A Universal Scheme for Modeling Energy Systems

For the modeling of energy systems a language is needed that is conceptually well-defined and gives a graphical representation. The most prominent approach, the extended Reference Energy System (eRES) suffers from shortcomings in the conceptual definition. Therefore, the alternative language Universal Scheme for modeling Energy Systems (USES) is being developed. The advantage of USES is its clearly defined concepts and their relationships between each other. USES is minimal in respect to its concepts meaning no unnecessary exceptions are introduced. A complete formal description of the syntax of USES taking advantage of both, graph theory and the UML class diagram language is created in this paper while also showing its usage on a real-world example.

Stichworte: Modeling Energy Systems, Universal Scheme, USES, Formal specification, Meta model

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