# Supporting Statement B for OMB 0596-0237
## Urban Forest Engagement in Atlanta, GA

## 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 setting for the study is the city of Atlanta, GA. Atlanta is the capital of Georgia and encompasses an area of 132.4 square miles in north Georgia. In 2017, the city had a population of 486,290 residents. Blending southern traditions with internationalism, Atlanta has emerged as an economic powerhouse in the region and is a destination city for people from around the country and the world. According to 2017 population estimates, 52.4 percent of the city was comprised of non-Hispanic African-Americans; 37.2 percent were white, non-Hispanic; 4.0 percent Asian, alone; and 0.3 percent Native American/Alaska Native alone. Latinos made up 4.8 percent of the city's population. Most of the city's land area is contained within Fulton County (94.8). Approximately 5.2% of Atlanta's land area is in neighboring DeKalb County. The number of housing units in the city is 228,579 (U.S. Census Bureau, American Community Survey 2011-2015; 2016).

For the data collection completed in 2015-2016, a total of 610 households were contacted, although the targeted sample size was 700. Excluding bad addresses (those with no access, i.e., gated residences, abandoned/boarded up homes, no physical address present), the sample size was 490. Of these, 318 observations contained usable data, resulting in a 52.13% response rate. Because of the stratified random sampling method used, we were restricted to episodic sampling of specific households. The large number of unoccupied houses, in particular, lowered the potential response rate. While this type of random sampling guards against biased samples, actual conditions within the sampling universe made this data collection mode overly restrictive.

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

   **Statistical methodology for stratification and sample selection**

This information collection will employ proportionate, census-guided (PCG) systematic random sampling, a technique commonly used in attitudinal research (Perdue et al., 1987; Andereck and Vogt 2000; Boley and McGhee 2014; Weber et

al., 2017).  PCG uses the U.S. Census Bureau's tracks and block groups to develop a stratified sampling framework for neighborhoods using the number of occupied housing units in each census block.  The sample is stratified by the proportion of households in a given census tract and block group.  The method begins with an identification of census tracts within the area of interest.  In our case, we will aggregate the city's census tracts into five sub-sections based on our understanding of socio-economic demarcations of neighborhoods.  For each section, we will calculate the proportion of occupied housing units in each census tract, relative to the total number of occupied units in the city.  We will perform the same computations at the block group level.  These proportions allow us to determine how many questionnaires to collect in each census track and each block group.  We anticipate a sample of 1,000 will be collected according to the calculated proportions.  We anticipate distributing 950 questionnaires, twice per year (total 1,900).  This assumes a response rate of roughly 53 percent, based on our recent, prior experience with this survey in 2015-2016 in the City of Atlanta.  Manuscript available from Cassandra Johnson Gaither.

Survey administrators will commence data collection at a randomly selected intersection of two streets in a given block group.  Surveys will be distributed at appropriately specified intervals on a given block until the requisite number of surveys has been collected for that block group (Boley and McGhee 2014).  The survey will be self-administered.  To help reduce response bias, the household member with the most recent birthday will be asked to complete the survey.  If two or more members share the same birthday, we will ask that the respondents self-select the person to complete the survey.  If a resident agrees to participate in the study, a single survey and an envelope will be left at the home, to be picked up later that day or the next day.  Respondents will be instructed to place the completed survey in the provided envelope.  Two return trips will be made to retrieve completed surveys that left outside the doorstep.  If no one answers the door at the initial knock or doorbell ring, administrators will proceed to the next immediate residence to survey.

In the first iteration of this information collection (2015-2016), households were selected based on a stratified, random sample of the universe of residential parcels for the City of Atlanta.  A random sample of these parcels was generated by SAS software using proportional allocation techniques.  Potential respondents included homeowners residing in single family dwellings, condominiums, and rental units.  Data for the survey were collected face-to-face at the residential or parcel unit.  The sample was stratified based on the city's 25 Neighborhood Planning Units (NPUs).

**Estimation procedure and degree of accuracy needed for the purpose described in the justification:**

The data collection instrument consists of 41 questions containing, dichotomous choice (yes, no), ordered response, Likert-type options (1, 2, 3, 4, 5), and open-ended questions.  We wish to estimate the mean for each of 14 statements that comprise the scale, with a certain degree of precision.

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The first time these data were collected, determination of an appropriate sample size for a multi-objective survey was difficult because no prior variability estimates were available for the PJ scale items.  To make sample size determination practical, we determined sample size based on a simple random sample and approximated the variance with the upper bound, maximum theoretical variance of the 5-point Likert PJ scale item.  We desired estimates of the confidence interval for the mean for any one of the 14 items to be plus/minus 0.15 of the mean with 95% confidence.

For the present request, we determined sample size based on the mean of variances for 14 Likert scale items (values ranges from 1 to 5) obtained from the first iteration of the survey (1.220), using the following formula:

where,

  E=the half width of the 95% confidence interval,
  Z = the upper alpha/2 percentage point of the normal distribution (that is, 1.96),
  Sigma=standard deviation (that is, square root of the variance), and
  n=sample size.

  Solving for n:

$$n = \left( \frac{Z * Sigma}{E} \right)^2$$

  and using the variance=1.220 and Z=1.96 values, we get

$$n = \left( \frac{1.96 * \sqrt{1.220}}{E} \right)^2$$

If we assume the estimate of any given Likert-scale item is within 0.10 of the mean

with 95% confidence, then 468.67 samples must be collected (rounded up to 500).

The equation assumes the sample will be a simple random sample; however, ours is

a proportionate random sample, in which case, we will apportion the sample size

based on the proportion of housing units in census tracts and block groups.

Assuming a response rate of 83%, we will draw a sample of 600 and expect 500

responses.

**Unusual problems requiring specialized sampling procedures**

There are no unusual problems.

**Any use of periodic (less frequent than annual) data collection cycles to reduce**
**Burden.**

There is no use of periodic data collection to reduce the burden.

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.**

Surveys will be collected on weekends because of the greater likelihood of people being home.  Because of the large volume of weekday traffic in Atlanta, especially during the evening hours, we determined that the most productive times for data collection are on Saturdays and Sundays.  Interviewer training is also central to achieving maximum response rates.  We anticipate employing four Atlanta residents, who are familiar with Atlanta neighborhoods, to administer the survey.  All interviewers will receive intensive and detailed training in door-to-door data collection procedures.  This training will enable them to conduct professionally accurate and efficient face-to-face surveys.  Each interviewer will be monitored regularly for quality control purposes and additional training is provided as needed.

We believe that the PCG methodology used to administer the survey will help to minimize non-responses.  If the survey is refused at a given residence, the administrator will be instructed to move to the next appropriate address.  This will be done until the requisite number of surveys have been administered on a given block.  We also believe that the direct method of door-to-door data collection offers numerous advantages in terms of increased response rates and minimization of non-response bias.  The presence of the interviewer helps to increase response rates.  The interviewer can quickly clarify questions the respondent might have about the survey and its application.  Importantly, face-to-face data collection is

also better suited for reaching lower income and education and minority populations.  Relatively high percentages of Atlanta's population fall into one or more of these categories (Dillman, 1978, p.40).


**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 was previously administered in 2015-2016.  Survey items were adjusted based on previous implementation and findings.  The survey associated with this requested information collection will be administered in 2019.

**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.**

USDA/NASS reviewed and provided input on the statistical design of the information collection:

Conducted by:

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Transmitted to:

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Dr. Dr. Stanley Zarnoch, USDA Forest Service, Southern Research Station, was consulted on sampling design and statistical methods - (864) 576.8188.

Dr. Bynum B. Boley, University of Georgia, Warnell School of Forestry and Natural Resources, was consulted on sampling design and statistical methods – (706) 583.8930.

**References:**

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Boley, B. B., & McGehee, N. G. (2014). Measuring empowerment: developing and validating

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   Survey. https://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?
   refresh=t#acsST.

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