

REQUEST FOR PROPOSAL

for

Develop an Agricultural Emissions Forecasting Scenario Tool for the San Joaquin Valley Region

Authorized by the Policy Committee of the San Joaquin Valleywide Air Pollution Study Agency

*Funded by the Central California Ozone Study (CCOS)
under the authority of the San Joaquin Valleywide Air Pollution Study Agency*

Submittal: Proposals must be received at the address below on or before Friday, July 8, 2011, 5:00 PM
Proposals received after the time and date stated above will not be accepted.

Submissions must include: two (2) signed copies of Proposals delivered by mail or messenger to establish official receipt;
one (1) unbound master suitable for black and white reproduction; and
one (1) electronic copy (CD-ROM) of all submittal documents in Word or PDF format for electronic distribution to the review committee.

Address Submissions to: Ms. Nicole Dolney
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California Air Resources Board
1001 "I" Street
Sacramento, CA 95814

Mark Envelope: "PROPOSAL: Develop an Agricultural Emissions Forecasting Scenario Tool for the San Joaquin Valley Region"

RFP Issuance Date: June 21, 2011

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Contents of the Request for Proposal

<u>Section</u>	<u>Page</u>
1. Introduction	3
2. Background	3
3. Project Description	4
3.1. Qualifying Statement	
3.2. Objective	
3.3. Scope of Work	
3.4. Work Products/Deliverables	
3.5. References	
4. Project Schedule	13
5. Budget	13
6. Required Qualifications	14
7. Project Direction	16
7.1. Management	
7.2. Submittal of Results	
7.3. Reporting Requirements	
7.4. Involved Parties Responsibilities	
8. Contents of Proposals	17
9. Submission of Proposals	20
10. Process	21
10.1 Addenda and Supplements to the RFP	
10.2 Evaluation Criteria for Qualification for Respondents	
10.3 Proposal Evaluation and Contractor Selection Process	
10.4 Contract Negotiation and Approval	
11. Insurance	23
12. Data Ownership and Publication	24
13. Confidential Information	24
Exhibit A: Certification Regarding Debarment	26
Table 2: Sample Budget Summary Form	27

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1. INTRODUCTION

The Technical Committee of the San Joaquin Valleywide Air Pollution Study Agency (Study Agency) is issuing this Request for Proposals (RFP) to develop improvements to the CCOS-Domain emissions model for future year characterization of agricultural sector emissions within the San Joaquin Valley Air Basin. The Study Agency is the guiding body for the Central California Ozone Study (CCOS). The output from CCOS is intended to provide products to support the effective development of ozone attainment plans for Central California. Emission inventories are important inputs to attainment plans. The Study Agency has charge of evaluating the proposals, selecting a qualified contractor, and executing the contract.

This particular project will involve working with stakeholders in the agricultural community.

2. BACKGROUND

The ARB and local air districts are responsible for developing clean air plans to demonstrate how and when California will attain air quality standards established under both the federal and California Clean Air Acts. For the areas within California that have not attained air quality standards, the ARB works with air districts to develop and implement State and local attainment plans. Attainment plans contain many parts, including a baseline emissions inventory and an attainment demonstration, which generally involves complex modeling. The project solicited by this RFP is intended, in part, to improve emission inventories that are inputs to air quality models. Additionally, some areas of the state continue to have difficulty in achieving various ozone and PM-related federal and state air quality standards, despite the implementation of control measures. The results of these analyses will ultimately provide guidance to air regulators as they consider strategies for improving air quality in future SIPs.

The San Joaquin Valleywide Air Pollution Study Agency, a joint powers agency that coordinates scientific research on air quality issues in Central California, is the sponsor of this project. The Study Agency's decision making body is a Governing Board consisting of one supervisor from each of the eight counties in the San Joaquin Valley. While the Study Agency employs no staff, its mission is guided by committees of state, federal, and district air agency staff, and public- and private-sector stakeholders. Its projects are typically carried out by contractors who are coordinated and managed by the staff of the California Air Resources Board (ARB) and SJVUAPCD. This project will be conducted by a contractor engaged by the Study Agency and guided by staff of the ARB and participating districts.

3. PROJECT DESCRIPTION

3.1 Qualifying Statement: It is understood that a detailed timeline for completion of this work cannot be developed until a contract is in place. Once this work plan has been approved by the Central California Air Quality Study (CCAQS) Policy Committee (PC) and a contract is in place, a detailed timeline will be developed in consultation with the CCAQS Technical Committee.

3.2 Objective:

Future year emissions from agricultural activities is necessary for regional air quality modeling as well as consideration for regulatory and State Implementation Plan (SIP) development. Currently, however, the impacts from changes in land use, water availability, climate change, government policies, and economics are not very well characterized in agricultural emissions inventories. The objective of this project is to provide a method for forecasting emissions from agricultural emissions into the future. This not only involves estimating future activity for various sources but also characterizing how these impacts affect inventory characteristics like the future age and horsepower distribution of equipment.

3.3 Scope of Work:

This study is comprised of four tasks. The first task involves a project kickoff meeting. Task 2 focuses on reviewing current methods and data, and providing improved methodology and data. The latter will involve determining what data exists and which best characterizes how agricultural emissions occur and are affected by changes in land use, water availability, climate change, government policies and economics. Eight source categories will be evaluated: pesticides, farming operations, unpaved road dust, fugitive windblown dust, managed burning and disposal, silage, off-road farm equipment and on-road agricultural trucks. These tasks will involve working closely with the Technical Committee and agricultural stakeholders to ensure proper characterization of the sources of interest.

Task 1. Kickoff Meeting

At the start of the contract period, participate in person at a project kickoff meeting with ARB, the CCAQS Technical Committee, and agricultural stakeholders. This meeting may occur at the CalEPA headquarters in Sacramento or somewhere in the San Joaquin Valley (assume Fresno). The contractor will be responsible for documenting the discussions, concerns, action items, and outcome of this meeting, including identification of relevant data sources available from stakeholders. Based on the discussions at the kickoff meeting, prepare a draft work plan and submit it to the Technical Committee for review and comments. The work plan will include a QA/QC plan that the contractor will implement through the course of the project to ensure that all data and work products from all tasks conducted in this project are accurate and error free. Responding to the comments provided, prepare and submit a final work plan.

Task 2. Determine Inventory Forecasting Methods and Collect Scenario Tool Forecasting Data

Emissions from agricultural sources are important to characterize into the future. The objective of this task is to determine the methods and collect the data needed for forecasting emission-category-specific scenarios of interest.

Task 2a (Review available methodologies and tools). This will include identifying and evaluating existing models and studies that assess the impact of forecasting variables including sector growth, land use changes, water availability, climate change, economics and government policies on agricultural emissions and activities (**Note: With regard to determining, reviewing, or selecting variable-specific forecasting methods and data, respondents should utilize ag-sector-recognized experts in the corresponding subject areas such that the data and methods utilized in this project can withstand scientific peer review and also be supported by all stakeholders involved for regulatory decision making**). Other relevant impacts may be considered. The resulting impacts could be by, but are not limited to, commodity, farm size, or region specific. Reconcile the information collected with historical impacts of these same forcing functions. Produce a draft document of the recommended methodologies and necessary data for review and approval by the project manager. Once approved, the methods, tools, and data selected under this task will be detailed in a Task 2 Technical Formulation Document that will clearly describe how they will be integrated into a forecast tool to be developed under Task 3.

Task 2b (Collect data). Following project manager approval of the Task 2a Technical Formulation Document, collect the data required by the methods identified in sub-task 2a, above, to forecast agricultural-emissions–category-specific scenarios for emissions occurring on the farm or via and transport to and from the farm. Data proposed for use under this project should give preference to high quality, freely available, routinely updated public data that the project sponsors can update in the future. Exceptions to this should be clearly noted by the contractor in the Technical Formulation Document (i.e. prior to data collection or methodology selection). For purposes of bidding on this proposal, the primary inventories for which updated forecasting factors (i.e. reflecting the effects of sector growth, land use changes, water availability, climate change, economics and government policies on agricultural emissions and activities) will be developed are:

Category
PESTICIDES/FERTILIZERS - AGRICULTURAL PESTICIDES
FARMING OPERATIONS -TILLING DUST
FARMING OPERATIONS -HARVEST OPERATIONS - DUST
FARMING OPERATIONS -LIVESTOCK HUSBANDRY
UNPAVED ROAD DUST -UNPAVED ROAD TRAVEL DUST- FARM ROADS
UNPAVED ROAD DUST -UNPAVED TRAFFIC AREAS - AGRICULTURE
FUGITIVE WINDBLOWN DUST -DUST FROM PASTURE LANDS
FUGITIVE WINDBLOWN DUST -DUST FROM AGRICULTURAL LANDS (NON-PASTURE)
MANAGED BURNING AND DISPOSAL -AGRICULTURAL BURNING - FIELD CROPS
MANAGED BURNING AND DISPOSAL -RANGE IMPROVEMENT

MANAGED BURNING AND DISPOSAL -AGRICULTURAL BURNING - PRUNINGS
MANAGED BURNING AND DISPOSAL -WEED ABATEMENT
SILAGE
FARM EQUIPMENT -AGRICULTURAL EQUIPMENT (Mobile, Stationary and Portable including AG IRRIGATION ENGINES)
AGRICULTURAL TRUCKS (On-Road)

The final list of categories to be address under the contract will be determined under Task 1 (which may or may not include changes to the list above).

Review of forecasting methodologies will include, but is not limited to, analyzing the existing forecasted emissions inventories, and collecting and reviewing information for potential emission category- and forecasting-variable-specific surrogates for forecasting of emissions from the sources under forecasting variable conditions. The contractor will propose a “recommended” methodology for updating forecasts that best describes the source and conditions represented by the corresponding forecasting variables.

For informational and background purposes, proponents should be aware that agricultural activity is accounted for in various ways with the emission inventories maintained by the California Air Resources Board (ARB). Some of the methodologies describing current emission estimation development as well as growth information can be found in the links below:

Links/References
<p>Pesticides/Fertilizers</p> <p>http://www.arb.ca.gov/ei/areasrc/arbsolevapagnagpest.htm</p> <p>http://www.arb.ca.gov/ei/areasrc/fullpdf/full6-4.pdf</p>
<p>Farming Operations</p> <p>2003 methodology estimates PM10 based on 2000 CDFA harvested acreage: http://www.arb.ca.gov/ei/areasrc/armiscprocrsfarmop.htm Draft update is in development, using 2008 harvested acreage.</p> <p>2003 methodology estimates PM10 based on 2000 CDFA harvested acreage http://www.arb.ca.gov/ei/areasrc/onehtm/one7-5.htm Draft update is in development, using 2008 harvested acreage.</p> <p>ISOR: http://www.arb.ca.gov/regact/lcaf05/isor.pdf Livestock Husbandry: http://o3.arb.ca.gov/ei/areasrc/fullpdf/FULL7-6.PDF Livestock Population Methodology: http://www.arb.ca.gov/ei/areasrc/lstkpoppmeth.pdf</p>
<p>Unpaved Road Dust</p> <p>1997 ARB methodology estimates PM10 based on 1993 CDFA harvested acreage: http://www.arb.ca.gov/ei/areasrc/ONEHTM/ONE7-11.HTM Draft update is in development, using 2008 harvested acreage.</p>

2003 SJV methodology, data vintage varies by source category:

<http://www.arb.ca.gov/ei/areasrc/districtmeth/sivalley/unpavedtrafficmethodology.pdf>

<http://www.arb.ca.gov/ei/areasrc/fullpdf/full7-13.pdf>

Updates in progress.

Fugitive Windblown Dust

Currently posted ARB method for both pasture and non-pasture:

<http://www.arb.ca.gov/ei/areasrc/fullpdf/full7-12.pdf>

Methodology is currently being revised. Only minor method revisions expected, with acreage updates being the most significant changes to the major agricultural areas. The sources of acreage revisions can be found at:

http://www.nass.usda.gov/Statistics_by_State/California/Publications/AgComm/Detail/index.asp

Managed Burning

ARB's methodology for estimating emissions for agricultural burning can be found on the following website under "Agricultural Burning and Other Managed Burns":

<http://arb.ca.gov/ei/see/see.htm>

ARB's May 2010 staff report on San Joaquin Valley agricultural burning program can be found at:

<http://www.arb.ca.gov/smp/district/arbstaffreport.pdf>

Information on ARB's agricultural burning forecasts and Sacramento Valley acreage allocations can be found at:

<http://www.arb.ca.gov/smp/met/met.htm>

ARB's Smoke Management Program:

<http://www.arb.ca.gov/smp/smp.htm>

Some studies related to agricultural burning [*I haven't been tracking any ongoing studies*]:

"Creating a Statewide Spatially and Temporally Allocated Agricultural Burning Emissions Inventory Using Consistent Emission Factors" (<http://www.arb.ca.gov/research/apr/past/99-714.pdf>)

"Atmospheric pollutant emission factors from open burning of agricultural and forest biomass by wind tunnel simulations" (http://www.arb.ca.gov/research/apr/past/a932-126a_1.pdf

http://www.arb.ca.gov/research/apr/past/a932-126b_1.pdf

<http://www.arb.ca.gov/research/apr/past/a932-126a2.pdf>

<http://www.arb.ca.gov/research/apr/past/a932-126b2.pdf>

<http://www.arb.ca.gov/research/apr/past/a932-126c2.pdf>

http://www.arb.ca.gov/research/apr/past/a932-126_3.pdf)

"2002 Fire Emission Inventory for the WRAP Region – Phase II"

http://www.wrapair.org/forums/feif/documents/WRAP_2002_PhII_EI_Report_20050722.pdf

"Review of Agricultural Crop Residue Loading, Emission Factors, and Remote Fire Detection"

http://wrapfets.org/pdf/Ag_burning_tech_memo_20100503.pdf

"Development of 2000-04 Baseline Period and 2018 Projection Year Emission Inventories"

http://www.wrapair.org/forums/feif/documents/task7/Phase3-4EI/WRAP_Fire_Ph3-4_EI_Report_20070515.pdf

Silage

Update in progress.

Agricultural Equipment

This inventory currently being developed. A survey of farm equipment that will be used as a basis for the inventory can be found at <http://www.arb.ca.gov/ag/agtractor/agtractor.htm>

Agricultural Trucks

<http://www.arb.ca.gov/regact/2010/truckbus10/truckbusappg.pdf>

<http://www.arb.ca.gov/msprog/onrdiesel/ab1085compliance.htm>

Other work related to agricultural activity is accounted for in various ways with the emission inventories maintained by the California Air Resources Board:

- The Farmland Mapping and Monitoring Program (FMMP) produces maps and statistical data biannually to analyze impacts on California's agricultural resources. FMMP crop acreage is currently the growth surrogate for fugitive dust from unpaved farm roads, ag harvest and land preparation. Details on the FMMP can be found at:
<http://www.conservation.ca.gov/dlrp/fmmp/Pages/Index.aspx> .
- An ERG contract that surveyed a number of economic sectors including agriculture. http://www.arb.ca.gov/msprog/moyer/fleet_mod/Off-Road_Equipment_Population_report.pdf

New tools are under development elsewhere that can complement this project to further improve the characterization of agricultural sector emissions, including:

- CCOS PROJECT #1 (Development of a CCOS-Domain Emissions Model for Period-Specific, Grid-Cell Specific Characterization of Agricultural Sector Emissions within the San Joaquin Valley Air Basin); the contractor for CCOS Project #2 (i.e. the project described in this RFP) will be required to collaborate with the contractor for CCOS Project #1;
- A San Joaquin Valley travel demand model currently under development by UC Davis will provide a tool for relating land use to travel demand in the SJV Air Basin – the accuracy of this model's results could increase with better agricultural activity data.
- A Caltrans-funded model under development at UC Irvine that will provide forecasts of statewide goods movement activity by commodity and mode – finer data on agricultural activity will lead to more accurate forecasts for SJV when this model is applied.
- By 2012, the California Department of Water Resources (DWR) will develop a regulation for agricultural water measurement and guidebooks to assist urban

and agricultural water suppliers to prepare water management plans and comply with SB X7-7.

- UC Davis' CALVIN model integrates economic and engineering aspects of California's future water supply, with explicit economic values for agricultural and urban water use for 2020 land use and population.

Upon completion of Task 2, the contractor will participate in a conference call with the project manager and other stakeholders prior to starting on Task 3. It may be feasible to conduct elements of Task 3b in parallel with Task 2, e.g. for emission categories having forecasting methodologies and data that have been approved by the project manager. If the recommendations from Task 2b involve collecting additional forecasting data via field programs or product licensing fees the contractor will provide a recommended data collection work plan for approval, including a clear justification of the need for a data collection effort and an estimate of how much time, resources, or funds will be allocated to this effort from the available project funds. Deliverables from Task 2 will include:

- Draft and final findings documents regarding recommended methods and data;
- A field data collection plan, if additional work such as purchasing licensed data or software or conducting a survey is deemed necessary;
- A technical formulation document detailing the specific methods developed- and data collected under this task. This should be a technical document that provides very clearly written details of the data used as well as the methods/formulations to be incorporated into the forecast scenario tool framework under Task 3. This document will be incorporated as an appendix to the system user guide under Task 3.
- An organized archive of all data (and associated pre-processing routines) collected under Task 2 to be integrated into the system under Task 3.
- Draft system architecture design for the scenario tool developed in consultation with project manager.

In the proposal as well as the Task 2 documentation, the contractor should clearly indicate whether proposed data are proprietary (and the cost, if proprietary) or freely and publicly available as well as the associated quality and update frequency. As mentioned under sub-task 2b, preference should be given to representative, high quality data sources that are publicly available at no charge and can be routinely updated by the project sponsors in the future. Any processing software required to conduct such updates will be considered part of the deliverables of this contract.

Task 3. Develop a Forecasting Scenario Tool Framework

Proposals should detail proponent's experience with emission model- and emissions forecasting tool development, specific system architectures, and whether a new system will be developed from scratch versus whether existing systems are proposed for modification. Any and all source code associated with the delivered system will be part of the deliverable from this task. Proponents should also address the robustness of the proposed system (e.g. computational efficiency and data capacity). The final delivered

system under this task should be fully capable of processing and storing emissions data for all ag-related source categories within the State of California. Also, note that the contractor will be required to work collaboratively with the project manager and contractor for Project #1, "Development of a CCOS-Domain emissions model for period-specific, grid-cell-specific characterization of agricultural sector emissions within the San Joaquin Valley Air Basin"

Task 3a (System Design). This task should be conducted in parallel with developing the technical formulation document under Task 2a due to the time constraints of this project. Prior to embarking on model development, under this task the contractor will discuss user needs and the proposed system architecture with the project manager and the Technical Committee. The outcome of these discussions will be the development of a draft system design document for review by the project sponsors. It should be noted that the use of this model will not be limited to only the emission categories covered under Task 2, but the model should be designed in such a way that emissions from a broader range of categories can also be subjected to forecasting scenarios in the future, given the necessary inputs. Additionally, the contractor should work collaboratively with the project manager and contractor for Project #1, "Development of a CCOS-Domain emissions model for period-specific, grid-cell-specific characterization of agricultural sector emissions within the San Joaquin Valley Air Basin", to ensure that the systems developed under each project are complementary. The resulting system, including full system documentation and well documented computer code, will allow the project sponsors to modify, update, distribute, and maintain it freely in the future once the contract is completed (documentation should be included to facilitate this). Hence, software for which project sponsors are familiar with and/or have access to is preferred. Preference will be given to license-free, high quality, publicly available software platforms. As part of the interaction, the contractor will hold a conference call with the CCAQS Technical Committee to discuss a proposed system architecture (system design, data flow, needed functionality, etc) for Task 3 work elements. Based on comments provided by the Technical Committee on the draft document, the contractor will implement modifications to the design/architecture and work plan. This task also involves using the data collected in Task 2 to develop model inputs.

Task 3b (System Development). Elements of this task *may* be conducted in parallel with Task 2 due to the time constraints of this project with project manager authorization. Based upon Task 3a, in this task the contractor will develop a draft (working beta) and final emissions model that includes the capability to forecast SJV's agricultural activity emissions as a function of land use changes, water availability, agricultural-sector economy, government policies, climate, and any other impacts approved by the project manager.

A working, beta version of the system using test data will be installed and tested on the project manager's systems for use, feedback, and modification prior to the completion of this task. The model will also be checked for emission estimation accuracy and processing efficiency. A final working version of the system plus documentation will be the final deliverable for this task. It will be necessary to work with the appropriate ARB staff to develop a model that can use ARB inventory inputs and provide outputs that are compatible with ARB emission inventory databases.

Task 3c (System Implementation). Under this task the final emissions forecasting scenario tool developed under Task 3b will be populated by the contractor with the appropriate data inputs. The inputs will include information collected in Task 2. It is important to note that use of this model will not be limited to only the emission categories covered under Tasks 1 and 2. As a result, the system should be designed in such a way that emissions from a broad range of categories can also be estimated, given the necessary inputs. The resulting emission estimates produced by the system will be quality assured for reasonableness and accuracy.

Task 3d. This element involves coordination and conference calls with ARB, agricultural stakeholders, the San Joaquin Valley Air District, and other CCOS stakeholders during model development (including PIs from other CCOS projects such as Project #1, "Development of a CCOS-Domain emissions model for period-specific, grid-cell-specific characterization of agricultural sector emissions within the San Joaquin Valley Air Basin").

The final deliverable of Task 3 is a functional, freely distributable emissions forecasting scenario tool, any related input processors, and final system documentation (system design documentation, technical formulation documents, user guides, etc), including any and all related source code and necessary inputs, to characterize agricultural sector emissions into the future.

In addition to being used by CARB for inventories associated with regional air quality modeling, the results of this project will be applied to the models developed for SJV and the statewide goods movement model to improve the forecasts generated by those models in relation to agricultural activity.

Task 4. Summarize Findings

Summarize the findings of tasks 1, 2 and 3 in a draft technical memorandum. Task 4 will include QA/QC results that were implemented through the course of the project to ensure that all data and work products from all tasks conducted in this project are accurate and error free.

In addition to a draft technical memorandum the contractor will prepare a manuscript of the findings in Tasks 2 and 3 which will, at ARB's discretion, be submitted to an appropriate professional journal for peer review and possible publication.

3.4 Work Products/Deliverables

Initial Kickoff Meeting: As described in Task 1, the contractor will meet with the CCAQS Technical Committee in person in Fresno or Sacramento as determined by the project manager to discuss the overall plan, details of performing the tasks, the project schedule, items related to personnel or changes in personnel, and any issues that should be resolved before work can begin.

Tasks 2 and 3 Meetings: Tasks 2 and 3 will both require a great deal of collaboration and coordination with ARB, the Technical Committee, agricultural stakeholders, and the contractor select for CCOS Project #1, "Development of a CCOS-Domain emissions

model for period-specific, grid-cell-specific characterization of agricultural sector emissions within the San Joaquin Valley Air Basin“.

Phase 1 Findings Conference Call: As described in Task 4, the contractor will discuss via telephone with the CCAQS Technical Committee the findings of Tasks 2 and 3. All tasks are to be approved by the ARB Program Manager in consultation with the CCAQS Technical Committee.

Final Project Meeting: The contractor will meet with the CCAQS Technical Committee in person in Sacramento to present the analyses and results of the three tasks. In addition to presenting the inputs, results and final model the contractor will install and test the model on ARB’s computers.

Progress Reports: The contractor will provide progress reports every month via email to the Project Manager. The progress report will include:

- Funds spent and remaining by sub-task;
- Hours used and remaining by sub-task;
- Current status of work products and deliverables;
- Problems encountered;
- Future work; and
- Brief summary of any meetings, including list of attendees.

The contractor will participate in conference calls to discuss the progress reports when requested by the Project Manager.

Data and Written Documentation: Written documentation will include:

- Work plan (Task 1; draft and final)
- Recommended Methodology (Task 2; draft and final)
- Field data collection plan, if necessary (Task 2);
- Technical formulation document (Task 2);
- All project-related data (Task 2);
- System Design Document (Task 3a; draft and final);
- All System Documentation (Task 3; draft and final);
- Draft Summary of Findings (Task 4)
- Final Summary of Findings (Task 4)
- Interim, Draft and Final Reports, including QA/QC plan and results (Task 4)

Software and Systems: Data processing and computer system deliverables will include:

- All data processing routines (Task 2 and Task 3);
- Preference of data sources and software unencumbered by proprietary licensing and fees;
- Complete source code
- Beta and working scenario tool (Task 3b; beta and final);
- System installation and testing on project manager’s systems (Task 3b);
- Loaded scenario tool (Task 3c with Task 2 data incorporated);

Electronic Data Submittal: The contractor shall provide any and all data developed or used in this project to the Study Agency in a format specified by the project manager. Reports will be provided to the Study Agency in a format specified by the Study Agency using Microsoft Office 2010 Professional software (Word, Excel or Access).

Draft Final Report: The Contractor shall deliver to the Study Agency an electronic copy of a draft final report for review by staff.

Copies of Final Report: Upon approval of the Final Report by the Study Agency, the Contractor shall deliver to the Study Agency five bound copies and one unbound copy of the final report incorporating all final alterations, additions and appendices. The Contractor shall also deliver an electronic copy of the final report produced in Microsoft Office 2010 Professional. The report shall also include a bibliography of data sources referenced or used to support the evaluation and completion of tasks. The Study Agency may request that a copy of these reference documents accompany the final report in order to provide complete documentation of the report.

Invoices and Progress Reports: The contractor shall submit invoices in one of two ways: 1) hard copy in triplicate or 2) via email using MS Word. Invoices shall be prepared in the format used by the Study Agency, which will be provided. The invoices must list the contract number and shall itemize all expenses (including equipment costs) incurred during the payment period completed. Each item in the invoice shall correspond to one of the tasks. Direct labor charges and subcontractor and contractor charges shall be subdivided into the number of hours spent by each staff classification (e.g., Senior Scientist, Research Assistant) for the invoice period.

The contractor will be paid for the payment period when the invoice and a progress report are deemed by the Study Agency to reflect work done in accordance with the contract. Ten percent (10%) of each invoice payment will be withheld until the final report is complete and approved by the Study Agency.

Additional tasks performed by the contractor or its subcontractors to develop supporting information or analysis, which were not specified in the proposal, will not be reimbursed without prior approval from the Study Agency. Unapproved additional tasks are not reimbursable. Any completed data sets shall be provided by the Study Agency for availability to the stakeholders.

4. PROJECT SCHEDULE

Although the Study Agency may agree to a different schedule that would be specified in the contract, the Study Agency intends for Tasks 1 through 4, to be completed according to the following schedule of deliverables. Status reports and conference calls are not included in Table 1. Funds for this project expire at the end of June 2012.

Table 1: Project Schedule and Deliverables

Action/Work Product	Date
Release of RFP	June 21, 2011
Proposal Deadline	July 8, 2011
Contractor Selection	July 19, 2011
Contract Development	July 26, 2011
Contract Approval	August 18, 2011
Kickoff Meeting (Task 1)	TBD
Final work plan (Task 1)	TBD
Draft Task 2 findings and Technical Formulation Document	TBD
Task 3a Completion (System Design) and Final Task 2 Plan for Field Data Collection or Surveys, if needed.	TBD
Task 2 and Task 3b Completion (System Dev.)	TBD
Task 3c Completion	TBD
Task 3 (all) Completion (System Implementation & Documentation)	TBD
Task 4 Draft Report	Early May 2012
Study Agency Review of Draft Report	Late May 2012
Final Task 4 Report	June 15, 2012

5. BUDGET

Costs will be a factor in evaluating proposals responding to this RFP. Proponents are directed to provide task-related costs in their proposal budget summary rather than a lump sum bid. Proposals will be evaluated both by comparison of cost for comparable tasks as well as projected total cost. The Study Agency's review committee is authorized to consider the comprehensiveness of proposed efforts as well as total cost to provide reasonable comparisons of the responses. All evaluation criteria are described in Section 10.2.

The budget for this project is \$250,000. The budgeted amount is available to the contractor for research, analysis, coordination, teleconferences, meetings, report writing, subcontractors, and all other efforts undertaken by the contractor for this project.

The proponent's costs must be itemized by the following categories:

Task: List a total cost per sub-task. The Study Agency reserves the right to remove tasks as deemed necessary to remain within budget.

Labor: List an hourly labor rate for each assigned principal and technical specialist. The rate quoted must include labor, general, administrative, and overhead costs.

Subcontractor Costs: Identify subcontractors by name, list their cost per hour or per day, and the number of hours or days their services will be used.

Travel Costs: Identify estimated travel costs, including the number of trips required, destinations, and approximate costs of travel. Travel costs are reimbursed at prevailing rates for the contracting company or rates approved by the Study Agency, whichever is lower, unless negotiated otherwise.

Miscellaneous Costs: If any.

Total cost must be clearly indicated in the Costs of Proposal section of the proposal.

It is expected that general overhead and administrative costs are included in the hourly rate for labor. It will be assumed that all contingencies and/or anticipated escalations are included. No additional funds will be paid above and beyond the contracted amount for the services specified in the proposal. If the Study Agency determines a need for additional tasks or services not included in the proposal, the contract may be amended by agreement of both parties to include additional tasks and related costs.

6. REQUIRED QUALIFICATIONS

The selected proponent shall have demonstrated extensive experience and expertise in the following areas:

- Knowledge, experience, and expertise in ag-specific variables that may influence regional agricultural emissions and activities in the future including sector growth, land use changes, water availability, climate change, economics and government policies;
- Knowledge, experience, and expertise in developing emission inventories;
- Knowledge, experience, and expertise in emission model development and gridded emissions processing;
- Knowledge, experience, and expertise in computer systems and data processing software used for emissions inventory processing, including large databases and Geographic Information Systems;
- Knowledge and experience in handling large amounts of data;
- Knowledge of analytical and quality assurance techniques;
- Collaborative and consensus-building experience working with public-private stakeholder groups similar to the stakeholder groups that will be involved in this project;
- Excellent working relationships with government agencies and the agricultural sector;
- Skill in preparing clear reports; and
- Excellent technical writing skills.

Contractor must demonstrate the ability and resources to produce the deliverables requested in this RFP. The Study Agency reserves the right to reject any proposal deemed non-responsive to the RFP, not responsible, and/or not reasonable.

Excluded Parties List System (EPLS)

The Excluded Parties List System (EPLS) is a central registry that contains information regarding entities debarred, suspended, proposed for debarment, excluded, or otherwise declared ineligible from receiving Federal contracts. Access to the EPLS is available at <http://www.epls.gov>. An Offeror or any individual identified in the solicitation that appear in EPLS are not eligible for award of a contract.

Verification of Federal Debarment List

For all procurements utilizing federal funds, buyers must verify prior to award that the intended awardee does not appear on the federal debarment list. The Excluded Parties List System (EPLS) website, <http://www.epls.gov/>, includes information regarding entities debarred, suspended, proposed for debarment, excluded or disqualified under the nonprocurement common rule, or otherwise declared ineligible from receiving Federal contracts, certain subcontracts, and certain Federal assistance and benefits. If the intended awardee appears on the list, they are ineligible to receive the award.

Bidder Requirements

The bidder certifies by signing the signature page of the original copy of the submitted proposal and any amendment signature page(s) that the bidder is not presently debarred, suspended, proposed for debarment, declared ineligible, voluntarily excluded from participation, or otherwise excluded from or ineligible for participation under federal assistance programs. The bidder should complete and return the attached certification regarding debarment, etc., i.e. Exhibit A, with their bid. This document must be satisfactorily completed prior to award of the contract.

7. PROJECT DIRECTION

7.1. Management

This project is part of the Central California Ozone Study (CCOS). CCOS is a large-scale program involving many sponsors and participants. Three entities are involved in the overall management of CCOS. First, the San Joaquin Valleywide Air Pollution Study Agency, a joint powers agency formed by the eight counties in the San Joaquin Valley, directs the fund-raising and contracting aspects. Second, the Study Agency's Policy Committee comprises four voting blocks: State, local, and federal government, and the private sector, provides guidance on the objectives and funding levels of CCOS projects, and approves all proposals, contracts and reports. Third, the Study Agency's Technical Committee provides overall technical guidance on RFPs, direction and progress of work, contract work statements, and reviews of all technical reports produced from the study. On a day-to-day basis, various staff of the California Air Resources Board (ARB) are responsible for management of CCOS. Staff of SJVUAPCD assist with the coordination of Study Agency Board actions, and the legal and financial management of the Study Agency.

The contractor selected to conduct this work shall report to the Study Agency Project Manager, who will be appointed with the approval of the contract. For the purposes of this project, the staff of the ARB will write and monitor contracts with the participants and will be the primary interface between the contractor, the Policy and Technical

Committees, and the Study Agency. Contract performance is not to begin until a contract is fully approved by the San Joaquin Valleywide Air Pollution Study Agency.

7.2. Submittal of Results

All completed files or reports shall be released by the contractor to the appointed Project Manager for distribution and review by the Study Agency. The Study Agency may review any of the results in whole or in part and submit comments or questions to the contractor through the Project Manager. The contractor shall not undertake additional work to address issues raised by this process without the express written approval of the Project Manager.

7.3. Reporting Requirements

The contractor shall deliver brief, written monthly progress reports to the Study Agency Project Manager. Payment to the contractor will not be made until receipt of all scheduled progress reports. The contractor shall deliver to the Project Manager a monthly invoice. With respect to the payment period completed, the invoice shall set forth in detail by task, in accordance with the contract budget and as appropriate, charges for time expended on the analysis, including classification of personnel involved in such time expenditure, and the monthly, weekly, or hourly rates for such personnel, as appropriate. The invoice shall also contain an itemization of all materials used for the analysis, including the purpose of its use and its cost. The contractor shall deliver a draft final and final electronic report in MS Word. The contractor will receive comments on the draft report within 45 days of submission, with revisions in the final report due within 45 days after receipt of review comments. The reporting requirements are in addition to the requirement to transmit all required electronic files related to completion of tasks as previously specified in Sections 2, 3, and 4 of this RFP.

7.4. Involved Parties Responsibilities

The Study Agency provides an independent, collaborative, peer reviewed, scientific approach that is desired to ensure stakeholder confidence in the research and outcomes. Staffs from the ARB, interested local air districts and other interested CCAQS TC members will provide review of draft reports along with guidance for research.

8. CONTENTS OF PROPOSALS

Proposals must be signed by a duly authorized official of the responder and must state that the proposal is valid for a period of not less than ninety (90) days from the date of submittal. The respondents name and address as used in contractual agreements should be provided. The name, address, title, telephone number, fax number and email address of the person(s) authorized to execute agreements and the person(s) acting as principal for conduct of the proposal should be provided.

Information in the proposals shall become public property subject to disclosure under the Public Records Act. Any information included in the proposal which constitutes a trade secret or is otherwise proprietary or confidential should be clearly marked with that designation. Proposals should convey a maximum of technical content related to the

relevant task with a minimum of extraneous material. Proposals should convey a high degree of technical understanding and innovation while demonstrating the ability to present complex scientific results to technically qualified decision-makers. The proposal should be clear and concise. The response to the RFP is expected to be brief, with text of the proposed approach to completing the tasks limited to less than 30 pages, not inclusive of qualification information (e.g. attached resumes, etc.), budget summary table and timeline.

The response to the RFP must include:

1. Qualifications of the staff of respondent to complete the required tasks.
2. Approach to completing tasks identified in Section 3 of this RFP. This portion should include information on the contractor's specific expertise to conduct these tasks and previous experience developing, using and designing similar systems.
3. Discussion of any missing tasks identified by the respondent, which respondent proposes to add for fulfillment of Section 3 objectives.
4. Estimated timeline for completion of tasks subsequent to contract execution. This estimate may indicate a minimum and maximum reflecting the investigative nature of the field study. Include information on the availability of the respondent and proposed subcontractors during the proposed term. Indicate and explain or justify adjustments to the schedule anticipated by or proposed by respondent.
5. Budget for RFP tasks and additional identified tasks. The estimated costs for each task should be provided, as well as hourly billing rates for additional services that may be necessary to complete additional processing identified by the investigative tasks, if authorized for completion by the Study Agency Project Manager.

Submitted proposals must follow the format outlined below and all requested information must be supplied. The submitted proposals shall be limited to 30 pages, single sided or 15 pages, double sided, with 1" margins. The Cover Letter, Table of Contents and Certificate of Eligibility for Federal Funding are not included in the 30 page limit. Proposals shall be printed on white paper and the font shall be black Arial and no smaller than 12 point. Graphics may be in color or black and white. Failure to submit proposals in the required format may result in elimination from proposal evaluation.

Cover Letter - Must include the name, address, and telephone number of the company, total field study cost, the name of the contact person for the proposal, and be signed by the person or persons authorized to represent the firm.

Table of Contents - Clearly identify material contained in the proposal by section and page number.

Summary (Section 1) - State the overall approach to the analysis and objective(s). Demonstrate a clear understanding of the analysis goal. Include total study cost. Provide specific examples of steps to be taken to complete the analysis, as well as measures to assure repeatability, reliability and applicability of analysis.

Work Program (Section 2) - Describe work activities or tasks to be performed including the sequence of activities and a description of methodology or techniques to be used.

Program Schedule (Section 3) - Provide projected milestones or benchmarks for major products/reports within the total time allowed.

Study Organization (Section 4) - Describe the proposed management structure, analysis procedures, organization of the contracting group, and facilities available.

Assigned Personnel (Section 5) - Identify the principals having primary responsibility for conducting the analysis. Discuss their professional and academic backgrounds. Provide a summary of similar work they have previously performed. List the amount of time, on a continuous basis, that each principal will spend on this study. Describe the responsibilities and capacity of the technical personnel involved. Substitution of the project manager and/or lead personnel shall not be permitted without prior written approval of the Study Agency Project Manager.

Study Agency And ARB/District Resources (Section 6) - Describe any Study Agency or ARB/District services and staff resources needed to supplement contractor activities to achieve identified objective(s).

Subcontractors (Section 7) - If subcontractors are to be used, identify each of them in the proposal. Describe the work to be performed by them and the number of hours or the percentage of time they will devote to the study. Provide a list of their assigned staff, their qualifications, and their relationship to project management, schedule, costs and hourly rates.

Contractor Capability and References (Section 8) - Provide a summary of the firm's relevant background experience. Discuss the applicability of each experience to this RFP. Include a brief summary of related studies completed for other parties that are of a similar nature to the work requested by this RFP. (Report examples [see Section 11] can be provided in an attachment).

Costs of Proposal (Section 9) - Identify all costs associated with the execution of this RFP. Also attach a Proposal Budget Summary Table similar to the example provided in this RFP (page 21).

Conflict of Interest (Section 10) - Identify any actual or potential conflicts of interest resulting from any contractual work performed, or to be performed, for other clients, as well as any such work done, or to be done, by its proposed subcontractors for the proponent. Specifically, proponents must disclose any recent or current contracts with the Study Agency, business entities regulated by the ARB or Districts, and/or any environmental or business interest group. In addition, proponents must disclose any contracts with the Study Agency, public or private entities, which are scheduled to be performed in the future, or which are currently under negotiation. The Study Agency will consider the nature and extent of such work in evaluating the proposal (see Section 10.0 below).

Additional Data (Section 11) - Attach a copy of any work prepared similar to what is requested in this RFP. Report samples shall not be considered part of the 30-page limitation set for the proposal. Provide other essential data that may assist in the evaluation of this proposal.

Certificate of Eligibility for Federal Funding (Exhibit A) - The bidder should complete and return the certification regarding debarment, Exhibit A, with their bid. This document must be satisfactorily completed prior to award of the contract.

Attachments – Extensive documentation is discouraged, but attachments for the budget summary table, resumes, and report examples can be included in the proposal. Attached documents are not part of the 30-page limitation.

9. SUBMISSION OF PROPOSALS

All proposals must be submitted according to the specifications set forth in Section 8 – “Contents of Proposal” and this section. Failure to adhere to these specifications may be cause for rejection of proposal.

1. Signature - All proposals shall be signed by an authorized representative of the proponent.
2. Due Date - Proposals must be received no later than 5:00 p.m. on July 8, 2011. Late proposals will not be accepted. Any correction or resubmission by the proponent will not extend the submittal due date.
3. Delivery Address - Proposals must be directed to and received at the address below and should be directed to:

Ms. Nicole Dolney
ARB Program Manager
California Air Resources Board
1001 “I” Street
Sacramento, CA 95814

4. Identification – To accommodate processing and identification of time of receipt, the bidder shall submit the required copies of the proposal in a sealed envelope, plainly marked in the upper left-hand corner with the name and address of the proponent and the words:

“Proposal: Develop an Agricultural Emissions Forecasting Tool for the San Joaquin Valley Region

5. Electronic Copy (Compact Disc, read-only-memory) - The bidder shall also submit an electronic copy of the proposal in Microsoft Word. The electronic copy shall be emailed to ndolney@arb.ca.gov.

Grounds For Rejection - A proposal may be immediately rejected if:

- It is received at any time after the exact due date and time set for receipt of proposals;
- It is not prepared in the format prescribed; or
- It is not signed by an individual authorized to represent the firm.

Once submitted, proposals, including the composition of the contracting team, cannot be altered without prior written consent of the Study Agency. All proposals shall constitute firm offers and may not be withdrawn for a period of ninety (90) days following the last day to accept proposals. All proposals become the property of the Study Agency. The Study Agency reserves the right to reject all proposals and make no awards.

10. PROCESS

10.1. Addenda and Supplements to the RFP

The Study Agency may modify the RFP and/or issue supplementary information or guidelines relating to the RFP during the proposal preparation period. In the event that it becomes necessary to revise any part of this RFP or if additional information is necessary to enable the responder to make adequate interpretation of the provisions of this RFP, a supplement to the RFP will be provided to each responder.

10.2. Evaluation Criteria for Qualification for Respondents

Proposals will be rated on the following key factors:

1. Proponent's ability and expertise to perform requested services in the RFP. Provide a brief statement of qualifications of the proposed participants and a description of the duties they will perform, including a specific discussion of relatively recent study experience. Greater detail may be incorporated by reference to a corporate website (preferred) or as a standard package. Extensive corporate experience is not as important as the qualifications of the principals who will be dedicated to the proposed task.
2. Extent of proposed action to meet the goals of the RFP
3. Timeliness of proposed schedule for completion of tasks
4. Comparison of cost, considering extent of proposed actions and schedule expediency.

10.3. Proposal Evaluation and Contractor Selection Process

The Study Agency will evaluate all proposals to determine responsiveness to the RFP. Participating ARB and district staffs and members of the Technical Committee will evaluate all responses to the RFP received in accordance with the required deadline and instructions, to ensure the requirements for this project will be satisfied, and will recommend a contractor for approval by the Policy Committee. Failure to adhere to

specifications in this RFP may be cause for rejection of the proposal. The Technical Committees, ARB, participating districts, Policy Committee and Study Agency retain the right to reject all proposals and conduct direct negotiations with a selected contractor if all proposals are considered to be substantially nonresponsive to key issues.

Proposal evaluation criteria will include:

1. Cost of proposal;
2. Clarity and thoroughness of proposal;
3. Presentation, including good organization, formatting, and a minimum of grammatical errors;
4. Thoroughness and appropriateness of the proposed work program;
5. Innovation in approach to work tasks;
6. Previous performance and experience with similar projects, especially emissions model development and collaboration with agricultural stakeholders;
7. Working relationships with government agencies and agricultural stakeholders.

During the selection process, the Study Agency may interview proponents with scores above a natural break, for clarification purposes only. No new material will be permitted at this time.

A contract will be awarded to the proponent with an acceptable proposal based on cost effectiveness and the criteria described in this section. The selection of proponent, final study budget and award of contract are subject to approval by the Policy Committee and the San Joaquin Valleywide Air Pollution Study Agency Governing Board. The Study Agency may choose not to award this contract if submitted proposals are not deemed acceptable to the Study Agency. All proponents will be notified of the results by letter.

10.4. Contract Negotiation and Approval

Contract negotiation will be conducted after approval of contractor selection by the Policy Committee. All agreements must be approved and executed by the Study Agency. Standard contract language is available for advance review by request to the Program Manager.

Government Code Section 1090 generally prohibits a public official from being financially interested in a contract which he or she has made or participated in an official capacity. Under certain circumstances, persons who perform work pursuant to a contract with a government agency may be subject to the restrictions of Government Code Section 1090. With respect to the CCOS, this means that based on participation in the planning of the Study, certain consultants are precluded from participating in all or some of the post-planning contracts. This preclusion would apply to these consultants as either a prime contractor or a subcontractor. In most cases, whether a particular consultant is eligible to bid will depend on an analysis of all of the circumstances

surrounding the consultant's earlier participation in the CCOS and the work that the consultant now proposes to perform. Any response to this RFP which includes a paid participant who is ineligible based on Government Code Section 1090 will be rejected during the review of the proposals.

Questions concerning the eligibility of a potential bidder must be directed to the Study Agency attorney at the address provided below prior to the preparation of a proposal.

General Counsel
San Joaquin Valleywide Air Pollution Study Agency
San Joaquin Valley Unified Air Pollution Control District
1990 East Gettysburg Avenue
Fresno, CA 93726

11. INSURANCE

The contractor shall provide insurance in coverage and amount acceptable to the Study Agency. The Study Agency will require that any contractor prior to endorsement of a contract meet the following insurance requirements for this field study.

Without limiting Study Agency's right to obtain indemnification from Contractor or any third parties, the Contractor, at its sole expense, shall maintain in full force and effect throughout the term of this Agreement the following insurance policy(s):

1. Liability insurance for bodily injury, including automobile liability, with limits of coverage of not less than Five Hundred Thousand Dollars (\$500,000) each person and One Million Dollars (\$1,000,000) each occurrence; and
2. Liability insurance for property damage with limits of coverage not less than Fifty Thousand Dollars (\$50,000) each occurrence; and
3. Workers compensation insurance in accordance with the California Labor Code; and
4. Commercial general liability insurance with minimum limits of coverage of not less than One Million Dollars (\$1,000,000) per occurrence.

The foregoing insurance policy(s) shall not be canceled, reduced, or changed without a minimum of thirty (30) calendar days advance, written notice given to Study Agency.

Prior to performing its obligations under this Agreement, the contractor shall provide the Study Agency with a certificate of insurance from an insurer acceptable to Study Agency as evidence of complying with the insurance requirements described above.

12. DATA OWNERSHIP AND PUBLICATION

The Study Agency shall have the right, at reasonable times during the project, to inspect and reproduce any data received, collected, produced, or developed by the contractor.

No reports, professional papers, information, inventions, improvements, discoveries, or data obtained, prepared, assembled, or developed by contractor shall be released or made available (except to the Study Agency) without prior, express written approval from the Project Manager. At the completion of the project, the contractor shall provide the Study Agency all data developed through conduct of the project that is in its possession. All data which is received, collected, produced, or developed from conduct of the project shall become the exclusive property of the Study Agency; however, the contractor shall be allowed to retain a copy of any non-confidential data received, collected, produced, or developed by the contractor. Should the contractor subsequently include data collected in this project for other evaluations and publications, the Study Agency would appreciate a notification of publication and/or a copy of the article or manuscript published.

13. CONFIDENTIAL INFORMATION

All responsible proposals received by the Study Agency are public records available for review by the public after the selection process is completed. Proposals containing information the bidder requires to be kept confidential will be rejected as nonresponsive.

EXHIBIT A

Certification Regarding
Debarment, Suspension, Ineligibility and Voluntary Exclusion
Lower Tier Covered Transactions

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 29 CFR Part 98 Section 98.510, Participants' responsibilities. The regulations were published as Part VII of the May 26, 1988, Federal Register (pages 19160-19211).

(1) The prospective recipient of Federal assistance funds certifies that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

(2) Where the prospective recipient of Federal assistance funds is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Name and Title of Authorized Representative

Signature _____

Date _____

Proposal Budget Summary

Direct Costs:

1. Labor & Employee Fringe Benefits (provide detailed breakdown by task and employee on separate sheet [including subcontractors]) \$ _____
 2. Equipment (provide detailed breakdown on separate sheet) \$ _____
 3. Travel & Subsistence \$ _____
 4. Electronic Data Processing \$ _____
 5. Photocopying/Printing/Mail/Telephone/FAX \$ _____
 6. Materials and Supplies \$ _____
 7. Miscellaneous (please specify) \$ _____
- TOTAL DIRECT COST: \$ _____

Indirect Costs:

11. Overhead (specify rate) \$ _____
 12. General & Administrative Expenses (specify rate) \$ _____
 13. Other Indirect Costs (please specify) \$ _____
 14. Fee or Profit (specify rate) \$ _____
- TOTAL INDIRECT COST: \$ _____

TOTAL DIRECT AND INDIRECT COST: \$ _____