Executive Summary: Is the Grass Greener on the Other Side?

Over the past two decades, a range of energy efficient consumer goods (from light bulbs to major appliances) have become a growing part of the consumer landscape, offering, at least in principle, a way for consumers to reduce both their energy consumption and its impact on the environment. By some estimates the effects could be substantial. Despite this, energy consumption data across both industrial and residential use indicate that there is a persistent and substantial gap between actual energy consumption and the lowest achievable level of energy consumption based on currently available technologies.

Several hypotheses have been advanced and explored to explain this gap, including widely varying individual discount rates; consumer misconceptions of energy costs; differences in incentives between renters and owners; and the magnitude of retro-fit costs. The extant studies assume, however, that consumers have equal access to energy efficient goods. But suppose that isn't the case; could inequality of access help to account for the observed inefficiency of adoption patterns? Surprisingly, there appear to have been no efforts to date to investigate that question.

As a first step in addressing that possibility, I consider theoretical explanations in terms of both demand and supply that might help to explain differential access to goods across neighborhoods. In so doing I document empirical regularities in the relationship between access to energy-efficient goods and a number of community-level socio-economic characteristics. The study is carried out using products found in every household: light bulbs, consumer electronics, and household appliances. "ENERGYSTAR®" certification conferred by the U.S. Department of Energy and the Environmental Protection Agency is used to capture the set of energy and efficient goods in each product group. "Access" is measured at the zip code level in two different ways. The first captures store location, given by proximity to the nearest ENERGYSTAR® registered retail partner carrying the specific product group, where distance is estimated relative to the zip code center. The second is a measure that captures the incremental distance, beyond the nearest store of any type that carries a given product, that a consumer must travel to reach a registered ENERGYSTAR® retail provider that carries the same product.

For approximately 28,000 (out of a total of some 29,706) zip codes, I use ENERGYSTAR® data from October 2013 and find robust evidence that households located in

lower income neighborhoods fare more poorly in terms of access to ENERGYSTAR® certified goods than households in wealthier neighborhoods. For example, after controlling for pertinent zip code level physical, socio-economic, and demographic characteristics, and then being ranked by median income, I find households located in zip codes at the 25th percentile must travel on average 2.1 miles further to reach a store carrying ENERGYSTAR® electronics than households located at the 75th percentile. As households located in lower income neighborhoods have reduced access to transportation and are less mobile, that 2.1 mile distance may be sufficient to mean the difference between consuming an energy efficient product and not.

Whether the additional distances that households in lower income areas must travel are sufficient to deter them from consuming energy efficient goods is an empirical question beyond the scope of this paper, but the possibility does raise questions worthy of serious consideration in the development of effective and equitable energy and environmental policy. One solution might be simply to mandate the use of energy efficient products. Minimum energy efficiency standards might also be an option. But before adopting any policy, what is needed is a better and more fundamental understanding of the causal relationships between income, race, and access to more efficient and environmentally more benign products.