

HIGG FEM 2026

FEM 2026 Energy Source Changes

Version fem2026-v1.4.0 · 11 September 2026

A summary of the changes in the in-assessment energy, emissions, water and waste calculations between FEM 2025 and FEM 2026.

Contents

Summary 3

Changes 3

Summary

FEM 2026 makes no changes to the constants behind the in-assessment energy and emissions calculations. Every energy density, fuel emission factor, refrigerant global warming potential and country grid emission factor is carried over from FEM 2025 unchanged, and the MJ and kg CO₂e calculation logic is the same. FEM 2025 and FEM 2026 energy and emissions values are therefore directly comparable, unlike the FEM 2024 to FEM 2025 transition documented in the FEM 2025 Energy Source Changes.

1. **Country grid emission factors are not updated.** FEM 2026 uses the same IEA-licensed factors as FEM 2025 (2022 data, or provisional 2023 data where IEA published it). Should an update be released during the FEM 2026 cycle it will be documented here and in the release notes. The specific values may not be shared under IEA's licensing terms.
2. **Fuel emission factors and energy densities are identical** to FEM 2025 for every source, including the sub-sources selectable in the steam, purchased renewables, EAC and biomass mix tables.
3. **Refrigerants** are the same 127 refrigerants with the same IPCC AR6 global warming potentials.
4. **Calculation model:** identical. The changes below add a reporting unit and validation or applicability helpers; none alters the value of any existing total for the same answers.

Changes

Therms accepted as an energy unit

`therm` (Therms) is added to the unit list of the facility energy sources and converts at 105.4804 MJ per therm. It is an energy unit, so it applies to every facility source that accepts energy units and needs no density. Vehicle sources do not gain the unit.

Validation of EACs against purchased renewables

The new validation `enpurchacrenewequalcheck` fires when a facility reports Energy Attribute Certificates (`ensourcepurchac` is `yes`) and the retired quantity converted to MJ (`eac_mj`) is exactly equal to its total purchased renewables (`ensourcepurchrenewtotal`). Exact equality is the usual signature of bundled certificates being reported twice, once inside a renewable contract and again as standalone EACs. The facility is asked to remove the duplicated amount before posting. The validation reads existing calculations and changes no total.

Onsite renewable electricity applicability

`hasOnsiteElectricRenewables` is true when `ensourcefacility` includes onsite wind, solar photovoltaic or mini/micro-hydro. It drives the applicability of the onsite generation follow-up questions and is available to data consumers as a convenient flag; it has no effect on totals.

Biomass mix emission factors in FDM

FEM 2025 applied the reported biomass source mix to the biomass emission factor for FEM only; FDM 2025 always used the default 0.1139 kg CO₂e per MJ. From FDM 2026 the mix questions are asked in FDM as well and the reported mix is applied exactly as in FEM.

Helper calculation retired

`ghg_emissions_increase_from_2024_model_percent`, the FEM 2025 helper that quantified the effect of the FEM 2025 emission factor model changes on each FEM, is not carried into FEM 2026 because no comparable model change was made.

Waste stream display text

The answer options for three waste streams are reworded: `slagnh` is now "Slag (Non-Hazardous) including boiler ash", `slagh` is "Slag (Hazardous) including non-coal boiler ash" and `expired` is "Expired/unused/used chemicals (solvents, reactants, etc.)" (waste oil is now reported under the oil and grease streams). The `ref_ids` and the waste totals are unchanged.

Water, wastewater and waste totals

The water, wastewater and waste calculations documented in the FEM 2026 Water and Waste Calculations and in the wastewater section of the FEM 2026 Energy and Global Warming Calculations are unchanged from FEM 2025.