

Electricity load level detail in computational general equilibrium - part II - welfare impacts of a demand response program

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Abstract— Demand Response (DR) programs send time-based signals to electricity consumers so that they may shift or reduce their loads to better adjust to the system requirements, thus creating interesting benefits for power systems. However, the assessment of these benefits is quite challenging, since it requires combining features from bottom-up and computable general equilibrium (CGE) models. This paper assesses the impacts of a DR program in Spain using a CGE model which includes both technological and temporal disaggregation. 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 available before only in bottom-up detailed models. Our results show clearly the advantages of using this approach for this type of policies.

Index Terms— Computable general equilibrium (CGE); Electricity demand response

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