Supporting Statement for OMB 0596-0189
UNDERSTANDING VALUE TRADE-OFFS REGARDING FIRE HAZARD REDUCTION PROGRAMS
IN THE WILDLAND-URBAN INTERFACE

B. Collections of Information Employing Statistical Methods

1. **Describe (including a numerical estimate) the potential respondent universe and any sampling or other respondent selection method to be used. Data on the number of entities (e.g., establishments, State and local government units, households, or persons) in the universe covered by the collection and in the corresponding sample are to be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection had been conducted previously, include the actual response rate achieved during the last collection.**

Sampling will involve approximately 3,000 households, 1,000 per year or 250 each in Florida (FL), New Mexico (NM), Oregon (OR), and Texas (TX). A stratified random sampling procedure is used. The three fire level strata are high, medium and low fire risk. We are using the term community broadly to include areas with similar characteristics like exposure to certain level of fire risk, are in the wildland-urban interface, have similar vegetation type, etc.

Communities selected to participate represent varying levels of historical wildfire damage, including communities that experienced catastrophic loss from the state's largest and more destructive wildfires. Communities not experiencing catastrophic wildfire loss in the recent past will serve as a control. Risk gradient is based on the total annual number of fires in the areas and the presence of flammable vegetation. FL, NM, OR, and TX have developed risk index maps for all communities. We will use these risk indexes maps in selecting communities in high, medium, and low fire risk index as defined by the states.

- FL Risk maps can be seen at: https://wildfirerisk.org/explore/0/12/; https://southernwildfirerisk.com/Map/Public/#whats-your-risk;
- NM Risk maps can be seen at: https://wildfirerisk.org/explore/0/35/; https://nmfireinfo.com/links/maps/;
- OR Risk maps can be seen at: https://wildfirerisk.org/explore/0/41/; https://tools.oregonexplorer.info/oe_htmlviewer/index.html?viewer=wildfire; and
- TX Risk maps can be seen at: https://wildfirerisk.org/explore/0/48/; https://www.texaswildfirerisk.com/Map/Public;

Previous data collection was conducted in Arizona, California, Colorado, and Florida. Two studies were done in Florida (general population and minorities), which had a response rate of 47% and 64%, respectively. For Arizona, California, and Colorado, the response rate was lower, approximately 30%.

2. Describe the procedures for the collection of information including:

- ### Statistical methodology for stratification and sample selection

The following formula was used to determine the sample size needed to make population estimates (Dillman, D. 2014, Mail and internet surveys, 4th Edition, John Wiley & Sons, Inc.):

$$N_s = \frac{(N_p)(p)(1-p)}{(Np-1)\left(\frac{B}{C}\right)^2 + (p)(1-p)}$$

Where N_s = completed sample size needed for desired level of precision
   N_p = size of population
   p = proportion of population expected to choose one of the two response categories
   B = acceptable amount of sampling error, .05 = ± 5% of the true population value
   C = Z statistic associated with the confidence level; 1.96 corresponds to the 95% level

A population of 1 million or more, the required sample size is 384 for the following parameters:
   N_p = 1,000,000
   p = .5 (set at the most conservative value possible)
   B =.05
   C = 1.96

$$N_s = \frac{(1,000,000)(.5)(1-.5)}{(1,000,000-1)\left(\frac{.05}{1.96}\right)^2 + (.5)(1-.5)} = 384$$

If we sample 625 individuals per state and there is a 40% response rate (average of all previous data acquisition process), the sample size per state will be 250 (625 x .40).

- ### Estimation procedure,
- ### Degree of accuracy needed for the purpose described in the justification.
- ### Unusual problems requiring specialized sampling procedures, and
- ### Any use of periodic (less frequent than annual) data collection cycles to reduce burden.

A stratified random digit dialing along a fire risk gradient across FL, NM, OR, and TX consisting of 3,000 head of households (**average of 1,000 per year or 250/state**).

Various choice models will be considered to estimate the preference parameters, such as multinomial logit and nested logit models in the STATA or LIMDEP statistical packages.

Proponents do not envision any unusual problems requiring specialized sampling procedures. The sample frame as selected by Dillman's methodology above is representative to the point that proponents are able to generalize to the sample populations in FL, NM, OR, and TX.

The hourly burden minimized by the following methods:
- Initial contact determines participants; interviewer will ask for head of household when establishing initial contact. This instruction is included in pre-survey script.
- Additional contact restricted to those who have agreed to participate, at which time they agree to respond to mini-survey.
- Participants receive questionnaire by mail or by e-mail.
- Participants informed of estimated length of survey at moment of initial contact.

3. Describe methods to maximize response rates and to deal with issues of non-response. The accuracy and reliability of information collected must be shown to be adequate for intended uses. For collections based on sampling, a special justification must be provided for any collection that will not yield "reliable" data that can be generalized to the universe studied.

The initial stratified random digit dialing procedure will identify and serve to select all study participants. Those agreeing to participate, respond to the initial short phone survey, receive a mailed or e-mail questionnaire, and answer questions via mailed booklet or respond to the web base questionnaire. Survey research center will be asked to ensure cross referencing with cell phone number in the areas to insure all potential participants have the same probability of being contacted.

The survey will implement using a modified Dillman (2014) approach: first a phone call to inquire about possible participation; those agreeing will respond to a short phone survey; then followed by a mailed or e-mail questionnaire; post cards or e-mail reminders will be sent to survey participants that have not completed the questionnaire.

For non-response issues, all respondents are asked questions, to questions affecting response to willingness to pay estimation (Q18-20 in survey), included in the questionnaire, about why they chose not to respond to the question or why they answered in a certain way. This allows proponents to determine if the zero responses were valid responses or protest responses to the scenarios presented in the survey. A tally of all non-responses is analyzed to determine if non-respondents are different from respondents.

4. Describe any tests of procedures or methods to be undertaken. Testing is encouraged as an effective means of refining collections of information to minimize burden and improve utility. Tests must be approved if they call for answers to identical questions from 10 or more respondents. A proposed test or set of tests may be submitted for approval separately or in combination with the main collection of information.

The survey instrument used in this research has been refined based on a peer review process, as well as employing statistical review. A small focus group of nine persons also reviewed the survey instrument for clarity and understanding of the content, to ensure the reality of the fuels reduction alternatives presented. To ensure the accuracy of the information presented, Forest Service fire managers and planners reviewed the survey instrument. Based on these reviews and a review conducted by the National Agricultural Statistical Service (NASS), adjustments and refinements were made to this project. Based on previous reviews and application in Arizona, California, and Colorado, we feel another round of reviews for application of the instrument to FL, NM, OR and TX residents is unnecessary.

5. Provide the name and telephone number of individuals consulted on statistical aspects of the design and the name of the agency unit, contractor(s), grantee(s), or other person(s) who will actually collect and/or analyze the information for the agency.

The NASS (Irene Fan – Mathematical Statistician, NASS Methodology Division, Summary, Estimation, and Disclosure Methodology Branch, Commodity Section) reviewed this proposal and associated survey instrument and materials. NASS did not recommend any changes.

Data to be collected by:

- Dr. José J. Sánchez, Pacific Southwest Research Station, USDA Forest Service
- Dr. John B. Loomis, Colorado State University
- Wyoming Survey and Analysis Center, University of Wyoming

Data will be analyzed by Drs. Sánchez and Loomis.

Reports and manuscripts will be prepared jointly by Drs. Sánchez and Loomis.