



BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

**Zero-emission
mobile agricultural equipment
demonstration program**

2020 Project solicitation

The Bay Area Air Quality Management District is offering up to \$1 million for projects that demonstrate mobile, zero-emission equipment in Bay Area agricultural operations and achieve significant reductions in greenhouse gas emissions, criteria pollutants, and toxic emissions.

The deadline for receiving applications is 3 PM on April 15, 2020

4/3/20 & 4/6/2020 updates - See page 7 for update on application submittal procedures

Bay Area Air Quality Management District
Strategic Incentives Division
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Background

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

The Bay Area Air Quality Management District (Air District or BAAQMD) is the public agency entrusted with regulating stationary sources of air pollution in the nine counties that surround San Francisco Bay: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, southwestern Solano, and southern Sonoma counties.

The California State Legislature created the Air District in 1955 as the first regional air pollution control agency in the country, recognizing that air pollution transcends political boundaries. The nine counties of the Bay Area form a regional air basin, sharing common geographical features and weather patterns, and therefore similar air pollution burdens, which cannot be addressed by counties acting on their own. www.baaqmd.gov

FARMER Program ¹

In 2017 the California Air Resources Board (CARB) developed the Funding Agricultural Reduction Measures for Emission Reductions (FARMER) Program to meet the Legislature's objectives and help meet the State's criteria, toxic and greenhouse gas emission reduction goals. The Air District has participated in the program since it was developed and administers FARMER program opportunities for the San Francisco Bay Area. In October 2019², CARB added additional project types to the FARMER program, including Advanced Technology Demonstration Projects.

<https://ww2.arb.ca.gov/our-work/programs/farmer-program>

Funding Source Acknowledgement

The FARMER Program is part of California Climate Investments, a statewide program that puts billions of Cap-and-Trade dollars to work reducing greenhouse gas emissions, strengthening the economy, and improving public health and the environment – particularly in disadvantaged communities. The Cap-and-Trade program also creates a financial incentive for industries to invest in clean technologies and develop innovative ways to reduce pollution. California Climate Investments projects include affordable housing, renewable energy, public transportation, zero-emission vehicles, environmental restoration, more sustainable agriculture, recycling, and much more. At least 35 percent of these investments are located within and benefiting residents of disadvantaged communities, low-income communities, and low-income households across California. For more information, visit the California Climate Investments website: <http://www.caclimateinvestments.ca.gov/>



Scope/ Objective

The Air District is offering up to \$1 million for projects to demonstrate mobile, zero-emission equipment used in Bay Area agricultural operations and achieve significant reductions in GHG, criteria pollutants, and toxic emissions. The Air District is looking to fund one or more projects that collectively will demonstrate 5 or more zero-emission units in agricultural operations in the Bay Area.

Advanced technology vehicles and equipment need field demonstrations to test the vehicle or equipment's viability or determine whether they can serve the same function and perform the same work as the vehicle or equipment they would replace. Demonstrations of sustainable farming solutions that encompass advanced technology vehicles, equipment, and supporting infrastructure at a farm is also needed. Under this new project category, air districts may fund demonstration projects without a requirement to scrap existing vehicles or equipment.

Eligible projects under this solicitation must:

- reduce greenhouse gas and criteria pollutant emissions
- include a fleet/ agricultural operator/ partner located in the Bay Area

¹ CARB FARMER Guidelines: <https://ww2.arb.ca.gov/sites/default/files/2018-07/farmerguidelines-final.pdf>

² CARB Guideline expansion: <https://ww3.arb.ca.gov/ag/agincentives/meetings/2019farmermemo-projectcategories.pdf>

- demonstrate zero-emission mobile agricultural equipment in agricultural operations - i.e. tractors, loaders, etc.
- demonstrate the operation of zero-emission equipment with 25 hp equivalent (or greater) power over 12 months within the boundaries of the Bay Area Air District
- conduct demonstrations while the pieces of equipment are in revenue service in their intended vocation by the fleet partner
- include a data collection component
- meet all applicable statutory requirements
- provide enough data to determine the economic viability for the continued use of the advanced technology pieces of equipment and must collect the relevant data points
- collect diesel equivalent workload baseline from same operator for comparison
- specify whether existing equipment will be permanently or temporarily replaced with zero-emission equipment. Scrappage of existing diesel equipment is not required; however, extra points will be awarded to applications that propose to scrap and replace existing diesel equipment with zero-emission equipment
- be reviewed and approved by the Air District and CARB before receiving funding

Funding Available

- Up to \$1,000,000 is available for technology demonstration project(s)
- Funding levels:
 - Max of 80% of eligible project costs for equipment that remains in operation for at least 1 year after completion of the demonstration period
 - Max of 75% of eligible project costs for equipment that returns to manufacturer after the completion of the demonstration period
- Applicants may request up to \$1,000,000 (max) in funding per application
- Eligible costs include the following: equipment, materials, labor, sales tax associated with eligible costs, and charging or fueling infrastructure
- The following activities are required, but they are not covered by the funding source (ineligible for reimbursement): application preparation, data collection, project administration, reporting, maintenance, travel, permits, operating costs, permits, environmental review, electricity or fuel costs, etc.
- Interim payments may be made on a milestone completion basis, as approved by the Air District. The Final project payment will be made after completion of the demonstration period and submittal and Air District approval of the Final Report
- Air District may award funding to more than one application, or zero applications if no applications are received for viable projects (meet a minimum score)
- Air District reserves the right to negotiate with any potential applicant to change or modify the project scope
- Air District reserves the right to partially fund applications by funding discrete portion(s) of proposed projects. The modified scope and budget would still need to meet all the requirements of the program. If the Air District decides to partially fund an application, it will do so in a manner that does not prejudice any applicants or affect the basis upon which the application was evaluated and selected for award, thereby maintaining the integrity of the competition and selection process.

Who can apply?

Private sector parties (i.e., technology manufacturers and end-users) interested in demonstrating a technology, other California-based public entity, or California-based non-profit organization in submitting a demonstration application. Applicants and project partners must be in compliance with all local, state and Federal Air Quality and environmental regulations. Only projects from eligible applicants will be scored.

Program Schedule

Table 1 – BAAQMD FARMER Demonstration project schedule

Estimate timeframe	Milestone
3/6/2020 - 4/15/2020	Application solicitation period
3/19/2020	Air District FARMER demonstration program solicitation webinar
4/6/2020	Deadline to submit written questions on the solicitation
4/8/2020	Q&A responses posted to website (1 week before RFP closing)
4/15/2020 by 3 pm	Applications must be received by Air District
4/2020	Project recommendations shared with CARB
5/2020 – 6/2020	Air District Board recommendations
6/15/2020	Contract execution
No later than 6/1/2021	Equipment delivery/ start of equipment operation
No later than 6/1/2022	Final Report and final reimbursement submittal deadline
6/30/2022	Fund liquidation deadline

Eligible Projects

- Zero-emission mobile agricultural equipment project - i.e. tractors, loaders, etc.
- Power range: 25 hp equivalent or greater
- Duration: One full year of zero-emission equipment operation
- The operational demonstration of the proposed equipment must be approved by the intended operators, and the confirmation of approval must be indicated in the operator’s letter of support
- The applicant must explain in the project narrative the steps that will be followed to accomplish required government certification and verification protocols
- Technical details needed with applicant submittal
- Technical and physical description of the zero-emission powertrain;
 - Description and capacity of energy storage system (batteries and/or fuel storage tanks);
 - Rated output (voltage and amperage) of battery packs, fuel-cell stacks, and electric motors, as applicable;
 - Estimated operating time (or other work metric) per complete charge, including an evaluation of the impacts of ambient temperature and/or other environmental factors on performance, as applicable;
 - Expected longevity (in units of hours, energy throughput, or other appropriate metric) of the energy storage system, fuel system, inverter, and motors, as applicable, in the equipment or conversion-kit model’s intended application;
 - Charging or fueling standards that are compatible with the equipment and necessary for maintaining daily operation – e.g.,
 - Estimated time (minutes) necessary to charge the battery pack(s) and level of voltage, or
 - Estimated time to fill the hydrogen tank from empty to full at given filling pressure level, as applicable.
- Infrastructure necessary for operating equipment that is the subject of this Solicitation is an eligible cost. Proposed infrastructure should be capable of allowing a robust and significant field demonstration of the proposed technology. Projects that propose only infrastructure without accompanying pieces of equipment will not be scored.
 - Description of the monitoring and diagnostic system (faults and conditions that will trigger an alert to the operator), data connector (e.g., Society of Automotive Engineers standard, wired/wireless, etc.), and the controller area network protocol (e.g., Society of Automotive Engineers Standard J1939)

Testing

- Duration: Testing shall be done throughout the full year of operation of zero-emission equipment
- Applicant shall describe the monitoring, data-collection, and telematics systems of the equipment or conversion-kit model. Include schematics/engineering diagrams, if available.
- The types of data to be collected include, but are not limited to, fuel/electricity consumption, fueling/charging times, state of charge information, odometer or hour meter readings, maintenance information, relevant telematics and GPS data, operating costs, hours of operation, idle times, temperatures, and user experience. Telematics data must include, at a minimum, the following parameters:
 - Cumulative Time in Use (hours),
 - Cumulative Energy Used (kWh),
 - Average Energy Discharge Rate During Non-Idle Operation (kW)
 - Electricity/ fuel costs for operating the funded equipment
- Include service/maintenance plan
- Historical product/ performance data (if available and applicable)
 - Include past testing data
 - Share historical sales data
 - Summary data on any warranty claims
- Description of tests performed on the equipment. Include, as necessary, method(s) of determination and actual test information and results for the following (as applicable and if available):
 - Usable battery capacity testing;
 - Rated output testing (voltage and amperage) for battery packs, fuel-cell stacks, and electric motors;
 - Battery/fuel-cell useful life testing;
 - Vibration testing;
 - Shock testing;
 - Thermal testing;
 - Safety-related testing; and
 - Real-world usage-hours testing.
- Establish baseline for existing fleet – Collect and track hours of operation and fuel consumption for diesel equivalent equipment operated by fleet partner and collect engine and equipment information for the diesel fleet.
- Data gathered from testing and actual emissions to the air as part of this demonstration project must be submitted to the Air District and CARB and cannot be protected from disclosure.

Reporting

Applicants selected for funding will be required to submit quarterly project status reports and a final project report to the Air District as shown below. Additional interim data or status updates, and site-visits may be requested by the Air District.

- **Quarterly reports**
 - Cost expenditures
 - Project progress
 - Photo/ video documentation of equipment operation or production progress
 - Summary of completed tasks/ milestones
 - Operational data including
 - operating hours
 - history of repairs
 - problems
 - down-time
 - changes to scope or operations
 - Reports must be submitted to the Air District by:

- **January 10th** – Covering project progress from October 1st to December 31st of the prior year
 - **April 10th** – Covering the project progress from January 1st to March 31st
 - **July 10th** – Covering the project progress from April 1st to June 30th
 - **October 10th** – Covering the project progress from July 1st to September 30th
- o **Final report**
 - Outputs/ outcomes
 - Operational data
 - Testing data (described above)
 - Discussion of results vs. initial expectations
 - Description of equipment performance
 - Lessons learned
 - Cost expenditures
 - Operator survey/ feedback on equipment performance
 - Description of next steps for technology development
 - Must be submitted to the Air District by **June 1, 2022**

Application Submittal

Project applications should include all of the elements described below. The submitted application package must include four (4) copies in addition to the signed original and one (1) compact disc (CD). The CD must contain the application package, including all required documents, as a single electronic file in either Microsoft Word or Portable Document Format (PDF). Applications that do not meet the above requirements may not be scored and may be disqualified. Applicants should not include any confidential information or data in the submittal. Proposals should be limited to 10 pages, not including the cover sheet or attachments.

Applications submitted must be dispatched with enough time to be received by the Air District no later than 3:00 p.m. (Pacific Time) on April 15, 2020 (delivery service provider tracking number may be used to verify date of receipt) to the address below. Applications received after April 15, 2020 may be rejected and not scored. No applications may be submitted by fax. Applications must be mailed to the following address:

**Bay Area Air Quality Management District
Strategic Incentives Division
Attention: Anthony Fournier, FARMER DEMO
375 Beale St., Suite 600
San Francisco, CA 94105**

4/6/2020 Update - Submittal flexibility due to COVID-19 restrictions. All applicants must submit hard copies of their applications. Do not send hard copies through mail services that require a delivery signature to be received to prevent undeliverable mail and returned packages. Applicants are also encouraged to submit an electronic copy of their complete application. In cases where email and hard copies are submitted, we will use the receipt of the email application as the official receipt date. In this case the hard copy must be postmarked by 3:00 pm on April 15, 2020. Email applications must be sent to Anthony Fournier at afournier@baaqmd.gov by 3:00 pm on April 15, 2020. Please use the email subject line text: Application Submittal Zero-Emission Mobile Agricultural Equipment Demonstration Program. The application submittal deadline has not been changed.

Required application elements

- o Application coversheet/ form
- o Work/ Implementation plan
 - Equipment proposal
 - Location of demonstration

- Description of how current work is done – diesel equipment
- Work / duties to be performed
- Expected equipment usage per day and per year (ex. Hours of operation, kwh, etc.)
- Emission reductions must be quantified using CARB Carl Moyer Program methodology³ for NO_x, ROG and PM as well as CARB Zero- and Near Zero-Emission Freight Facilities Project (ZANZEFF) quantification methodology of GHG reductions⁴
- Estimated fuel savings from the demo
- The applicant must provide equipment details from fleet partner for current diesel equivalent equipment that does the work that will be done by the demonstration equipment. Minimum information needed include:
 - Equipment: Type, make, model, model year
 - Engine: Make, model, model year, hp, fuel type
 - Expected annual hours of equipment operation
- Resources available/ needed to implement the project
- Project schedule – proposed milestones
- Post-demonstration plans for the zero-emission equipment and infrastructure
- Team/ partner description
 - Roles/ responsibilities
 - Experience
 - # of staff
 - Location – operating address
 - Equipment development
 - History of demonstration projects
- Total cost estimate/ Budget – See Funds Available section for description of eligible and ineligible costs
 - Itemized budget – Applicants must itemize costs related to personnel, fringe benefits, travel, equipment, installation (labor) supplies, contractual costs, other direct costs (subawards, participant support costs), indirect costs, and total costs.
 - Equipment
 - Charging/ fueling Infrastructure
 - Infrastructure labor (estimated rates and hours)
 - Other labor (estimated rates and hours)
 - Administrative costs/ project management
 - Operating costs – Electricity/ fuel, maintenance costs for operating the funded equipment
 - Data collection
 - Other costs
 - Scalability option: Provide a range of costs by unit to allow for consideration of different # of units
 - Identify all sources of funding that will support the project
 - If a proposed cost share is to be provided by a named third-party, a letter of commitment is required.
- Equipment description / manufacturer summary
- Letter(s) of commitment from all project partners
- Description of value of demonstration and potential for commercialization

Application Evaluation, Award, and Contracting

Evaluation

³ CARB Carl Moyer Program 2017 Guidelines, cost-effectiveness methodology, https://ww3.arb.ca.gov/msprog/moyer/guidelines/2017gl/2017_gl_appendix_c.pdf

⁴ CARB ZANZEFF Solicitation: https://www.arb.ca.gov/msprog/mailouts/msc1810/zanzeff_appendix_d.pdf

The Air District will evaluate each proposed project component using the information provided in the application and rank each project component based on the Program’s evaluation criteria. Applications must be complete to be considered for funding.

The Air District may:

- select one or more proposals for this award
- award less than \$1,000,000 if there are not enough qualified applications
- partially fund applications by funding discrete portions of proposed projects. If the Air District decides to partially fund an application, it will do so in a manner that does not prejudice any applicants or affect the basis upon which the application was evaluated and selected for award, thereby maintaining the integrity of the competition and selection process.
- follow-up with applicants if clarification is needed
- place eligible proposals on a backup list that could be funded if additional funds become available
- cancel this Solicitation
- revise the amount of funds available under this Solicitation
- amend this Solicitation as needed
- reject any or all Applications received in response to this Solicitation
- issue a 2nd Solicitation round if no sufficient project is found in 1st round
- fund a demo with the 2nd, 3rd, etc. place applicants using leftover, remaining funds from this current solicitation if the first applicant selected withdraws their project or is unable to complete the project as proposed

Project applications will be reviewed, scored and competitively ranked for recommendation. Selected demonstration projects must be approved by CARB and the Air District before receiving funding. If oversubscribed, the Air District may hold applications as backup for additional program funds that may become available. Incomplete applications, applications from ineligible applicants, and applications outside the scope of the solicitation may not be scored and may be disqualified. Project application review and scoring criteria are shown in **Table 2** below.

Table 2 – Application Evaluation Criteria and Scoring

Evaluation criteria	Possible points
Project objectives and work/ implementation plan <ul style="list-style-type: none"> • Objectives • Work/ implementation plan details and feasibility • Partners 	20
Readiness <ul style="list-style-type: none"> • Resources available • Readiness for demonstration implementation 	20
Qualifications <ul style="list-style-type: none"> • Applicant experience/ history • Partners roles and experience 	20
Budget <ul style="list-style-type: none"> • Itemized equipment and infrastructure cost • Co-funding/ match • Cost per piece of demonstrated equipment • Total project cost 	15
Technology/ innovation	15

<ul style="list-style-type: none"> • # of units to be demonstrated • Commercial readiness of technology • Potential for Market Penetration and Commercialization • Innovation 	
Timeline	5
Application completeness	5
Total Points Possible	100

Award and Contracting

The Air District will bring selected project to the BAAQMD Board of Directors for consideration and will then enter into contracts for the selected project(s). Contracts will include requirements for: project schedule, deadlines, funding award amount, project scope, performance requirements/ penalties, monitoring and reporting, payment procedures, recordkeeping, termination, repayment, etc.

No equipment is to be ordered and no work is to begin on a project until a fully executed contract between the Air District and the grantee is in place. No costs or financial commitments that are incurred or undertaken prior to the date of full execution of the contract will be considered for reimbursement from the Air District. Air District Board approval does not guarantee funding. Only a fully executed contract constitutes an obligation for the Air District to fund a project.

For Program Updates and Questions

A program webinar will be held to provide an overview of this solicitation and answer questions from interested parties. **Written questions will be accepted by email until Monday, April 6th**, and should be sent to afournier@baaqmd.gov with the subject line “RE: FARMER Demo Program.” Responses to all of the written questions received will be collected and posted on the Program website by 4/8/2020 at: www.baaqmd.gov/agriculture.

Definitions

“Agricultural Operations” means (1) the growing or harvesting of crops from soil (including forest operations) and the raising of plants at wholesale nurseries (but not retail nurseries), or the raising of fowl or animals for the primary purpose of making a profit, providing a livelihood, or conducting agricultural research or instruction by an educational institution, or (2) agricultural crop preparation services such as packing houses, cotton gins, nut hullers and processors, dehydrators, and feed and grain mills. Agricultural crop preparation services include only the first processing after harvest, not subsequent processing, canning, or other similar activities. For forest operations, agricultural crop preparation services include milling, peeling, producing particleboard and medium density fiberboard, and producing woody landscape materials. Defined in the Regulation for In-Use Off-Road Diesel-Fueled Fleets (California Code of Regulations, title 13, § 2449(c)(1)).

“Mobile Agricultural Equipment” means diesel-fueled, self-propelled, off-road equipment or vehicles with greater than 25 horsepower that are used in agricultural operations. Defined in the State Implementation Plan Credit from Mobile Agricultural Equipment Regulation (California Code of Regulations, title 13, § 2428(c)(14)).

Application Form/ Coversheet

<i>Applicant Contact and Project Information</i>	
APPLICANT INFORMATION	
Name of Applicant:	
Organization/agency/business name:	
Mailing Address:	
Street Address/P.O. Box:	
State:	
City:	
Zip code:	
BASIC PROJECT INFORMATION	
Project Title:	
Total Project Cost:	\$
Total BAAQMD Funding Requested (equipment):	\$
Total BAAQMD Funding Requested (infrastructure):	\$
# of pieces of equipment to be demonstrated:	
Proposed equipment operator for demonstration:	
Proposed project demonstration location (address):	

CONTACT INFORMATION				
	Name	E-Mail	Phone number	Fax number
Primary Project Contact				
Person(s) with Authority to Sign contract with Air District				
Person who Completed Application				

Applicant must read and initial each item below to indicate understanding and agreement:

- a. I certify that I have reviewed the application and to the best of my knowledge, the information contained in this application and in any documentation submitted in furtherance of this application is true and accurate.

Initial: _____

- b. I understand that an incomplete or illegible application or the absence of any required documentation may cause this application to be considered incomplete, and this application may be rejected by the Air District at its discretion.
Initial: _____
- c. I certify that I have not applied for or received additional grant funds from any other public entity (including any air district, the California Air Resources Board (CARB), or any Federal agency) or public program for the equipment described in this application and I agree that, if in the future, I submit an application for or receive additional grant funds from other public entities that would be used for the same equipment, I will disclose the name of the funding source(s), the full grant amount(s) and purpose(s) of that additional funding.
Initial: _____
- d. I certify that the applicant will pay any project costs beyond the grant amount awarded for this Project and that these matching funds will be available within a reasonable timeframe to complete this Project.
Initial: _____
- e. I certify that neither the applicant, equipment owner nor the equipment described in this application has any outstanding (meaning “unpaid”) violations of ARB regulations.
Initial: _____
- f. I understand and agree that the Air District or its designees must conduct inspections of the equipment that is the subject of this application to verify eligibility and compliance with requirements of the program.
Initial: _____
- g. I certify that the proposed project is not required by any local, State or Federal rule or regulation; judicial order, or agreement, memorandum of understanding, contract, or other binding obligation that requires the project equipment to implement any portion of the project.
Initial: _____
- h. I certify that I have attached documentation to this application showing that my organization carries at least the minimum insurance (e.g., Workers Compensation, Vehicle Liability, and Vehicle Physical Damage Insurance) as required by law for my fleet or company and that this insurance is held with a carrier rated A.M. Best’s rating of no less than A: VII.
Initial: _____
- i. I understand that this application is for evaluation purposes only and does not guarantee that grant funding will be awarded to any or all of the equipment described in this application.
Initial: _____
- j. I understand and agree that equipment funded can only be purchased or placed into operation after the grant agreement has been fully-executed between the equipment owner and the Air District.
Initial: _____
- k. I certify that I have attached all the required Attachments to this application.
Initial: _____
- l. I understand and certify that accepting grant funds may lead to tax liability and that by signing the grant agreement for the Project, agree to accept this liability.
Initial: _____
- m. I understand and certify that if the Air District receives a Public Records Request requiring release of information about my Project, that the Air District may release a business address but not a personal or home address, since business addresses are considered to be publicly-available (directory) information.

Initial: _____

n. I certify that, if selected for funding, the Program-funded equipment shall be placed into operation and inspected prior to the applicable operational deadlines to remain eligible for funding.

Initial: _____

I certify that I have the legal authority to apply for funding on behalf of the applicant entity, and that I am authorized to sign and submit this application on behalf of the applicant. I understand that failure to comply with the items listed above could jeopardize my participation in the program and may result in the withdrawal of this application or termination of the project (if funded).

Signed: _____

Date: _____

(Authorized Representative of Applicant)

Name (Please Print): _____ **Title:** _____