

## **Request for Approval under the “Generic Clearance for Citizen Science and Crowdsourcing Projects” (OMB Control Number: 2080-0083)**

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### **TITLE OF INFORMATION COLLECTION:**

Impact of Heating Stove Replacement on Indoor and Outdoor Pollutants and Respiratory Health in Shiprock, NM, Navajo Nation

### **PURPOSE:**

The majority of households on the Navajo Nation heat with wood; many also supplement with coal overnight and on colder days. The stoves in use are often very old, in poor condition, improperly vented, and not designed for the mix of fuels being used. A federal Clean Air Act Settlement Agreement with the Four Corners Power Plant is providing \$4.7 million to replace older wood and coal stoves and to weatherize homes (“*stove changeout*”). The stove changeout will include replacement of stoves with a new, custom-designed cleaner burning dual-fuel (wood and coal) stove model, a first in the United States. This new stove was custom-designed for this project, is EPA-certified, and shown in the lab to reduce emissions of particulate matter and carbon monoxide while burning wood and coal. Additionally, it is expected that the improved efficiency of the newer stoves, coupled with home weatherization, will lessen the need for people to use coal to keep warm at night. This citizen science research project seeks to document the impact of stove replacement on indoor air quality, outdoor air quality, and asthma and COPD symptoms. Researchers will place air quality monitors inside and outside participating homes before and after stove replacement, and will work with participants to log home activities (such as when fuel is loaded, cooking, cleaning, etc.), health symptoms, and stove and fuel use.

### **NEED AND AUTHORITY FOR COLLECTION:**

The research seeks to determine 1) if the stove replacement and weatherization improves air quality 2) if the stove replacement and weatherization improves symptoms in participants with asthma and COPD using standardized assessment and 3) if participants notice improvements in air quality, health, and quality of life. Information Collection from research participants will be critical to gather information on potential air quality confounders (such as cooking), health symptoms for participants with asthma or COPD, fuel use, and perception of air quality changes and stove performance. The statutory authority is 42 U.S.C. §7403(a) [Clean Air Act/Research, Investigation, Training, and Other Activities].

### **USES OF RESULTING DATA:**

The data are being collected for research purposes, as no other changeout program in the U.S. has incorporated cleaner stoves for coal users. The research data will be shared with the community and Navajo Nation government (including other stove changeout projects, such as under the Weatherization Assistance Program) to inform their efforts to improve indoor and outdoor air quality. The data will also be of interest to other communities that heat with coal. In particular feedback from participants can inform educational materials used in explaining how to properly operate the stove. For instance, if participants report dissatisfaction with the stove performance, that will indicate that additional and more effective education is needed on operating the new appliance.

**DATA COLLECTION METHODS:**

Data will be collected primarily in-person during home visits using paper surveys, forms, and questionnaires. Scheduling will take place over the phone, and some follow up may be necessary over the phone as well, if information is missing or unclear. Home visits will take place before stove replacement, as well as 1 or 2 times after stove replacement. Participants will help researchers fill out a home assessment survey during each visit (the researcher will do the writing but will need feedback from participants for some items in the survey), researchers will help participants with COPD or asthma fill out a health assessment during each visit, participants will sign necessary consent forms to participate in research on the first visit, and during each 2-7 day monitoring period (2-3 periods total) participants will fill out a graphic-based activity log.

<b>Name of Instrument</b>	<b>Purpose (i.e. what data is being collected?)</b>	<b>Time to Complete</b>
Childhood Asthma Control Test (C-ACT)	Asthma control level for children (4-11 yrs)	5-10 minutes
Asthma Control Test (ACT)	Asthma control level (> 12 yrs)	5-10 minutes
COPD Assessment Test (CAT)	Impact of COPD (Chronic Obstructive Pulmonary Disorder)	5-10 minutes
General Household Survey 1	Household conditions that may confound study findings (i.e. other sources of pollutants) and study members with COPD or asthma. Used during first visit (pre-changeout)	20-30 minutes
General Household Survey 2	Shortened version of Survey 1 for second assessment period (post-changeout)	10-20 minutes
Activity Log Form	Time of activities in the home that may increase pollution levels – such as cooking or stoking the stove.	30 minutes
Consent/Assent Forms	Obtain consent and assent to participate in research	5 minutes

**PARTICIPANT UNIVERSE:**

Category of Respondent	No. of Respondents	Number of responses per respondent	Participation Time per response	Burden Hours
All Respondents	200	Max of 7 forms	16.4 minutes	1.92
Totals				383 hours

Based on worst case scenario of a respondent who needs to fill out every form, including the asthma control test, the child asthma control test, and the COPD control test, in addition to the standard forms. See table above for time for each respondent to fill out each response. Not all forms will be filled out in the same visit, the 1.92 burden hours is stretched between 2-3 visits.

**AGENCY COST:** The estimated annual cost to the Federal government is \$1,491.00

This is based on the salary of a GS-14 employee located in San Francisco, who's hourly rate is  $\$124,475/2,087 \text{ hrs} = \$59.64$ . Work to collect and analyze data will primarily be done by external partners. Federal employee role will be limited to data review and communication, therefore this analysis estimates a maximum of 30 minutes per respondent =  $0.5\text{hr} \times 200 \text{ respondents} \times \$59.64 = \$5,964$  maximum. The project will take 4 years, therefore the annual cost is  $\$5964/4 = \$1491$ .

**STATISTICAL ANALYSIS:**

We will test for normality on the data obtained and if appropriate, analysis of variance (ANOVA) will be used to investigate the relationship between air pollutant exposure (dependent variable) and the factors contributing to the measured exposure (independent variables). If data are not normally-distributed, a non-parametric approach will be followed. A more detailed statistical analysis is being developed for grant proposals.

**DATA QUALITY ASSESSMENT PROCEDURES:**

This research study has an existing, approved quality assurance project plan (QAPP). Data quality will additionally be assured by using standardized, gold-standard health assessment questionnaires for respondents with asthma and COPD.

**ADMINISTRATION OF THE INSTRUMENT:** (Check all that apply)

- |   |   |
|---|---|
| <input type="checkbox"/> Web-based or Social Media                        | <input type="checkbox"/> Mail           |
| <input checked="" type="checkbox"/> Telephone (scheduling + missing info) | <input type="checkbox"/> Other, Explain |
| <input checked="" type="checkbox"/> In-person                             |   |

**INSTRUMENT:** Append a copy of the questionnaire or a screen shot of the website or app that includes the information collection.

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## Guidance: Request for Approval under the “Generic Clearance for Citizen Science and Crowdsourcing Projects” (OMB Control Number: 2080-0083)

**TITLE OF INFORMATION COLLECTION:** Provide the name of the collection that is the subject of the request.

**PURPOSE:** Provide a brief description of the purpose of this collection and how it will be used. If this is part of a larger study or effort, please include this in your explanation.

**NEED AND AUTHORITY FOR COLLECTION:** In this section, describe why the information is needed and under what legal authority it will be collected. Then, to **establish legal authority**, cite the principal authorities and explain how they relate to the collection.

**USES OF RESULTING DATA:** In this section, describe how the information you collect will fulfill a need. If your ICR is a renewal, you must include a discussion of how the Agency has made use of the information already received.

**DATA COLLECTION METHODS:** To demonstrate that the information you collect will be useful - accurate, reliable, and retrievable - once collected, describe the collection methodology and management.

**PARTICIPANT UNIVERSE:** To calculate the total burden and costs, you must estimate the number of respondents to complete each activity. The total number of respondents is also referred to as the respondent universe. In estimating the respondent universe, you should consult industry reports, census data, or a previously completed Information Collection Request. The public comment period or your consultations (with nine or fewer respondents) may also provide some information on the approximate number of respondents.

You should note that the respondent universe may vary among the activities listed because not all respondents must complete each activity.

**AGENCY COST:** To estimate agency costs, multiply burden hours per activity by labor rates. The cost to employ Federal government workers is published annually by the Office of Personnel Management. Estimate the cost to the Federal government for just the information collection, not the project as a whole. In your write-up for this section, briefly explain how you derived your Agency burden and cost estimates.

**STATISTICAL ANALYSIS:** Briefly explain your statistical analysis. In your discussion, confirm that the anticipated survey results will satisfy the survey objectives and your program's information needs. Also, if you plan to use a contractor for any aspect of the survey, state the name and address of the firm, and indicate on which component(s) (i.e., design, tabulation, etc.) the contractor will provide support.

**ADMINISTRATION OF THE INSTRUMENT:** Check all that apply.

**INSTRUMENT:** Append a copy of the information collection or a screen shot of the website or app that includes the information collection.