

SAMPLE

Comparison of Fuel/Electricity and CO2 Emissions* Residential RIDING Mower Battery-Electric vs Gas/Diesel

Annual Fuel Cost Savings

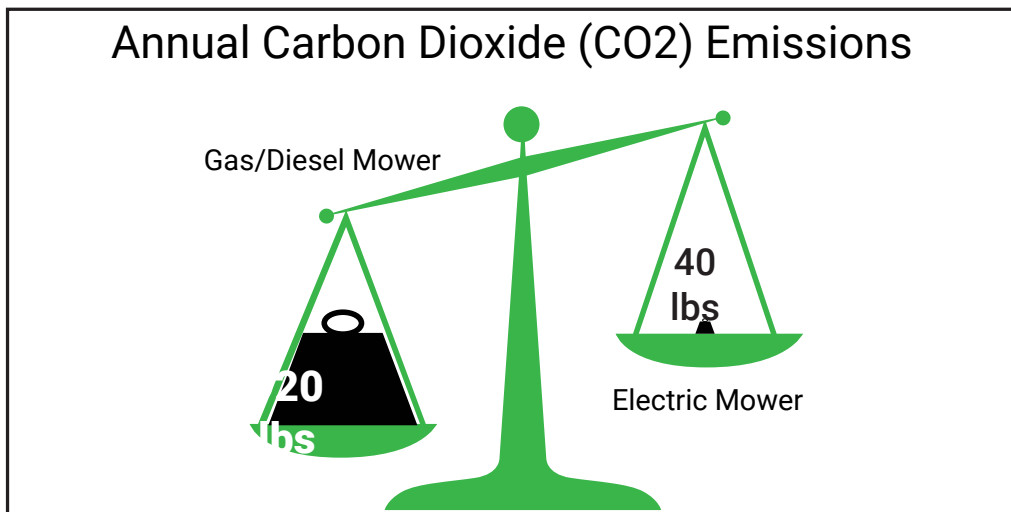
\$106

Annual CO2 Savings

880 lbs

*Using the calculations and Assumptions below

To generate a comparison of CO2 and fuel savings for a specific mower and situation, use the Excel spreadsheet found at <https://mowelectric.org/savings-co2-impact-calculators>



Assumptions

| | |
|--|--------|
| Operating hours per day | 2 |
| Operating days per week | 1 |
| Operating weeks per year | 23 |
| Fuel cost (per gallon) | \$2.75 |
| Deck width (inches) | 42 |
| Average mowing speed (mph) | 6 |
| Fuel consumption per hour (gal) | .6 |
| Electricity consumption per hour (kWh) | 2.8 |

Notes & Assumptions

This PDF Sample Comparison is Based on Data for Residential RIDING Mowers: Because of the significant differences in the number of annual operating hours, the calculation used for this SAMPLE compared the CO₂ Emissions and Fuel Costs for RESIDENTIAL RIDING mowers, versus COMMERCIAL riding mowers. However, an interactive PDF that allows for the comparison of the CO₂ emissions and fuel costs for residential OR commercial riding mowers can be found at <https://mowelectric.org/savings-co2-impact-calculators/>. An interactive Excel spreadsheet that allows for an even more detailed comparison of these CO₂ emissions and fuel costs can also be found at <https://mowelectric.org/savings-co2-impact-calculators/>.

Residential WALK-BEHIND Mowers: Small residential electric walk-behind mowers offer significant advantages over gas mowers, including reduced noise, zero-tailpipe emissions, no handling of gas, no engine servicing/repair, etc. And while the COMBINED CO₂ emissions of many walk-behind mowers operating in a particular region is significant, the calculation used for this SAMPLE also did NOT include the emissions from residential walk-behind mowers.

Fuel Consumption Rates: Fuel consumption rates for gas-powered lawn mowers are typically not published by the manufacturers. However, based on anecdotal observations, the calculation used for this SAMPLE assumed 1 gal/hr for gas-powered commercial RIDING mowers (e.g. 24 to 36 hp) and .60 gal/hr for gas-powered residential RIDING mowers (e.g. 10 to 20 hp).

Electricity Use for Battery-Electric Riding Mowers: The amount of electricity consumed by electric riding mowers will vary by make, model, and operating conditions. However, the calculation used for this SAMPLE assumed the battery-electric riding mower uses approximately 2.8 kW per operating hour.

Electricity Costs: Electricity costs vary by utility and region. Utilities also offer variable rates for different types of end-users (e.g. commercial, institutional, residential, etc.), as well as peak and off-peak hours. The calculation used for this SAMPLE used a typical rate for Vermont in 2021.

CO₂ Emissions Associated with Fossil Fuel: According to EPA data, approximately 19.64 lb of CO₂ is emitted per gallon of GASOLINE burned, and 22.4 lb of CO₂ is emitted per gallon of DIESEL fuel burned. For simplicity, the calculation used for this SAMPLE used an average of 20 lb for both residential and commercial mowers with internal combustion engines. The total annual CO₂ emissions for gas-powered mowers are based on the total annual operating hours.

CO₂ Emissions Associated with Electricity: The CO₂ emissions associated with electricity is largely determined by the source of that electricity. For example, renewable sources such as wind, solar and hydro have minimal CO₂ emissions compared to the electricity generated by burning fossil fuels. The Vermont Agency of Natural Resources (ANR) recently estimated that each kWh of electricity consumed in Vermont is associated with the production of approximately 0.26 lb of CO₂, which is one of the lowest CO₂ emissions ratings in the US. Since the Mow Electric! Campaign is being rolled out in Vermont, the calculation used for this SAMPLE used a value of 0.26 lb of CO₂ generated per kWh consumed. The total annual CO₂ emissions for battery-electric mowers are based on the total annual operating hours.

"Life-Cycle" Cost Savings: Beyond the lower emissions and the cost of electricity compared to the emissions and cost of gas or diesel, battery-electric mowers also provide significant cost savings over their usable life due to their considerably lower maintenance and repair costs. The "Life-Cycle" cost savings from specific mowers can be calculated using the interactive Excel spreadsheet "Life-Cycle Cost Savings Comparison" calculator at this link <https://mowelectric.org/savings-co2-impact-calculators/>.