The Supporting Statement for OMB 0596-NEW
Homeowner Response to Wildfire Hazard Mitigation Incentives: What Works and What Doesn't
Revised January 24, 2008

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.**

   The information collection will occur simultaneously at four sites. The table below shows the potential respondent universe, sample size and expected response rate. This is a new collection so there are no data on previous response rates.

	Grand Haven, MI	Ruidoso, NM	Oakland Wildfire Prevention District, CA	Larimer County, CO
Universe (approximate)	4,000	7,000	22,000	8,000
Sample size	1,000	1,000	1,000	1,000
Expected response rate	50%	50%	50%	50%

   At each site, the respondent universe includes households who own homes within high-risk wildfire areas. The high-risk area perimeters are determined by local agency officials who each have the areas mapped. Researchers identify the owner households within each high-risk area by cross-checking the delineated areas with county tax assessor databases. All residential owner households within these delineated areas comprise the universe at each site. After deleting duplicate owners (those who own more than one residence), this list becomes the sample frame. Sampling within this frame is accomplished via random selection using a computer spreadsheet operation. Our expected response rate of 50 percent is based on the experience of our researchers' recent similar surveys in high-risk wildfire areas in four states. These past studies used similar sampling methods.

2. **Describe the procedures for the collection of information including:**
   - **Statistical methodology for stratification and sample selection,**
   - **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.**

We will use the sample frames as described above from which to draw random samples for each site. There is not a stratification component to the sampling methodology.

Sample sizes for this project are based on both the statistical techniques we plan to use and on estimates of real parameters in the population. As stated above in Part A, #16, we plan to descriptive statistics (e.g. means and proportions), group comparisons (e.g. independent samples t-tests), and multivariate analysis (e.g. linear regression). We can estimate population parameters based on related research at a variety of sites. For the multivariate analysis, we estimate the minimum sample size needed using a sample size Milton's sample size formula for multiple regression studies[1]. The formula (equation 1 below) for minimum sample size, n, is based on four parameters: k is the number of independent variables in the multivariate model, t is the desired level of statistical significance, R^2 is the anticipated overall variance explained by the whole model, and Δr_j^2 is the explained variance attributed to the *j*th variable when entered last in the regression equation.

$$n = k + 1 + \frac{t^2(1 - R^2)}{\Delta r_j^2} \qquad (1)$$

In the researchers past studies of wildland-urban interface homeowners in sites in four states, linear regression models specified to test explanatory variables associated with support for government wildland fire policies on public land, R^2 ranged from 0.33 to 0.56. For this study, we assume, conservatively that our multivariate model specifications will explain 30 percent of the model's variance, or $R^2 = 0.30$. Our desired addition to *r*-square for individual variable coefficients when that variable is entered last is 0.01, and desired $t = 2$ (for $p<0.05$). Finally, we expect to specify as many as 20 independent variables (k) in regression models of support for local government wildfire policies. With these specified parameters, solving equation 1 for n yields a minimum sample size of 301.

While this sample size would work if we were only interested in the multivariate model, a larger sample is needed to produce descriptive statistics (means and proportions) that represent the population with an acceptable level of sampling error. With a sample of 1,000 households per site and an expected response rate of 50 percent, the resulting sample of 500 respondents is large enough to yield an acceptable sampling error of plus or minus 4.5 percent (with a 95 percent confidence interval) for proportions when 50 percent of the respondents select an item on the survey.

We will not be reporting results based on combined data from multiple sites.

1 Milton, S. 1986. A sample size formula for multiple regression studies. *Public Opinion Quarterly*, 50:112-118.

No unusual problems are anticipated that would require specialized sampling procedures.

This is a one-time information collection; therefore, there will be no periodic data collection cycles.

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 information collection uses a modified version of Dillman's Total Design Method to maximize response rate. First, each sampled household will receive a cover letter from the Principal Investigator, the self-administered survey questionnaire and a postage-paid return envelope. All of these elements are designed to maximize response rates (e.g. regular first class postage stamps, hand signing the cover letter). Next, seven days after the initial mailing, each sampled household will receive a reminder postcard. Then in three weeks, a second full package with cover letter, questionnaire, and return envelope will be sent to all nonrespondents.

Certain characteristics of our sample frame and of our sampled households create significant challenges for nonresponse testing. (E.g. the tax assessor database does not include telephone numbers and households increasingly have unlisted numbers or cell phones only; high proportion on non-resident households or seasonal homeowners). As such, we propose a multi-pronged approach to nonresponse analysis.

- ☑ First, we will compare the survey respondents to nonrespondents using available household attribute data contained in the sample frame (county tax assessor database). Such characteristics include resident or absentee homeowner and property value.
- ☑ Second, we will compare key variable and demographic data between "waves" of respondents, testing early versus late respondents.
- ☑ Third, a random sample of 200 nonrespondents from three of the four sites will be sent an abbreviated, two-page self-administered questionnaire, cover letter, and postage-paid return envelope. The subset of questions will include key variables that will be selected after an initial review of the respondent survey data (Prior to using the final nonresponse survey instrument, the instrument will be submitted to OMB for approval as a non-substantial change to a previously approved information collection). We will test for statistically significant differences in these measures between respondents and the non-respondent test group at each site.
- ☑ Finally, at the remaining site, we will conduct a nonresponse survey as in the third approach above; but using computer-assisted telephone

interviewing (CATI) to contact nonrespondents and to collect data. For this approach, the nonresponse sample will include the universe of all nonrespondents for which phone numbers can be obtained.

Results of the NON-RESPONSE tests will be reported and the implications (if any) on the study's results will be discussed in all resulting publications.

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 draft survey instrument will be pre-tested at each site. The purpose of the pre-tests is to test for understandability and clarity of the questions. We will confer with our local site cooperators to recruit no more than two respondents from each of the four sites. The respondents will be recruited from local homeowner or neighborhood associations.

Results of these tests will be reported and the implications of response bias (if any) on the study's results will be discussed in all resulting publications.

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.

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Paul Gobster, Research Social Scientist, USDA Forest Service, Northern Research Station, Evanston, IL 60201, (847) 866-9311 ext. 16.

Van Johnson, Environmental Statistician, National Agricultural Statistics Service, (202) 720-7492. *NOTE: Van Johnson of NASS was the last to review our survey design (reviewing both the survey instrument and the draft supporting statement. We consulted with him by phone. He suggested two minor wording improvements to questions and asked further questions about our anticipated response rate and potential duplication with other surveys. All of his questions were answered to his satisfaction and we adopted the question wording changes he suggested.*