**Energy, expenditure, and consumption aspects of rebound, Part II: Applications of the framework**

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**Executive summary**

Widespread implementation of energy efficiency is a key greenhouse gas emissions mitigation measure, but rebound can “take back” energy savings. However, the absence of solid analytical foundations hinders empirical determination of the size of rebound. In Part I, we developed foundations of a rigorous analytical framework that is approachable for both energy analysts and economists. In this paper (Part II of two), we develop energy, expenditure, and consumption planes, a novel, mutually consistent, and numerically precise way to visualize and illustrate rebound. Further, we operationalize the macro factor for macroeconomic rebound. Using the framework and rebound planes, we calculate and show total rebound for two examples: energy efficiency upgrades of a car (56.2%) and an electric lamp (67.0%). We calculate rebound for a producer-sided extension to the framework, namely an energy price rebound effect. Finally, we provide information about new open source software tools for calculating magnitudes and visualizing rebound effects using the framework.

From the application of the framework in Part II, we draw two conclusions. First, the car and lamp examples show that the framework enables quantification of rebound magnitudes at microeconomic and macroeconomic levels, including energy, expenditure, and consumption aspects of direct and indirect rebound for emplacement, substitution, income, and macro effects. Second, the examples show that magnitudes of all rebound effects vary with the type of EEU performed. Thus, values for rebound effects for one EEU should never be assumed to apply to a different EEU, and it is important to calculate the magnitude of all rebound effects for each EEU in each economy.

**Keywords** Energy efficiency, Energy rebound, Energy services, Microeconomic rebound, Substitution and income effects, Macroeconomic rebound

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