



October 28, 2019

Request for Proposals# 2019-014

BAY AREA  
AIR QUALITY  
MANAGEMENT  
DISTRICT

**Developing Improved Methods for Estimating  
Emissions from Residential Wood Combustion**

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**SECTION I – SUMMARY**

The Bay Area Air Quality Management District (Air District) is requesting proposals from experienced and qualified organizations to develop improved methods for estimating emissions from residential wood combustion. The selected organization will update and improve current methods and datasets for quantifying populations of woodstoves and fireplaces in the Air District, estimating emissions from these devices, and characterizing the spatial and temporal distribution of woodsmoke emissions.

To respond to this Request for Proposals (RFP), an interested company should submit its proposal electronically (in Adobe Acrobat PDF file format) to the Air District’s Procurement Portal (Portal):

Cynthia Zhang, Staff Specialist  
Bay Area Air Quality Management District  
375 Beale Street, Suite 600; San Francisco, CA 94105  
Portal link: <https://baaqmd.bonfirehub.com>

**Proposals must be submitted and received by 4:00 p.m. on December 10, 2019.  
Late proposals will not be considered.**

Proposals must address all information requested in this RFP. A proposal may add information not requested in this RFP, but the information should be in addition to, not instead of, the requested information and format. Minority business enterprises, women’s business enterprises, veteran’s business enterprises, and Certified Green Businesses are encouraged to submit proposals. **Any questions regarding this RFP should be submitted through the Portal.**

## **SECTION II – BACKGROUND**

### **A. Air District Overview**

The Air District was created by the California Legislature in 1955 as the first regional agency to deal with air pollution in California. The Air District jurisdiction includes Alameda, Contra Costa, Marin, Napa, Santa Clara, San Francisco, San Mateo, southwestern Solano, and southern Sonoma counties.

The State Legislature originally gave the Air District the authority to regulate stationary sources of air pollution, such as factories, oil refineries, chemical plants, gasoline stations, and agricultural burning. With more recent legislation, the Air District was granted authority to enact certain transportation and mobile source measures.

The Air District is governed by a twenty-four-member Board of Directors, consisting of elected officials, including county supervisors, mayors, and city council members. The Executive Officer / Air Pollution Control Officer for the Air District is Jack P. Broadbent.

### **B. Developing Improved Methods and Datasets for Estimating Wood Smoke Emissions**

Health studies in recent decades have shown that exposure to fine particulate matter (PM<sub>2.5</sub>) can have a wide range of respiratory and cardiovascular health effects, including premature death, and that there are negative health effects from PM<sub>2.5</sub> exposure even at concentrations below current air quality standards. In addition, compelling evidence suggests that PM<sub>2.5</sub> is the air pollutant most harmful to the health of Bay Area residents.

Wood smoke is a major component of PM<sub>2.5</sub> in the Bay Area, especially on winter days when exceedances of the Federal 24-hr PM<sub>2.5</sub> standard are most likely to occur. According to 2016 emission estimates for the winter season, woodsmoke accounts for 54% of the Air District's area source PM<sub>2.5</sub> emissions inventory and 30% of the Air District's total PM<sub>2.5</sub> inventory.

To address the health impacts of wood burning at both the regional and local scale, the Air District has adopted its "Spare the Air" wood smoke control program and Regulation 6, Rule 3, which prohibits the installation of wood burning devices in new building construction. In addition, the Air District launched an incentive program in 2016 that provides funding to help Bay Area homeowners replace their wood burning devices with cleaner heating options. Currently, the Air District seeks to continue refining its wood smoke emission estimates and to better understand the impact of its wood smoke control programs.

Residential wood combustion has been previously evaluated in the Bay Area, most notably through a series of telephone surveys that were conducted from 2004-2018. These surveys were designed to gather detailed information on wood burning devices and behaviors in the Bay Area, allowing for statistically reliable estimates in each of the nine Air District counties. The surveys also included questions related to the public's awareness of Spare the Air messaging and the potential impact of that program. Results from these surveys were used by Air District staff to estimate wood burning device populations and wood smoke emissions at the zip code level. In addition, the Air District analyzed PM filters for Carbon-14 (14C) to estimate the contribution of wood smoke emissions to Bay Area

PM<sub>2.5</sub> levels.<sup>1</sup> Findings from the 14C analyses suggest that winter wood smoke emissions were reduced by 40% between the winters of 2009-2010 and 2016-2017, though this source remains a significant contributor to regional PM<sub>2.5</sub> concentrations.

Despite these efforts, significant uncertainties still exist regarding the Air District's wood smoke emissions estimates, which are impacted by assumptions regarding device populations, device types (e.g., fireplace, EPA-certified<sup>2</sup> woodstove, non-EPA-certified woodstove), wood consumption rates (e.g., cords of wood burned per year), and the impact of control programs. For example, the Air District's estimate of annual average PM<sub>2.5</sub> emissions from woodsmoke for 2016 is 9.8 tons per day (tpd), which is 30% higher than the 7.5 tpd estimated by the California Air Resources Board (ARB). Significant differences also exist between Air District and ARB distributions of emissions by county, month, and device type. In addition, ARB's estimates of annual average PM<sub>2.5</sub> emissions from woodsmoke for the Sacramento (4.7 tpd) and San Joaquin Valley (2.8 tpd) Air Districts are significantly lower than the 7.5 tpd estimated for the Bay Area. These differences may indicate that impacts from wood smoke control programs are not accurately reflected in the Air District's or ARB's estimates.

This project would update previous studies and reduce uncertainties in the Air District's wood smoke emissions estimates by, including but not limited to, developing improved methods and datasets for characterizing wood burning device populations, wood consumption, and the spatial and temporal distribution of wood smoke emissions. Project results will be used to support fine-scale (1-km grid resolution) modeling of PM<sub>2.5</sub> concentrations in the Bay Area, as well as local-scale dispersion modeling in selected communities. Local-scale modeling will be performed to support analyses related to Assembly Bill (AB) 617, which requires air agencies to identify communities most impacted by air pollution and reduce disparities in exposures and health risks.

### **SECTION III – SCOPE OF WORK**

This scope of work will lead Air District staff and the selected contractor through a review and update of the methods and datasets used to estimate wood smoke emissions in the District and allocate those emissions temporally (i.e., by month and day of week) and spatially (i.e., by 1-km grid cell for regional modeling and by Census block for local-scale modeling).

To support this review, the Air District will share previous woodburning survey reports with the contractor.

**Project Timeline:** Work should be completed within 12 months from when the contract is signed.

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<sup>1</sup> 14C is a radioactive isotope of carbon that is present in all living things but decays with a half-life of about 5,700 years. Therefore, the fraction of 14C in the carbon of a PM<sub>2.5</sub> sample can help differentiate the contribution of "modern" carbon sources, such as wood burning or meat cooking, from that of "fossil" carbon sources (i.e., fossil fuels).

<sup>2</sup> Since 1988, EPA has implemented New Source Performance Standards (NSPS) for wood stoves, and models that meet NSPS requirements are considered EPA-certified.

### **Task 1: Data Review and Methodology Development**

The contractor will assemble and review available information for estimating woodburning emissions in the Bay Area. This information includes, but is not limited to, the following:

- Reports from surveys conducted by the Air District from 2004-2018;
- Prior emissions estimates for woodburning prepared by the Air District;
- Results from the Air District's 14C analyses;
- Methodologies and emissions estimates for woodburning prepared by the California Air Resources Board (CARB), other California air districts, and the U.S. Environmental Protection Agency (EPA);
- Scientific literature on woodburning activities and emissions; and
- Available data on wood consumption or woodburning activity patterns.

Based on this review, the contractor will develop a recommended approach for characterizing woodburning activities in the Bay Area and developing corresponding emissions estimates. The recommended approach should include methods for defining the following parameters:

- a. Wood burning device populations and the distribution of those devices by jurisdiction (county or Census block) and by type (fireplace, EPA-certified wood stove, non-certified wood stove, etc.).
- b. Wood burning activity by jurisdiction, device type, month, and day of week.
- c. The impact of "Spare the Air" and other control programs on wood burning activities.

In addition, as part of Task 1, the contractor should identify methods to evaluate and ground-truth emissions estimates prepared under this contract. These methods may include targeted surveys, comparisons between alternative woodburning activity estimates, or other approaches. This verification step should be included in the overall recommendations provided to the Air District, and these recommendations must be approved by the Air District prior to the commencement of work on Task 2.

Deliverables: The contractor will be required to prepare a technical memorandum that presents a recommended methodology for characterizing wood smoke emissions in the Bay Area, as well as methodologies for ground-truthing woodburning emissions estimates. This memorandum should also include recommended procedures for converting data to useful formats, such as preparing emissions inputs and spatial surrogate data for the Sparse Matrix Operator Kernel Emission (SMOKE) Model.

### **Task 2: Emissions Estimation and Data Delivery**

Following receipt of the memorandum, Air District staff will work with the contractor to finalize the approaches to be used for characterizing and ground-truthing wood smoke emissions. Once the overall methodology has been finalized, the contractor will use results from the previous Air District surveys and all other available data collected under Task 1 to generate county-level emissions estimates, temporal profiles (for assigning emissions to months and days of the week) and spatial allocation factors (for assigning emissions to grid cells in the Air District's 1-km modeling domain). Emission estimates should cover the

Air District's entire jurisdiction and reflect only those portions of Solano and Sonoma counties that lie within Air District boundaries.

In addition, to support local-scale modeling, the contractor will estimate emissions at the Census block level for up to 8 selected AB 617 communities in the Bay Area. After emissions estimates have been prepared, contractor will evaluate the results using the ground-truthing approaches developed under Task 1.

Deliverables: The contractor will be required to provide the following:

1. An Excel spreadsheet summarizing woodburning emissions estimates for the Bay Area by month and by jurisdiction (county and community-level).
2. All raw data (e.g., shapefiles or survey results) used to prepare final data deliverables (note that any purchased data will be owned by the Air District).
3. Any code, scripts, or spreadsheets used to process wood smoke activity data and emissions estimates. (Note that all data processing should be done through code or scripts that clearly link raw data with final products.)
4. SMOKE-ready emissions input files that contain county-level, annualized wood smoke emissions estimates for PM<sub>2.5</sub> and other criteria pollutants.
5. SMOKE-ready temporal profiles and spatial surrogate data for wood smoke emissions; spatial data should be prepared for the Air District's 1-km modeling domain.
6. SMOKE-ready cross-reference files that match wood smoke source codes with appropriate temporal profiles and spatial surrogates.

### **Task 3: Documentation**

To assist the Air District with the subsequent updating of the emissions estimates developed for this project, the contractor should prepare a final report that documents the data sources used to characterize wood smoke emissions, summarizes the processing steps used to prepare final data deliverables, and discusses uncertainties associated with the overall methodology.

Deliverables: The contractor will be required to provide a final report that is sufficiently detailed to enable the replication of all data collection and data processing steps performed as part of this project. This report should include technical guidance on the use of data processing scripts or codes provided as project deliverables.

## **SECTION IV – INSTRUCTIONS TO BIDDERS**

### **A. General**

1. Interested firms must create an account through the Portal described on p. 1 of this RFP to view RFP documents and addenda, and to submit questions and bid documents.
2. All proposals must be made in accordance with the conditions of this RFP. Failure to address any of the requirements is grounds for rejection of this proposal.

3. All information should be complete, specific, and as concise as possible.
4. Proposals should include any additional information that the respondent deems pertinent to the understanding and evaluation of the bid.
5. The Air District may modify the RFP or issue supplementary information or guidelines during the proposal preparation period prior to the due date. Please check our [Portal](#) for updates prior to the due date.
6. Proposals shall constitute firm offers. Once submitted, proposals may be withdrawn, modified and resubmitted through the Portal up until the December 10, 2019, due date.
7. The District reserves the right to reject any and all proposals submitted and/or request additional information
8. The total cost for this project should not exceed \$160,000. Any spatial data that needs to be purchased to support this project will be directly purchased by the Air District, and the price of such data should not be included in the quoted amount.
9. All questions must be in written form and submitted through the Portal no later than **4:00 p.m. on November 7, 2019**. Firms will not be able to submit questions after this time. All questions will be answered in writing and posted on the [Portal](#) by **6:00 p.m. on November 14, 2019**.
10. The cost for developing the proposal is the responsibility of the bidder, and shall not be chargeable to the Air District.

## **B. Submittal of Proposals**

All proposals must be submitted according to the specifications set forth in Section V (A) – Contents of Proposal, and this section. Failure to adhere to these specifications may be cause for the rejection of the proposal.

1. Due Date – All proposals are due no later than 4:00 p.m., December 10, 2019, and should be submitted via the Portal to:

Cynthia Zhang, Staff Specialist  
Bay Area Air Quality Management District  
375 Beale Street, Suite 600; San Francisco, CA 94105  
Portal link: <https://baaqmd.bonfirehub.com>

2. Uploading large documents may take significant time, depending on the size of the file(s) and Internet connection speed. Bidders should plan sufficient time before the due date to finalize their submissions and to complete the uploading process. Bidders will not be able to submit documents after the due date. Proposals received after the date and time previously specified will not be considered.

3. Signature – All proposals should be signed by an authorized representative of the bidder.
4. Submittal – Submit one (1) electronic copy (in Adobe Acrobat PDF file format). Electronic submissions submitted via the Portal will be acknowledged with a confirmation email receipt. Late proposals will not be accepted. Any correction or re-submission of proposals will not extend the submittal due date.
5. Grounds for Rejection – A proposal may be rejected at any time if it arrives after the deadline, or is not in the prescribed format, or is not signed by an individual authorized to represent the firm.
6. Disposition of the Proposals – All responses to this RFP become property of the Air District and will be kept confidential until a recommendation for award of a contract has been announced. Thereafter, submittals are subject to public inspection and disclosure under the California Public Records Act. If a respondent believes that any portion of its submittal is exempt from public disclosure, it may mark that portion “confidential.” The Air District will use reasonable means to ensure that such confidential information is safeguarded, but will not be held liable for inadvertent disclosure of the information. Proposals marked “confidential” in their entirety will not be honored, and the Air District will not deny public disclosure of any portion of submittals so marked.

By submitting a proposal with portions marked “confidential,” a respondent represents it has a good faith belief that such portions are exempt from disclosure under the California Public Records Act and agrees to reimburse the Air District for, and to indemnify, defend, and hold harmless the Air District, its officers, employees, and agents, from and against any and all claims, damages, losses, liabilities, suits, judgments, fines, penalties, costs, and expenses, including without limitation, attorneys’ fees, expenses, and court costs of any nature whatsoever, arising from or relating to the Air District’s non-disclosure of any such designated portions of a proposal.
7. Modification – Once submitted, proposals, including the composition of the contracting team, may be altered up until the due date. Proposals may not be modified after the due date. All proposals shall constitute firm offers valid for ninety (90) days from the December 10, 2019, due date.

**C. Interviews**

1. The Air District, at its option, may interview bidders. The interviews will be for the purpose of clarifying the proposals.
2. Submittal of new proposal material at an interview will not be permitted.
3. Interviews may involve a presentation and/or a question-and-answer session.

## **SECTION V – PROPOSAL FORMAT, CONTENT, AND SUBMITTAL**

### **A. Contents of Proposal**

Submitted proposals must follow the format outlined below and include all requested information. Failure to submit proposals in the required format can result in the proposal being eliminated from evaluation and consideration.

#### **1. Technical Proposal**

- a. Cover Letter (Section I) – Must include the name, address, and telephone number of the company, and must be signed by the person(s) authorized to represent the firm.
- b. Firm Contact Information – Provide the following information about the firm:
  - Address and telephone number of office nearest to San Francisco, California and the address and phone number of the office that each of the proposed staff members are based out of if different.
  - Name of firm’s representative designated as the contact and email address
  - Name of project manager, if different from the individual designated as the contact
- c. Table of Contents – Clearly identify material contained in the proposal by section
- d. Summary (Section II) – State overall approach to Developing Improved Methods for Estimating Emissions for Residential Wood Combustion, including the objectives and scope of work.
- e. Program Schedule (Section III) – Provide projected milestones or benchmarks for completing the project within the total time allowed.
- f. Firm Organization (Section IV) – Provide a statement of your firm’s background and related experience in providing similar services to governmental organizations, if any. Describe the technical capabilities of the firm and, in particular, the firm’s exposure with working with environmental regulations, if any. Provide references of other, similar projects including contact name, title, and telephone number for all references listed.
- g. Project Organization (Section V) – Describe the proposed management structure, program monitoring procedures, and organization of the engagement team. Provide a statement detailing your approach to the project, specifically address the firm’s ability and willingness to commit and maintain staffing to successfully conclude the project on the proposed schedule.
- h. Assigned Personnel (Section VI) – Provide the following information about the staff to be assigned to the project:



- List all key personnel assigned to the project by level and name. Provide a description of their background, along with a summary of their experience in providing similar services for governmental agencies, and any specialized expertise they may have. Background descriptions can be a resume, CV, or summary sheet. Substitution of project manager or staff will not be permitted without prior written approval of the Air District's assigned program manager.
  - Provide a statement of the availability of staff in any local office with requisite qualifications and experience to conduct the requested project.
  - Provide a statement of education and training programs provided to, or required of, the staff identified for participation in the project. Make particular mention of with reference to experience dealing with governmental agencies, procedures, and environmental regulations.
- i. Retention of Working Papers (Section VII) – All working papers are the property of the Air District. Include a statement acknowledging that if your firm is awarded the contract, you will retain project related papers and related reports for a minimum of five (5) years.
  - j. Subcontractors (Section VIII) – List any subcontractors that will be used, the work to be performed by them, and the total number of hours or percentage of time they will spend on the contract.
  - k. Conflict of Interest (Section IX) – Address possible conflicts of interest with other clients affected by contractors' actions performed by the firm on behalf of the Air District. The Air District recognizes that prospective bidders may have contracts to perform similar services for other clients. Include a complete list of such clients for the past three (3) years with the type of work performed and the total number of years performing such tasks for each client. The Air District reserves the right to consider the nature and extent of such work in evaluating the proposal.
  - l. Additional Data (Section X) – Provide other essential data that may assist in the evaluation of the proposal (e.g. green business certification, etc).
2. Cost Proposal
- a. Name and Address – The Cost Proposal must have the name and complete address of the bidder in the upper, left hand corner.
  - b. Cost Proposal – The Cost Proposal must list the fully-burdened hourly rates and the total number of hours estimated for each level of professional and administrative staff to be used to perform the tasks required by this RFP. In addition, costs should be estimated for each of the components of the Scope of Work.
  - c. The Cost Proposal does not need to be a separate, sealed document.

## SECTION VI – PROPOSAL EVALUATION

A panel of Air District staff will evaluate all proposals. The panel will recommend the selection of the contractor to the Air Pollution Control Officer (APCO), who will, in turn, make a recommendation to the Air District Board of Directors. The Air District Board of Directors may be required to approve the contract to carry out the work described in this RFP. A link to a typical contract for professional services used by the Air District is included in Section VII.

Proposals will be evaluated on the following criteria:

<b>Criteria</b>	<b>Description</b>	<b>Weight</b>
Expertise	Technical expertise, size and structure of the firm and personnel assigned to RFP tasks; firm's ability to perform and complete the work in a professional and timely manner.*	25%
Skill	Past experience of the firm and, in particular, experience of the team working on projects of similar scope for other governmental agencies.	25%
Approach	Responsiveness of the proposal, based upon a clear understanding of the work to be performed.	40%
Cost	Cost or cost effectiveness and resource allocation strategy.	5%
Firm's Specialty Focus Area	Local business/Green Business**	5%
	<b>Total</b>	<b>100%</b>

\* "Size and structure of firm" refers to the ability of a firm's size to meet the needs of the District. It does not give absolute preference to larger or smaller firms.

\*\* The Air District gives preferences to local business and those that are certified as green businesses by a government agency or independent private rating organization. "Local business" means that a firm's headquarters is located within the nine counties of the Air District's jurisdiction.

If two or more proposals receive the same number of points, the Air District will accept the lower cost offer.

## SECTION VII – SAMPLE CONTRACT

A sample contract to carry out the work described in this RFP is available on the District's website at <http://www.baaqmd.gov/about-the-air-district/request-for-proposals-rfp-rfq/samples-previous>. (Click the + to the left of Sample Contracts, and then click on the Professional Services Contract link)