Electricity load level detail in computational general equilibrium - Part I - Data and calibration

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Abstract— The growing importance of the electricity sector in many economies, and of energy and environmental policies, requires a detailed consideration of these sectors and policies in computable general equilibrium (CGE) models, including both technological and temporal aspects. This paper presents the first attempt to our knowledge at building temporal disaggregation into a CGE model, while keeping technological detail. This contribution is coupled with some methodological improvements over existing technology-rich CGE models. The model is able to account for the indirect effects characteristic of CGE models while also mimicking the detailed behavior of the electricity operation and investment present before only in bottom-up detailed models. The present paper is the first of two parts and focuses on the bottom-up top-down calibration methodology needed to build such a model. Part II will present the CGE model applied to the evaluation of an energy policy with temporal consequences.

Index Terms— Computable general equilibrium (CGE); Calibration