|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Scenario** |  |  |  | |  | |  | | **Carbon balance (kg CO2 GJ-1)** | | | |
|  |  |  |  | |  | |  | |  |  |  |  |
| **Feedstock** | **Conversion Efficiency (%)** | **Transport Distance One-way (km)** | **Harvest Age (years)** | **Harvest Emissions Factor (kg CO2 GJ-1)** | | **MAT (˚C)** | | **Carbon Parity Time (years)** | | **25 Years** | **50 Years** | **100 Years** |
| local chips | 90 | 3.3 | 40 | 2.63 | | NA | | 0 | | -1130 | -3038 | -10376 |
| local chips | 90 | 50 | 40 | 2.63 | | NA | | 0 | | -1094 | -2966 | -10231 |
| local chips | 75 | 3.3 | 40 | 2.63 | | NA | | 3 | | -631 | -2195 | -9551 |
| local chips | 75 | 50 | 40 | 2.63 | | NA | | 3 | | -588 | -2108 | -9377 |
| local chips | 65 | 3.3 | 40 | 2.63 | | NA | | 18 | | -171 | -1417 | -8788 |
| local chips | 65 | 50 | 40 | 2.63 | | NA | | 20 | | -120 | -1317 | -8588 |
| local chips | 90 | 3.3 | 24 | 2.63 | | NA | | 0 | | -1265 | -4054 | -15426 |
| local chips | 90 | 50 | 24 | 2.63 | | NA | | 0 | | -1228 | -3981 | -15280 |
| local chips | 75 | 3.3 | 24 | 2.63 | | NA | | 2 | | -792 | -3414 | -15610 |
| local chips | 75 | 50 | 24 | 2.63 | | NA | | 2 | | -749 | -3327 | -15436 |
| local chips | 65 | 3.3 | 24 | 2.63 | | NA | | 13 | | -310 | -2823 | -15779 |
| local chips | 65 | 50 | 24 | 2.63 | | NA | | 14 | | -306 | -2723 | -15579 |
| local chips | 90 | 3.3 | 40 | 5.26 | | NA | | 0 | | -1057 | -2892 | -10084 |
| local chips | 90 | 50 | 40 | 5.26 | | NA | | 0 | | -1021 | -2820 | -9939 |
| local chips | 75 | 3.3 | 40 | 5.26 | | NA | | 4 | | -544 | -2020 | -9200 |
| local chips | 75 | 50 | 40 | 5.26 | | NA | | 6 | | -500 | -1933 | -9026 |
| local chips | 65 | 3.3 | 40 | 5.26 | | NA | | 22 | | -69 | -1215 | -8384 |
| local chips | 65 | 50 | 40 | 5.26 | | NA | | 25 | | -19 | -1114 | -8183 |
| local chips | 90 | 3.3 | 24 | 5.26 | | NA | | 0 | | -1192 | -3908 | -15133 |
| local chips | 90 | 50 | 24 | 5.26 | | NA | | 0 | | -1155 | -3835 | -14988 |
| local chips | 75 | 3.3 | 24 | 5.26 | | NA | | 3 | | -705 | -3239 | -15289 |
| local chips | 75 | 50 | 24 | 5.26 | | NA | | 4 | | -661 | -3152 | -15085 |
| local chips | 65 | 3.3 | 24 | 5.26 | | NA | | 16 | | -255 | -2621 | -15375 |
| local chips | 65 | 50 | 24 | 5.26 | | NA | | 18 | | -205 | -2521 | -15174 |
| local chips | 90 | 3.3 | 40 | 7.89 | | NA | | 0 | | -984 | -2746 | -9792 |
| local chips | 90 | 50 | 40 | 7.89 | | NA | | 0 | | -948 | -2673 | -9647 |
| local chips | 75 | 3.3 | 40 | 7.89 | | NA | | 7 | | -456 | -1845 | -8849 |
| local chips | 75 | 50 | 40 | 7.89 | | NA | | 8 | | -412 | -1758 | -8675 |
| local chips | 65 | 3.3 | 40 | 7.89 | | NA | | 27 | | 32 | -1013 | -7979 |
| local chips | 65 | 50 | 40 | 7.89 | | NA | | 30 | | 82 | -912 | -7778 |
| local chips | 90 | 3.3 | 24 | 7.89 | | NA | | 0 | | -1119 | -3761 | -14841 |
| local chips | 90 | 50 | 24 | 7.89 | | NA | | 0 | | -1082 | -3689 | -14696 |
| local chips | 75 | 3.3 | 24 | 7.89 | | NA | | 5 | | -617 | -3063 | -14908 |
| local chips | 75 | 50 | 24 | 7.89 | | NA | | 5 | | -573 | -2976 | -14734 |
| local chips | 65 | 3.3 | 24 | 7.89 | | NA | | 20 | | -154 | -2419 | -14970 |
| local chips | 65 | 50 | 24 | 7.89 | | NA | | 22 | | -104 | -2318 | -14769 |
| mill residue pellets | 90 | 2900 | NA | 0.53 | | -1 | | 12 | | -673 | -2521 | -6669 |
| mill residue pellets | 90 | 1040 | NA | 0.53 | | 0 | | 2 | | -1441 | -4030 | -9594 |
| mill residue pellets | 75 | 2900 | NA | 0.53 | | -1 | | 24 | | -82 | -1574 | -5102 |
| mill residue pellets | 75 | 1040 | NA | 0.53 | | 0 | | 9 | | -1004 | -3386 | -8611 |
| mill residue pellets | 65 | 2900 | NA | 0.53 | | -1 | | 37 | | 463 | -701 | -3655 |
| mill residue pellets | 65 | 1040 | NA | 0.53 | | 0 | | 16 | | -600 | -2791 | -7705 |
| mill residue pellets | 90 | 2900 | NA | 0.53 | | 5.3 | | 7 | | -1094 | -3129 | -7325 |
| mill residue pellets | 90 | 1040 | NA | 0.53 | | 6.3 | | 0 | | -1857 | -4608 | -10207 |
| mill residue pellets | 75 | 2900 | NA | 0.53 | | 5.3 | | 15 | | -587 | -2304 | -5889 |
| mill residue pellets | 75 | 1040 | NA | 0.53 | | 6.3 | | 6 | | -1503 | -4079 | -9347 |
| mill residue pellets | 65 | 2900 | NA | 0.53 | | 5.3 | | 23 | | -119 | -1542 | -4563 |
| mill residue pellets | 65 | 1040 | NA | 0.53 | | 6.3 | | 10 | | -1176 | -3591 | -8553 |
| mill residue pellets | 90 | 2900 | NA | 1.32 | | -1 | | 12 | | -651 | -2477 | -6582 |
| mill residue pellets | 90 | 1040 | NA | 1.32 | | 0 | | 3 | | -1419 | -3987 | -9506 |
| mill residue pellets | 75 | 2900 | NA | 1.32 | | -1 | | 24 | | -56 | -1522 | -4997 |
| mill residue pellets | 75 | 1040 | NA | 1.32 | | 0 | | 10 | | -978 | -3333 | -8506 |
| mill residue pellets | 65 | 2900 | NA | 1.32 | | -1 | | 38 | | 494 | -640 | -3534 |
| mill residue pellets | 65 | 1040 | NA | 1.32 | | 0 | | 16 | | -570 | -2730 | -7583 |
| mill residue pellets | 90 | 2900 | NA | 1.32 | | 5.3 | | 7 | | -1072 | -3085 | -7238 |
| mill residue pellets | 90 | 1040 | NA | 1.32 | | 6.3 | | 0 | | -1835 | -4564 | -10119 |
| mill residue pellets | 75 | 2900 | NA | 1.32 | | 5.3 | | 15 | | -561 | -2251 | -5784 |
| mill residue pellets | 75 | 1040 | NA | 1.32 | | 6.3 | | 6 | | -1477 | -4026 | -9242 |
| mill residue pellets | 65 | 2900 | NA | 1.32 | | 5.3 | | 24 | | -89 | -1482 | -4442 |
| mill residue pellets | 65 | 1040 | NA | 1.32 | | 6.3 | | 10 | | -1146 | -3530 | -8432 |
| mill residue pellets | 90 | 2900 | NA | 2.63 | | -1 | | 12 | | -614 | -2404 | -6436 |
| mill residue pellets | 90 | 1040 | NA | 2.63 | | 0 | | 3 | | -1383 | -3914 | -9360 |
| mill residue pellets | 75 | 2900 | NA | 2.63 | | -1 | | 25 | | -12 | -1434 | -4821 |
| mill residue pellets | 75 | 1040 | NA | 2.63 | | 0 | | 10 | | -934 | -3246 | -8331 |
| mill residue pellets | 65 | 2900 | NA | 2.63 | | -1 | | 40 | | 544 | -539 | -3331 |
| mill residue pellets | 65 | 1040 | NA | 2.63 | | 0 | | 17 | | -520 | -2629 | -7381 |
| mill residue pellets | 90 | 2900 | NA | 2.63 | | 5.3 | | 8 | | -1035 | -3012 | -7092 |
| mill residue pellets | 90 | 1040 | NA | 2.63 | | 6.3 | | 2 | | -1799 | -4491 | -9973 |
| mill residue pellets | 75 | 2900 | NA | 2.63 | | 5.3 | | 16 | | -517 | -2164 | -5609 |
| mill residue pellets | 75 | 1040 | NA | 2.63 | | 6.3 | | 6 | | -1433 | -3939 | -9067 |
| mill residue pellets | 65 | 2900 | NA | 2.63 | | 5.3 | | 25 | | -39 | -1381 | -4240 |
| mill residue pellets | 65 | 1040 | NA | 2.63 | | 6.3 | | 10 | | -1095 | -3429 | -8229 |

\* Harvest age only applies to scenarios that utilize local willow chips for bioenergy, as it refers to the stand age that the willow is harvested. MAT only applies to scenarios that utilize residue pellets, as it refers to the temperature that pellets will decompose at in the landfill in the fossil fuel scenario. MAT increased by 6.3˚C (to 5.3 ˚C OR 6.3 ˚C) to simulate climate change.