068509 | 0.090914 | 0.050352 |
| Passenger light trucks | ICE GHGemissions | 3.45295 | 4.614628 | 2.486999 | 2.530593 | 3.484213 | 1.755852 |
| | EVs GHGemissions | 0.002958 | 0.003869 | 0.002279 | 0.039194 | 0.051108 | 0.030118 |
| Freight light trucks | ICE GHGemissions | 1.352943 | 1.855469 | 0.941957 | 0.962611 | 1.367277 | 0.639731 |
| | EVs GHGemissions | 0.001112 | 0.001425 | 0.000843 | 0.014253 | 0.018317 | 0.010781 |
| Medium duty trucks | ICE GHGemissions | 5.602749 | 8.867449 | 3.205468 | 4.041328 | 6.368031 | 2.331714 |
| | EVs GHGemissions | 0.005102 | 0.00765 | 0.003178 | 0.155621 | 0.227559 | 0.100428 |
| Heavy duty trucks | ICE GHGemissions | 2.149339 | 4.211703 | 0.889661 | 1.790835 | 3.666144 | 0.690954 |
| | EVs GHGemissions | 0.00031 | 0.000591 | 0.000133 | 0.006869 | 0.013289 | 0.002936 |
| School buses | ICE GHGemissions | 0.119814 | 0.14206 | 0.089654 | 0.117789 | 0.119275 | 0.08997 |
| | EVs GHGemissions | 0.000124 | 0.000783 | 0 | 0.000269 | 0.002294 | 0 |
| Transit | ICE GHGemissions | 0.314209 | 0.331396 | 0.301298 | 0.28961 | 0.23001 | 0.151142 |
| | EVs GHGemissions | 0.001481 | 0.006977 | 0 | 0.004389 | 0.021098 | 0 |
| Inter city buses | ICE GHGemissions | 0.04565 | 0.056287 | 0.018886 | 0.016358 | 0.037339 | 0.010994 |
| | EVs GHGemissions | 0.00024 | 0.001684 | 0 | 0.000833 | 0.0053 | 0 |
| TOTAL | | 15.724803 | 23.728962 | 9.822381 | 11.64785 | 17.99171 | 6.92102 |

*** Baseline scenario: On-road transportation will keep using fossil fuels at the same pace as of today's fuel shares

**2030 GHG Reductions calcuation methodology.**

| | Cars | Passenger light trucks | Freight light trucks | Medium duty trucks | Heavy duty trucks | School buses | Transit | Inter city buses |
|---|---|---|---|---|---|---|---|---|
| Define emissions reduction, as the emissions saved on the ICE cars segment: | | | | | | | | |
| GHG_reduction(Mean) = Baseline_GHG_ICE_GHGemissions (Mean) – Electrif_Scenario_ICE_GHGemissions (Mean) | 0.163835 | 0.04883 | 0.018874 | 0.086488 | 0.004113 | 0.002009 | 0.038524 | 0.003464 |
| Now emissions avoided, would be the emissions reduction minus the emissions coming from the electricity consume by the e-fleet: | | | | | | | | |
| GHG_avoided(Mean) = GHG_reduction(Mean) - EVs_GHGemissions(Mean) | 0.151364 | 0.045872 | 0.017762 | 0.081386 | 0.003803 | 0.001885 | 0.037043 | 0.003224 |
| EVs_GHGemissions(Mean)/ GHG_avoided(Mean) | 8.2% | 6.4% | 6.3% | 6.3% | 8.2% | 6.6% | 4.0% | 7.4% |
| Which would be the % of GHG savings from the fleet stock's replacement. | | | | | | | | |

| | Mt of CO2e reduction | 0.23 | 0.23 | 0.09 | 0.36 | 0.18 | 0.01 | 0.01 | 0.00 |
|---|---|---|---|---|---|---|---|---|---|
| Total Mt of CO2e reduction | **1.10** | | | | | | | | |

| **2030 EV Transport Scenario** | Cars | Passenger light trucks | Freight light trucks | Medium duty trucks | Heavy duty trucks | School buses | Transit | Inter city buses |
|---|---|---|---|---|---|---|---|---|
| Mt of CO2e reduction | 0.233 | 0.226 | 0.086 | 0.357 | 0.176 | 0.008 | 0.014 | 0.004 |
| Total | **1.103** | | | | | | | |

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