Public Review Draft

Proposed Addendum r to Standard 189.1-2023

Standard for the Design of High-Performance Green Buildings

Except Low-Rise Residential Buildings

First Public Review (September 2025)
(Draft Shows Proposed Changes to Current Standard)

This draft has been recommended for public review by the responsible project committee. To submit a comment on this proposed standard, go to the ASHRAE website at www.ashrae.org/standards-research--technology/public-review-drafts and access the online comment database. The draft is subject to modification until it is approved for publication by the Board of Directors and ANSI. Until this time, the current edition of the standard (as modified by any published addenda on the ASHRAE website) remains in effect. The current edition of any standard may be purchased from the ASHRAE Online Store at www.ashrae.org/bookstore or by calling 404-636-8400 or 1-800-727-4723 (for orders in the U.S. or Canada).

This standard is under continuous maintenance. To propose a change to the current standard, use the change submittal form available on the ASHRAE website, www.ashrae.org.

The appearance of any technical data or editorial material in this public review document does not constitute endorsement, warranty, or guaranty by ASHRAE of any product, service, process, procedure, or design, and ASHRAE expressly disclaims such.

ASHRAE, 180 Technology Pkwy NW, Peachtree Corners, GA 30092

(This foreword is not part of this standard. It is merely informative and does not contain requirements necessary for conformance to the standard. It has not been processed according to the ANSI requirements for a standard and may contain material that has not been subject to public review or a consensus process. Unresolved objectors on informative material are not offered the right to appeal at ASHRAE or ANSI.)

Foreword

This addendum updates the annual-average carbon emission rates in Table 7.6.2.1 of Standard 189.1-2023 Addendum h.[1] The update is based on data available from US DOE, US EPA, DOE/NETL, and NREL at the time of publication. Documentation of these data sources and the methodology used is provided in an update to Informative Appendix J, which is issued concurrently with this addendum as Addendum s in an Advisory Public Review.

[Note to Reviewers: This addendum makes proposed changes to the current standard. These changes are indicated in the text by underlining (for additions) and ~~strikethrough~~ (for deletions) except where the reviewer instructions specifically describe some other means of showing the changes. Highlights are added in the tables to assist with the new footnotes. Only these changes to the current standard are open for review and comment at this time. Additional material is provided for context only and is not open for comment except as it relates to the proposed changes.]

Addendum r to 189.1-2023

Modify Section 7.6.2.1 and Table 7.6.2.1 and Insert new Figure 7.6.2.1(b)

7.6.2.1 Annual Average GHG Emissions. To determine the annual CO_2e for each energy source in the baseline building and proposed design (GHG_{UBB}, GHG_{RBB}, $GHG_{proposed}$), the energy consumption for each fuel shall be multiplied by the CO_2e emission factors from Table 7.6.2.1. U.S. locations shall use values for eGRID subregions from Table 7.6.2.1 and Figure 7.6.2.1(a) for electricity and Figure 7.6.2.1(b) for natural gas. Locations outside the U.S. shall use the value for "All other electricity" and "Other" for natural gas or locally derived values.
(***Informative Note:*** The values in Table 7.6.2.1 are based on eGRID subregions and delivery of electricity and fossil fuels for U.S. locations. ~~Some~~ ~~jurisdictions~~ Jurisdictions may use locally derived values based on procedures in Informative Appendix I.)

Table 7.6.2.1 CO_2e Emissions Factors

	CO_2e Emissions (kg/MWh)		
	Combustion	**Pre-Combustion**	**Total**
Electricity[1]			
AKGD - ASCC Alaska Grid	521	122	643
AKMS - ASCC Miscellaneous	263	80	343

[1] https://www.ashrae.org/file%20library/technical%20resources/standards%20and%20guidelines/standards%20addenda/189_1_2023_h_20250530.pdf

		CO_2e Emissions (kg/MWh)		
		Combustion	**Pre-Combustion**	**Total**
AZNM - WECC Southwest		358	92	450
CAMX - WECC California		235	74	309
ERCT - ERCOT All		481	123	605
FRCC - FRCC All		407	129	536
HIMS - HICC Miscellaneous		668	204	872
HIOA - HICC Oahu		815	251	1067
MROE - MRO East		659	128	787
MROW - MRO West		506	87	592
NEWE - NPCC New England		309	65	373
NWPP - WECC Northwest		320	72	392
NYCW - NPCC NYC/Westchester		444	95	539
NYLI - NPCC Long Island		453	97	549
NYUP - NPCC Upstate NY		126	27	153
PRMS - Puerto Rico Miscellaneous		722	188	911
RFCE - RFC East		305	62	367
RFCM - RFC Michigan		549	118	667
RFCW - RFC West		472	97	569
RMPA - WECC Rockies		517	98	615
SPNO - SPP North		577	100	678
SPSO - SPP South		485	117	602
SRMV - SERC Mississippi Valley		403	120	523
SRMW - SERC Midwest		649	110	759
SRSO - SERC South		449	118	567
SRTV - SERC Tennessee Valley		455	95	550
SRVC - SERC Virginia/Carolina		319	84	403
All other electricity[2]		371	78	448
Fossil Fuels Delivered to Buildings				
Natural gas	Midwest	184	59	243
	Northeast	184	44	228
	Pacific	184	69	253
	Rocky Mtn.	184	68	252
	Southeast	184	70	254
	Southwest	184	65	249
	Other[2]	184	52	236
LPG or propane		229	66	295
Fuel oil (residual)		265	70	334
Fuel oil (distillate)		255	69	324
Coal		332	51	382
Gasoline		255	82	337
Other fuels not specified in this table		332	51	382
Thermal Energy				
Chilled water		89	19	107
Steam		309	88	397
Hot Water		292	83	375

Informative Notes:

1. The electricity emissions rates are based on the residual generation mix
2. This is the US average
3. The CO_2e emission factors presented in this table are based on US data and a 20-year time-horizon for methane (CH_4) and nitrous oxide (N_2O). When comparing or combining CO_2e values, care should be taken to ensure that a consistent time-horizon is used for all estimates of CO_2e. ~~Informative Appendix I, Table I-10~~ Table J11 in Informative Appendix J has emission rates based on a 100-year time-horizon for use when the use of 100-year time horizons is necessary.

-	~~CO_{2e} Emissions kg/MWh~~		
	~~Combustion~~	~~Precombustion~~	~~Total~~
~~Fossil fuels delivered to buildings~~	-		
~~Natural gas~~	~~184~~	~~93~~	~~277~~
~~Liquefied petroleum gas or propane~~	~~229~~	~~66~~	~~295~~
~~Fuel oil (residual)~~	~~265~~	~~70~~	~~334~~
~~Fuel oil (distillate)~~	~~255~~	~~69~~	~~324~~
~~Coal~~	~~332~~	~~51~~	~~382~~
~~Gasoline~~	~~255~~	~~82~~	~~337~~
~~Other fuels not specified in this table~~	~~332~~	~~51~~	~~382~~
~~Electricity~~			
~~AKGD–ASCC Alaska Grid~~	~~514~~	~~159~~	~~673~~
~~AKMS–ASCC miscellaneous~~	~~289~~	~~93~~	~~383~~
~~AZNM–WECC Southwest~~	~~444~~	~~121~~	~~565~~
~~CAMX–WECC California~~	~~255~~	~~88~~	~~343~~
~~ERCT–ERCOT all~~	~~431~~	~~126~~	~~558~~
~~FRCC–FRCC all~~	~~442~~	~~155~~	~~596~~
~~HIMS–HICC miscellaneous~~	~~681~~	~~211~~	~~892~~
~~HIOA–HICC Oahu~~	~~895~~	~~233~~	~~1128~~
~~MROE–MRO East~~	~~770~~	~~150~~	~~920~~
~~MROW–MRO West~~	~~534~~	~~94~~	~~628~~
~~NEWE–NPCC New England~~	~~287~~	~~96~~	~~383~~
~~NWPP–WECC Northwest~~	~~349~~	~~76~~	~~426~~
~~NYCW–NPCC NYC/Westchester~~	~~269~~	~~110~~	~~379~~
~~NYLI–NPCC Long Island~~	~~481~~	~~169~~	~~650~~
~~NYUP–NPCC Upstate NY~~	~~132~~	~~48~~	~~180~~
~~PRMS–Puerto Rico Miscellaneous~~	~~731~~	~~214~~	~~944~~
~~RFCE–RFC East~~	~~350~~	~~106~~	~~456~~
~~RFCM–RFC Michigan~~	~~594~~	~~133~~	~~727~~
~~RFCW–RFC West~~	~~532~~	~~113~~	~~645~~
~~RMPA–WECC Rockies~~	~~580~~	~~120~~	~~699~~
~~SPNO–SPP North~~	~~515~~	~~93~~	~~608~~
~~SPSO–SPP South~~	~~460~~	~~123~~	~~583~~
~~SRMV–SERC Mississippi Valley~~	~~418~~	~~137~~	~~555~~
~~SRMW–SERC Midwest~~	~~779~~	~~134~~	~~913~~
~~SRSO–SERC South~~	~~496~~	~~133~~	~~629~~
~~SRTV–SERC Tennessee Valley~~	~~473~~	~~104~~	~~577~~
~~SRVC–SERC Virginia/Carolina~~	~~360~~	~~97~~	~~456~~
~~All other electricity~~	~~436~~	~~111~~	~~547~~

~~Thermal Energy~~	-	-	-
~~Chilled water~~	~~104~~	~~26~~	~~131~~
~~Steam~~	~~309~~	~~157~~	~~466~~
~~Hot water~~	~~292~~	~~148~~	~~440~~

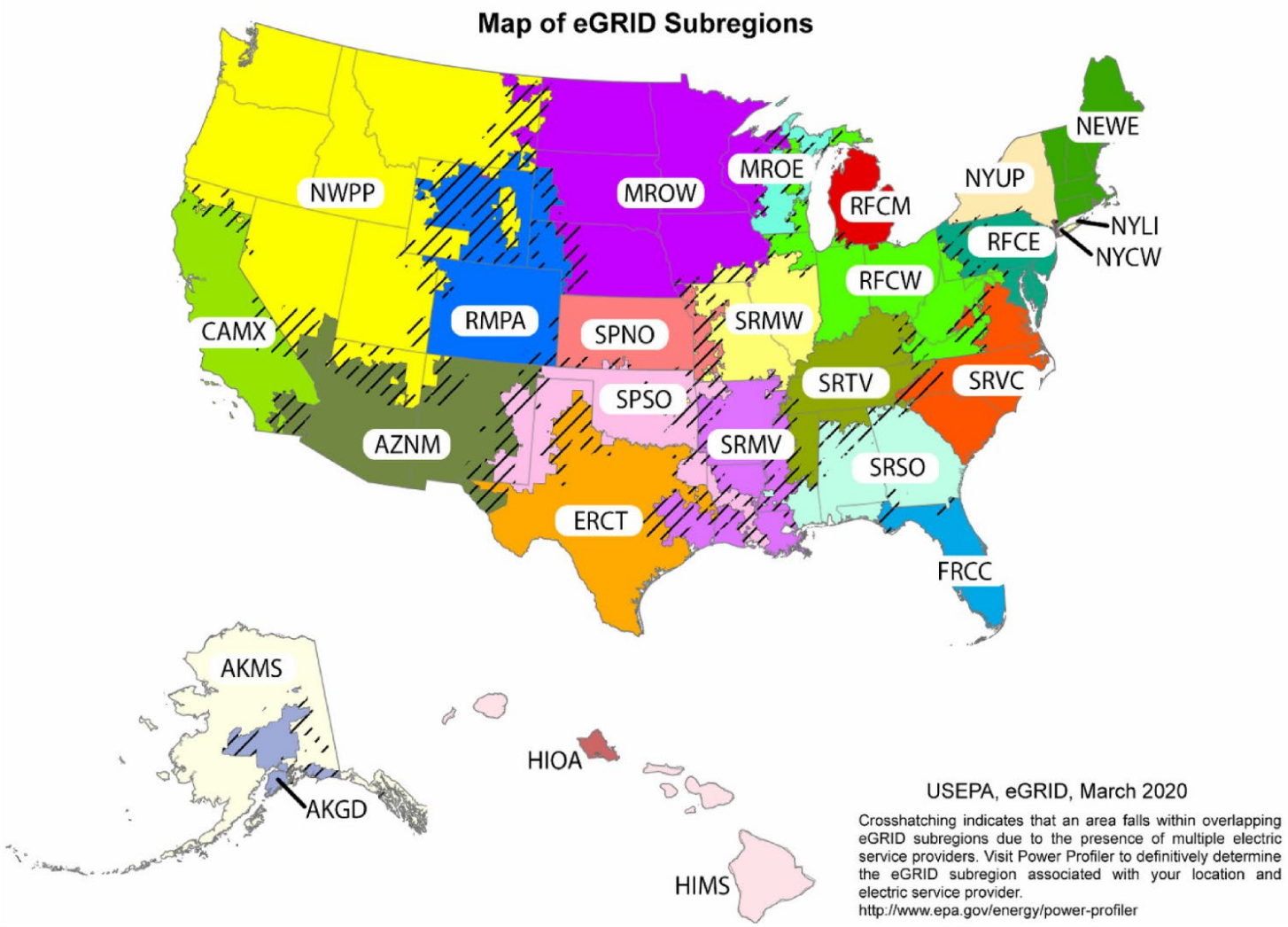

Figure 7.6.2.1(a) Map of eGRID subregions.
Crosshatching indicates that an area falls within overlapping eGRID subregions due to the presence of multiple electric service providers. Power Profiler can be used to definitively determine the eGRID subregion associated with a specific location and electric service provider (www.epa.gov/energy/power-profile

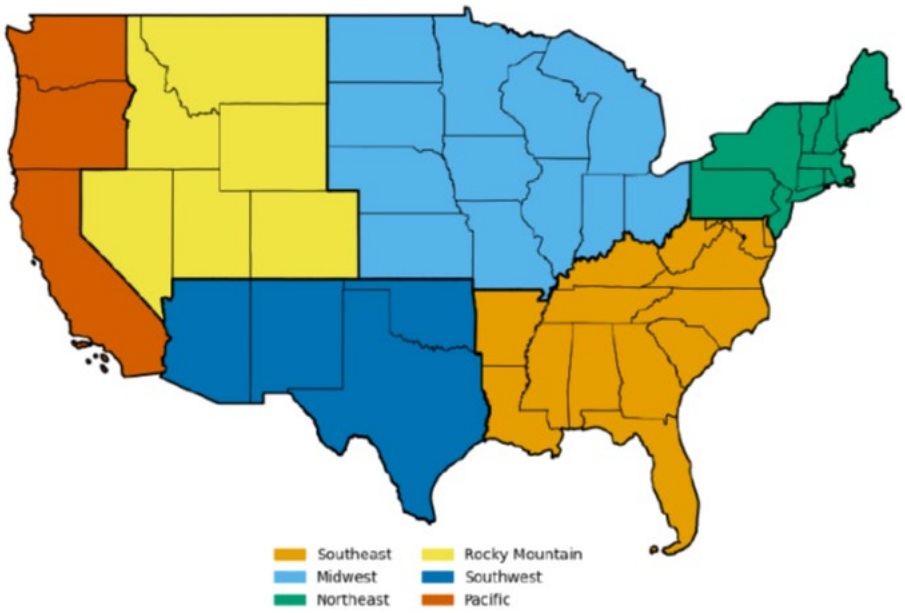

Figure 7.6.2.1(b) Map of Six Regions for Natural Gas Delivery.
Exhibit 4.12 in *Life Cycle Analysis of Natural Gas Extraction and Power Generation: U.S. 2020 Emissions Profile,* DOE/NETL-2024/4862, December 2024.