

An Analysis of the Residential Preferences for Green Power

The Role of Bioenergy

Objective: The purpose of the study is to ascertain residential electricity consumers' views on electricity from bioenergy and other renewable sources. The sources examined include: solar, wind, landfill gas, bioenergy from fast growing crops, and bioenergy from forest products wastes. Consumers' support and willingness to pay premiums for energy from renewable sources are evaluated. Differences in willingness to pay across sources of renewable energy are also investigated.

Approach: The survey was conducted by mail in Spring/Summer of 2003. Prior to the field survey, a pretest survey of 50 randomly selected residents was conducted. The results from the pretest suggested no significant design problems. For the field survey, a sample of 3,000 Tennessee residents was randomly drawn. A survey, cover letter, and information sheet were mailed to individuals in the sample. About two to three weeks following the first mailing, a second mailing was sent to all non-respondents to the first mailing.

The survey contained three sections. First, respondents were asked about their support for and willingness to pay some positive amount for energy from renewable sources. Respondents were reminded that there may be many reasons why someone would be willing to pay more for electricity from renewable sources as well as many reasons why someone might not be willing to pay more for green power. Respondents were also reminded that their budget is allocated between many goods and many environmental and charitable causes, and that green power is but one. If a respondent indicated they supported and would pay some amount more for energy from renewable sources, he or she was asked questions regarding current participation in a green power program and willingness to pay for renewable energy from several sources. If a respondent indicated he or she supported electricity from renewable sources but would not pay more, or that green power was not supported regardless of its cost, the respondent was instructed to skip forward to demographic questions.

The second section contained questions about consumers' willingness to pay for renewable energy from several sources, including solar, wind, landfill gas, bioenergy from fast growing crops, and bioenergy from forest products wastes. Respondents were asked to read an information sheet comparing land use, emissions, and other environmental impacts across the types of energy sources prior to responding. The sample was evenly divided among five premium levels for a 150kWh block of green power. These premium levels were \$1.65, \$3.75, \$4.50, \$6.00, and \$13.00. These premium levels and the block of electricity sold were based on data from existing green power programs and did not differ

by source of power. For each group, a referendum format was used, where respondents were asked to indicate whether they would be willing to purchase the block of power at that premium level.

The third section included questions about socioeconomic and demographics, including age, education, income, and home ownership. Respondents were also asked about recycling, contribution to environmental organizations, or home energy audits. Respondents were also asked to indicate their highest and lowest monthly bill during the past year.

Results: The results from this study suggest that the percentage of residential electricity consumers who are willing to pay premiums for electricity is much lower than found in prior studies, at 38 percent compared with estimates as high as 60 percent. Findings from this suggest that there is a slightly lower preference for electricity from crops or forest wastes than for electricity from solar or wind sources. However, percents responding positively for crops and electricity from landfill wastes are not statistically different. This finding is similar to those from prior studies.

Generally, those who would be willing to pay more for electricity from renewable sources are more highly educated, middle income individuals who have contributed time or money to environmental organizations. If male gender, income of \$60,000-\$75,000, and having contributed to an environmental organization is used as a profile, this profile of respondent has over an 80 percent chance of stating they would be willing to pay more for electricity from renewable energy sources. It should be noted, however, that this profile constitutes a relatively small share of the sample (less than 5 percent).

Those who were willing to pay more for electricity from forest wastes are in their 50's, male, and a college graduate. Those who were willing to pay more for electricity from crops were in their 50's, high school or college graduates, of middle income (\$60,000 to \$100,000), and had not contributed time or money to an environmental organization.

The results from this study do suggest that there is a potential market demand for electricity from forest wastes and crops, however, the market is likely smaller than that for wind or solar power. The results with regard to contribution of time or money to an environmental organization suggest that this may have a negative influence on potential consumers' views of bioenergy.