

Abstract

Three quite different scales for measuring the amount of primary energy the world uses annually are currently in use. The Engineering Information Administration, the International Energy Agency and the Working Group III (WG III) of the Intergovernmental Panel on Climate Change (IPCC), each has its own scale for measuring and recording primary energy. The purpose of this paper is to clarify the relationship between these scales so the reader can avoid introducing errors into work involving primary energy. An example is presented to show how mixing of these scales, and not identifying them, constitutes an error in 16 of the 40 energy scenarios in the Special Report on Emissions Scenarios prepared by WG III of the IPCC. These three scales arise mainly because legitimate differences of opinion about how to measure and record primary energy, and especially for generating electricity from nuclear and renewable energies. All three scales use “Joules” as the unit of energy measurements, but these “Joules” are arbitrary units and are not the precise Joule as defined and used in physics and chemistry.

Keywords: Primary; Energy; Joule; EIA; IEA