Many electric utilities in the United States have replaced flat pricing schedules with increasing block prices (IBPs) in an effort to decrease aggregate energy use without imposing costs on low-income households. IBPs are step functions where the price per kilowatt-hour increases as a household uses more electricity. It is not clear, however, in theory or in practice, whether IBPs decrease aggregate energy use and protect low-income households relative to a revenue-neutral flat rate.

I use detailed monthly billing records combined with demographic data for 11,745 California households and price differences over time across utility climate zones to estimate price elasticities of energy demand by income.

I find that that wealthier households are more price elastic. I use these elasticities to show that IBPs increase total electricity use relative to a revenue-neutral flat price, therefore failing to achieve their goal of conservation. Finally, I find that IBPs decrease electricity bills for low-income households while pushing costs to high-income households.

In this paper, I demonstrate that if households respond to average prices, IBPs increase total electricity consumption in California, which is contrary to their stated goal. This outcome depends on the relative price elasticities of households along the pricing schedule. I also find that IBPs redistribute income relative to a flat pricing schedule. It is important to understand whether IBPs meet their dual goals, because more and more utilities are considering introducing them. While IBPs are becoming increasingly common in electricity markets, nonlinear prices are pervasive. Examples of other nonlinear prices include increasing marginal tax rates and water rates and decreasing nonlinear rates for cellphone data plans. Although these pricing policies often have salutary policy goals, the results presented in this paper demonstrate that their effectiveness in meeting those goals depends on how, or whether, consumers respond to them.