

GHG Emission Reductions Factors

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Methodology Notes

Prior to 2022, emissions factors were established by the Massachusetts Department of Environmental Protection. Starting in 2022, following passage of “An Act Creating A Next Generation Roadmap for Massachusetts Climate Policy,” St. 2021, c. 8, the greenhouse gas (“GHG”) emissions reductions goals and emissions factors are now established by the Massachusetts Secretary of Energy and Environmental Affairs. GHG goals for the current Three-Year Plan are detailed in a letter from the Secretary on "Greenhouse Gas Emissions Reduction Goal for Mass Save," July 15, 2021¹ and are based on cumulative annual emissions reductions in 2030. Therefore, qualifying measures must have a measure-life extending to at least 2030. A measure not projected to last until 2030 will not count towards these GHG emissions reduction targets, even if it will reduce GHG emissions in the short term. For example, weatherization counts toward the GHG emissions reduction target, whereas some lighting measures do not.

Table 1: CO2e Conversion Factors – 2022-2024

Input	Unit	2022 - 2024
CO2e, electricity, 2025	Metric Ton/MWh	0.18690
CO2e, electricity, 2030	Metric Ton/MWh	0.10650
CO2e, natural gas	Metric Ton/MMBtu	0.05307
CO2e, oil	Metric Ton/MMBtu	0.07879
CO2e, propane	Metric Ton/MMBtu	0.06307
CO2e, gasoline	Metric Ton/MMBtu	0.07130
CO2e, diesel	Metric Ton/MMBtu	0.07316

Note: Electricity factors represent the emissions that grid generation would not emit for each MWh not needed because energy efficiency reduced the load.

Source: Letter from the Secretary, "Greenhouse Gas Emissions Reduction Goal for Mass Save," July 15, 2021. Gasoline & Diesel: Sourced from the same EIA table cited in the 15 July 2021 letter from the Secretary.

¹ <https://www.mass.gov/doc/greenhouse-gas-emissions-reduction-goal-for-mass-save/download>

Table 2: Lifetime CO2e Electricity Factors -- 2022-2053

End Year	CO2e (electricity) short tons CO2e/MWh			
	Summer Peak	Summer Off-Peak	Winter Peak	Winter Off-Peak
2022	0.263570	0.233990	0.254538	0.241635
2023	0.261861	0.234411	0.254329	0.240396
2024	0.246417	0.215178	0.235460	0.218658
2025	0.237305	0.204592	0.221092	0.202377
2026	0.229364	0.195455	0.211997	0.192005
2027	0.223178	0.188672	0.203530	0.183101
2028	0.217508	0.183379	0.196044	0.175545
2029	0.212977	0.179664	0.190018	0.169630
2030	0.209292	0.175980	0.184242	0.164059
2031	0.205196	0.172233	0.178697	0.158823
2032	0.201461	0.169145	0.173936	0.154422
2033	0.197542	0.166038	0.169301	0.150381
2034	0.194151	0.163498	0.164588	0.146265
2035	0.191137	0.161167	0.160605	0.142905
2036	0.188144	0.158794	0.157054	0.139903
2037	0.185517	0.156978	0.153582	0.136973
2038	0.182834	0.155146	0.150782	0.134803
2039	0.180614	0.153787	0.148051	0.132641
2040	0.178572	0.152428	0.145211	0.130420
2041	0.176783	0.151287	0.142664	0.128323
2042	0.174832	0.150172	0.140331	0.126551
2043	0.173041	0.149333	0.138175	0.124912
2044	0.171335	0.148514	0.136210	0.123605
2045	0.169816	0.147751	0.134268	0.122253
2046	0.168387	0.147033	0.132456	0.120994
2047	0.167035	0.146354	0.130760	0.119815
2048	0.165753	0.145708	0.129167	0.118707
2049	0.164531	0.145093	0.127665	0.117663
2050	0.163364	0.144504	0.126244	0.116677
2051	0.162275	0.143954	0.124918	0.115755
2052	0.161255	0.143439	0.123678	0.114894
2053	0.160300	0.142957	0.122515	0.114086

Table 3: CO2e Conversion Factors – 2010-2021

Year	Fuel	CO2e (Short Tons)
2021	Electric (MWh)	0.494
2021	Gas (Therm)	0.00585
2021	Oil (MMBTU)	0.080693
2021	Propane (MMBTU)	0.0696
2020	Electric (MWh)	0.494
2020	Gas (Therm)	0.00585
2020	Oil (MMBTU)	0.080693
2020	Propane (MMBTU)	0.0696
2019	Electric (MWh)	0.494
2019	Gas (Therm)	0.00585
2019	Oil (MMBTU)	0.080693
2019	Propane (MMBTU)	0.0696
2018	Electric (MWh)	0.376458
2018	Gas (Therm)	0.00585
2018	Oil (MMBTU)	0.080693
2018	Propane (MMBTU)	0.0696
2017	Electric (MWh)	0.376458
2017	Gas (Therm)	0.00585
2017	Oil (MMBTU)	0.080693
2017	Propane (MMBTU)	0.0696
2016	Electric (MWh)	0.376458
2016	Gas (Therm)	0.00585
2016	Oil (MMBTU)	0.080693
2016	Propane (MMBTU)	0.0696
2015	Electric (MWh)	0.396076
2015	Gas (Therm)	0.00585
2015	Oil (MMBTU)	0.080693
2015	Propane (MMBTU)	0.0696
2014	Electric (MWh)	0.384942
2014	Gas (Therm)	0.00585
2014	Oil (MMBTU)	0.080693
2014	Propane (MMBTU)	0.0696
2013	Electric (MWh)	0.387063
2013	Gas (Therm)	0.00585

Year	Fuel	CO2e (Short Tons)
2013	Oil (MMBTU)	0.080693
2013	Propane (MMBTU)	0.0696
2012	Electric (MWh)	0.38123
2012	Gas (Therm)	0.00585
2012	Oil (MMBTU)	0.080693
2012	Propane (MMBTU)	0.0696
2011	Electric (MWh)	0.413574
2011	Gas (Therm)	0.00585
2011	Oil (MMBTU)	0.080693
2011	Propane (MMBTU)	0.0696
2010	Electric (MWh)	0.439555
2010	Gas (Therm)	0.00585
2010	Oil (MMBTU)	0.080693
2010	Propane (MMBTU)	0.0696

Source: Massachusetts Department of Environmental Protection.