Respondent Search

Solar Wiki and Solar Network Announcement

I am a volunteer at Solar Cookers International and have taken on an independent project: a survey of solar cooking in the USA. My purpose is to fill the hole in the national consciousness as to solar cooking's potential for saving energy. I was hoping you could help me improve the results of the survey.

I am searching for survey participants. The survey is conducted in person, over the phone, or may be sent via emailed; and is 25 questions, taking about 15 minutes. It is set-up to align with RECS, Residential Energy Consumption Survey, a well-regarded triennial national survey conducted by the federal government.

If you reside in the USA, have been solar cooking for at least 18 months, and are interested being a survey respondent, please email Natalia Blackburn at natalia.a.blackburn@gmail.com for how to become involved.

Solar Cooking Study - Background

The Residential Energy Consumption Survey of 2009 (RECS) ,administered by the United States Energy Information Administration (EIA) indicates that cooking appliances including: range tops, ovens, microwave ovens, and toaster ovens, represent 6.5% of the total electrical consumption in U.S. households. That is 74.1 billion kWhs per year. At a rate of $0.128 per kWh that represents over 9 billion dollars per year. Residential solar cooking is an emerging technology that has the potential of saving a piece of that energy in sunny climate areas in the U.S

Saving 30% of that energy by solar cooking during the 6 prime sun months results in saving $26 per year. (See "Preliminary Analysis" below for further discussion.) To put this amount into a utility company perspective, 50,000 households saving 30% with solar cooking represents 1.3 million dollars or 10,300 megawatt-hours per year.

Cost savings would be even greater for residential households in the higher cost energy tiers (a factor of 3 for PG&E residential customers currently). Additional smaller order savings include the air-conditioning energy saved by the household for not having heated the house as much in the summer, and electric demand capacity available to the supplying utility for a household not using as much electricity during peak periods.

In the last decade, those of us in the energy efficiency fields have witnessed acceptance of new more efficient products such as compact fluorescent lights, Energy Star refrigerators, and air-conditioners meeting ever higher California energy efficiency standards. Some of these products save very little for each individual household, but have their impact on the larger scale as more and more households participate. The strategies that successfully encouraged these "now emerged" technologies could be applied to solar cooking as well.

As a start in that direction, this study intends to begin the work of quantifying how much energy a household would save by regularly solar cooking. A review of available literature indicates that some work has been done in this area internationally, primarily by non-governmental organizations evaluating their solar cooker projects in countries with ample sun and impending shortages of wood or charcoal for cooking fires. The author could not find a single study located within the U.S. Also, a review of several solar cooker suppliers and organizations touting the benefits of solar cooking did not uncover specific claims of how much a solar cooker or solar cooking might reasonably save.

Having demonstrated solar cooking at community events, this study's prime investigator is aware that many people purchase and use solar cookers not because they hope to save a lot of money, but because "it's good for the environment" and "it's the right thing to do". Specific savings are not commonly discussed; they are not easily determined. A $26 yearly savings is not enough to sway most U.S. consumer decisions. Other people purchase solar cookers primarily as a way to cook food in an emergency situation when utility power or natural gas in unavailable. Many of those solar cookers are stored away until needed. Therefore, it become pivotal that the utilities understand that the energy benefits are better perceived on the larger scale.

The objective of this study is to begin that process which has proven helpful with other "now emerged" technologies. It is to develop a set of protocols to measure energy savings and dollar savings attributable to the use of solar cookers in U.S. residential households. The study will be undertaken in two phases: the first is an initial solar cooking survey and the second encompasses monitoring and verification of several households that regularly solar cook. As a part of the study a set of results will be presented for each phase. The following questions will be asked about the data that is collected:

1. Can the study data shed light upon how many U.S. households regularly solar cook?
2. Can the study's sample of households which regularly solar cook be compared to average national data in a useful way?
3. Can the study's data be used to provide an estimate of energy saved by a household that regularly solar cooks? Estimate of cost savings?
4. Can the data be used to provide an estimate of the additional energy saved of cooling the house less?
5. Is an estimate of electric demand reduction feasible?