

This table shows the carbon dioxide emissions of a gas storage water heater and a heat pump water heater. It takes into account natural gas leakage emissions from gas water heaters and refrigerant leakage from heat pump water heaters and shows the estimated CO2 savings.

User Inputs	
Baseline Gas Tank Water Heater	
269	Annual therms per EnergyGuide
1.08%	Upstream Leakage (1.08% default)
53.11	Gas CO2e rate for combustion (kg CO2e/Mbtu)
13.21	Fugitive Natural Gas Emissions Rate (kg CO2e/MMBtu)
1,433	Annual CO2e (kg)
Heat Pump Water Heater	
1,219	kWh per EnergyGuide
360	Long-run marginal emissions rate (kg CO2e/MWh)
12	Lifespan (years) to annualize end-of-life leakage
0.65	Refrigerant charge (kg of R134a)
2%	Annual operational leakage rate
80%	End-of-life leakage rate (annualized for 1-year comparison estimate)
519	Annual CO2e (kg)
Savings	
913	CO2e Savings (kg)
2,009	CO2e Savings (lb)
64%	CO2e Savings (%)

If you have any questions, please [email Joe Wachunas](#), NBI Project Manager.