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Air Resources Board

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Edmund G. Brown, Jr.
Governor

**DIESEL EMISSION REDUCTION ACT (DERA) FUNDED GRANTS
REQUEST FOR GRANT PROPOSALS (RFGPs) No. 10-405
A Minimum of Two Gen-Set Switch Locomotives –
San Joaquin Valley Air Basin (1) and San Francisco Bay Air Basin (1)
As Amended by Addendum No. 1**

January 13 ~~13~~ **21**, 2011

You are invited to review and respond to this DERA-funded Request for Grant Proposals (RFGPs) No. 10-405, entitled, "Gen-Set Switch Locomotives Operating in the San Joaquin Valley Air Basin (SJVAB) and San Francisco Bay Air Basin (SFBAB)." In submitting your proposal, you must comply with the instructions found herein.

This grant solicitation is published online in the California State Contracts Register at <http://www.eprocure.dgs.ca.gov/CSCRAAds.htm> and the ARB Railyard Emission Reduction program webpage <http://www.arb.ca.gov/railyard/railyard.htm>. To ensure receipt of any addenda that may be issued, interested parties are encouraged to register online at <http://www.bidsync.com/help/bidsync/freebids.html>.

The Air Resources Board (ARB) deadline for receipt of proposals is **February 14, 2011, no later than 3:00 p.m.** No late received, faxed, or emailed proposals are acceptable. **All late, faxed, and/or emailed proposals will not be accepted.** Proposals must be received on or before the date and time specified herein at the following location:

Air Resources Board
ASD-Contract and Procurement Services Section
Attn: Sue Bayoneta
1001 I Street, 20th Floor
Sacramento, CA 95814

You are advised that you are responsible for ensuring that your proposal is received by the above listed contact person by the time and date required. Any proposal reaching the contact person after the deadline date and time will not be accepted.

In the opinion of the Air Resources Board, this is complete and without need of explanation. However, if you have questions, notice any discrepancies or inconsistencies, or need any clarifying information; the contact person for this RFGP is listed below. **All questions must be submitted in accordance with the instructions contained herein and sent via email directly to the below listed contact person and not through the BidSync system.**

Contact: Sue Bayoneta
Phone: (916) 327-8215
Email: sbayonet@arb.ca.gov

We appreciate your interest in this project and hope to receive a proposal from you if this is within your area of expertise.

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website: <http://www.arb.ca.gov>.

California Environmental Protection Agency

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I. PURPOSE / SCOPE OF WORK:

A. Purpose

The Air Resources Board (ARB) was awarded two million dollars of total funding by the United States Environmental Protection Agency (U.S. EPA) under the Diesel Emission Reduction Act (DERA) funds for the National Clean Diesel Funding Assistance program. The purpose of the DERA funding is to achieve significant reductions in diesel emissions to improve air quality and protect public health. For this project, ARB is requesting that a minimum of one (1) locomotive in the San Joaquin Valley Air Basin (SJVAB) be repowered with gen-set technology with an allocation amount of \$1,000,000; and a minimum of one (1) locomotive in the San Francisco Bay Air Basin (SFBAB) be repowered with gen-set technology with an allocation amount of \$1,000,000. See **Attachment 7**, Air Basin Boundaries.

The purpose of this Request for Grant Proposals (RFGPs) is to obtain proposals from qualified railroads / switch locomotive operators that will contribute a minimum of 33.33 percent funding towards repowering existing older switch (yard) locomotives. The repowering would be achieved by replacing the existing large diesel engine (within 1,006 to 2,300 horsepower) in each locomotive with **two or** three new, smaller Tier 3 non-road diesel engines (less than 750 horsepower) in each locomotive that would result in a qualifying ultra low-emitting-switch locomotive (ULESL). For this RFGPs, the qualifying ULESL is a gen-set switch locomotive. The qualifying railroad(s) must subgrant with a qualifying gen-set switch locomotive manufacturer(s).

Potential qualifying railroads / switch locomotive operators include, but are not limited to:

- California's two Class I railroads: Union Pacific Railroad (UP) and BNSF Railway for operations within the SJVAB and SFBAB;
- Class III railroads in SJVAB (e.g., San Joaquin Valley Railroad, Stockton Terminal and Eastern Railroad, Central California Traction, Stockton Terminal and Eastern Railroad, Modesto & Empire Traction, Sierra Northern Railway, California Northern Railroad and other qualifying railroads)
- Class III railroads in SFBAB (e.g., Richmond Pacific, San Francisco Bay Railroad, Oakland Terminal Railway, and other qualifying railroads)
- Passenger and industrial switch locomotive operators within the SJVAB and SFBAB.

It is ARB's goal is to use the federal funding in order to repower as many gen-set switch locomotives as possible. ARB reserves the right to award multiple grants under this RFGP in order to achieve this objective as long as each proposal covers repowered locomotives that operate in and around different railyards within the required air basins.

Proposers are advised that this RFGP and the resulting grant(s) have aggressive time schedules, requiring the gen-set switch locomotives to be manufactured and operational in the assigned air basin by October 31, 2011.

Emissions reductions achieved for this RFGP are not allowed to be used to satisfy any other mandated emission reduction requirements under any agreements with federal, state, or local agencies.

In accordance with the Cooperative Agreement terms and conditions between ARB and U.S. EPA, no funds provided under this agreement may be used to contract services with the Association of Community Organizations for Reform Now (ACORN) or its subsidiaries.

B. Scope of Work Summary

Grantee(s) (qualifying railroad) agrees to subgrant with a qualifying gen-set switch locomotive manufacturer to repower a minimum of two (2) older switch locomotives as gen-set switch locomotives to operate within the SJVAB (1 locomotive) and SFBAB (1 locomotive). The older switch locomotives will be repowered with **two or** three new Tier 3 nonroad engines that will meet or exceed requirements as a qualifying gen-set switch locomotive, pursuant to this RFGP. The gen-set switch locomotive(s) must be U.S. EPA certified and ARB verified. The qualifying railroad agrees, at its own expense, to test the manufactured qualifying gen-set switch locomotive(s) and transport to the assigned railyard or area of operations within the SJVAB and SFBAB. (See Attachment 7, Air Basin Boundaries) The funded qualifying gen-set switch locomotive(s) will be operated solely within the SJVAB and SFBAB except for required necessary maintenance and repairs outside the air basins. The funded qualifying gen-set switch locomotive(s) will be required to operate within the specified air basins for a minimum of fifteen years.

All funded gen-set switch locomotive(s) must be solely (except for required maintenance) operating within the specified air basins in California by October 31, 2011.

A detailed scope of work is contained in the Grant Agreement, Attachment 10.

II. BACKGROUND / DEFINITIONS

A. Background

Pursuant to Health & Safety Code section 39003, "The State Air Resources Board (ARB) is the state agency charged with coordinating efforts to attain and maintain ambient air quality standards, to conduct research into the causes of and solution to air pollution, and to systematically attack the serious problem caused by motor vehicles, which is the major source of air pollution in many areas of the state."

ARB is undertaking several efforts to reduce the emission impacts of railyards on local communities. These efforts include working with UP Railroad and BNSF Railways to reduce locomotive emissions in and around railyards.

ARB staff prepared 18 major railyard health risk assessments (HRAs) from 2006 to 2008 for the SJVAB, SFBAB and SCAB. Based on the railyard HRAs, ARB staff determined that up to 90 percent or more of switch (yard) locomotive emissions are generated in and around large railyards in California. Switch locomotives can also generate up to half or more of the remaining locomotive diesel PM emissions within and around railyards. Gen-set switch locomotives can provide up to a 90 percent reduction in emissions as compared to older existing switch (yard) locomotives, which can also provide substantial cancer risk reductions and non-cancer health benefits to highly impacted communities in the SJVAB and SFBAB.

On June 28, 2010, the U.S. EPA awarded ARB with \$2 million of DERA funds. These funds are to be used to fund a minimum of two (2) older switch locomotives to be repowered as gen-set switch locomotives. The gen-set switch locomotive will be required to operate within the SJVAB (1 locomotive) and SFBAB (1 locomotive). Under this EPA grant project, railroads are required to provide a minimum contribution of 33.33 percent of the total costs. The combination of the federal funding and the railroad contributions would provide a minimum funding level of about \$3 million.

Staff estimates that the typical cost for a four-axle gen-set switch locomotive is about \$1.5 million. Note that capital costs can vary based on current market conditions and prices and the volume of gen-set locomotives manufactured and whether it is a four- or six-axle unit. However, staff estimates that a minimum of 2 four-axle gen-set switch locomotives could be funded to operate within the SJVAB and SFBAB with about \$3 million.

Gen-set switch locomotive capital costs can be an important factor in this RFGP, and potentially result in funding more gen-set switch locomotives. However, a lower capital cost does not necessarily result in greater emissions and cancer risk reductions. Therefore, other important factors will be considered and are outlined in the scoring section of this RFGP.

ARB seeks proposals that not only meet the minimum contribution requirement of 33.33 percent but exceed the contribution threshold so that more engines can be repowered and result in additional emissions reductions. ARB seeks proposals that will repower a minimum of one (1) gen-set locomotive in the San Joaquin Valley Air Basin (SJVAB) and a minimum of one (1) gen-set locomotive in the San Francisco Bay Air Basin (SFBAB). Anything above these minimum requirements for each basin will receive higher scores.

At ARB's sole discretion, it may award a single grant or multiple grants to the proposal(s) that maximize the benefits of the federal funding available. The total number of awards (whether one or multiple) must result in a minimum of one (1) locomotives in SJVAB and a minimum of one (1) locomotive in SFBAB being repowered.

B. DEFINITIONS

The following definitions apply to this solicitation:

1. **San Joaquin Valley Air Basin:** The San Joaquin Valley Air Basin is comprised of a single air district, the San Joaquin Valley Air Pollution Control District (SJVAPCD), and consists of the San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, and Tulare counties, and the western portion of Kern County. See **Attachment 7**, San Joaquin Valley Air Basin Boundaries.
2. **San Francisco Bay Air Basin:** The San Francisco Bay Area Air Basin is comprised of a single district, the Bay Area Air Quality Management District (BAAQMD), and consists of Napa, Marin, San Francisco, Contra Costa, Alameda, San Mateo, and Santa Clara counties, the southern portion of Sonoma County, and the western portion of Solano County. See **Attachment 7**, San Francisco Bay Air Basin Boundaries.

3. **Qualifying Railroad / Eligible Proposer:** A railroad that primarily operates individual switch locomotives within the San Joaquin and San Francisco Bay Area Air Basins. See Section I.B. Scope of Work.
4. **Switch (Yard) Locomotive:** A locomotive that is typically four-axle, but can be six-axle, that operates primarily in and around railyards. A locomotive within a horsepower range of 1,006 and 2,300 horsepower, as defined under the 40 CFR Part 92 and Part 1033. A switch locomotive must have at least an average annual diesel fuel consumption level of 15,000 gallons to 25,000 gallons. Annual diesel fuel consumption must be documented via fuel records for up to two years. Further, ARB will also request any data available with hours of operation (e.g., even a quarter or three months) that would be representative of an annual average operations of an existing switch locomotive(s) operation.
5. **Qualifying Gen-Set Switch Locomotive:** Must meet an equivalent horsepower definition of a switch locomotive with at least **two or** three Tier 3 non-road engines at less than 750 horsepower each. The qualifying gen-set switch locomotive must be U.S. EPA certified (pursuant to 40 CFR Part 92 or 1033 in the line haul or switch duty cycle) and ARB verified as an Ultra-Low-Emitting Switch Locomotive or ULESL. ARB will also accept a 40 CFR Part 92 or 1033 line haul or switch duty cycle emission test, using either CARB or U.S. EPA ultra-low-sulfur diesel fuel, to meet the ULESL NOx and PM emissions levels. A funded ULESL gen-set switch locomotive under this RFGP must be operated primarily within the SJVAB and SFBAB boundaries for a minimum of 15 years.
6. **Ultra Low Emitting Switch Locomotive (ULESL):** An advanced technology switch locomotive with emissions equal to or less than 3.0 g/bhphr NOx and 0.1 g/bhphr PM emissions levels pursuant to 40 CFR Part 92 or 1033 in the line haul and switch duty cycle with the required use of CARB diesel. As of December 2010, a ULESL includes: gen-set, diesel battery electric (Green Goat), or LNG switch locomotives.
7. **Equivalent Horsepower Switch Locomotive(s):** One or more roughly equivalent horsepower older switch locomotive(s), e.g., one or more EMD GP-38(s), performing the same route, job order, or duties which in combination meets ARB's regulatory definition as an intrastate locomotive(s) of 90 percent or more miles, hours of operation, and fuel consumption within California (except for required maintenance periods), that could be replaced by one funded gen-set switch locomotive, pursuant to this RFGP.
8. **Qualifying Sub-grantee/Qualifying Gen-Set Switch Locomotive Manufacturer:** Must be a manufacturer of U.S. EPA certified and ARB verified gen-set switch locomotives approved to repower existing older engines.
9. **U.S. EPA Certification and ARB Verification:** A gen-set switch locomotive must have an approved U.S. EPA Certificate of Conformity (see: <http://www.epa.gov/otaq/certdata.htm>) and ARB verification for NOx and PM emissions to be able to participate in this program. As of November 30, 2010, the following companies have both U.S.EPA certification and current ARB verifications: National Railway Equipment Company, R.J. Corman (Railpower), Caterpillar/Progress Rail, Motive Power (MP), and Brookville Equipment Company (BEC).

10. **Exemptions from Operations within the San Joaquin Valley and San Francisco Bay Air Basins:** Gen-set switch locomotives funded under this RFGP are intended to operate primarily within the SJVAB and SFBAB boundaries. Funded gen-set switch locomotives, however, will be allowed to leave the air basin for federally required maintenance intervals, which can be every 92 days, or for necessary repairs, and for ongoing opacity meter testing. The maintenance periods (number of days) that a funded gen-set switch locomotive is outside of the basin boundaries must be documented and provided to ARB in the reports.

III. PROPOSAL INSTRUCTIONS AND INFORMATION

This section contains instructions for the submission of your proposal. It is the responsibility of the proposer to carefully read and follow all proposal requirements within this Request for Grant Proposals (RFGPs). Compliance with the RFGP instructions is mandatory for your proposal to be considered for award. Failure to comply with the RFGP instructions may cause your proposal to be deemed non-compliant and non-responsive, thus ineligible for award.

A. Key Action Dates

Below is the tentative time schedule for this RFGP. ARB reserves the right to modify the RFGP and/or change the date and time at its sole discretion, prior to the date fixed for submission of proposals.

(1) ARB reserves the right to modify or cancel in whole or any part of this solicitation.

<u>Key Actions</u>	<u>Dates</u>	<u>Time</u>
RFGP available to prospective proposers	01/13/2011	N/A
Questions / RFGP Clarification Deadline	01/21/2011	5:00 p.m.
Proposal Submission / Receipt by ARB	02/14/2011	3:00 p.m.
Evaluation of Proposals	02/15/11- 02/18/2011	N/A
Proposed grant awarded	02/25/2011	N/A
Signed grant returned to ARB for counter signature	03/01/2011	N/A
Grant Approved & Executed – work begins	03/15/2011	
Work Must Be Completed	10/31/2011	N/A

Proposed award for grant agreement is dependent upon ARB internal processing procedures.

Dates listed above are estimates only, and subject to change at ARB's sole discretion. The date for Work Begins/Start Date shall not be considered as the actual start date of the grant/agreement.

B. Questions Regarding RFGP Requirements

All questions or concerns related to the RFGP requirements must be emailed to the contact person below and not through the BidSync system:

Attn: Sue Bayoneta
Air Resources Board
Administrative Services Division
Contract and Procurement Services Section
Phone: 916 / 327-8215
Email: sbayonet@arb.ca.gov

Questions must be received by the date indicated in Key Action Dates, Section III.A.

C. Submission of Proposal

Proposals should provide straightforward and concise descriptions of the proposer's ability to satisfy the requirements of this RFGP. The proposal must be complete and accurate. Omissions, inaccuracies, or misstatements will be sufficient cause for rejection of a proposal.

The original proposal must be double sided and marked "ORIGINAL COPY." All documents contained in the original proposal package **must have original signatures and must be signed by a person who is authorized to bind the proposing firm.** The signature must indicate the title or position that the individual holds in the firm. All additional proposal sets may contain photocopies of the original package. Due to limited storage space, the proposal package should be prepared in the least expensive method (i.e., cover page with staple in upper left-hand corner, no fancy bindings such as spiral binding, 3-hole punch, etc.).

All proposals must be submitted under **sealed** cover, labeled or identified appropriately, and sent to the Air Resources Board by the dates and times shown in Section III. A., **Key Action Dates**. Proposals received after this date and time will not be considered.

A minimum of **six (6) sets** of the proposal must be submitted that includes one (1) original and five (5) copies. For the Administrative portion, only one (1) original is required for submission.

Responses to this RFGP shall be submitted in a sealed package/envelope. The proposal package/envelope must be plainly marked with the RFGP number and title, your firm name, address, and must be marked with "DO NOT OPEN," as shown in the following example:

SEALED PACKAGE/ENVELOPE	
Company Name Address	
RFGP No. 10-405 GEN-SET SWITCH LOCOMOTIVES –SAN JOAQUIN VALLEY AIR BASIN, SAN FRANCISCO BAY AIR BASIN	
PROPOSAL	DO NOT OPEN

Proposals not submitted under sealed cover and marked as indicated may be rejected. If the proposal is made under a fictitious name or business title, the actual legal name of Proposer must be provided.

- All proposals shall include the documents identified in Required Attachment Checklist (see Attachment 1). Proposals not including the proper "required attachments" shall be deemed non-responsive. A non-responsive proposal is one that does not meet the basic proposal requirements.
- Time of delivery is of the essence and must be adhered to. Any proposal received after the due date and time deadline will be rejected by ARB as not complying with a mandatory requirement of this RFGP. **NOTE:** Postmark time is **NOT** acceptable.
- All correspondence or invoices must show the RFGP or grant number and Project Title.
- Mail or deliver proposals to the following address:

Air Resources Board
ASD-Contract and Procurement Services Section
Attn: Sue Bayoneta
1001 I Street, 20th Floor
Sacramento, CA 95814

D. Proposal Withdrawal

1. A proposer may modify a proposal after its submission by withdrawing its original proposal and resubmitting a new proposal prior to the proposal submission deadline. Proposer modifications offered in any other manner, oral or written, will not be considered.
2. A proposer may withdraw its proposal by submitting a written withdrawal request to ARB signed by the proposer or an agent authorized in accordance with Section III H, titled "Signature." A proposer may thereafter submit a new proposal prior to the proposal submission deadline. Proposals may not be withdrawn without cause subsequent to proposal submission deadline.

E. Proposer Responsibilities

1. Before submitting a response to this solicitation, Proposer(s) should review, correct all errors, and confirm compliance with the RFGP requirements.
2. Costs incurred for developing proposals and in anticipation of award of the agreement are entirely the responsibility of the proposer and shall not be charged to ARB. This includes, but is not limited to: delivery, drayage, express, parcel post, packing, cartage, insurance, license fees, permits, cost of bonds, or for any other purpose unless expressly included and itemized in the proposal solicitation.
3. Prior to submission of proposal, proposer shall examine any drawings, specifications, and instructions or other materials required and included in the proposal package to ensure that they meet all the requirements stated in RFGP.
4. It is the **proposer's responsibility** to promptly notify ARB contract analyst identified in the solicitation, by phone, letter, fax, e-mail, or visit, if the proposer believes that the solicitation is unfairly restrictive, contains errors or discrepancies, or is otherwise

unclear. Notification **must be done immediately** upon receipt of the solicitation in order that the matter may be fully considered and appropriate action taken by ARB prior to the closing time set to receive solicitation responses. Such notification must be submitted no later than the question period referenced in the Key Action Dates. All such correspondence received after the question submittal deadline will not be considered.

5. Each proposal must constitute an irrevocable offer for a period of at least 180 working days after proposal submission.
6. Proposers must provide evidence to show that the proposer is a “qualifying railroad” as defined in this RFGP.
7. It is the proposer’s responsibility to review all attachments and information to ensure that it appropriately responds to this RFGP and understands the terms and conditions under which it would be responsible should it receive a grant award.
8. Under this RFGP, all Grantee costs must comply with the grant cost principles and procedures found at 2 Code of Federal Regulation (CFR) 225,230 or 220 (formerly OMB circular A-87, A-122, or A-21).

F. Signature

1. An individual who is authorized to bind the bidding firm contractually shall sign the required Cover Letter for the proposal and the Proposer Certification Sheet, **Attachment 2**. The signature must indicate the title or position that the individual holds in the firm. An unsigned proposal may be rejected.
2. All documents requiring a signature must bear an original signature of a person authorized to bind the bidding firm and must be duly authorized to sign the grant/agreement if selected for award.

G. Disposition of Proposals

1. Upon proposal receipt, all original documents submitted in response to this RFGP will become the property of the State of California and ARB, and will be regarded as public records under the California Public Records Act (Government Code Section 6250 et seq.). The following information shall be kept from public review unless mandated by Judicial Order: confidential information, such as social security numbers, medical information; trade secrets, copyrighted materials and other information deemed non-releasable by the Public Records Act.
 2. Proposal packages (copies) may be returned only at the proposer's expense, unless such expense is waived by ARB.
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IV. PROPOSAL REQUIREMENTS

A. Grant Proposal Preparation

Proposals must be printed on both sides. To conserve paper, please use single or one-and-a-half spacing. Please do not include lengthy, oversized company brochures. Due to limited storage space, the proposal package should be prepared in the least expensive method (i.e., cover page with staple in upper left-hand corner, no fancy bindings).

The proposal must contain the following components, information and documents as outlined below:

1. Title Page

The purpose of this page is to provide in one location information needed by ARB administrative staff. It must contain the following items:

- a) The title of the proposal, which must be the same as the title of the RFGP; and
- b) Date of proposal.

2. Cover Letter / Letter of Commitment

This introductory letter must be on the company's letterhead and include the following information and statements:

- a) A statement that the proposal was prepared for ARB;
- b) Warranty Statement. Grantee must commit to warranty work and materials performed/provided by Grantee and any sub-grantees for a period of at least one (1) year against any type of defect in material or workmanship. Grantee will be responsible to repair and/or replace defective parts with new or reconditioned/updated parts made by the manufacturer as long as their performance is equal or superior to the original specification parts;
- c) The name and address of your company [NOTE: You may use a Post Office box, but please provide your company's street address for our records]; and
- d) The name, title, and signature of a company official authorized to bind the proposal.

3. Table of Contents

4. Abstract

A one-page abstract of the proposed project briefly summarizing the main point of the various sections of the proposal.

5. Summary. A concise narrative outlining the key items in the proposal including the features and benefits of the proposal.

6. Project Schedule. A comprehensive calendar of the entire project from the submission of the bid to the completion of the project. The calendar must include timeframes for each major task, highlighting the milestones, critical paths, and responsible party for each. The tasks will include: a) a schedule for the qualifying railroad to subgrant with a qualifying gen-set switch locomotive manufacturer, the qualifying gen-set switch locomotive(s) capital costs, key components, warranty, maintenance costs, and liability provisions, b) the schedule for the qualifying railroad

or gen-set switch locomotive manufacturer to obtain an existing older locomotive(s) to be repowered, c) the schedule for the qualifying gen-set switch locomotive manufacturer to obtain the necessary parts and supplies for the funded qualifying gen-set switch locomotive(s), d) the schedule for the qualifying gen-set switch locomotive manufacturer to build and assemble the qualifying gen-set switch locomotive(s) and transport to the qualifying railroad test facility, e) the schedule for the qualifying railroad to test and assess the qualifying gen-set switch locomotive(s), and f) the schedule for the qualifying railroad to transport the approved qualifying gen-set switch locomotive(s) to the assigned railyard or area within SJVAB and SFBAB. See **Attachment 8**, Project Implementation Timeline. A comprehensive calendar of the entire project must be presented with your proposal. Following is only a sample table of some milestones that should be included in the project schedule. **Note that this project schedule must demonstrate full project completion by October 31, 2011.**

Sample Project Schedule

TASK	RESPONSIBLE PARTY	SCHEDULE
Kickoff Meeting	Grantee/ARB	Feb/March 2011
Copy of all subgrants	Grantee	March 2011
Initiation of the subgrants	Grantee	March 2011
Signing of the subgrants	Grantee	March/April 2011
Locomotive manufacturer(s) order older switch locomotive(s) for repower and parts and supplies necessary for gen-set switch locomotives(s)	Grantee	May 2011
Locomotive manufacturer(s) begin production of all funded gen-set switch locomotives	Grantee	June 2011
Locomotive manufacturer(s) complete production of all funded gen-set switch locomotives	Grantee	July 2011
Test and shakedown of the genset switch locomotive(s) at a railyard.	Grantee	August 1, 2011
Transportation of the genset switch locomotive to the SJVAB and SFBAB.	Grantee	September 1, 2011
Genset fully operational in SJVAB, SFBAB	Grantee	October 31, 2011
Final Report To ARB	Grantee	October 31, 2011

7. **Engineering Section.** This section shall include major equipment specifications (e.g., Tier 3 nonroad engines (horsepower and emissions levels), alternator, traction motors, safety cab, idle reduction device, etc.) and acquisition schedules.
8. **Facilities and Resources.** Explain where the parts and supplies will be obtained (i.e., which specific suppliers and from which states) and where the qualifying gen-set switch locomotives will be built and assembled. Explain where the qualifying railroad will test and evaluate the qualifying gen-set switch locomotive and what type of testing equipment will be needed to perform this testing. Also provide the railyard location from which the proposed repowered locomotives will primarily operate.

- 9. Minimum Qualifications Explanation.** Outline and provide detailed information as to how each of the minimum qualifications (see section IV C) has been met, and to what extent if any, the minimum qualifications have been exceeded. The proposer will explain how it meets the qualifying railroad requirements.
- 10. Management Plan.** A project management plan including the management structure and project organization.
- 11. Qualifications Section.** Name the qualifying railroad, qualifying gen-set switch locomotive manufacturer, and the qualifying gen-set switch locomotive(s) to be funded under this RFGP. The proposal must identify by name all key personnel from the qualifying railroad and qualifying gen-set switch locomotive manufacturer assigned to the project and clearly describes their individual areas of responsibility. For each individual, include company, position title, job descriptions, and contact information. The proposer will explain how it meets the qualifying railroad requirements. The qualifying railroad will also provide the necessary information that demonstrates the sub-grantee meets the definition as qualifying gen-set switch locomotive manufacturer that also will build qualifying gen-set switch locomotives pursuant to this RFGP.
- 12. U.S.EPA Certificate of Conformity and ARB Verification.** The qualifying railroad must obtain from the qualifying gen-set switch locomotive manufacturer a copy of a U.S. EPA certificate of conformity and ARB verification letter that demonstrates that proposed repowered locomotive(s) will meet the ultra low emitting switch locomotive (ULESL) emission standards. ARB will also accept a 40 CFR Part 92 or 1033 line haul or switch duty cycle emission test, using either CARB or U.S. EPA ultra-low-sulfur diesel fuel, to meet the ULESL NOx and PM emissions levels.
Proposers must meet this requirement by the proposal submission deadline date, Section III.A., Key Action Dates.
- 13. Codes and Standards.** Provide a list of all the applicable federal and state safety and operational codes and standards necessary for the construction and operation of the proposed funded gen-set switch locomotive(s).
- 14. Cost Detail.** The proposed work shall be broken down into the outline in the Work Plan and Work Schedule for the purpose of this proposal, such as the qualifying railroad subgrant with the qualifying gen-set switch locomotive manufacturer, the procurement of the existing older switch locomotive chassis and the parts and supplies needed for the proposed qualifying gen-set switch locomotive, the building and assembling of the gen-set switch locomotive, and testing and certification, operation, etc.
- The cost portion of the proposal must include, at a minimum, the information described below:
- a. Summary** – concise write-up itemizing estimated costs of the existing older switch locomotive(s) to be repowered and the major equipment costs for the funded gen-set switch locomotive(s) including: **two or** three Tier 3 nonroad engines, traction motors, safety cab, and total manufacturing costs per locomotive. See **Attachment 5**, Cost Breakdown Sheets.

b. Cost Breakdown Sheets (Attachment 5) – This grant is a firm fixed cost award. All costs must be provided for each task and deliverable. All items listed below and in Attachment 5 are eligible for cost share (grant funding).

- **Manufacturing Cost** – Provide estimate of manufacturing costs to repower a qualifying gen-set switch locomotive with two or three new Tier 3 nonroad engines, upgrade or improve the tractions motors and alternators, replace with a new federal safety cab, etc. List total number of hours and hourly billing rate for the preparation of an existing older switch locomotive to be repowered to a qualifying gen-set switch locomotive.
- **Equipment Costs** – Provide cost of major equipment (see table in Cost Breakdown Sheets, **Attachment 5**) which includes, but is not limited to: the cost of an existing older switch locomotive, cost to remove the existing engine and any other major parts to be upgraded (e.g., tractions motors, safety cab, etc.), costs to upgrade computer and electrical systems, the two or three new Tier 3 nonroad engines, alternator, and any other major pieces of equipment.

15. Letter of Commitment from Qualifying Manufacturer. The proposer must subgrant with a qualifying gen-set switch locomotive manufacturer. A letter must be provided indicating commitment from a qualifying gen-set switch locomotive manufacturer to build the proposed qualifying gen-set switch locomotive(s).

16. Quote for the Manufacturing and Equipment Cost. The proposer must provide a quote obtained from the proposed subgrantee / qualifying gen-set switch locomotive manufacturer with the total costs for older switch locomotive(s) to be repowered, including the total labor and major equipment costs. The quote must specify the total number of locomotives to be repowered. It will serve as a commitment of costs for an older existing switch locomotive to be repowered and for the total costs for parts, supplies, building, and assembling of the qualifying gen-set switch locomotive.

17. Proposal / Proposer Certification Sheet. The proposer must complete the Proposal / Proposer Certification Sheet (**Attachment 2**). This is a **mandatory submittal** and failure to submit this attachment may cause the proposer to be ineligible for award.

19. Existing Switch (Yard) Locomotive Information. The proposer must complete and submit the form entitled “Existing Switch (Yard) Locomotive Information” (**Attachment 3**). This form is a **mandatory submittal** and shall include railroad company name, existing switch locomotive make, model, horsepower, number of axles, annual diesel fuel consumption (for up to three years), partial or whole annual megawatt-hours of operation (if available), and locomotive(s) numbers. Failure to submit this attachment may cause the proposer to be ineligible for award.

As part of **Attachment 3**, the proposer must provide annual diesel fuel consumption (up to three years) and annual hours of operation of existing equivalent horsepower switch locomotive, via event recorder and manual documentation, if available, and an estimated notch profile (i.e., estimate of percent time in power settings) of the work performed. This information will serve as the basis to estimate the work and

potential emissions and risk reductions of replacing an existing older switch locomotive with a funded gen-set switch locomotive.

- 20. Funded Gen-Set Switch Locomotive Information.** The proposer must complete and submit the form entitled “Funded Gen-Set Switch Locomotive Information.” (**Attachment 4**). This form is a **mandatory submittal** and shall include railroad company name, funded gen-set switch locomotive make, model, equivalent horsepower, proposed capital costs, and level of railroad contributions per unit. Failure to submit this attachment may cause the proposer to be ineligible for award.

21. Other Required Submittals:

Std. 204 Payee Data Record (see **Attachment 6**)

B. Additional Proposal Requirements

Proposals and proposers must meet all of the minimum qualification requirements stated in the RFGP. Each proposal will first be reviewed to ensure that the proposal: is received by date and time specified; contains all the required documents; meets the format requirements specified; and meets the minimum qualifications. A responsive proposal from a responsible proposer is one that meets the definitions as stated below. All proposals that are deemed to be considered responsive from a responsible proposer, and meet the minimum qualification, shall be scored as part of Phase II.

1. Responsive and Responsible Proposer

In order to be eligible for award, a bid or proposal must be evaluated as responsive to all solicitation requirements and the proposer must be evaluated as responsible, both of which are defined below:

a. Definition of Responsive and Compliant Proposal:

A proposer’s solicitation response must be compliant with solicitation requirements without material deviation. This includes but is not limited to, a proposal that complies with all solicitation instructions and requirements, and includes all required documentation, signed and completed certifications, and any other documents requested and/or required within the time and date specified in this RFGP.

A non-responsive proposal is one that:

- o does not meet the requirements stated in the RFGP
- o fails to provide all required documents and attachments
- o deviates substantially from requirements.

A proposal that changes the terms and conditions of the solicitation or the proposed grant provisions will be considered a counterproposal and will be rejected as non-responsive.

b. Definition of Responsible Proposer:

The question of whether a particular proposer is a responsible proposer involves an evaluation of the proposer’s experience, facilities, reputation, financial resources, and other factors existing at the time of grant award. If determined to be not a responsible proposer, your proposal will be rejected.

In determining whether a proposer is responsible, ARB may in its sole discretion, require proposer(s) to submit evidence of their qualifications at such times, and

under such conditions, as it may require. Proposers may be requested to provide artifacts of financial history to support the financial stability of the company.

C. Minimum Qualifications

Proposers and proposals must meet the minimum qualifications in order to be further evaluated and considered for award. Proposals that do not meet the minimum qualifications will be determined non-responsive and ineligible for award. See Minimum Qualifications Explanation in Section IV.A.9. Proposal requirements.

1. Proposer

- a. Proposers must be railroads that operate individual switch locomotives within the San Joaquin Valley Air Basin and San Francisco Bay Air Basin. See **Attachment 7**, Air Basin Boundaries.

2. Proposal

- a. Proposals must contain a commitment to subgrant with a qualified gen-set switch locomotive manufacturer who has the ability to repower an older switch locomotive to a gen-set switch locomotive.
 - b. Proposals must offer a minimum contribution of 33.33 percent to complement the DERA funds of \$2.0 million (One million for SJVAB and one million for SFBAB).
-

V. Proposal Scoring

Proposals that meet the minimum qualifications of this RFGP will be scored in accordance with the following Rating Criteria.

A. Rating Criteria

1. Cost Proposal - Potential Leveraging / Other Source Contributions (35 points)

Points will be awarded based on the percentage of the proposer's contribution towards repowering each proposed locomotive to complement the DERA funding of about \$2.0 million (one million for each basin). The maximum amount of points that can be achieved equals 35 points. **Proposals submitting less than a 33.33 percent contribution will be rejected and ineligible for award.**

Proposals will be scored in accordance with the example shown below.

SCORING EXAMPLE
(35 points maximum)

	Proposer A	Proposer B	Proposer C
Contribution Percentage	35	50	100
Percentage Points Calculation 1	$\frac{35}{100}$	$\frac{50}{100}$	$\frac{100}{100}$
Percentage Points Calculation 2	$0.35 \times 35 = 12.2$	$0.50 \times 35 = 17.5$	$1.00 \times 35 = 35$
TOTAL Percentage Points*	12	18	35

* rounded to nearest whole number

2. Potential Level of NOx, ROG, and PM Emission Reductions (30 points)

Up to 30 points will be given for proposals providing the greatest potential level of gen-set switch locomotive NOx (nitrogen oxide), ROG (reactive organic gas), and 20*PM (particulate matter) emissions reductions, as compared to the proposed replaced existing switch locomotive operations.

The baseline or existing emissions levels from the replaced older switch locomotives will be calculated based on data submitted in **Attachment 3**. The estimated emissions levels from qualifying gen-set switch locomotives will be calculated based on the data provided in **Attachment 4**. The difference between the baseline emissions and qualifying gen-set switch locomotive emissions will be the estimated emissions reductions. Emissions will be calculated based on U.S. EPA g/bhp-hr emission factors (converted based on U.S. EPA conversion of 15.2 for older locomotives and 20.8 for newer or gensets) to grams/gallon. Proposals with the highest estimated emission reductions will receive the highest/maximum score. Points to the other proposers will be awarded on a weighted basis (weighted factor) with respect to the highest/maximum score.

SCORING EXAMPLE
(30 points maximum)

	Proposer A	Proposer B	Proposer C
NOx, ROG and 20*PM Reduced (Tons)	X=100	Y=150	Z=200
Weighted Factor (WF)	0.5	0.75	1
Weighted Factor (WF) X Maximum Points = Total points scored WF X 30			
Calculation	$0.5 \times 30 = 15$	$0.75 \times 30 = 22.5$	$1.00 \times 30 = 30$
TOTAL Points*	15	23	30

- rounded to nearest whole number
- Highest emissions reductions achieved by a proposer= 100% points or WF=1
- If Proposer C is the highest emission reduction applicant e.g. Z=200 tons then for Z=1 WF and $1 \times 30 = 30$ points for C and proposer A and B gets scoring based on emission weighted factor with respect to C which is 0.50 and 0.75 respectively.
- $WF = \frac{\text{Emission reductions achieved by a proposer}}{\text{Maximum emission reductions achieved}}$

3. Qualifying Gen-Set Switch Locomotive Cost-Effectiveness (30 points)

Proposals will be scored highest in this category based on which ones are the most cost-effective. Cost-effectiveness is calculated by dividing the total costs of each qualifying gen-set switch locomotive (costs provided in **Attachment 5**) and by the estimated emissions reductions (calculated from **Attachments 3 and 4**, Existing and Funded Gen-Set Locomotive Information) for each qualifying gen-set switch locomotive. The cost-effectiveness will also be prorated by a capital recovery factor over 15 years. Points will be awarded on a percentage graduated scale (calculated similarly to the example above for Item 2).

**SCORING EXAMPLE
(30 points maximum)**

	Proposer A	Proposer B	Proposer C
Carol Moyer Cost Effectiveness	3,000	4,000	5,000
Calculation 1	$\frac{3,000}{3,000}$	$\frac{3,000}{4,000}$	$\frac{3,000}{5,000}$
Calculation 2	$1 \times 30 = 30$	$0.75 \times 30 = 22.5$	$0.6 \times 30 = 18$
TOTAL Points*	30	23	18

* rounded to nearest whole number

The cost-effectiveness calculations will be made pursuant to the Carl Moyer Program criteria and guidelines (2008) considering the information provided by each proposer in **Attachment 4**, Funded Gen-Set Locomotive Information. Calculation information can be found in Appendix C of the document located at:

http://www.arb.ca.gov/msprog/moyer/guidelines/cmp_guidelines_part4.pdf.

A copy of this information is included here as **Attachment 9**.

4. Use of the Air Basin/In State Maintenance Facilities (5 points)

The maximum of 5 points will be awarded to proposals where gen-set switch locomotives are both operated and maintained at facilities within the boundaries of the SJVAB and SFBAB or in facilities located near the air basins. It is recommended that routine maintenance be performed at facilities within the SJVAB and SFBAB or at facilities closest to the SJVAB and SFBAB. Staff acknowledges that major repairs or specialty work may need to be performed outside of the SJVAB and SFBAB or even outside of the state.

Railroads will need to identify regular maintenance intervals (e.g., FRA 92 day, etc), opacity meter or visible emission testing, and expected annual downtime (i.e., estimated reduced utilization rates for gen-sets) from unforeseen maintenance problems and where these maintenance activities will typically be performed (i.e., within the SJVAB and SFBAB or outside air basin maintenance facilities). Unexpected catastrophic failures or specialty work that needs to be done outside of the air basin does not have to be identified.

B. Scoring Matrix

All proposals must meet the stated minimum qualifications and include all mandatory submittals in order to be scored. If a proposal does not meet any one Minimum Qualification, it will automatically be deemed non-responsive and ineligible for award; therefore, no further evaluation of the proposal will be conducted.

VI. EVALUATION, SELECTION AND AWARD

A. Proposal Evaluation

1. ARB will conduct an administrative evaluation in accordance with the RFGP requirements to determine a proposer's responsiveness and responsibility. Each proposal will be checked for completeness and/or absence of all required information and to ensure that the proposer meets the minimum qualifications in conformance with the submission requirements. During evaluation period, if an item is unclear, or needs further clarification, proposers may be requested to provide additional documentation.
2. ARB will also conduct a technical evaluation, which will be performed by an evaluation team consisting of ARB employees. **An overall group consensus scoring methodology will be used.** If deemed necessary, independent academic, technical, or policy experts may be called upon to answer any specific questions regarding the responses to the RFGP. These individuals will not be voting members of the panel nor participate in the evaluation process.

Minimum Qualifications		Yes	No
1.	Proposer meets the minimum of 33.33 percent contribution level of DERA funds of \$2.0 million		
2.	Proposer must be railroads operating switch locomotives within the SJVAB and SFBAB boundaries		
3.	Proposer commits to subgranting with a manufacturer with U.S. EPA-certified and ARB verified gen set switch locomotive		
<i>If minimum qualifications are NOT met, STOP HERE</i>			
Scoring Item			Max Score
1.	Cost Proposal (Contribution Amount and Percentage)		35
2.	Potential Level of NOx, ROG, and PM Emission Reductions		30
3.	Qualifying Gen-Set Switch Locomotive Cost-Effectiveness		30
4.	Use of the Air Basin/In State Maintenance Facilities		5
Total Score			100

3. Award will be based on the highest scoring proposal(s). It is ARB's goal to repower as many gen-set switch locomotives as possible. ARB reserves the right to award multiple grants under this RFGP in order to achieve this objective as long as each proposal for repowered locomotives operates in at least one of the SJVAB and SFBAB railyards.

B. Proposal Rejection

1. Proposals must be submitted for the performance of all the services as described herein. Any deviation from the RFGP will not be considered and may cause a proposal to be rejected.
2. Proposals must be complete in all respects as required by the RFGP. A proposal may be rejected if it is conditional or incomplete, or if it contains any alterations of form or other irregularities of any kind.
3. ARB reserves the right to reject any or all proposals for any reason. The ARB may reject any or all proposals and may waive any deviation deemed immaterial in a proposal. The State's waiver of an immaterial deviation shall in no way modify the RFGP document or excuse the proposer from full compliance with all requirements if awarded the agreement. All deviations will be examined to determine whether the deviation is immaterial (e.g., errors in mathematical computation or spelling). **A material deviation will cause rejection of the proposal. A proposal must be rejected if any such defect or irregularity constitutes a material deviation from the RFGP requirements.** If a deviation is deemed immaterial, then the proposal will be processed as if no deviation has occurred.
4. Proposals that contain false or misleading statements, or which provide references that do not support an attribute or condition claimed by the proposal, may be rejected.
5. Proposals received past the date and time specified in the "**Key Action Dates**" will be deemed non-responsive and rejected. Under no circumstances will any proposals be accepted past the date and time stated in Section IIIA. All such proposals received past the date and time will not be accepted.

C. Award

The winning proposer(s) will receive a fully executed grant agreement with all necessary attachments, language, including proposal, etc. Proposers should carefully read entire grant agreement and shall sign all required attachments if selected.

D. Other Conditions of Service

1. No oral understanding or agreement shall be binding on either party. Any changes or alterations to the grant/agreement must be in writing and approved by both parties.
2. Payment will be rendered upon completion, acceptance of each task/milestone outlined in the RFGP. The state may be invoiced on a monthly basis. There will be a five (5) percent withhold from each progress payment. ARB will not under any

circumstances issue any type of advance payment, in any amount. Grantee may submit the final invoice for payment upon completion and acceptance of final task, meaning: the necessary existing older switch locomotive(s) to be repowered have been procured and the necessary parts and supplies for the qualifying gen-set switch locomotive(s) have been obtained, qualifying funded gen-set switch locomotive(s) are built and assembled, all testing and safety inspections have been approved for completion, the qualifying funded gen-set switch locomotive(s) have been transported, assigned and operating within SJVAB, and SFBAB and the final report has been submitted to ARB; at that point payment in full shall be rendered.

E. Post- Grant Award Deliverables

See **Attachment 10**, Sample Grant Agreement for all grant agreement deliverables. If awarded the grant, the grantee will be required to submit federal assurances and certification, Exhibits A and B.

**ATTACHMENT 1
REQUIRED ATTACHMENT CHECK LIST**

A complete proposal package will consist of all the items listed below. **Be sure that your proposal includes all required documents as stated in this RFGP, not just those listed in this checklist.** Please refer to Section IV.B titled: "Definition of Responsive/ Compliant Proposal" and "Definition of Responsible Proposer."

	Attachment	Attachment Name/Description	Complete	Sign
_____	Attachment 1	Required Attachment Check List	X	
_____	Attachment 2	Proposal/Proposer Certification Sheet	X	X
_____	Attachment 3	Existing Switch (Yard) Locomotive Information	X	
_____	Attachment 4	Funded Gen-Set Switch (Yard) Locomotive Information	X	
_____	Attachment 5	Grantee Cost Sheet	X	
_____	Attachment 6	Payee Data Record (STD 204) Grantee must complete and submit to the awarding agency to determine if the Grantee is subject to state income tax withholding pursuant to California Revenue and Taxation Code Sections 18662 and 26131. No payment shall be made unless a completed STD. 204 has been returned to the awarding agency.	X	X
_____	Attachment 7	Air Basin Boundaries	Informational	
_____	Attachment 8	Project Implementation Timeline	X	
_____	Attachment 9	Cost Effectiveness Calculation Methodology	Informational	
_____	Attachment 10	Sample Grant Agreement	Informational	

ATTACHMENT 2
PROPOSAL/PROPOSER CERTIFICATION SHEET

This Proposal/Proposer Certification Sheet must be signed and returned along with all other required documents and contain original signatures. The proposal must be transmitted in a sealed envelope in accordance with RFGP instructions.

A. Railroad's Need for Gen-Set Switch Locomotives

Please provide the following information with totals from Attachment 5, Cost Breakdown Sheet

Repowered locomotives will primarily operate within the railyard located at (list address):

1. Total number of gen-set switch locomotives to be repowered in San Joaquin Valley Air Basin (SJVAB)		
2. Total dollar amount of DERA funds requested for gen-set switchers:		\$
3. Total dollar amount of railroad or other funds to be contributed for gen-set switchers:		\$

Repowered locomotives will primarily operate within the railyard located at (list address):

1. Total number of gen-set switch locomotives to be repowered in Bay Area Air Basin (SFBAB)		
2. Total dollar amount of DERA funds requested for gen-set switchers:		\$
3. Total dollar amount of railroad or other funds to be contributed for gen-set switchers:		\$

Repowered locomotives will primarily operate within the railyard located at (list address):

1. Grand total of gen-set switch locomotives to be repowered		
2. Total dollar amount of DERA funds requested for gen-set switchers:		\$
3. Total dollar amount of railroad or other funds to be contributed for gen-set switchers:		\$

B. Railroad Certification

To the best of my knowledge and belief, the information in this application is true and correct. The railroad will complete the gen-set switch locomotive projects in accordance with the timeline (Attachment 8) culminating on or before October 31, 2011.

C. Railroad Information

An Unsigned Proposal / Proposer Certification Sheet May be Cause of Rejection

1. Company Name	2. Telephone Number ()	2a. Email Address
3. Address		
Indicate your organization type: 4. <input type="checkbox"/> Sole Proprietorship 5. <input type="checkbox"/> Partnership 6. <input type="checkbox"/> Corporation		
Indicate the applicable employee and/or corporation number: 7. Federal Employee ID No. (FEIN) 8. California Corporation No.		
9. Indicate applicable license and/or certification information:		
10. Proposer's Name (Print)	11. Title	
12. Signature	13. Date	

Instructions for Proposal / Proposer Certification Sheet

Complete the numbered items in Section C, Railroad Information, on the Proposal / Proposer Certification Sheet by following the instructions below.

Item Numbers	Instructions
1, 2, 2a, 3	Must be completed. These items are self-explanatory.
4	Check if your firm is a sole proprietorship. A sole proprietorship is a form of business in which one person owns all the assets of the business in contrast to a partnership and corporation. The sole proprietor is solely liable for all the debts of the business.
5	Check if your firm is a partnership. A partnership is a voluntary agreement between two or more competent persons to place their money, effects, labor, and skill, or some or all of them in lawful commerce or business, with the understanding that there shall be a proportional sharing of the profits and losses between them. An association of two or more persons to carry on, as co-owners, a business for profit.
6	Check if your firm is a corporation. A corporation is an artificial person or legal entity created by or under the authority of the laws of a state or nation, composed, in some rare instances, of a single person and his successors, being the incumbents of a particular office, but ordinarily consisting of an association of numerous individuals.
7	Enter your federal employee tax identification number.
8	Enter your corporation number assigned by the California Secretary of State's Office. This information is used for checking if a corporation is in good standing and qualified to conduct business in California.
9	Complete if your firm holds a California license/certification which are required for this proposal.
10, 11, 12, 13	Must be completed. These items are self-explanatory.

ATTACHMENT 3
 DERA Funding of Gen-Set Switch Locomotives for the San Joaquin Valley Air Basin (SJVAB) and
 San Francisco Bay Air Basin (SFBAB)

Existing Switch (Yard) Locomotive Information

COMPANY NAME: _____

Manufacturer	Model	Horse-power	Build Date	U.S. EPA Emission Level (pre-Tier 0 or Tier 0)	2007 Diesel Fuel (Gallons)	2008 Diesel Fuel (Gallons)	2009 Diesel Fuel (Gallons) *	Locomotive Number
SJVAB								
SFBAB								

Continued on next page

ATTACHMENT 3 continued

* Attach any megawatt hours of operation (e.g., monthly, quarter) that would be representative of an annual average hours of operations. Also, based on this information, develop a notch (power setting) profile with estimated percent time in each power setting.

This information would be for switch locomotive(s) that would be replaced with a funded gen-set switch locomotive, on an equivalent horsepower and work basis. Multiple individual switch locomotives may perform that same equivalent work for specific jobs or routes that would be performed by one funded gen-set switch locomotive. Combine the data from the locomotive(s) "work" that would be replaced by the one funded gen-set switch locomotive, based on annual diesel fuel consumption. If available, provide partial or whole megawatt-hours of operation that would be representative of the work to be performed (i.e., monthly, quarterly, semi-annual, or annual recorded or documented hours of operation) by the existing switch locomotive(s) to be replaced with the funded gen-set switch locomotive.

Manufacturer: e.g., EMD, GE, MP, etc.

Model: e.g., GP15, GP38, SD38, etc.

Horsepower: Rated horsepower – e.g., 2,000 hp.

Build Date: Original manufacture year and month. If applicable, use an * asterisk to indicate date when unit was remanufactured to Tier 0.

Emission Level: U.S. EPA - Pre-Tier 0, Tier 0, Tier 1, Tier 2, etc.

Annual Diesel Fuel Consumption (Gallons) – based on actual fuel records, electronic tracking, or estimates based on megawatt hours.

Locomotive(s) Number: BNSF 3703, UPY 1378, etc.

In accordance with Title 17, California Code of Regulations (CCR), Sections 91000 to 91022, and the California Public Records Act (Government Code Section 6250 et seq.), the information that a company provides to the Air Resources Board (ARB) may be released (1) to the public upon request, except trade secrets which are not emissions data or other information which is exempt from disclosure or the disclosure of which is prohibited by law, (2) to the federal Environmental Protection Agency, which protects trade secrets as provided in Section 114(c) of the Clean Air Act and amendments thereto (42 USC 7401 et seq.) and in federal regulation, and (3) to other public agencies provided that those agencies preserve the protections afforded information which is identified as a trade secret, or otherwise exempt from disclosure by law (Section 39660(e)).

Trade Secrets as defined in Government Code 6254.7 are not public records and therefore will not be released to the public. However, the California Public Records Act provides that air pollution emission data are always public records, even if the data comes within the definition of trade secrets. On the other hand, the information used to calculate information is trade secret. If any company believes that any of the information it may provide is a trade secret or otherwise exempt from disclosure under any provision of law, **it must identify the confidential information as such at the time of submission to the ARB and must provide the name, address, and telephone number of the individual to be consulted.** If ARB receives a request for disclosure or seeks to disclose the data claimed to be confidential, ARB may ask the company to provide documentation of its claim of trade secret or exemption at a later date. Data identified as confidential will not be disclosed unless ARB determines, in accordance with the above referenced regulations that the data does not qualify for a legal exemption from disclosure. The regulations establish substantial safeguards before any such disclosure.

In accordance with the provisions of Title 17, California Code of Regulations, Sections 91000 to 91022, and the California Public Records Act (Government Code Sections 6250 et seq.) Company Name: _____ declares that all the information submitted in response to the California Air Resources Board's information request in Attachment 3 is confidential "trade secret" information, and requests that it be protected as such from public disclosure. All inquiries pertaining to the confidentiality of this information should be directed to the following person:

_____ Signature (above)		_____ Date Signed (above)
_____ Printed Name of Person Signing:	_____ Title:	_____ Telephone Number:
MAILING ADDRESS Street Address: _____	City and State: _____	Zip Code: _____

ATTACHMENT 4
 DERA Funding of Gen-Set Switch Locomotives for the San Joaquin Valley Air Basin (SJVAB) and
 San Francisco Bay Air Basin (SFBAB)

Funded Gen-Set Switch (Yard) Locomotive Information

COMPANY NAME: _____

Manufacturer	Model	Equivalent Horsepower	U.S. EPA Certified-ARB Verified (Y/N)	U.S. EPA NOx Emissions Level (g/bhp-hr)	U.S. EPA PM Emissions Level (g/bhp-hr)	Number of Axles (4 or 6)	Capital Costs-Gen-Set	Railroad Contribution Gen-Set
SJVAB								
SFBAB								

Continued on next page

ATTACHMENT 4 continued

Manufacturer: e.g., NREC=National Railway Equipment Company, RP=Railpower, MP=Motive Power; CAT=Caterpillar, BR=Brookville. etc.

Model: e.g., 3GS21B, RP20BD

Horsepower: Equivalent horsepower – e.g., 2,000 hp equivalent estimate based on two or three 700 horsepower Tier 3 nonroad engines.

U.S. EPA Certified and ARB Verified: Attach a copy of U.S. EPA certificate of conformity and ARB letter of verification.

U.S. EPA NOx and PM Certified Emissions Level: e.g., 3.0 g/bhp-hr NOx and 0.1 g/bhp-hr PM – based on the U.S. EPA line haul duty cycle pursuant to 40CFR Part 92 and 1033.

Number of Axles: Identify whether a four or six axle unit.

Capital Costs per Gen-Set Switch Locomotive: e.g., about \$1, 500,000.00

Railroad Contribution: e.g., 33.33 percent of \$1,500,000 would = \$512,700*

Note: The dollar amount contribution may change depending upon the price per genset.

ATTACHMENT 5
COST BREAKDOWN SHEET
San Joaquin Valley Air Basin (SJVAB)
List Major Components per Locomotive

Description	Cost
Major Equipment Costs for a Locomotive	
Older Locomotive to be repowered	
Cab and related upgrades	
Control Stand (within Cab)	
Electronic Controls	
Electrical (wiring, etc.)	
Rectifiers / Inverters	
Air Intakes	
Diesel Engine(s) and accessories	
Alternator (main and/or auxiliary)	
Radiator	
Fuel Tanks	
Air Tanks	
Traction motors	
Truck frame	
Air Compressor	
Wheels	
Batteries	
Sand box	
Other Costs	
Sub Total of Qualifying Gen-set Locomotive Major Components Cost (per locomotive)	X
Manufacturing Cost per Locomotive (to replace/repower/rebuild and Assemble)	Y
Total Cost Per Qualifying Gen-set Locomotive	X + Y = Z
Total Number of Qualifying Gen-set Switch Locomotives in the SJVAB Air Basin	A
Total Cost for all of the Qualifying Gen-set Switch Locomotives*	Z x A

**NOTE: remember to include quote in proposal as required.*

FUNDING SOURCES	percent Contribution	Amount in Dollars
Railroad Contribution (Minimum of 33.33% of the grand total)		\$
DERA Funds Requested (Maximum award amount up to \$1,000,000)		\$
GRAND TOTAL		\$

**ATTACHMENT 5 –COST BREAKDOWN SHEET
San Francisco Bay Air Basin (SFBAB)
List Major Components per Locomotive**

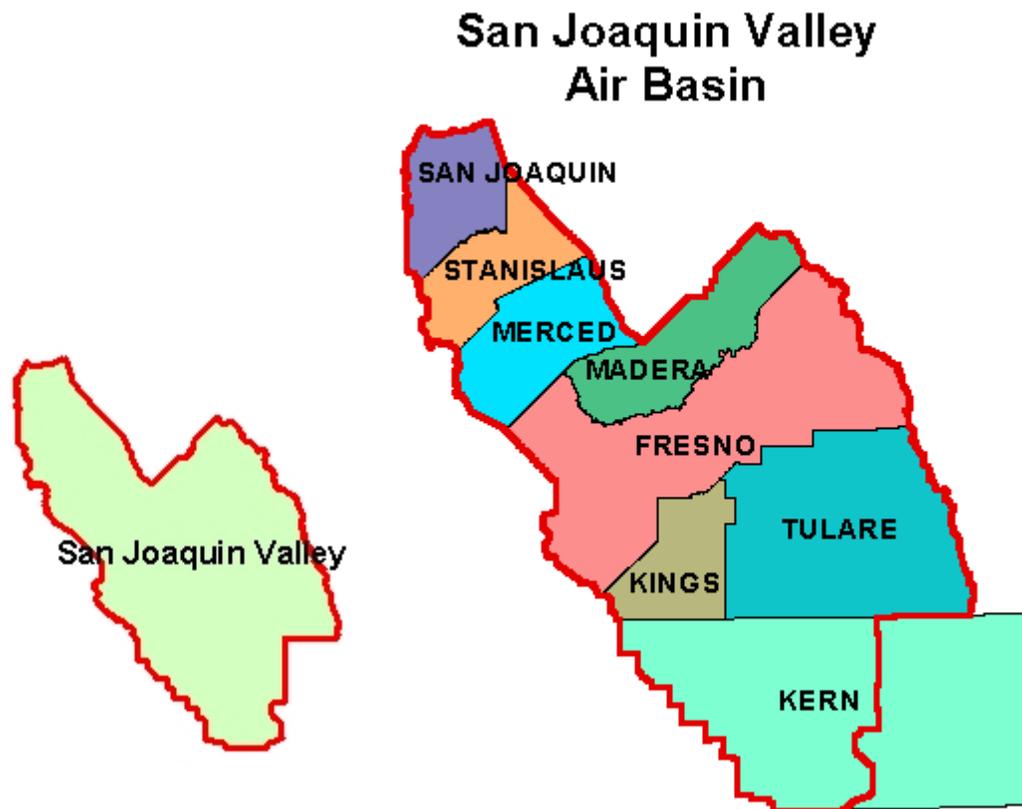
Description	Cost
Major Equipment Costs for a Locomotive	
Older Locomotive to be repowered	
Cab and related upgrades	
Control Stand (within Cab)	
Electronic Controls	
Electrical (wiring, etc.)	
Rectifiers / Inverters	
Air Intakes	
Diesel Engine(s) and accessories	
Alternator (main and/or auxiliary)	
Radiator	
Fuel Tanks	
Air Tanks	
Traction motors	
Truck frame	
Air Compressor	
Wheels	
Batteries	
Sand box	
Other Costs	
Sub Total of Qualifying Gen-set Locomotive Major Components Cost (per locomotive)	X
Manufacturing Cost per Locomotive (to replace/repower/rebuild and Assemble)	Y
Total Cost Per Qualifying Gen-set Locomotive	X + Y = Z
Total Number of Qualifying Gen-set Switch Locomotives in the SFBAB Air Basin	A
Total Cost for all of the Qualifying Gen-set Switch Locomotives*	Z x A

**NOTE: remember to include quote in proposal as required.*

FUNDING SOURCES	percent Contribution	Amount in Dollars
Railroad Contribution (Minimum of 33.33% of the grand total)		\$
DERA Funds Requested (Maximum award amount up to \$1,000,000)		\$
GRAND TOTAL		\$

ATTACHMENT 7- San Joaquin Valley Air Basin (San Joaquin Valley APCD)

The San Joaquin Valley Air Basin is comprised of a single air district, the San Joaquin Valley APCD, and consists of the San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, and Tulare counties, and the western portion of Kern* County. Note: * (portion of the County)



ATTACHMENT 7- San Francisco Bay Area Air Basin (Bay Area AQMD)

The San Francisco Bay Area Air Basin is comprised of a single district, the Bay Area AQMD, and consists of Napa, Marin, San Francisco, Contra Costa, Alameda, San Mateo, and Santa Clara counties, the southern portion of Sonoma* County, and the western portion of Solano* County.

Note: *(portion of the county)



ATTACHMENT 9 Carl Moyer Cost Effectiveness Calculation Methodology

From http://www.arb.ca.gov/msprog/moyer/guidelines/cmp_guidelines_part4.pdf
<http://www.arb.ca.gov/msprog/moyer/moyer.htm>.

COST-EFFECTIVENESS CALCULATION METHODOLOGY

I. Introduction

To receive Carl Moyer Program funding, each project must meet the maximum cost effectiveness limit of \$16,000 per weighted ton of surplus NO_x, ROG, and PM₁₀ (PM₁₀ means combustion PM) emissions reduced. Only Carl Moyer Program funding, funding under the district's fiduciary budget authority, or funding provided by a port authority (to meet the match fund requirement) are included in determining the cost-effectiveness of surplus emission reductions. For more details see Part IV: Administration of the Carl Moyer program.

II. General Cost-Effectiveness Calculations

A. C-1 Cost Effectiveness. The cost-effectiveness of a project is determined by dividing the annual cost of the potential project by the annual weighted surplus emission reductions that will be achieved by the project as shown in formula C-1 below.

*Formula C-1: Cost-Effectiveness of Weighted Surplus Emission Reductions (\$/ton):
Annualized Cost (\$/yr) / Annual Weighted Surplus Emission Reductions (tons/yr)*

Descriptions on how to calculate annual emission reductions and annualized cost are provided in the following sections.

Calculating the Annual Weighted Surplus Emission Reductions

Annual weighted emission reductions are estimated by taking the sum of the project's annual surplus pollutant reductions following formula C-2 below. This will allow projects that reduce one, two, or all three of the covered pollutants to be evaluated for eligibility to receive Carl Moyer Program funding. While NO_x and ROG emissions are given equal weight; emissions of combustion PM₁₀ (such as diesel exhaust PM₁₀ emissions) have been identified as a toxic air contaminant and thus carry a greater weight in the calculation.

*Formula C-2: Annual Weighted Surplus Emission Reductions:
NO_x reductions (tons/yr) + ROG reductions (tons/yr) + [20 * (PM₁₀ reductions (tons/yr))]*

The result of formula C-2 is used to complete formula C-1 to determine the cost-effectiveness of surplus emission reductions.

C-2 COST EFFECTIVENESS

In order to determine the annual surplus emission reductions by pollutant, formula C-3 below must be completed for each pollutant (NO_x, ROG, and PM₁₀), for the baseline technology and the reduced technology, totaling up to 6 calculations:

1. Annual emissions of NO_x for the baseline technology
2. Annual emissions of NO_x for the reduced technology
3. Annual emissions of ROG for the baseline technology
4. Annual emissions of ROG for the reduced technology
5. Annual emissions of PM₁₀ for the baseline technology
6. Annual emissions of PM₁₀ for the reduced technology

These calculations are completed for each pollutant by multiplying the engine emission factor or converted emission standard (found in Appendix B) by the annual activity level and by other adjustment factors as specified for the calculation methodologies presented.

The **baseline technology** is the technology applied under normal business practices, such as, an engine certified by ARB to the current emission standards for new purchases; or the existing engine in a vehicle or equipment for repowers and retrofits.

The **reduced technology** is the newer technology used by the applicant to obtain surplus emission reductions. The newer technology may be one of the following:

For a new purchase it would be the engine certified by ARB to reduce NO_x emissions by at least 30 percent less than the current NO_x emission standard, or certified by ARB to the optional NO_x or NO_x+NMHC emission standard. Locomotive and marine vessel new purchases have slightly different criteria. Please see the specific source category cost-effectiveness criteria for more information.

For a repower it would be the replacement engine certified by ARB (for locomotives and marine vessels it would be EPA verified) to a minimum of 15 percent less than the NO_x emissions from the baseline technology (existing engine).

For a NO_x retrofit it would be an ARB-verified retrofit technology that will reduce NO_x emissions by a minimum of 15 percent from the NO_x emissions of the baseline technology.

For a PM retrofit it would be the ARB-verified diesel emission control strategy (DECS) that reduces PM emissions as level 1 (25 percent reduction), level 2 (50 percent reduction), or level 3 (85 percent reduction).

Since the emission factor or converted standard is given in units of grams, a conversion from grams to tons is also required, as described in formula C-3 below.

*Formula C-3: Estimated Annual Emissions by Pollutant (tons/yr):
Emission Factor or Converted Emission Standard (g/bhp-hr) * Annual Activity *
Adjustment Factor(s) * Percent Operation in CA * ton/907,200g*

C-3 COST EFFECTIVENESS

The Carl Moyer Program allows the emissions reductions from a project to be calculated using the following activity factors on an annual basis:· Hours of operation,· Fuel consumption, or Miles traveled.

Specific activity factors allowed for each project category may differ and are identified in the source category chapters of the Carl Moyer Program Guidelines.

1. Calculating Annual Emissions Based on Hours of Operation

When actual annual hours of equipment operation are the basis for determining emission reductions, the equipment activity level must be based on a properly functioning hour meter (See Part I, Chapter 2 and the relative source category chapter for additional information on this topic). In addition, the horsepower rating of the engine and an engine load factor found in Appendix B must be used. A default load factor of 0.43 is used for those projects where no specific equipment load factor is available in Appendix B. The method for calculating emission reductions based on hours of operation is described in formula C-4 below.

*Formula C-4: Estimated Annual Emissions based on hours of Operation (tons/yr):
Emission Factor or Converted Emission Standard (g/bhp-hr) * Horsepower **

*Load Factor * Activity (hrs/yr) * Percent Operation in CA * ton/907,200g*

The engine load factor is an indicator of the nominal amount of work done by the engine for a particular application. It is given as a fraction of the rated horsepower of the engine and varies with engine application. For projects in which the horsepower of the baseline technology and reduced technology are different by more than 25 percent, the load factor must be adjusted following formula C-5 below. It is important to understand the replacement load factor must never exceed 100 percent in cases where the reduced technology engine is significantly smaller than the baseline technology engine.

Formula C-5: Replacement Load Factor:

*Load Factor baseline * hp baseline/hp reduced*

2. Calculating Annual Emissions Based on Fuel Consumption

When annual fuel consumption is used for determining emission reductions, the equipment activity level must be based on annual fuel usage within California provided by the applicant. Fuel records must be maintained by the engine owner as described in the relative source category chapter for additional information on this topic.

C-4 COST EFFECTIVENESS

An energy consumption factor (ECF) must be used to convert emissions given in g/bhp-hr to units of grams of emissions per gallon of fuel used (g/gal). The ECF is a number that combines the effects of engine efficiency and the energy content of the fuel used in that engine into an approximation of the amount of work output by an engine for each unit of fuel consumed. The ECF is found in Table B-25 in Appendix B. Formula C-6 below is the formula for calculating annual emissions based on annual fuel consumed.

Formula C-6: Estimated Annual Emissions based on Fuel Consumed using Emission Factors or Converted Emission Standard (tons/yr):

*Emission Factor or Converted Emission Standard (g/bhp-hr) * ECF (hp-hr/gal) * Activity (gal/yr) * Percent Operation in CA * ton/907,200g*

For on-road projects, if the emission factor is in g/mile, a unit conversion factor (bhp-hr/mile) found in Table B-29 in Appendix B must be used to convert from g/mile to g/bhp-hr. This is completed by dividing the emission factor (g/mile) by the conversion factor (bhp-hr/mile) resulting in (g/bhp-hr). Formula C-7 below is used to calculate annual emissions for fuel based on-road calculations.

Formula C-7: Estimated Annual Emissions based on Fuel Consumed using On-Road Emission Factors (tons/yr):

*[On-Road Emission Factor (g/mile)/Unit Conversion Factor (bhp-hr/mile)] * ECF (hp-hr/gal) * Activity (gal/yr) * Percent Operation in CA * ton/907,200g*

3. Calculating Annual Emissions Based on Annual Miles Traveled

Calculations based on annual miles traveled are only used for on-road projects. Mileage records must be maintained by the engine owner as described in Part 1, Chapter 3: On-road Heavy-Duty Vehicles.

Calculations Using Emission Factors: There is no conversion since the emission factors for on-road projects provided are given in units of g/mile. Formula C-8 describes the method for calculating pollutant emissions based on emission factors and miles traveled.

Formula C-8: Estimated Annual Emissions based on Mileage using Emission Factors (tons/yr):

*Emission Factor (g/mile) * Activity (miles/yr) * Percent Operation in CA * ton/907,200g*

Calculating Annual Emissions Based on Converted Standards: The unit conversion factor found in Table B-29 in Appendix B is used to convert the units of the converted emission standard (g/bhp-hr) to g/mile. Formula C-9 describes the method for calculating pollutant emissions using converted emission standards.

C-5 COST EFFECTIVENESS

Formula C-9: Estimated Annual Emissions based on Mileage using Converted Emission Standards (tons/yr):

*Converted Emission Standard (g/bhp-hr) * Unit Conversion (bhp-hr/mile) * Activity (miles/yr)*
** Percent Operation in CA * ton/907,200g*

4. Calculating Annual Surplus Emission Reductions by Pollutant

The final step in this portion of the calculations is to determine the annual surplus emission reductions by pollutant. For new purchases and repower projects, subtract the annual emissions for the reduced technology from the annual emissions for the baseline technology following formula C-10 below.

Formula C-10: Annual Surplus Emission Reductions by Pollutant (tons/yr) for Repowers and New Purchases:

Annual Emissions for the Baseline Technology –

Annual Emissions for the Reduced Technology

For retrofits, multiply the baseline technology pollutant emissions by the percent of emission reductions that the ARB-verified reduced technology is verified to following formula C-11 below.

Formula C-11: Annual Surplus Emission Reductions by Pollutant (tons/yr) for Retrofits:

*Annual Emissions for the Baseline Technology **

Reduced Technology Verification Percent

Calculations must be done for each pollutant, NO_x, PM₁₀, and ROG, giving a total of three calculations.

For fleet modernization projects the baseline will be the newer vehicle emissions.

The annual surplus emission reductions by pollutant would be used in Formula C-2 to calculate the annual surplus emission reductions.

B. Determining the Annualized Cost

Annualized cost is the amortization of the one-time incentive grant amount for the life of the project to yield an estimated annual cost. The annualized cost is calculated by multiplying the incremental cost by the capital recovery factor (CRF). The resulting annualized cost is used to complete formula C-12 to determine the cost-effectiveness of surplus emission reductions.

Formula C-12: Annualized Cost (\$):

*CRF * incremental cost (\$)*

C-6 COST EFFECTIVENESS

1. Calculating the CRF

The CRF is the level of earnings reasonably expected by investing state funds in various financial instruments over the length of a Carl Moyer Program project.

The CRF uses an interest rate and project life to determine the rate at which earnings could reasonably be expected if the same funds were invested over a length of time equaling the project life. The CRF is calculated following formula C-13 below.

Formula C-13: Capitol Recovery Factor (CRF):

$[(1 + i)^n (i)] / [(1 + i)^n - 1]$

Where

i = discount rate (4 percent)

n = project life (at least 3 years see specific project criteria for default maximums)

The discount rate of 4 percent reflects the prevailing earning potential for state funds that could reasonably be expected by investing state funds in various financial instruments over the length of the minimum project life of Carl Moyer Program projects. Table B-1 in Appendix B lists the CRF for various project lives using a discount rate of 4 percent. Use the result from formula C-13 to complete formula C-12 to determine the annualized cost of a project.

2. Calculating the Incremental Cost

In previous guidelines, incremental cost was determined by calculating the difference in cost between the new reduced technology and the baseline technology, making it necessary for the applicant to receive quotes for both the reduced and the baseline technologies. ARB staff decided to streamline this process by applying maximum

eligible percent funding amounts to define incremental cost, eliminating the need to receive quotes for the baseline technology. An applicant would only need to provide an estimate of the cost of the reduced technology. Therefore, the incremental cost is determined by multiplying the cost of the reduced technology by the maximum eligible percent funding amount (from applicable chapter), as described in formula C-14 below.

Formula C-14: Incremental Cost (\$):

*Cost of Reduced Technology (\$) * Maximum Eligible Percent Funding Amount*

Generally the cost of the baseline vehicle for a new purchase is assumed to be a certain percentage of the cost of a new vehicle meeting reduced emissions from the standard.

The cost of the baseline technology for a repower is assumed to be a percentage of the new engine. For retrofits, there is no baseline technology cost; hence the entire cost of the retrofit may be eligible for funding.

C-7 COST EFFECTIVENESS

For fleet modernization projects, the incremental cost is determined by adjusting the value given to the vehicle by the National Automotive Dealership Association (N.A.D.A.), as described in formula C-15 below.

Formula C-15: Incremental Cost for Fleet Modernization Projects (\$):

When the replacement vehicle is not new:

*N.A.D.A value where the N.A.D.A value is the retail value of the used vehicle * 50 percent.*

When the replacement vehicle is new:

*Invoice of the New Vehicle * 50 percent*

Use the results from formula C-14 or C-15 to complete formula C-12 to determine the annualized cost of a project.

III. List of Formulas

For an easy reference, the necessary formulas to calculate the cost-effectiveness of surplus emission reductions for a project funded through the Carl Moyer Program are provided below.

Formula C-1: Cost-Effectiveness of Weighted Surplus Emission Reductions (\$/ton):

Annualized Cost (\$/yr)

Annual Weighted Surplus Emission Reductions (tons/yr)

Formula C-2: Annual Weighted Surplus Emission Reductions:

NOx reductions (tons/yr) + ROG reductions (tons/yr) + [20 * PM10 reductions (tons/yr)]

Formula C-3: Estimated Annual Emissions by Pollutant (tons/yr):

Emission Factor or Converted Emission Standard (g/bhp-hr) * Annual Activity *

Adjustment Factor(s) * Percent Operation in CA* (ton/907,200g)

Formula C-4: Estimated Annual Emissions based on hours of Operation (tons/yr):

Emission Factor or Converted Emission Standard (g/bhp-hr) * Horsepower *

Load Factor * Activity (hrs/yr) * Percent Operation in CA * ton/907,200g

Formula C-5: Replacement Load Factor:

Load Factor baseline * hp baseline/hp reduced

C-8 COST EFFECTIVENESS

Formula C-6: Estimated Annual Emissions based on Fuel Consumed using Emission Factors or Converted Emission Standard (tons/yr):

Emission Factor or Converted Emission Standard (g/bhp-hr) * ECF (hp-hr/gal) *

Activity (gal/yr) * Percent Operation in CA * ton/907,200g

Formula C-7: Estimated Annual Emissions based on Fuel Consumed using On-Road Emission Factors (tons/yr):

$[\text{On-Road Emission Factor (g/mile)/Unit Conversion Factor (bhp-hr/mile)}] * \text{ECF (hp-hr/gal)} * \text{Activity (gal/yr)} * \text{Percent Operation in CA} * \text{ton/907,200g}$

Formula C-7.1: Estimated Annual Emissions based on Fuel Consumed using On-Road Pre-Converted Emission Standards (tons/yr):

$[\text{Converted On-Road Emission Standard (g/gal)} * \text{Activity (gal/yr)}$

$* \text{Percent Operation in CA} * \text{ton/907,200g}$

Formula C-8: Estimated Annual Emissions based on Mileage using Emission Factors (tons/yr):

$\text{Emission Factor (g/mile)} * \text{Activity (miles/yr)} * \text{Percent Operation in CA} * \text{ton/907,200g}$

Formula C-9: Estimated Annual Emissions based on Mileage using Converted Emission Standards (tons/yr):

$\text{Converted Emission Standard (g/bhp-hr)} * \text{Unit Conversion Factor (bhp-hr/mile)} * \text{Activity (miles/yr)} * \text{Percent Operation in CA} * \text{ton/907,200g}$

Formula C-10: Annual Surplus Emission Reductions by Pollutant (tons/yr) for Repowers and New Purchases:

$\text{Annual Emissions for the Baseline Technology} - \text{Annual Emissions for the Reduced Technology}$

Formula C-11: Annual Surplus Emission Reductions by Pollutant (tons/yr) for Retrofits:

$\text{Annual Emissions for the Baseline Technology} * \text{Reduced Technology Verification Percent}$

Formula C-12: Annualized Cost (\$):

$\text{CRF} * \text{incremental cost (\$)}$

Formula C-13: Capitol Recovery Factor (CRF):

$[(1 + i)^n (i)] / [(1 + i)^n - 1]$

Where i = discount rate (4 percent) and n = project life (at least 3 years see specific project criteria for default maximums)

C-9 COST EFFECTIVENESS

Formula C-14: Incremental Cost (\$):

$\text{Cost of Reduced Technology (\$)} * \text{Maximum Eligible Percent Funding Amount}$

Formula C-15: Incremental Cost for Fleet Modernization Projects (\$):

When the replacement vehicle is not new:

$\text{N.A.D.A value where the N.A.D.A value is the retail value of the used vehicle} * 50 \text{ percent.}$

When the replacement vehicle is new:

$\text{Invoice of the New Vehicle} * 50 \text{ percent}$

This section provides examples of calculations for determining cost-effectiveness of surplus emission reductions for locomotive projects.

Example 1 – Multiple Engine Switcher Purchase (Class 1 Railroad)

A Class 1 railroad operator has the opportunity to purchase an alternative technology switch locomotive. Because this is a multiple engine switcher (Engine Family Number 7NREG0060LOC) with new electronics, a new battery, and other components, the project is evaluated as a new locomotive purchase. Fuel receipts indicate other switch locomotives with the same activity in the railyard consume 45,000 gallons of fuel per year. The cost of the new alternative technology switcher is \$1.2 million. The project life is 10 years. Emission reductions are calculated as follows:

Baseline Technology Information:

- Locomotive model year: none
- Locomotive emission factor (Tier 0, Table B-18a)2: 11.84 g/bhp-hr NOx, 1.06 g/bhp-hr ROG, 0.378 g/bhp-hr PM10
- Activity (application): 45,000 gal/year
- Energy consumption factor = 20.8 bhp-hr/gal (Table B-25)

Reduced Technology Information:

- Engine model year: 2007
- Emission factors (Engine Family 7NREG0060LOC)1: 2.54 g/bhp-hr NOx, 0.105 g/bhp-hr ROG, 0.060 g/bhp-hr PM10
- Activity (application): 45,000 gal/year

2 For information regarding how to determine reduced engine emission factors, refer to the Supplemental

Documents webpage at: www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm
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- Energy consumption factor = 18.5 bhp-hr/gal (Table B-25)
- Locomotive project criteria allow for the Carl Moyer Program to pay for up to 50 percent of Class 1 railroad alternative switcher locomotive purchase cost

Emission Reduction Calculations:

Formula C-6: Estimated Annual Emissions based on Fuel Consumed using Emission Factors or Converted Emission Standard (tons/yr):

1. Annual NOx baseline technology emissions
(11.84 g/bhp-hr * 45,000 gal/yr * 20.8 bhp-hr/gal) *(ton/907,200g) = 12.21 ton/yr NOx
2. Annual NOx reduced technology emissions
(2.54 g/bhp-hr * 45,000 gal/yr * 18.5 bhp-hr/gal) *(ton/907,200g) = 2.33 ton/yr NOx
3. Annual ROG baseline technology emissions
(1.06 g/bhp-hr * 45,000 gal/yr * 20.8 bhp-hr/gal) *(ton/907,200g) = 1.09 ton/yr ROG
4. Annual ROG reduced technology emissions
(0.105 g/bhp-hr * 45,000 gal/yr * 18.5 bhp-hr/gal) *(ton/907,200g) = 0.10 ton/yr ROG
5. Annual combustion PM10 baseline technology
(0.378 g/bhp-hr * 45,000 gal/yr * 20.8 bhp-hr/gal) *(ton/907,200g)=0.390 ton/yr PM10
6. Annual combustion PM10 reduced technology emissions
(0.060 g/bhp-hr * 45,000 gal/yr * 18.5 bhp-hr/gal) *(ton/907,200g)=0.055 ton/yr PM10

Formula C-10: Annual Surplus Emission Reductions by Pollutant (tons/yr) for Repowers and New Purchases

- Emission benefits NOx = 12.21 tons/yr – 2.33 tons/yr = 9.88 tons/yr NOx
- Emission benefits ROG = 1.09 tons/yr – 0.10 tons/yr = 1.00 tons/yr ROG
- Emission benefits PM10 = 0.390 tons/yr – 0.055 tons/yr = 0.335 tons/yr PM10

Formula C-2: Annual Weighted Surplus Emission Reductions

9.88 tons/yr + 1.00 tons/yr + 20(0.335 tons/yr) = 17.59 weighted tons/yr

Annualized Cost:

Project Life: 10 years

CRF (Table B-1): = 0.123

Formula C-14: Incremental Cost

\$1,200,000 * 0.50 = \$600,000

Formula C-12: Annualized Cost

0.123 * \$600,000 = \$73,800/yr

Cost-Effectiveness:

Formula C-1: Cost-Effectiveness of Weighted Surplus Emission Reductions (\$/ton)

(\$73,800/yr)/(17.59 weighted tons/yr)

= \$4,197/tons of weighted surplus emissions reduced

The project cost-effectiveness is below \$16,000 per weighted ton of emissions reduced.

Therefore, the project qualifies for \$600,000 in Carl Moyer Program funding.

Example 2 – Switch Locomotive Engine Remanufacture Kit (Class 3 Railroad)

A Class 3 railroad operator opts to remanufacture an existing 1971 model year switch locomotive engine with a U.S. EPA-certified Tier 0 Engine Remanufacture Kit. The

existing locomotive consumes 40,000 gallons of fuel per year, with 100 percent operation in California. The cost of the remanufacture kit plus installation of the kit costs \$400,000. The cost to purchase and install an automatic engine start-stop ILD is \$11,000. The railroad company will commit to a 10 year project life. Emission reductions are calculated as follows:

Baseline Technology Information:

- Locomotive model year (application): 1971
- Locomotive emission rate (Table B-18a): 16.36 g/bhp-hr NOx, 1.06 g/bhp-hr ROG, 0.378 g/bhp-hr PM10
- Activity (application): 40,000 gal/year
- Energy consumption factor = 20.8 bhp-hr/gal (Table B-25)

Reduced Technology Information:

- Emission Factors (Table B-18a): 11.84 g/bhp-hr NOx, 1.06 g/bhp-hr ROG, 0.378 g/bhp-hr PM10₁
- Activity (application): 40,000 gal/year
- Energy consumption factor = 20.8 bhp-hr/gal (Table B-25)
- ILD emission reduction factor (Table B-19): 0.90
- Locomotive project criteria allow for the Carl Moyer Program to pay for up to 85 percent of the remanufacture kit cost and 50 percent of ILD cost

Emission Reduction Calculations:

Formula C-6: Estimated Annual Emissions based on Fuel Consumed using Emission Factors or Converted Emission Standard (tons/yr):

1. Annual NOx baseline technology emissions
(16.36 g/bhp-hr*40,000 gal/yr*20.8 bhp-hr/gal)*(ton/907,200g) = 15.00 ton/yr NOx
2. Annual NOx reduced technology emissions
(11.84 g/bhp-hr*40,000 gal/yr*20.8 bhp-hr/gal*0.90)*(ton/907,200g)=9.77 ton/yr NOx
3. Annual ROG baseline technology emissions
(1.06 g/bhp-hr *40,000 gal/yr*20.8 bhp-hr/gal)*(ton/907,200g) = 0.97 ton/yr ROG
4. Annual ROG reduced technology emissions
(1.06 g/bhp-hr*40,000 gal/yr*20.8 bhp-hr/gal *0.90)*(ton/907,200g)=0.87 ton/yr ROG
5. Annual combustion PM10 baseline technology
(0.378 g/bhp-hr*40,000 gal/yr*20.8 bhp-hr/gal)*(ton/907,200g) = 0.347 ton/yr PM10
6. Annual combustion PM10 reduced technology emissions
(0.378 g/bhp-hr*40,000 gal/yr*20.8 bhp-hr/gal *0.90)*(ton/907,200g)
= 0.312 ton/yr PM10

₁ For information regarding how to calculate reduced engine emission factors, refer to the Supplemental Documents webpage at: www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm

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Formula C-10: Annual Surplus Emission Reductions by Pollutant (tons/yr) for Repowers and New Purchases

- NOx emission benefits = 15.00 tons/yr – 9.77 tons/yr = 5.23 tons/yr NOx
- ROG emission benefits = 0.97 tons/yr - 0.87 tons/yr = 0.10 tons/yr ROG
- PM10 emission benefits= 0.347 tons/yr - 0.312 tons/yr = 0.035 tons/yr PM10

Formula C-2: Annual Weighted Surplus Emission Reductions

$$5.23 \text{ tons/yr} + 0.10 \text{ tons/yr} + 20(0.035 \text{ tons/yr}) = 6.02 \text{ weighted tons/yr}$$

Annualized Cost:

Project Life: 10 years

CRF (Table B-1): = 0.123

Formula C-14: Incremental Cost

$$(\$400,000 * 85 \text{ percent}) + (\$11,000 * 50 \text{ percent}) = 345,500$$

Formula C-12: Annualized Cost

$$0.123 * \$345,500 = \$42,497/\text{yr}$$

Cost-Effectiveness:

Formula C-1: Cost-Effectiveness of Weighted Surplus Emission Reductions (\$/ton)

$(\$42,497/\text{yr})/(6.02 \text{ weighted tons}/\text{yr})$

= \$7,057/tons of weighted surplus emissions reduced

The project cost-effectiveness is below \$16,000 per weighted ton of emissions reduced.

Therefore, the project qualifies for \$305,500 in Carl Moyer Program funding.

**ATTACHMENT 10
Sample Grant Agreement**

This legally binding GRANT AGREEMENT, including Exhibits A through E and incorporated here in attached hereto, is made and executed between the STATE OF CALIFORNIA, AIR RESOURCES BOARD ("ARB" or "Board") and the GRANTEE)_____.

GRANTEE agrees to perform the work described in this Grant Agreement and as described in the proposal, submitted in response to ARB's Request for Grant Proposal No. 10-405.

Total funding by ARB through U.S. EPA's National Clean Diesel Funding Assistance Program Grant # DE- 00T37201-0 is \$2,000,000 (one million each for San Joaquin Valley Air Basin (SJVAB) and San Francisco Bay Air Basin (SFBAB) to repower a minimum of two (2) older switch locomotives, one per SJVAB and SFBAB with **two (2)** **or** three (3) new tier 3 nonroad engines, per genset switch locomotive.

Grantee: ABC Railroads
Grant Award: \$2,000,000 Total (one million each for SJVAB and SFBAB)
Leveraged Funding: \$
Total Program Cost:
Grant Number: G10-DERA-03
Project Period: Upon execution of the signed agreement – October 31, 2011

The undersigned parties agree to the terms and conditions as set forth in this Grant Agreement and all exhibits and attachments. The undersigned parties certify under the penalty of perjury that they are duly authorized to bind the parties to this Grant Agreement.

California Air Resources Board

Grantee

Signature of Authorized Official

Signature of Authorized Official

Name: Alice Stebbins
Title: Chief
Administrative Services
Division

Name:
Title:

Date: _____

Date: _____

I. BACKGROUND

Pursuant to Health & Safety Code section 39003, "The State Air Resources Board (ARB) is the state agency charged with coordinating efforts to attain and maintain ambient air quality standards, to conduct research into the causes of and solution to air pollution, and to systematically attack the serious problem caused by motor vehicles, which is the major source of air pollution in many areas of the state."

ARB is undertaking several efforts to reduce the emission impacts of railyards on local communities. These efforts include working with UP Railroad and BNSF Railways to reduce locomotive emissions in and around railyards.

ARB staff prepared 18 major railyard health risk assessments (HRAs) from 2006 to 2008 for the SJVAB, SFBAB and SCAB. Based on the railyard HRAs, ARB staff determined that up to 90 percent or more of switch (yard) locomotive emissions are generated in and around large railyards in California. Switch locomotives can also generate up to half or more of the remaining locomotive diesel PM emissions within and around railyards. Gen-set switch locomotives can provide up to a 90 percent reduction in emissions as compared to older existing switch (yard) locomotives, which can also provide substantial cancer risk reductions and non-cancer health benefits to highly impacted communities in the SJVAB and SFBAB.

On June 28, 2010, the U.S. EPA awarded ARB \$2,000,000 (two million) of DERA funds. This money is to be used to fund a minimum of two (2) older switch locomotives to be repowered as gen-set switch locomotives to operate within the SJVAB and SFBAB. Under this awarded project, railroads are required to provide a minimum contribution of 33.33 percent of the total costs. The combination of the federal funding and the railroad contributions would provide a minimum funding level of about \$3 million.

II. SCOPE OF WORK

Grantee agree(s) to subgrant with a qualifying gen-set switch locomotive manufacturer to obtain a minimum of two (2) older switch locomotive(s), one for San Joaquin Valley Air Basin and one for San Francisco Bay Area Air Basin, all of which will be repowered with **two or three** new Tier 3 nonroad engines that will meet or exceed requirements as a qualifying gen-set switch locomotive. The gen-set switch locomotive(s) must be U.S. EPA-certified and ARB-verified. The qualifying railroad agrees, at its own expense, to test the manufactured qualifying

gen-set switch locomotive(s) and transport to the assigned railyard or area of operations within the SJVAB and SFBAB. The funded qualifying gen-set switch locomotive(s) will be operated solely within the SJVAB and SFBAB except for required necessary maintenance and repairs outside the air basins. The funded qualifying gen-set switch locomotive(s) will be required to operate within the required regions/air basins for a minimum of fifteen years.

All funded gen-set switch locomotive(s) must be solely (except for required maintenance) operating within the specified air basins in California by October 31, 2011.

The Grantee shall repower the number of locomotives in the following basins:

- SJVAB - X locomotives
- SFBAB - X locomotives

Grantee cost and contribution levels towards repowering the above locomotive(s) and allocation amounts are provided in Attachment 5, Grantee Cost Sheets, which are incorporated as part of this agreement.

The Grantee shall be required to perform the following tasks:

Task 1 – Sub-grantee Formation

- Subgrant with qualifying locomotive manufacturer(s) to repower older existing switch locomotive(s) with new Tier 3 non-road engines to become qualifying ultra-low-emitting switch locomotive (ULESL) gen-set switch locomotives. This includes, but is not limited to, agreement on the gen-set switch locomotive capital costs, warranty and maintenance provisions, and liability requirements.
- The Grantee must supply a copy of all grants awarded to the Air Resources Board (ARB) project representative and any specific requirements for subgrants. This part of the process shall be completed **no later than March 15, 2011**.

Task 2 – Manufacturer Order

- Ensure the selected gen-set switch locomotive manufacturer(s) orders the necessary parts and supplies to repower the gen-set switch locomotives. The Grantee will be responsible to meet and obtain necessary documentation to determine that this part of the process is on schedule and to report this information to ARB staff in short one- to two-page monthly status reports. This part of the process shall be completed **no later than April 1, 2011**.

Task 3 – Installation of new engines

- The Grantee shall ensure that the selected gen-set switch locomotive manufacturer(s) uses the necessary parts and supplies to install, repower, and build the qualifying gen-set switch locomotives with the new engines. The Grantee agrees to ban or scrap all older, existing engines / locomotives from California operations for all of the projects funded under this agreement. Ban or Scrapage guidelines are detailed in VII. General Grant Provisions, Item Number 21. The Grantee will be responsible to meet with the qualifying gen-set switch locomotive manufacturer and obtain the necessary documentation to determine that this part of the process is on schedule and to report this information to ARB staff in a short one- to two-page monthly status report. This part of the process shall be completed **no later than July 1, 2011**.

Task 4 – Testing and Acceptance

- When the repower of the gen-set switch locomotive(s) is completed, the Grantee will be required to receive the funded qualifying gen-set switch locomotives from the qualifying gen-set locomotive manufacturer and test and shakedown new gen-set switch locomotives at a designated railroad facility, at its own expense. The Grantee will assume the responsibility to determine whether the gen-set switch locomotives meet federal safety, railroad operational, and quality standards before assuming ownership for the qualifying gen-set switch locomotives. This part of the process shall be completed **no later than August 1, 2011**.

Task 5 – Transport to Destination

- Once the Grantee has assumed responsibility for the qualifying gen-set switch locomotives from the qualifying gen-set switch locomotive manufacturer, the Grantee will be responsible to transport the funded qualifying gen-set switch locomotive, at its own expense, to the SJVAB and SFBAB. This part of the process shall be completed **no later than October 1, 2011**.

Task 6 – Operation

- Qualifying funded gen-set switch locomotives are required to begin full operational use within the SJVAB and SFBAB by **October 31, 2011**. The Grantee will notify ARB staff, and document, that qualifying gen-set switch locomotives began operations within the SJVAB and SFBAB no later than October 31, 2011. To confirm that operations have begun on or prior to October 31, 2011, ARB staff will be allowed to perform a site visit.

Meetings

- a. Initial meeting. Before work on the grant begins, Grantee will meet with the ARB's Project Representative and other staff 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 may need to be resolved before work can begin.
- b. Progress review meetings. Grantee and appropriate members of his or her staff will meet with the ARB's Project Representative at monthly intervals to discuss the progress of the project. This meeting may be conducted by phone, if appropriate.
- c. Immediately following grant signing, representatives from the Grantee and qualifying gen-set switch locomotive manufacturers will begin biweekly coordination meetings, in person or via conference calls.

III. REPORTING AND DATA COMPILATION

Grantee must communicate with the ARB project representative on a regular basis or as needed to discuss the progress of the project, including the subgrant, ordering of older switch locomotive(s) and necessary parts and supplies, building and assembling of the qualifying gen-set switch locomotives, testing and shakedown of the qualifying gen-set switch locomotives, and the transport and operational assignment of the qualifying gen-set switch locomotives in the SJVAB and SFBAB. To ensure this takes place in a regular manner, Grantee shall also provide the following reports:

- Monthly status reports will be scheduled and may be conducted via teleconference line with staff and management.
- Quarterly written progress reports will be submitted that summarize project status; achievement of milestones; preliminary findings; deviations from plan; new recommendations, if any; and financial summary and invoices due to ARB.

Quarterly reports are due according to the following schedule.

June 1 – August 31 Reporting Period: report due date September 15.

September 1 – November 30 Reporting Period: report due date December 15

December 1 – February 28 Reporting Period: report due date March 15

March 1 – May 31 Reporting Period: due date June 15

If the project start date falls within a defined Reporting Period, the Grantee must report for that period by the given due date. The quarterly reporting schedule shall be repeated for the duration of the grant agreement. A brief discussion of problems encountered during the reporting period and how they were or are proposed to be resolved. A brief discussion of work planned, by project task, before the next progress report.

- Quarterly progress meetings between Grantee and ARB personnel, held on-site if deemed necessary by ARB. A progress report will include a brief narrative account of project tasks completed or partially completed since the last progress report.
- Final report – must be provided after the 60 days of project completion and describe the highlights and challenges of what was involved in the successful implementation of the project. The report must contain a detailed description of each of the main stages involved from planning through completion and operation of the gen-set switch locomotives. The report must include a list of recommendations that might benefit the repower of gen-set switch locomotives of similar design in the future. A draft of the final report must be submitted to ARB staff for review and comment at least Thirty (30) days before the submission of the final report. Grantee's final report shall follow the format specified in Exhibit C, Sample Final Report Format.
- Together with the final report, Grantee will deliver a copy of the report on diskette, using Microsoft Word 6.0 (or newer) and a set of all data compilations as specified by the ARB Project Representative.
- Grantee's obligation under this Agreement shall be deemed discharged only upon submittal to and acceptance by ARB of the final report, report diskette, and all required data compilations.
- The Grantee agrees that it will promptly notify ARB of any problems, delays, or adverse conditions which may materially impair its ability to deliver on the outputs/outcomes specified in the work plan. This disclosure must include a statement of the action taken, or contemplated, and any assistance needed to resolve the situation. The Grantee agrees that it will also notify ARB of any favorable developments which may enable meeting time schedules and objectives sooner or at less cost than anticipated or producing more beneficial results than originally planned.
- Record Keeping and Record Access for Audits - Grantee agrees to establish an official file for the Project which shall adequately document all significant actions relative to the Project. Grantee agrees that ARB, U.S. EPA, Department of Finance (DOF), the Bureau of State Audits (BSA), or their designated representative(s) shall have the right to review and copy any records and supporting documentation pertaining to the performance of this Grant Agreement. Grantee agrees to maintain such records for a possible audit for at least two years after the program termination date. Grantee agrees to allow the auditor(s) access and to copy such records during normal business hours and to allow interviews of any employees who might reasonably have information related to such records. Further, Grantee agrees to include a similar right of the State to audit records and interview staff in any work plan related to performance of this Grant Agreement.

IV. FINANCIAL MATTERS AND GRANT DISBURSEMENTS

1. The Grantee agrees that, at a minimum, its fiscal control and accounting procedures will be sufficient to permit tracing of grant funds to a level of expenditure adequate to establish that such funds have not been used in violation of State and or Federal law, or this Grant Agreement. Unless otherwise prohibited by State or local law, Grantee further agrees that it will maintain separate Project accounts in accordance with generally accepted accounting principles.
2. Requests for payment shall be made in alignment with Grantee's approved Work plan. Grant payments shall be made only for reasonable costs incurred by the Grantee and only when the Grantee has submitted a Grant Disbursement Request Form (*Exhibit D*), consistent with milestones for specific tasks stipulated in Grantee's Work plan that have been accomplished, documentation of accomplishment has been provided to ARB in the form of the progress report and any associated deliverables, if applicable, have been provided to ARB. Payments shall not be made more frequently than monthly.
3. Grant payments are subject to ARB's approval of progress reports and any accompanying deliverables. A payment will not be made if the ARB Grant Manager deems that a milestone has not been accomplished or documented, that deliverable meeting specifications have not been provided, that claimed expenses are not documented, not valid per the budget, or not reasonable, that the Grantee has not met other terms of the grant.
4. The Chief of the Stationary Source Division or designee of ARB may review the Grant Manager's approval or disapproval of a grant disbursement. No reimbursement will be made for expenses that, in the judgment of the Division Chief of the Stationary Source Division, are not reasonable or do not comply with the Grant Agreement.

The Grantee shall mail the Grant Disbursement Request Form (*Exhibit D*) to:
Mr. Harold Holmes,
Manager, Engineering Evaluation Section
California Air Resources Board
1001 I Street, 6th Floor
Sacramento, California, 95814

ARB shall withhold payment equal to five percent of the total grant agreement cost until completion of all work and submission of final report to ARB.

V. GRANT TERMINATION

1. In the event Grantee fails to comply with any terms or conditions of this Grant Agreement, or fails to provide the services in the manner agreed upon by the parties, including, but not limited to, the requirements specified in Grantee's work plan, this failure shall constitute a breach of the Grant Agreement. ARB shall notify Grantee, in writing, that it must cure the breach or provide written notification of ARB's intention to terminate this Grant Agreement.
2. In the event Grantee wishes to terminate this grant, or at ARB's request for termination, Grantee shall submit to ARB for approval a Program Termination Plan at least 40 working days prior to the proposed program termination date. The Program Termination Plan must contain, at a minimum, the following provisions:
 - A complete report on the program. The report must be sufficiently detailed to allow the ARB, or an independent third party, to fully evaluate how the program has been administered.
3. If terminates this grant ARB reserves the right to recover all grant payments made to the Grantee.
4. ARB reserves all rights under law and equity to enforce this Grant Agreement and recover any damages. ARB reserves the right to terminate this Grant Agreement at any time for non-breach, and for the convenience of ARB for any reason judged sufficient by ARB. ARB will reimburse Grantee for actual costs incurred that are not recoverable as a result of ARB's decision to terminate the Grant Agreement (not to exceed the total Grant Agreement amount) in performance of this Grant Agreement through the effective date of termination for any reason other than breach.

VI. PROJECT MANAGEMENT

The ARB project representatives during the term of this agreement will be:

State Agency: Air Resources Board	Grantee:
Section/Unit	Section/Unit
Name:	Name:
Phone:	Phone:
Fax:	Fax:
Email:	Email:

Direct all payment inquiries to:

State Agency: Air Resources Board	Grantee:
Section/Unit: Accounting Section	Section/Unit:
Attention:	Attention:
Phone:	Phone:
Fax:	Fax:
Email:	Email:

VII. GENERAL GRANT PROVISIONS

1. **Amendment:** No amendment or variation of the terms of this Grant Agreement shall be valid unless made in writing, signed by the parties and approved as required. No oral understanding or agreement not incorporated in the Grant Agreement is binding on any of the parties.
2. **Assignment:** This grant is not assignable by Grantee, either in whole or in part, without the consent of the ARB.
3. **Availability of Funds:** ARB's obligations under this Grant Agreement are contingent upon the availability of funds. In the event funds are not available, the State shall have no liability to pay any funds whatsoever to Grantee or to furnish any other considerations under this Grant Agreement.
4. **Compliance with law, regulations, etc.:** Grantee agrees that it will, at all times, comply with and require its grantors and subgrantors to comply with all applicable federal and State laws, rules, guidelines, regulations, and requirements.
5. **Computer software:** Grantee certifies that it has appropriate systems and controls in place to ensure that State funds will not be used in the performance of this Grant Agreement for the acquisition, operation or maintenance of computer software in violation of copyright laws.
6. **Conflict of interest:** Grantee certifies that it is in compliance with applicable State and/or federal conflict of interest laws.
7. **Damages for breach affecting tax exempt status:** In the event that any breach of any of the provisions of this Grant Agreement by the Grantee shall result in the loss of tax exempt status for any State bonds, the Grantee shall immediately reimburse the State in an amount equal to any damages paid by or loss incurred by the State due to such breach.
8. **Disputes:** Grantee shall continue with the responsibilities under this Grant Agreement during any dispute, unless ARB issues an order to stop work. Grantee staff or management may work in good faith with ARB staff or management to resolve any disagreements or conflicts arising from implementation of this Grant Agreement. However, any disagreements that cannot be resolved at the management level within 30 days of when the issue is first raised with ARB staff shall be subject to resolution by the ARB Executive Officer, or his designated representative, whose decision shall be final and binding.
9. **Environmental justice:** In the performance of this Grant Agreement, the Grantee shall conduct its programs, policies, and activities that substantially affect human health or the environment in a manner that ensures the fair treatment of people of all races, cultures, and income levels, including minority populations and low-income population of the State.
10. **Force majeure:** Neither ARB nor Grantee shall be liable for or deemed to be in default for any delay or failure in performance under this Grant Agreement or interruption of services resulting, directly or indirectly, from acts of God, enemy or hostile governmental action, civil commotion, strikes, lockouts, labor disputes, fire or other casualty, etc.

11. **Governing law and venue:** This grant is governed by and shall be interpreted in accordance with the laws of the State of California. ARB and Grantee hereby agree that any action arising out of this Grant Agreement shall be filed and maintained in the Superior Court in and for the County of Sacramento, California, or in the United States District Court in and for the Eastern District of California. Grantee hereby waives any existing sovereign immunity for the purposes of this Grant Agreement.
12. **Grantee's responsibility for work:** Grantee shall be responsible for work and for persons or entities engaged in work, including, but not limited to, grantors, subgrantors, suppliers, and providers of services. Grantee shall be responsible for any and all disputes arising out of its grant for work on the Project, including but not limited to payment disputes with grantors, subgrantors, and providers of services. The State will not mediate disputes between Grantee and any other entity concerning responsibility for performance of work.
13. **Independent actor:** Grantee, and its agents and employees, if any, in their performance of this Grant Agreement, shall act in an independent capacity and not as officers, employees or agents of ARB.
14. **Indemnification:** Grantee agrees to hold harmless, indemnify, and defend ARB, its officers, employees, agents, representatives, and successors-in-interest against any and all loss, damage, cost or expenses which ARB, its officers, employees, agents, representatives, and successors-in-interest may incur or be required to pay by reason of any injury or property damage caused or incurred by Grantee, its employees, subgrantors, or agents as a result of the performance of this Grant and use of the subject equipment.
15. **Nondiscrimination:** During the performance of this Grant Agreement, Grantee and its grantors shall not unlawfully discriminate against, harass, or allow harassment against any employee or applicant for employment because of sex, race, religion, color, national origin, ancestry, disability, sexual orientation, medical condition, marital status, age (over 40) or allow denial of family-care leave, medical-care leave, or pregnancy-disability leave. Grantee and its grantors shall ensure that the evaluation and treatment of their employees and applicants for employment are free of such discrimination and harassment.
16. **No third party rights:** The parties to this Grant Agreement do not create rights in, or grant remedies to, any third party as a beneficiary of this Grant Agreement, or of any duty, covenant, obligation or undertaking establish herein.
17. **Prevailing wages and labor compliance:** If applicable, the Grantee agrees to be bound by all the provisions of State Labor Code Section 1771 regarding prevailing wages. If applicable, the Grantee shall monitor all agreements subject to reimbursement from this Grant Agreement to ensure that the prevailing wage provisions of State Labor Code Section 1771 are being met.
18. **Professionals:** For projects involving installation or construction services, the Grantee agrees that only licensed professionals will be used to perform services under this Grant Agreement where such services are called for and licensed professionals are required for those services under State law.
19. **Recitals:**
 - Grantee is validly organized and existing under the laws of the State of California (State) and is authorized to enter into this Grant Agreement to perform its obligations hereunder.

- Grantee agrees to obtain the required licenses, permits, and all other appropriate legal authorizations from all applicable federal, state, and local jurisdictions, and pay all applicable fees.
 - All parties to this grant award have had the opportunity to have the Grant Agreement reviewed by their attorneys.
20. **Severability:** If a court of competent jurisdiction holds any provision of this Grant Agreement to be illegal, unenforceable or invalid in whole or in part for any reason, the validity and enforceability of the remaining provisions, or portions of those provisions, will not be affected.
21. **Timeliness:** Time is of the essence in this Grant Agreement. Grantee shall proceed with and complete the Project in an expeditious manner.
22. **Waiver of Rights:** Any waiver of rights with respect to a default or other matter arising under the Grant Agreement at any time by either party shall not be considered a waiver of rights with respect to any other default or matter. Any rights and remedies of the State provided for in this Grant Agreement are in addition to any other rights and remedies provided by law.
23. **Potential Sub-grantee:** Nothing contained in this Agreement or otherwise, shall create any contractual relation between the ARB and any sub-grantees, and no subgrant shall relieve the Grantee of his responsibilities and obligations hereunder. The Grantee agrees to be as fully responsible to the ARB for the acts and omissions of its sub-grantees and of persons either directly or indirectly employed by any of them as it is for the acts and omissions of persons directly employed by the Grantee. The Grantee's obligation to pay its sub-grantees is an independent obligation from the ARB's obligation to make payments to the Grantee. As a result, the ARB shall have no obligation to pay or to enforce the payment of any moneys to any sub-grantee.

Grantee shall not subgrant any services under this Agreement without prior approval of the ARB.

24. **The Cost Principles:** The cost principal of 2CFR 225,230 or 220 (formerly OMB Circular A-87, A-122, or A-21) are applicable to this award. Since there are no indirect costs included in the assistance budget, they are not allowable under this Grant Assistance Agreement.
25. **Ban/Scrappage of Engines:** Grantee agrees to completely ban or scrap older, existing engines/locomotives from California operations for all of the projects funded under this agreement, including subawards / subgrants.

To use the ban option, the engines must be removed from the older existing locomotives. The railroad company or locomotive manufacturer must record the engine block serial number or locomotive unit number. The Railroad company/locomotive manufacturer must make sure that the original older engines will never operate in a locomotive or other piece of equipment in California.

Scrappage engine is defined as a permanently disabled engine no longer suitable for use. To use the scrappage option, the older existing engines must be replaced as a part of a repower project and must be destroyed by scrapping or drilling a hole in the engine block

or manifold, to render the existing engine inoperable. Permanently disabling the chassis or the engine while retaining possession of the equipment/engine is also an acceptable scrapping method. Owner/operator of the original engine or equipment may retain possession of the scrapped engine/chassis.

The vehicle/equipment being replaced/repowered will be scrapped or rendered permanently disabled within 90 days of the replacement, or returned to the original engine manufacturer to a certified cleaner emission standard.

The railroad/ locomotive manufacturer or their designee must provide digital photographs, described below, to demonstrate the destruction of the older existing locomotive engine to ARB. ARB must receive these photos, within 90 business days, of the existing engine being scrapped.

The following digital picture views must be taken and stored appropriately for later identification in record files:

1. Locomotive U.S. Department of Transportation (DOT) certification or equivalent tag(s).
2. Engine side view (within or outside of engine compartment).
3. Engine serial number either stamped on the block or on the tag.
4. Destroyed engine block.

For engine repowers, the Grantee (railroad/locomotive manufacturer or their designee) agrees to the following:

- a. The locomotive, engine, or equipment being repowered will be scrapped within ninety (90) days of the repower, or the repowered, engine, or equipment will be returned to the original engine manufacturer for remanufacturing to a cleaner standard.
 - b. The repower engine, or equipment will perform the same function as the engine, or equipment that is being repowered.
 - c. The repower engine, or equipment will be the same type and similar gross vehicle weight rating or horsepower as the vehicle, engine, or equipment being repowered.
26. **Equipment Use, Management, and Disposition:** These equipment use, management, and disposition instructions are applicable to assistance agreement recipient and subrecipient acquiring equipment this award. State agencies may use, manage, and dispose of equipment acquired under assistance agreement by the state in accordance with state laws and procedures.

Grantee agrees the equipment acquired under this grant agreement will be subject to the use and management and disposition regulations at 40 CFR 30.34 and 31.32, as applicable. Equipment is defined as tangible non-expendable personal property having a useful life of more than one year and an acquisition cost of \$5,000 or more per unit. Certified or verified technologies, vehicles, engines, and non-road equipment are considered to be equipment to the extent they fall within this definition.

Grantee agrees that at the end of the project period the Grantee will continue to use the equipment purchased under this grant agreement in the project or program for which it

was acquired as long as needed, whether or not the project or program continues to be supported by Federal funds.

These disposition instructions are applicable to grant agreement recipients, subrecipients, and any other third-party beneficiaries acquiring equipment under this award.

27. **Program Income:** If remanufactured, scrapped or salvaged engines/vehicles are to be sold outside of California and program income is generated during the course of the project, program income requirements apply.

Program income is defined as gross income received by the Grantee directly generated by a grant supported activity, or earned only as a result of the grant agreement during the grant period. "During the grant period" is the time between the effective date of the award and the ending date of the award reflected in the final financial report. Program income earned during the project period shall be retained by the recipient/railroads and, in accordance with 40 CFR parts 31.25, recipient is authorized to use program income as follows:

- a. Program income may be added to funds committed to the project by EPA and recipient/railroad and used to further eligible project or program objectives. The program income shall be used for the purpose and under the conditions of the grant agreement.
- b. Program income may be used to finance the non-Federal share of the project or program, including any mandatory or voluntary cost share. The amount of the Federal grant award remains the same.
- c. Deducted from the total project or program allowable cost in determining the net allowable costs on which the federal share of cost is based. This means that the recipient/railroad shall spend program income on project activities before spending/requesting federal funds for project activities. This may result in unspent federal funds at the end of the project period.

The recipient/railroad will maintain records adequate to document the extent to which transactions generate program income and the disposition of program income.

28. **Uniform Administrative Requirements:** Recipient agrees to comply with 40 CFR Part 31, Uniform Administrative Requirements for Grants and Cooperative Agreements to States and Local Governments.

Work under this agreement must be completed in accordance with the final approved work plan. Recipient agrees to obtain the prior approval of ARB for any revisions of the scope or objectives of the project or the need to extend the period of availability of funds, in accordance with 40 CFR Section 31.30.

Recipient shall consult with the project officer whether a budget or work plan revision constitutes a change in the scope or the objective of the project or program.

29. **Trafficking Victim Protection Act of 2000 and Suspensions and Debarment:** To implement requirements of Section 106 of the Trafficking Victims Protection Act of 2000, as amended, the following provisions apply to this award:

- a. The Federal awarding agency (U.S. EPA) may unilaterally terminate this award, without penalty, if a subrecipient that is a private entity: 1) is determined to have violated an applicable prohibition in the Prohibition Statement below; or 2) has an employee who is determined by the agency official authorized to terminate the award to have violated an applicable prohibition in the Prohibition Statement below through conduct that is either: a) associated with performance under this award; or b) imputed to the subrecipient using the standards and due process for imputing the conduct of an individual to an organization that are provided in 2 CFR part 180, "OMB Guidelines to Agencies on Government-wide Debarment and Suspension (Nonprocurement)," as implemented at 2 CFR part 1532 . You must inform the ARB immediately of any information you receive from any source alleging a violation of a prohibition in the Prohibition Statement below.
- b. The right to terminate unilaterally that is described in paragraph a of this award term: 1) implements section 106(g) of the Trafficking Victims Protection Act of 2000 (TVPA), as amended (22 U.S.C. 7104(g)), and 2) is in addition to all other remedies for noncompliance that are available to us under this award.
- c. You must include the requirements of the Prohibition Statement below in any subaward you make to a private entity.

Prohibition Statement: The Grantee, all its employees, and subgrantees may not engage in severe forms of trafficking in persons during the period of this agreement; procure a commercial sex act during the period of time that the grant is in effect; or use forced labor in the performance of this agreement. ARB may unilaterally terminate this agreement without penalty in accordance with the requirements of Section 106 of the Trafficking Victims Protection Act of 2000.

30. **Restrictions on Lobbying:** The Grantee agrees to comply with Title 40 CFR Part 34, New Restrictions on Lobbying.

In accordance with the Byrd Anti-Lobbying Amendment, a Grantee who makes a prohibited expenditure under Title 40 CFR Part 34 or fails to file the required certification or lobbying forms shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such expenditure.

31. **Lobbying and Litigation:** The Grantee shall ensure that no grant funds awarded under this assistance agreement are used to engage in lobbying of federal Government, ARB or in litigation against the United States unless authorized under existing law. The recipient shall abide by its respective 2 CFR 220,225 or 230 (formerly OMB circular A-21, A-87, or A-122) which prohibits the use of federal grant funds for litigation against the United States or for lobbying or other political activities.
32. **Drug Free Work Place Certification:** The Grantee of this grant agreement must make an ongoing, good faith effort to maintain a drug-free workplace pursuant to the specific requirements set forth in Title 40 CFR 36.200 – 36.230. Additionally, in accordance with these regulations, the Grantee must identify all known places under this grant awards, and keep this information on file during the performance of this award.

Those Grantees who are individuals must comply with the drug-free provisions set forth in title 40 CFR 36.300.

The consequences for violating this condition are detailed under Title 40 CFR 36.510. Grantee can access the Code of Federal Regulations (CFR) Title 40 Part 36 at

http://www.access.gpo.gov/nara/cfr/waisidx_06/40cfr36_06.html.

33. **For Profit Subrecipients:** Grantee shall utilize terms and conditions in all subgrants to for-profit sub-recipients: 40 CFR Sections 30.2, 30.13, 30.14, 30.16, 30.17, 30.18, 30.20, 30.23, 30.25, 30.26(d), 30.28, 30.31, 30.34, 30.35, 30.36, 30.37, 30.40-47, 30.51, 30.53, 30.61, 30.62. For the purposes of applying the listed regulations to for-profit sub-recipients, Grantee shall perform the functions that the regulations provide will be performed by USEPA.

Grantee shall establish a procedure for resolving disputes with for-profit sub-recipients.

Grantee shall not reimburse a for-profit sub recipient until receipt of documentation that the sub-recipient has incurred eligible and allowable costs.

Grantee shall obtain a final report detailing how the sub-recipient expended funds in a format prescribed by the Grantee.

Grantee shall ensure that every sub-grant includes any clauses required by Federal statute and executive orders and their implementing regulations.

Grantee shall ensure that sub-recipients are aware of requirements imposed upon them by Federal statutes and regulations.

34. **Suspension and Debarment:** The Grantee shall fully comply with Subpart C of 2 CFR 180 and 2 CFR Part 1532, entitled "Responsibilities of Participants Regarding Transactions (Doing business with Other Persons). The recipient is responsible for ensuring that any lower tier covered transaction as described in Subpart B of 2 CFR Part 180 and 2 CFR Part 1532, entitled "Covered Transactions", includes a term or condition requiring compliance with subpart C. The Grantee acknowledges that failing to disclose the information as required at 2 CFR 180.335 may result in the delay or negation of this assistance agreement, or pursuance of legal remedies, including suspension and debarment.

The recipient may access the Excluded Parties List System at www.epls.gov. This term and conditions supersedes EPA Form 5700-49, "Certification Regarding Debarment, suspension and Other Responsibility Matters."

EXHIBIT A

ASSURANCES FOR NON-CONSTRUCTION PROGRAMS

Note: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency.

As the duly authorized representative of the Grantee, I certify that the Grantee:

1. Will give the awarding agency, the Comptroller General of the United States, and if appropriate, the ARB, through any authorized representative, access to and the right to examine all records, books, papers, or documents, related to the award; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
2. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personnel or organizational conflict of interest, or personal gain.
3. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. 4728-4763) relating to prescribed standards for merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
4. Will comply with all Federal statutes relating with nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. 1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. 794 including Executive Orders 11914 and 11250), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. 6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (PL 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse of alcoholism; (g) 523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. 290 dd-3 and 290 ee; 3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. 3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and (j) the requirements of any other nondiscrimination statutes(s) which may apply to the application.
5. Will comply, or has already complied, with the requirements of Titles II and III of the uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (PL 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or Federally assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
6. Will comply, as applicable, with the provisions of the Hatch Act (5 U.S.C. 1501-1508 and 7324-7328), which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.
7. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. 276a to 276a-7), the Copeland Act (40 U.S.C.276c and 18 U.S.C. 874) and the Grant Work Hours and Safety Standards Act (40 U.S.C. 327-333), regarding labor standards for federally assisted construction sub-agreements.
8. Will comply, if applicable, with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is \$10,000 or more.

9. Will comply with environmental standards which may be prescribed pursuant to the following:
(a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C.1451 et seq.); (f) conformity of Federal actions to State (Clear Air) Implementation Plans under Section 176(c) of the Clear Air Act of 1955, as amended (42 U.S.C 7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended, (P.L. 93-523); and (h) protection of endangered species under the Endangered Species Act of 1973, as amended, (P.L. 93-205).
10. Grants, subgrants, and sub grants over \$100,000 must comply with applicable standards, orders, or requirements issued under Clean Air Act and the Clean Water Act, and Executive Order 11738, "Administration of the Clean Air Act and the Federal Water Pollution Control Act with Respect to Federal Grants."
11. Grantor must comply with standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Pub.L. 94-163).
12. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. 1721 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.
13. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. 470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. 469a-1 et seq.).
14. Will comply with P.L. 93-348 regarding the protection of human subjects involved in research, development, and related activities supported by this award of assistance.
15. Will comply with the Laboratory Animal Welfare Act of 1966 (PL 89-544, as amended, 7 U.S.C. 2131 et seq.) pertaining to the care, handling, and treatment of warm blooded animals held for research, teaching, or other activities supported by this award of assistance.
16. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. 4801 et seq.), which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.
17. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, Audits of States, Local Governments, and Non-Profit Organizations.
18. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations and policies governing this program.

Typed Name & Title of Authorized Representative

Signature of Authorized Representative

Grantee Organization

Date Signed

EXHIBIT B
CERTIFICATION REGARDING LOBBYING

The undersigned certifies, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal grant, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal grant, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress in connection with this Federal grant, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
- (3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including sub-grants, sub-grants, and grants under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31 U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Typed Name & Title of Authorized Representative

Signature of Authorized Representative

Grantee Organization

Date Signed

EXHIBIT C
Sample Final Report

Grant Program:	
Project Title:	
Grant Recipient:	
Grant Number:	
EPA/ARB Award Amount:	
Date Submitted:	

Table 1. Expenditures (Record all funds expended for each budget category.)			
	Total Federal Funds Expended	Total Cost-Share Expended	Total Additional Leveraged Funds Expended
Personnel			
Fringe Benefits			
Travel			
Equipment			
Supplies			
Contractual			
Other			
Indirect Charges			
TOTALS			

Table 2. Actual Results					
	NOx	PM	HC	CO	CO2
Annual Reductions (tons)					
Lifetime Reduction (tons)					
Capital Cost Effectiveness (\$/ton)					
Total Project Cost Effectiveness (\$/ton)					
Gallons of Diesel Fuel Saved	Annual =		Lifetime =		

Provide a narrative description of the project.

Provide a narrative discussion of the actual project results (outputs and outcomes) and how the results are quantified. These may include, but are not limited to:

- Number of replaced or retrofitted engines/vehicles/equipment and/or hours of idling reduced;
- Emission Reductions, Cost Effectiveness and Diesel Fuel Saved, as shown in Table 2 above;
- Health benefits achieved (health benefits may be measured by numbers of illnesses (e.g. reductions in the number of children with asthma, health care costs, or missed work/school days avoided);
- Adoption of an idle-reduction policy or changes in driver behavior regarding idling practices
- Documented improved ambient air quality;
- Sub-recipient information (name, award amount, project description);
- Vendor information (name, payment amount, good/services provided);
- An increased understanding of the environmental or economic effectiveness of the implemented technology;
- Dissemination of the project information and increased knowledge via list serves, websites, journals, and press/outreach events (provide web links where applicable);
- Widespread adoption of the implemented technology;
- Increased public awareness of project and results
- Other

Provide a summary of the proposed outputs and outcomes as listed in the approved project Work Plan. Provide a comparison of actual results with the proposed outputs/outcomes specified in the approved project Work Plan. Explain the reason for any differences in proposed versus actual outputs/outcomes.

Provide a narrative discussion of the successes and lessons learned for the entire project.

If any cost-share or additional leveraged funds are reported in Table 1 above, identify the source of the funds.

Was any program income generated during the project period? Identify amount of program income, how it was generated, and how the program income was used.

For projects involving vehicle/equipment replacement and repowers provide:
1) Evidence that the replacement activity is an “early replacement,” and would not have occurred during the project period through normal attrition (i.e. without the financial assistance provided by EPA/ARB). Supporting evidence can include verification that the vehicles or equipment replaced had useful life left and fleet characterization showing fleet age ranges and average turnover rates per the vehicle or fleet owner’s budget plan, operating plan, standard procedures, or retirement schedule; and
2) Evidence of appropriate scrappage or remanufacture, including the engine serial number and/or the vehicle identification number (VIN).

*Include Attachments as Necessary

For projects that take place in an area affected by, or that include affected vehicles, engines or equipment affected by, Federal, State or local law mandating emissions reductions, provide evidence that emission reductions funded with EPA funds were implemented prior to the effective date of the mandate and/or are in excess of (above and beyond) those required by the applicable mandate.

*Include Attachments as Necessary

Additional Information

EXHIBIT E
GRANTEE COST SHEET
San Joaquin Valley Air Basin (SJVAB)
List Major Components per Locomotive

Description	Cost
Major Equipment Costs for a Locomotive	
Older Locomotive to be repowered	
Cab and related upgrades	
Control Stand (within Cab)	
Electronic Controls	
Electrical (wiring, etc.)	
Rectifiers / Inverters	
Air Intakes	
Diesel Engine(s) and accessories	
Alternator (main and/or auxiliary)	
Radiator	
Fuel Tanks	
Air Tanks	
Traction motors	
Truck frame	
Air Compressor	
Wheels	
Batteries	
Sand box	
Other Costs	
Sub Total of Qualifying Gen-set Locomotive Major Components Cost (per locomotive)	X
Manufacturing Cost per Locomotive (to replace/repower/rebuild and Assemble)	Y
Total Cost Per Qualifying Gen-set Locomotive	X + Y = Z
Total Number of Qualifying Gen-set Switch Locomotives in the SJVAB Air Basin	A
Total Cost for all of the Qualifying Gen-set Switch Locomotives*	Z x A

**NOTE: remember to include quote in proposal as required.*

FUNDING SOURCES	percent Contribution	Amount in Dollars
Railroad Contribution (Minimum of 33.33% of the grand total)		\$
DERA Funds Requested (Maximum award amount up to \$1,000,000)		\$
GRAND TOTAL		\$

San Francisco Bay Air Basin (SFBAB)
List Major Components per Locomotive

Description	Cost
Major Equipment Costs for a Locomotive	
Older Locomotive to be repowered	
Cab and related upgrades	
Control Stand (within Cab)	
Electronic Controls	
Electrical (wiring, etc.)	
Rectifiers / Inverters	
Air Intakes	
Diesel Engine(s) and accessories	
Alternator (main and/or auxiliary)	
Radiator	
Fuel Tanks	
Air Tanks	
Traction motors	
Truck frame	
Air Compressor	
Wheels	
Batteries	
Sand box	
Other Costs	
Sub Total of Qualifying Gen-set Locomotive Major Components Cost (per locomotive)	X
Manufacturing Cost per Locomotive (to replace/repower/rebuild and Assemble)	Y
Total Cost Per Qualifying Gen-set Locomotive	X + Y = Z
Total Number of Qualifying Gen-set Switch Locomotives in the SFBAB Air Basin	A
Total Cost for all of the Qualifying Gen-set Switch Locomotives*	Z x A

**NOTE: remember to include quote in proposal as required.*

FUNDING SOURCES	percent Contribution	Amount in Dollars
Railroad Contribution (Minimum of 33.33% of the grand total)		\$
DERA Funds Requested (Maximum award amount up to \$1,000,000)		\$
GRAND TOTAL		\$