



Community Air Protection Incentives Policies and Procedures Manual

Version: August 21, 2024

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I. Introduction

Assembly Bill (AB) 617 (Chapter 136, Statutes of 2017) directed the California Air Resources Board (CARB), in conjunction with local air districts to establish the Community Air Protection (CAP) Program. AB 617 provides a community focused action framework to improve air quality and reduce exposure to criteria air pollutants and toxic air contaminants in the communities most impacted by air pollution. AB 617 calls for CARB and the air districts to actively engage with members of heavily impacted communities, follow their guidance, and address local sources of concern. AB 617 includes a variety of strategies to address air quality issues in impacted communities, including community-level monitoring, uniform emission reporting across the State, stronger regulation of pollution sources, and incentives for both mobile and stationary sources.

To support the AB 617 effort, the California Legislature has appropriated incentive funding to support early actions to address localized air pollution in the most impacted communities. Between fiscal years 2017-18 and 2018-19, the state budget has appropriated CARB a total of \$495 million of California Climate Investments funding for CAP incentives to be administered by air districts in partnership with local communities. The Legislature expanded the scope of the CAP incentives appropriated in SB 856 to include additional project types.

CARB developed proposed CAP Incentives 2019 Guidelines which contain guiding principles, program administration requirements, and eligibility criteria for new incentives to address the new project categories identified in SB 856. These CAP Guidelines build upon 2018's CAP Funds Supplement to the Carl Moyer Program (CMP) 2017 Guidelines. The Feather River Air Quality Management District (District) will use these two guiding documents, as well as CARB's Carl Moyer Program Guidelines and the District's Carl Moyer Program Policies and Procedures Manual to guide the District's policies and procedures for CAP Incentives projects.

II. Program Status

The District has expended 100% of Year 1 FY2017-18 funds. During the Year 2 Solicitation for Projects, the District received applications for stationary diesel emergency engine replacements. The District pursued a Chapter 6 project plan to fund the stationary engines. The project plan was approved February 16, 2022. The Year 2 funds are now fully under contract and 79% expended. Year 2 projects must be expended by June 30, 2026.

The Year 3 FY 2019-20 project solicitation was released on March 30, 2022, and closed May 13, 2022. Year 3 projects were selected in July 2022 and included school bus replacement, electric vehicle charging stations, and an off-road equipment replacement project. The District Board of Directors approved an Alternative Fuel Infrastructure Projects Competitive Review and Evaluation Process for Infrastructure Projects in February 2021 which allowed the funding of publicly accessible charging stations in the Year 3 project solicitation. The Year 3 solicitation also included stationary engines. As of August 9, 2024, over 84% of Year 3 funding has been obligated to projects and 79% has been expended. Year 3 funds must be expended by June 30, 2025.

There was no Year 4 as fiscal year 20/21 funding was combined with fiscal year 21/22 funding to result in the Year 5 allocation. The Year 5 project solicitation was released on March 31, 2023, and closed on May 31, 2023. Year 5 projects were selected in June 2023 and included school bus replacement, electric vehicle charging stations, replacing lawn/garden equipment, and replace an off-road piece of equipment. Year 5 funds are over 67% obligated and over 30% expended.

The current RFP is for Year 6 of the CAP Incentives Program.

III. Tentative Year 6 Funding Program Timeline

The dates below are target dates unless required by grant agreement.

Date	Goal
Ongoing	Conduct community outreach
August 21, 2024	Release project solicitation
October 21, 2024	Initial applications due
December 2024	Project list posted on District website
April 2025	Update FRAQMD Board on AB 617 and program
By June 30, 2026	100% of FY22-23 (Year 6) project funds under contract
By June 30, 2027	100% of FY22-23 (Year 6 CAP Incentive funds liquidated

IV. Eligible Project Categories

The guidelines allow CAP Incentive Funding to be used for Carl Moyer Program (CMP) eligible projects, Proposition 1B Program eligible projects, Hexavalent Chromium Plating Facility projects, CARB approved Chapter 6 Project Plans, and Reducing Air Pollution in Schools projects. The District has selected to fund CMP projects, stationary diesel emergency engines in accordance with our approved Chapter 6 Project Plan and Reducing Air Pollution in Schools projects.

A. Carl Moyer Program Eligible Projects

The Community Air Protection Funds Supplement (CAPFS) to the CMP 2017 Guidelines provides the requirements and funding levels for funding Carl Moyer Program eligible projects using CAP Incentives. If selected, these projects will be administered using the District's Carl Moyer Program Policies and Procedures Manual. The CMP 2017 Guidelines included funding caps and maximum eligible costs for the specific project types. The CAPFS adopted revised caps and costs for certain CAP Incentive projects. Table 1 shows the maximum funding amounts for Carl Moyer Program eligible projects under the Community Air Protection Program that were modified by the CAPFS. All other project types should refer to the CMP 2017 Guidelines for caps and costs.

For the Year 6 CAP Incentives, the District will solicit the following CMP eligible projects:

a. On-road Heavy-Duty Vehicles

The following projects are eligible for CAP Incentives administered by the District provided that state and local requirements are met:

- Heavy-duty trucks diesel to zero-emission on-road vehicle replacement.
- Emergency vehicle, transit vehicle, solid waste collection vehicle, or school bus replacement to diesel, CNG, or zero-emission replacement vehicle.
- Conversions and engine re-powers to zero-emission.

b. Off-Road Equipment

The following projects are eligible for CAP Incentives administered by the District provided that state and local requirements are met:

- Off-road equipment replacement to diesel or zero-emission.
- Off-road engine repower.
- Retrofit purchase and installation on existing off-road diesel equipment.

c. Zero Emission Infrastructure

The following infrastructure projects are eligible for CAP Incentives administered by the District:

- Infrastructure associated with an equipment or vehicle project.
- New battery charging station or hydrogen not associated with an equipment or vehicle project.

Table 1: Maximum Percentage of Eligible Cost and District Funding Caps for Specific Project Types That Differ from Carl Moyer Guidelines

Category	Project Type		Community Air Protection	
			District Funding Cap	Maximum Eligible Cost
On-Road	Zero-Emission Replacements or Conversions	School Buses	None	100%
		Transit Buses	None	95%/90%/60%*
		HHD Vehicles	None	95%/90%/60%*
		MHD Vehicles	None	95%/90%/60%*
		LHD Vehicles	None	95%/90%/60%*
	Emergency Vehicles	None	90%	
Off-Road	Repower to Zero-Emission		None	95%
	Repower to Diesel/LSI		None	95%
	Mobile Equipment Replacement		None	90%
	Portable Equipment Replacement		None	90%
Infrastructure	Any Infrastructure Project		None	60%
	Any Infrastructure Project Located at a Sensitive Receptor ¹		None	100%
	Publicly accessible project		None	70%
	Projects with solar/wind power systems		None	75%
	Publicly accessible project with solar/wind power systems		None	85%
	Public School Bus Battery Charging and Alternative Fueling		None	100%

*Percentages are for fleets of 1-3 vehicles, 4-10 vehicles, and over 10 vehicles, respectively.

¹ Sensitive receptors include schools, hospitals, day care centers, and such other locations as the air districts or CARB may determine (H&SC § 42705.5(a)(5)).

B. Reducing Air Pollution in Schools

These project categories are designed to decrease exposure and address a range of outdoor and indoor air emission sources that may potentially affect the health of school children. The District may fund a project or projects at schools in disadvantaged communities or low-income communities. These project categories will be administered by this Policies and Procedures Manual with guidance from Chapter 5 of the Community Air Protection Incentives 2024 Guidelines.

a. Air Filtrations Systems

Air filtration reduces the concentration of particulate contaminants from indoor air and is an important component of a school’s Heating Ventilation and Air Conditioning (HVAC) system. Reducing airborne particles (such as PM2.5) is important because particulate matter negatively impacts human health, especially for sensitive populations such as children. Older HVAC systems and basic air filtration used in some schools only remove a small fraction of particles in the air that are smaller than 0.3 microns (µm). More efficient HVAC air filters and standalone air cleaners are important for creating healthier air in school classrooms. Table 2 shows the maximum funding amounts for this project type.

Table 2: Funding Amounts for Air Filtration Systems

Type of Equipment	Funding Amount
Air Filters (MERV 14+)	Up to 100%
Standalone Systems	Up to 90%

b. Zero-Emission Lawn and Garden

The use of internal combustion lawn and garden equipment to maintain schoolyards and sporting fields exposes children and equipment operators to elevated levels of air toxics and criteria air pollutants. This project type provides incentives to schools in disadvantaged communities or low-income communities and contractors servicing those public schools to purchase zero-emission L&GE less than 19 kilowatts (or 25 horsepower) such as lawn mowers, chainsaws, leaf blowers, trimmers, etc. Table 3 shows the maximum funding amount for this project type.

Table 3: Zero-Emission Lawn and Garden Equipment Types and Funding Amounts

Equipment Type	Equipment Funding Amount	Funding Amount for Additional Batteries and/or Charger
Chainsaws/Polesaws, Edgers, Trimmers, Blowers/Vacuums	70 percent of purchase price up to \$400	70 percent of purchase price up to \$400
Walk-Behind Mowers	70 percent of purchase price up to \$750	70 percent of purchase price up to \$750
Ride-On or Standing Ride Mowers	70 percent of purchase price up to \$15,000	Not Eligible

C. Stationary Diesel Engines Emissions Reductions Project Plan

The Stationary Diesel Engines Emission Reductions Project Plan is applicable to stationary source projects and will fund the replacement of older diesel internal combustion engines with cleaner technology that is beyond what is currently required, with an emphasis on zero-emission technology. To be eligible for replacement, existing engines must:

- Meet and maintain compliance with all Federal, State, and Local requirements applicable to emergency diesel engine use in the District.
- Have a valid District Permit to Operate.
- Be at least 25 horsepower.
- Be fueled by diesel.
- Be uncertified or Tier 1 with a PM emissions rating of equal to or greater than 0.40 g/bhp-hr.
- Be operational.

The Project Plan is attached to these Policies and Procedures as Exhibit A.

V. Project Selection

The District will use the Guiding Principles included in the CAP Incentives 2024 Guidelines to help select projects that meet the goals of the Community Air Protection Program and AB 617. These Guiding Principles include:

- Reducing emissions in disadvantaged and low-income communities, with a goal of 70% of funds benefitting disadvantaged communities and 80% of funds benefitting low-income communities;
- Considering toxic air contaminant, criteria air pollutant, and greenhouse gas benefits;
- Applicants ability to successfully implement the project;
- Engaging communities and providing support;
- Providing emission reductions in excess of laws or regulations;
- Prioritizing zero-emission technology and infrastructure;
- Considering special projects that protect sensitive receptors;
- Ensuring transparency in project selection and reporting;
- Considering both cost-effectiveness and relative exposure reduction in funding decisions.

A. Community Engagement

The District has conducted community outreach to determine the types of projects the communities are most concerned with in regard to air quality. The District will provide direct outreach to groups of potential applicants in disadvantaged and low-income communities to increase awareness of funding opportunities. The District may also conduct outreach in or near disadvantaged communities to seek input on important community needs from local residents and community-based organizations. Community outreach information will be documented for inclusion in disbursement requests and semi-annual reports. Priorities identified by community members and organizations will be documented.

A map of Disadvantaged Communities (SB 535 (De León, Chapter 830, Statutes of 2012)) and Low-income Communities (AB 1550 (Gomez, Chapter 369, Statutes of 2016)) is available at <https://ww3.arb.ca.gov/cc/capandtrade/auctionproceeds/lowincomemapfull.htm>.

B. Project Solicitation

The District will open a solicitation period to accept project proposals. The District will make the required documents and guidelines available to the public on the District website as well as at the District office. Proposals will be reviewed, and the applicant will be notified within 30 working days of receipt of the completeness of the proposal. Proposals will be tracked in the CARL database as well as in an excel spreadsheet.

Outreach for project solicitation will include press releases to local media and outreach to the potential applicants and community groups involved in the community engagement process.

All project applications received during the solicitation will be listed on the District's website.

Applicants may be asked to submit additional or supplemental information for projects that are deemed eligible. The supplemental information may include information necessary to calculate cost-effectiveness of the project and perform the project ranking.

C. Project Ranking

The District will prioritize eligible projects based on the following criteria (from highest priority to lowest priority):

- a. Projects in disadvantaged communities addressing a primary community need as determined based on community engagement.
- b. Projects in low-income communities addressing a primary community need as determined based on community engagement.
- c. Projects located outside of disadvantaged communities and low-income communities that may benefit these communities.
- d. Eligible projects located outside of disadvantaged communities and low-income communities.

Projects within each priority level will be ranked based on cost-effectiveness, the Alternative Fuel Infrastructure Projects Competitive Review and Evaluation Process for Infrastructure Projects, or the number of students to benefit from the project for Schools projects. The timeliness of project completion may also factor into project ranking. Public agencies and non-profit agencies will be preferred applicants.

D. Approval of Projects

The District will post a proposed list of projects on the District's website 10 days prior to approval. The Air Pollution Control Officer shall consider community feedback and project ranking prior to selecting projects.

E. Award Notification

The District will mail all applicants a list of the approved projects. A list of approved projects and awardees will also be posted on the District's CAP webpage.

VI. Project Management

A. Pre-Inspections

After selecting a potential project, the District will complete a pre-inspection prior to contract execution. Pre-inspections for CMP eligible projects will follow the District's CMP Policies and Procedures Manual.

The pre-inspection for school air filtration projects will include photos of the current in-use air filtration system, in-use filters, and the space to benefit from the project. The pre-inspection for school lawn and garden equipment will include photos of the equipment to be replaced. The pre-inspection for stationary diesel engines may be satisfied by a recent annual inspection as part of the stationary permitting program, if the inspection meets the requirements of Exhibit A.

All pre-inspections will include other relevant information including, but not limited to, name of inspector, date of inspection, name of equipment owner, and location and area of operation of the equipment.

B. Contract Development

Once pre-inspections are completed and the equipment is verified as being eligible for funding (if needed, through a compliance check with CARB), the District will develop a grant contract. Grant contracts for CMP eligible projects will be developed in accordance with the District's CMP Policies and Procedures Manual.

Contracts for school projects will include the general requirements included in Chapter 5 of the CAP Incentives 2024 Guidelines, party names and dates, contact information for both parties, requirements regarding co-funding, contract term, project completion date, funding amount, project specifications including information on existing and new equipment, compliance statements, maintenance requirements, reporting requirements, recordkeeping requirements, provisions to allow audits and inspections, and repercussions for nonperformance.

The applicant has sixty (60) calendar days after receiving the contract to review, sign, and return the contract with all requested supporting documentation. If a contract and associated supporting documentation is not returned within sixty (60) calendar days, funds may be allocated to another project. Written requests for an extension may be approved on a case-by-case basis by the APCO.

An applicant may not order or make a down payment on a new engine, piece of equipment, or vehicle prior to contract execution. Dealers ordering engines, equipment, or vehicles prior to air district approval of grant application awards assume all financial risk and are in no way ensured program funds.

Stationary diesel engine projects may also require an Authority to Construct if the replacement equipment is subject to District permitting. See Exhibit A for more information on stationary engine project requirements.

C. Post Inspections

The District will gather and document post-inspection information on all projects funded with CAP incentives prior to payment to the grantee. Post-inspections for CMP eligible projects will follow the District's CMP Policies and Procedures Manual.

The post-inspection for air filtration projects at schools will verify the following information, as applicable: Air filter and/or system manufacturer, model, MERV rating, pollutant removal efficiency (percentage), usage life, size, and filter materials. The post-inspection for school lawn and garden projects will include photos of the new zero-emission equipment and destroyed combustion equipment. All post-inspections will verify that new equipment is consistent with the grant contract.

D. Project Completion

The District will make payment for a project or equipment only after the post-inspection finds the project or equipment in place and operational, and the air district receives an invoice itemized in sufficient detail to ensure that only completed and eligible project costs are reimbursed, a W-9 has been received as applicable, and other sources and amounts of funding for the project are reviewed to ensure the sum of all project funds does not exceed the total project cost. For multi-stage projects, partial payments may be approved on a case-by case basis and is described in the contract. The District will maintain a clear record of progress payment in the project file and in the administration fiscal database.

If any portion of the equipment purchase requires financing, the Program Participant shall provide the financing terms to the District before the District issues payment. A minimum of the full Contract amount shall be used as a down payment. The amount financed may not exceed the applicant's portion of the cost of the project.

An applicant that is not a public entity must provide at least 15 percent of a project's CMP eligible cost. The applicant cost share cannot be covered through in-kind contributions.

E. Air District Audit of Projects

The District will conduct audits of projects funded with CAP incentives. On an annual basis these audits will include five percent of active projects or 20 active projects (whichever is less). These conducted audits are to include any projects with unsatisfactory annual reporting.

F. Nonperforming Projects

The District will work with nonperforming project grantees to ensure CAP Incentives project requirements are met and emissions reductions are achieved. Air districts may consider

unforeseen circumstances beyond the grantee's control in determining repercussions for nonperformance.

If the District is not successful in gaining grantee compliance with the usage and program requirements specified in a contract, the District will make all reasonable efforts to recapture CAP incentives from the grantee, in consultation with CARB. Recaptured funds will be reassigned to projects that achieve the shortfall in emissions reductions or usage. The District's efforts to recapture funds may be guided by circumstances such as suspected or actual fraud or misuse of funds, the amount of CAP incentives involved, or the ability of the grantee to repay the funds.

VII. Project Records

The following items will be maintained in the project file(s) until three years after the contract term:

- a. Applications and/or project proposals including receipt date;
- b. Project ranking and selection criteria as applicable;
- c. Correspondence;
- d. Pre & post inspection forms;
- e. Project invoices;
- f. Annual reports;
- g. Any usage waivers.

Administrative records, including project implementation costs, invoices, contracts, and personnel and payroll records will be retained for a minimum of five (5) years following the funds liquidation deadline for the grant.

Applications for unfunded projects must generally be kept a minimum of two (2) years following the solicitation period, or two years from receipt if there is not a specified solicitation period.

VIII. Reporting

A. Annual Grantee Reporting

The District will request annual reports commencing no later than 18 months after project post-inspection and continuing annually thereafter throughout the project implementation phase of the contract. The District will include the dates the grantee annual report is due. CMP eligible projects will use existing reporting templates included in the CMP Policies and Procedures Manual.

School air filtration projects will report the estimated hours of use and average number of people in the room during use. Reporting will also include a statement of any performance and maintenance issues. School composite wood product projects will report the approximate average class size as well as the number of hours the room is in use.

The District will review the annual report for completeness, accuracy, and reported usage, and will maintain in the project file a copy of the report that is initialed and dated by the reviewing staff. If an annual report is incomplete, inaccurate or not received from the grantee on schedule, the air district will make a reasonable attempt to obtain a complete and accurate report from the grantee.

If the air district is unable to obtain the report, the air district will identify the project for audit. Grantees that have not submitted complete required reports will not be granted funds for new CAP incentives projects until all reports are satisfactorily submitted.

B. District Reporting

Twice a year the District will report to CARB. The District will submit a Yearly Report in the fall and a Mid-Cycle Report in the spring. CARB will provide instructions for both reports. The District will complete, certify, and submit these reports by the dates specified in Table 4 below.

Table 4: Community Air Protection Incentives Reporting Dates

Date	Action
May 31	Mid-Cycle Report (Projects Nov 1 - April 30) due to CARB
June 30	CARB submits data to CCIRTS
November 29	Yearly Report (Projects May 1 – October 31) due to CARB
December 31	CARB submits data to CCIRTS

The District will also report project information in the CARL database, either via CARL forms or batch import, sufficient to populate the required data fields and to calculate covered emissions reductions and cost effectiveness for source categories where required. The District will ensure that information in CARL is complete, correct, and supported by documentation.

Reporting for CAP incentives projects may be updated to reflect program changes and California Climate Investments reporting requirements. In the event of a conflict, the California Climate Investments reporting requirements will take precedence. No later than six months after the District fiscal year end, the air district will append to its Yearly Report financial statements displaying revenues and expenditures related to projects funded by CAP incentives, in formats consistent with GAAP.

IX. Fiscal Administration

CAP incentives must be accounted for as separate funds or have separate project IDs within the air district’s general ledger following Generally Accepted Accounting Principles (GAAP). An air district receiving a total allocation of one percent or more of all fiscal year 2019-20 CAP incentives must use a Special Revenue Fund for CAP incentives accounting. Other air districts may use a Trust Fund. CAP Incentives grants are voluntary non-exchange transactions to the air district. As such the District should recognize revenues in the fiscal period when all eligibility requirements have been met and the resources are available. For reference see Governmental Accounting Standards Board (GASB) Statements 33 and 34.

A. Advanced Payment

The District will place advance payment funds in an interest-bearing account and track interest accrued on the advance payment. Interest earned on the advance payment will only be used for eligible grant-related expenses or will be returned to CARB.

The District will report to CARB the value of any unused balance of the advance payment and interest earned. The District will remit to CARB any unused portion of the advance payment and interest earned within 90 days following the end date of the grant.

The District will complete and submit to CARB for review and approval, an Air District Advance Payment Request Form, along with each grant disbursement that is requesting advance payment.

B. Project Implementation Costs

Allowable expenditures for administrative and implementation costs associated with the grant are divided into direct project costs and indirect project costs. Air districts must keep records of project implementation costs that include all necessary staff and tasks to implement the project. If appropriate, this includes activities such as outreach and education, research, data management, and reporting.

Direct project costs are the direct project labor and expenses associated with the project, and include, but are not limited to, the following: Personnel costs and fringe benefits, travel expenses, external consultant and third-party contract fees for direct support, Printing, records retention, and mailing associated with staff working on the project.

Indirect project costs are administrative costs not tied directly or solely to the project such as distributed administration and general administrative services; non-project related contracts or subscriptions; rent and office space, phones and telephone services, printing, or mailing services not associated with staff working on the project; or any other costs that are not directly and fully incurred to support the grant. Indirect project costs may not exceed 4 percent of the total grant amount.

C. Financial Statements

Financial statements containing, at a minimum, the following account balances and transaction classes, as applicable, will be prepared at least annually:

- a. Cash and Cash Equivalents (cash, investment pools, petty cash);
- b. CAP Incentives Revenue Receivable (grant funding from CARB);
- c. Recapture Revenue Receivable (recapture funds receivable from grant participants for unmet contractual obligations);
- d. Accounts Payable (vendor invoices pending for CAP incentives projects);
- e. Fund Balance (restricted for Projects and Administrative costs);
- f. Revenue Subsidiary Ledgers;
- g. CAP Incentives Project Revenue;
- h. Administration and Operating Revenue;
- i. Recapture Revenue;
- j. Interest Revenue;
- k. Project Expenditures (from CAP incentives grants, recapture, salvage, interest);
- l. Administration and Operating Expenditures including indirect costs;
- m. CAP incentives air district money returned to CARB for reallocation;

n. Transfers In/Out.

D. Interest Revenue

The District will maintain accounting records that tracks the grant's interest earned on CAP incentives separately from other incentive fund programs. The calculation of interest earned will be based on a daily balance or some reasonable and demonstrable method of allocating the proceeds from the interest-generating account back into the program; and will be consistent with how it is calculated for the District's other fiscal programs. Interest earned will only be used for eligible grant-related expenses as specified in applicable guidelines, including administration up to the portion provided for in the grant agreement, or be remitted to CARB.

Earned interest must be fully expended or returned to CARB if it is not used by the end of the grant performance period. The District will report in the Yearly Report interest earned on all CAP incentives during the previous fiscal year. Documentation of the interest earned must be retained for a minimum of three years following its generation and liquidation.

X. Coordination with CARB

CARB has assigned a staff liaison for each district. The liaison assigned to the District as of February 11, 2020, is:

Deborah Paselk, Air Pollution Specialist
Mobile Source Control Division
Incentives & Technology Advancement Branch
1001 I Street
Sacramento, CA 95814
916-323-1534
deborah.paselk@arb.ca.gov

District staff currently responsible for implementing the CAP Incentives program include: the APCO, the Administrative Services Officer, the Planning and Engineering Supervisor, the Air Quality Planner, and an Air Quality Specialist. District staff will document any correspondence with CARB staff regarding CARB interpretations, clarification, guidance or possible deviations from the CAP Incentives Guidelines. All documentation will be kept in the CAP Incentives project files and should be retained for at least three (3) additional years after the last year of the District's participation of this program.

XI. CARB Oversight

The District will comply with all oversight responsibilities identified in the CAP Incentives Guidelines, any future Program Advisories and Mail-Outs, and Grant Agreements.

CARB or its designee reserves the right to audit at any time during the duration of this grant the District's costs of performing the grant and to refuse payment of any reimbursable costs or expenses that in the opinion of CARB or its designee are unsubstantiated or unverified. The District will cooperate with CARB or its designee including, but not limited to, promptly providing all information

and documents requested, such as all financial records, documents, and other information pertaining to reimbursable costs, and any matching costs and expenses.

CARB or its designee may recoup funds which were received based upon misinformation or fraud, or for which a District, manufacturer or project participant is in significant or continual non-compliance with the terms of this grant or State law.

XII. APCO Approval

This version of the Feather River Air Quality Management District’s Policies and Procedures Manual for Community Air Protection Incentives is approved by:

Christopher D. Brown, AICP
Air Pollution Control Officer

Date

XIII. Incorporated and Guidance Documents

Program Applications (On-road, Off-road, General)

Stationary Diesel Engines Emission Reductions Project Plan

Program Flyers (Air Filtration in Schools, Zero-Emission Lawn and Garden Equipment at Schools, Zero-Emission Infrastructure)

Feather River AQMD Carl Moyer Program Policies and Procedures Manual

CARB Carl Moyer Program 2017 Program Guidelines

CARB Community Air Protection Funds Supplement to the Carl Moyer Program 2017 Guidelines

CARB Community Air Protection Incentives 2024 and 2019 Guidelines

Community Air Protection Grant Agreements with CARB

XIV. Exhibit A: Stationary Diesel Engines Emission Reductions Project Plan

XV. Exhibit B: Project Ranking Form for Alternative Fueling Infrastructure Projects

Feather River Air Quality Management District AB 617 Community Air Protection Program Incentives

Stationary Diesel Engines Emission Reductions Project Plan

1. Project Identification

This document serves as the “Project Plan” for Stationary Diesel Engines Emission Reductions. It was drafted according to the guidelines laid out in the Community Air Protection Incentives 2019 Guidelines¹. It describes the nature of the strategy, its support by the community, requirements for entities desiring to participate and receive project funding, how these projects will benefit the community through improved air quality, as well as other key aspects like project selection criteria and inspection requirements.

This Project Plan is applicable to stationary source projects and will fund the replacement of older diesel internal combustion engines with cleaner technology that is beyond what is currently required, with an emphasis on zero-emission technology. The eligible source classification code for eligible engines is 20200401.

This Project Plan will replace older emergency, backup engines with zero-emission technology or newer cleaner engines. The California Air Resources Board’s Technology Clearing House Tool includes information on available technology options for backup power. The tool is available at: <https://ww2.arb.ca.gov/our-work/programs/public-safety-power-shutoff-psps-events/emergency-backup-power-options-commercial>. The Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines² (Title 17, CCR section 93115 through 93115.15) was adopted to reduce diesel particulate matter (PM) and criteria pollutant emissions from stationary diesel-fueled compression ignition engines. The ATCM applies to emergency and prime engines with a rated brake horsepower greater than 50. Existing emergency diesel engines with a PM standard of 0.40 grams per brake horsepower-hour or greater (uncertified, Tier 0 and Tier 1) may operate a maximum of 20 hours per year under the ATCM for non-emergency use (maintenance and testing). These engines would be replaced by Tier 4 diesel or zero-emission technology.

¹ CARB. 2020. Community Air Protection Incentives 2019 Guidelines. October 14. Available at: https://ww2.arb.ca.gov/sites/default/files/2020-10/cap_incentives_2019_guidelines_final_rev_10_14_2020_0.pdf. Accessed: April 2021.

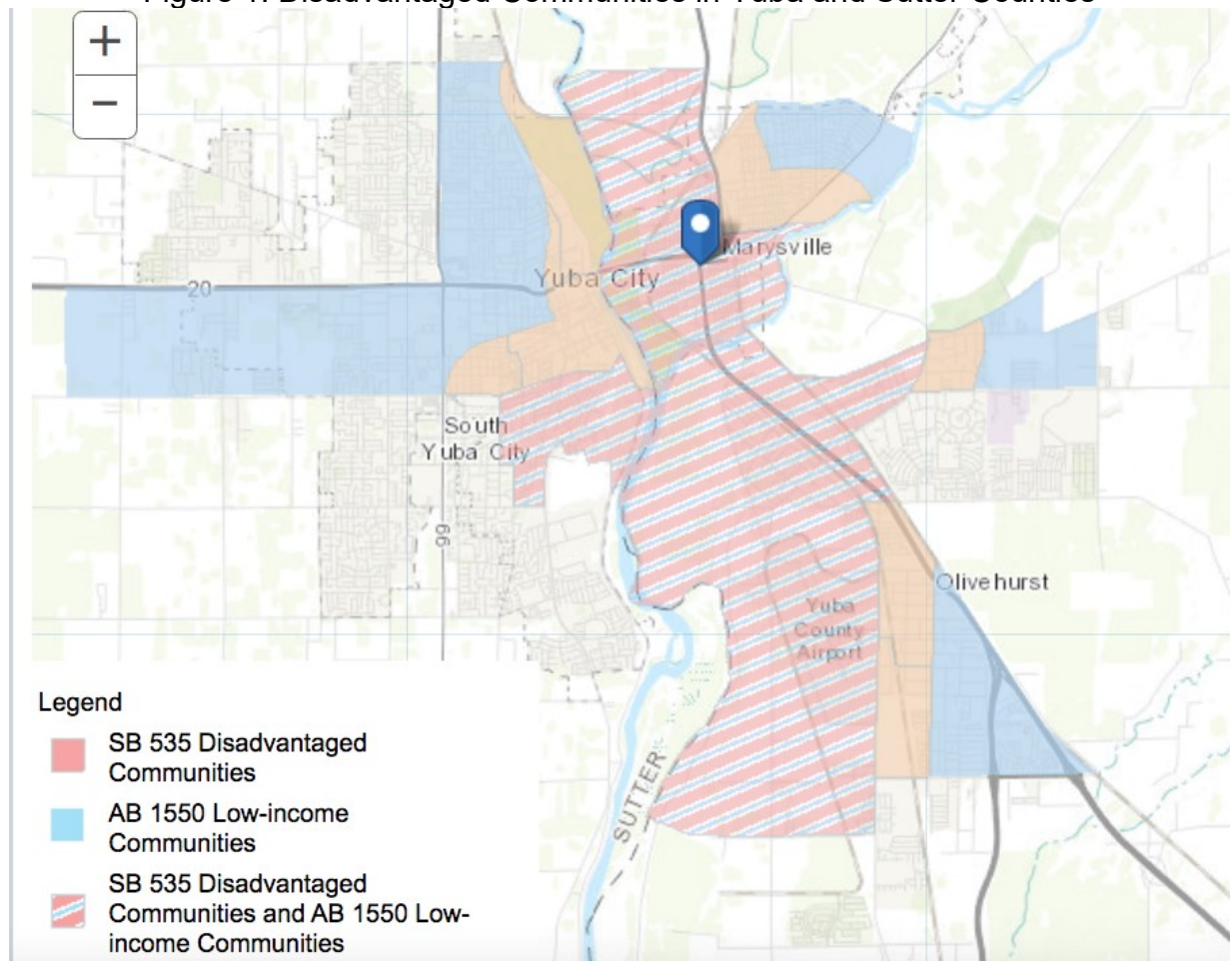
² <https://ww2.arb.ca.gov/sites/default/files/classic//diesel/documents/finalreg2011.pdf>

2. Community Support

The Project Plan will be implemented in the Feather River AQMD with the jurisdictional boundaries of Yuba and Sutter counties. The Community Air Protection Incentive Funds will be primarily spent on projects within and benefitting disadvantaged and low-income communities. There are several disadvantaged census tracts in Yuba County and one in Sutter County in CalEnviroScreen³. They are generally located in the cities of Marysville and Yuba City and in the Olivehurst/Linda community, as seen in figure 1. The District does not contain an AB 617 Community and does not have a Community Emissions Reduction Program or a steering committee. Outreach on the AB 617 program has been conducted through the following:

- Social media
- Newspaper print notices
- Press releases and press events
- Community events
- Webinars/meetings
- Surveys

Figure 1: Disadvantaged Communities in Yuba and Sutter Counties



³ <https://oehha.ca.gov/calenviroscreen>

The City of Marysville has expressed strong support for projects that reduce emissions from stationary diesel engines and has submitted applications to the District to fund the replacement of emergency diesel engines. The District has updated its Board of Directors, represent the cities and counties in the Disadvantaged Communities, on the AB 617 Program and presented the draft Stationary Engine project plan to the Board at the June 7, 2021, meeting. At the meeting, District staff presented the project plan and provided an opportunity to the elected representatives of the Disadvantaged Communities and the public to comment on the proposed plan. The District did not receive any public comments on the project plan at the meeting.

The proposed project plan was made available for public review and comment for 30 days during the month of June on the District's website. During the 30-day public comment period, the project plan was promoted on social media. The District did not receive any comments from the public on the project plan through social media.

The District has posted a survey on its website to solicit feedback from the public on the sources of air pollution they are most concerned about in their communities and the types of projects the District should implement to reduce air pollution in their communities. As on July 13, 2021, the District has received 72 responses to the survey. The community of Marysville has submitted the most responses, totaling 57 of the 72. We have also received comments from Yuba City, Brownsville/Challenge, Wheatland, Sutter, and Linda/Olivehurst. The public has reported that cleaner school buses (66), electric vehicle charging stations (3), on-road trucks (1), and incentives to purchase electric vehicles (2) are projects they would like the District to implement in their communities. The public has also reported that rice dryers are a source of air pollution they are most concerned about in their community.

3. Eligibility and Requirements

(A) Stationary Diesel Engine Project Eligibility

Public agencies that own and operate stationary diesel engines are eligible to apply. The engines must have a current Permit to Operate from the District and be in compliance with the Stationary Diesel Engine Air Toxic Control Measure⁴.

A public agency is defined as the state or any local subdivision thereof, or any state or local department, agency, board or commission.

(B) Existing Engine Requirements

To be eligible for replacement, existing engines must:

- 1) Meet and maintain compliance with all Federal, State, and Local requirements applicable to emergency diesel engine use in the District.
- 2) Have a valid District Permit to Operate.
- 3) Be at least 25 horsepower.

⁴ ATCM for Stationary Compression Ignition Engines, CCR 17 §93115

- 4) Be fueled by diesel.
- 5) Be uncertified or Tier 1 with a PM emissions rating of equal to or greater than 0.40 g/bhp-hr.
- 6) Be operational.

(C) Replacement Engine Requirements

- 1) The replacement engine must be available for inspection if requested by District staff or CARB staff during the contract period and in accordance with the terms of the Permit to Operate.
- 2) Replacement engines must provide EPA certification or CARB executive order or be source tested to verify emission reductions. Replacement engines must meet Final Tier 4 or higher emission standards. Zero-emission technology will be considered on an individual basis and once approved by the District, will not require certification or source testing.
- 3) Replacement engines should be no greater than 125% above the existing engine brake horsepower rating, unless a larger engine would result in greater emission reductions.
- 4) The applicant may not claim emission reduction credits from the project during the entire contract period.
- 5) The replacement engine must be under contract for the entire project life, which may range from three to ten (3-10) years.
- 6) During the entire project life, the applicant must submit an annual report of hours operated.

(D) Process and Participant Requirements

- 1) Participants will be required to submit a complete project application, which includes a quote for the new engine, Permit number, and an executive order for new engine (if diesel).
- 2) Applications selected for funding will be processed by District staff and Participant will provide all necessary engine data to be entered into the spreadsheet to calculate emission reductions.
- 3) Pre-inspection of the engine will be conducted by District staff. During the pre-inspection District staff will verify engine information and hour meter reading. A compliance inspection conducted within the past 12 months may be substituted for the pre-inspection if it confirms the engine information and hour meter reading. The pre-inspection or compliance inspection must verify the function and use of the engine as backup emergency power generation to an existing building, structure, utility, or other use.
- 4) Once the application and pre-inspection have been approved, a contract will be offered to the participant. Once both parties have agreed to sign the contract, the participant will be notified of the contract execution. If the new engine requires a District Permit, the participant will then submit an Authority to Construct to the District. Once the Authority to Construct

has been issued, the participant may proceed with the purchase and installation of the new engine. If the zero-emission technology does not require an Authority to Construct, the participant may proceed with the purchase and installation upon notification of contract execution.

- 5) Once a Participant has purchased and installed their new engine or zero-emission technology, they must contact the District to complete the post-inspection. During the post inspection, the District will verify the engine or technology meets the Final Tier 4 or higher emission standard by photographing and recording the EPA family on the equipment and any control equipment.
- 6) If the equipment is required by the District to conduct a source test to verify emissions, the results of the source test must be received within 30 days of the post-inspection.
- 7) After the successful post-inspection, the Permit to Operate for the new engine will be issued, if applicable.
- 8) The invoice from the purchase and installation of the new engine or zero-emission and a W-9 tax form should be submitted to the District.
- 9) The old engine must be surrendered to an approved salvage yard within 30 days of the post-inspection. The old engine must be destroyed and rendered permanently inoperable. At a minimum, the destruction of an engine must include:
 - (1) A hole in the engine block with a diameter of at least three inches at the narrowest point. The hole must be irregularly shaped (i.e. no symmetrical squares or circles) and
 - (2) A section of the oil pan flange must be removed as part of the hole or have a line cut through it that connects the hole.

Once all of these requirements have been met, the District will submit a check request. The check will be mailed to the participant.

(E) Rules and Regulations Applicable to Stationary, Emergency Diesel Engines

Existing diesel engines must be in compliance with all local, state, and federal rules and regulations to be eligible for funding. This section lists the rules apply to stationary, emergency diesel-fueled engines.

New diesel engines and alternative fuel engines will be reviewed for compliance during the ATC review. In some instances, existing engines and new engines have different emission standards or usage limitations.

Zero-emission technology is not subject to any of the following rules and regulations.

Table 1 FRAQMD Rules Applicable to Engines

FRAQMD Rule #	Summary of Requirement	Applicable to Existing Engine	Applicable to New Engine
Rule 3.0 Visible Emissions	<i>Facility shall not emit visible emissions for a period or periods aggregating more than 3 minutes in any one hour as dark or darker in shade as that designated as No. 2 on the Ringlemann Chart, as published by the United States Bureau of Mines; or of such opacity as to obscure an observers view to a degree equal to or greater than does smoke described above.</i>	Yes	Yes
Rule 3.2 Particulate Matter Concentration	<i>Facility shall not discharge into the atmosphere from any source particulate matter in excess of 0.3 grains per cubic foot of gas at standard conditions. When the source involves a combustion process, the concentration must be calculated to 12 per cent carbon dioxide (CO₂).</i>	Yes	Yes
Rule 3.3 Dust and Fumes	<i>Facility shall not discharge in any one hour from any source whatsoever dust or fumes in total quantities in excess of the amounts as prescribe for and shown in District's Rule 3.3 Table of Allowable Rate of Emission Based on Process Weight Rate.</i>	Yes	Yes
Rule 3.10 Sulfur Oxides	<i>A facility shall not discharge into the atmosphere from any single source of emission whatsoever, any sulfur oxides in excess of 0.2 percent by volume (2,000 ppm) collectively calculated as sulfur dioxide (SO₂).</i>	Yes	Yes
Rule 3.13 Circumvention	<i>A facility shall not be build, erect, install, or use any article, machine, equipment or other contrivance, the use of which, without resulting in a reduction in the total release of air contaminants to the atmosphere, reduces or conceals an emission which would otherwise constitute a violation of the Health and Safety Code of the State of California or of these Rules and Regulations.</i>	Yes	Yes
Rule 3.22 IC Engines	<i>All new and existing internal combustion engines rated above 50 horsepower shall not operate above the listed emission limitations according to the area of designation and fuel type. Engines designated as emergency, portable, or low use (<200 hours/year) shall not be subject to the emission standards.</i>	Not subject to emission standards as an emergency engine	Not subject to emission standards as an emergency engine

Table 2 California Rules Applicable to Engines

California Rule or Regulation	Existing Engine Applicability	New Diesel Engine Applicability
ATCM for Stationary Compression Ignition Engines [CCR 17 §93115]	In-Use Emergency >0.4 g/bph-hr allowed 20 hrs/year maintenance and testing	New emergency with PM 0.01 to 0.15 allowed 50 hours M/T
<i>HSC 41700 Facility shall not discharge from any source whatsoever such quantities of air contaminants or other materials which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety of any such person or the public or which cause or have a natural tendency to cause injury or damage to business or property.</i>	Yes	Yes
<i>HSC 42301.6 ". . . prior to approving an application for a permit to construct or modify a source which emits hazardous air emissions, which source is located within 1,000 feet from the outer boundary of a school site, the air pollution control officer shall prepare a public notice in which the proposed project or modification for which the application for a permit is made is fully described." Additionally, each address within 1000 feet radius of the source shall also be notified."</i>	Yes	Yes

Table 3 Federal Rules Applicable to Engines

Federal Rule or Regulation	Existing Engine Applicability	New Diesel Engine Applicability
40 CFR 63 Subpart ZZZZ - Reciprocating Internal Combustion Engines (03/2008)	Existing engine at area source not applicable	New engine at area source, complies by meeting 40 CFR 60 Subpart IIII
40 CFR 60 Subpart IIII: NSPS for Stationary CI Engines (07/2006)	Does not apply to engines installed prior to July 11, 2005	New emergency engine must meet emission standard, sulfur content, and opacity standards.

4. Funding Amounts

The District will fund the zero-emission technology at 95% of the eligible costs of the project. The District will fund distributed generation (DG) (compliant with CARB's DG standard) technology at 90% of the eligible costs of the project. The District will fund

the Tier 4 diesel engines at 85% of the eligible costs of the project.

Eligible costs will be determined by the District before a contract is offered.

Eligible costs include:

- Purchase of technology that is beyond what is currently required, including zero-emission technology, DC compliant, or Tier 4 diesel engines
- Equipment and materials necessary to install new engine/technology
- Fuel storage equipment for zero emissions and DC compliant equipment
- Hour meters
- Installation, if hourly rate is included on invoices
- Delivery charges

Expenses not to be included in grant amount but may count towards eligible costs and participant's cost share of 5-15% include:

- Sales tax
- Permit fees, including District's ATC/PTO and required building permits

Costs not eligible to be funded and not eligible to count towards participant's cost share:

- Purchase, lease, or rental of land
- Planning and design fees
- Consultant fees
- Administrative/staff time of public agency to participate
- CEQA or environmental analysis costs

5. Project Selection and Ranking

Projects will be selected according to the process established in the District's Community Air Protection Incentive Funds Policy and Procedures Guidelines⁵:

The District will prioritize eligible projects based on emission benefit, proximity to sensitive receptors, and cost using the following criteria (from highest priority to lowest priority):

- a) Projects in disadvantaged communities addressing a primary community need as determined based on community engagement.
- b) Projects in low-income communities addressing a primary community need as determined based on community engagement.
- c) Projects located outside of disadvantaged or low-income communities that may benefit these communities.
- d) Eligible projects located outside of disadvantaged and low-income communities.

⁵ Community Air Protection Incentives, Policy and Procedures Manual, Feather River AQMD, March 17, 2020

6. Tracking Projects

The District maintains a website for the Community Air Protection Program and this is where projects can be tracked. The website address is:

<https://www.fraqmd.org/community-air-protection-program>.

The initial list of projects will be posted to the District's website prior to final approval. Once projects are selected and contracts are executed, the awarded project list with the contracted amount and final project description will be posted to the website. Projects will also be reported to the California Air Resources Board per grant agreement terms for submittal to the California Climate Investments Reporting and Tracking System, or CCIRTS database, where the emissions reductions, and benefits to priority populations will be tracked, compiled, and made available for public review.

7. Cost Benefit Analysis

(A) Overview of Benefits and Emission Reductions

The project plan will result in a reduction of toxic air contaminants, criteria air pollutants, and greenhouse gas emissions. The communities surrounding the projects in the disadvantaged communities will see the greatest benefits as toxic air contaminants affect those living closest to the source of emissions. The emission reduction calculation methodology will only calculate emissions from maintenance and testing hours because emergency hours are not limited on the permit nor are they routine or predictable.

During an emergency event, such as a loss of power, the project will result in an even greater benefit to the community surrounding the project. The cleaner engine or zero emission technology will emit less toxic air contaminants, criteria air pollutants, and greenhouse gases during the emergency event than the existing engines.

A review of District permits performed in November 2021 showed five permits issued to local cities or counties that included at least one uncertified or Tier 1 diesel emergency generator located in the current boundaries of the disadvantaged community. In addition there are eight permits issued to municipality owned utilities for backup generators in the DAC which may also include eligible engines, and 11 permits issued to investor owned utilities and private entities.

The District will calculate emission reductions for each project funded under this project plan. Emission reductions for criteria and toxic air contaminants will be calculated using the District's standard method for stationary emergency engines when issuing an Authority to Construct/Permit to Operate in accordance with Health and Safety Code section 42300, District Regulation III Stationary Sources, Regulation IV Stationary Emission Sources Permit System and Registration, and Regulation X New Source Review.

(B) Calculating Criteria Air Pollutants

1) Source of Emission Factors

The District uses the most representative emission factor available for the engine. This may include source test data, manufacturer's specifications, CARB Executive Order for the engine family, Certification Level Steady-State Modal Test Results from US EPA, or AP-42. Executive Orders are written documentation of compliance with CARB regulations, for example vehicles or products certified to specific emissions standards.

Executive Orders for new off-road diesel engines can be found at <https://www.arb.ca.gov/msprog/offroad/cert/cert.php>. Certification Level Test Results can be found at US EPA's website: <https://www.epa.gov/compliance-and-fuel-economy-data/annual-certification-data-vehicles-engines-and-equipment> under Nonroad Compression Ignition Engines. [AP-42 Compilation of Air Pollutant Emission Factors](#) is a compilation of EPA's emission factor information and has been published since 1972. The District also uses the Santa Barbara County Air Pollution Control District's emissions factor for uncertified diesel engines for SOx⁶.

The engineering evaluation⁷ lists the source of the emission factor for each criteria pollutant and toxic air contaminant.

Zero emission technology is assumed to have zero emissions. The remainder of this methodology explains the calculation of emissions from diesel fueled engines.

2) Conversions

Emission factors in units of g/kw-hr on the Executive Orders/EPA spreadsheet must be converted. Grams are converted to pounds by a factor of 453.59 grams per pound. Kilowatts are converted to horsepower by a factor of 0.746 Kilowatts per horsepower.

3) Calculating Potential To Emit

The potential to emit, or PTE, of an engine is calculated by multiplying the emission factor by the process rate. The process rate and emission factor must use the same units or a conversion will be needed. The District calculates the maximum pounds per hour, pounds per day, and tons per year of volatile organic compounds, nitrogen oxides, sulfur oxides, particulate matter (PM, PM10, and PM2.5) and carbon monoxide.

The permit to operate (PTO) limits the daily and yearly operation of the engine. These limits are used to calculate the daily and annual PTE from the lbs/hr.

The PTO limits, emission factors, and any control technologies are included on the engineering evaluation for each engine, and are legally enforceable conditions of operation.

⁶ https://www.ourair.org/emission-factors-2/#Default_SBCAPCD_Diesel_Engine_Emission_Factors

⁷ Attachment B Example for Diesel to Diesel projects, Attachment C Example for Diesel to Zero-Emission projects

4) Calculating Emissions in Pounds Per Hour

To calculate emissions in pounds per hour (lbs/hr), the emission factor is multiplied by the kW/hp conversion factor above and the horsepower of the engine, then divided by the g/lb conversion.

Example NOx calculation:

$$(0.190 \text{ g/kw-hr} \times 0.746 \text{ kW/hp} \times 456 \text{ hp}) / 453.59 \text{ g/lb} = 0.1425 \text{ lbs/hr}$$

5) Calculating Emissions in Pounds Per Day

To calculate emissions in pounds per day (lbs/day), the lbs/hr is multiplied by the maximum hours of operation per day on the permit. For a backup stationary emergency generator, the maximum number of hours it could operate for maintenance and testing is 24 hours. The maximum lbs/day equals the lbs/hr multiplied by the maximum hours.

Example NOx calculation:

$$0.1425 \text{ lbs/hr} \times 24 \text{ hours} = 3.42 \text{ lbs/day}$$

6) Calculating Emissions in Tons Per Year

To calculate emissions in tons per year, the lbs/hr is multiplied by the maximum number of hours in a year the engine is permitted to operate for maintenance and testing. That number results in pounds per year. To convert to tons, divide by 2000.

Example NOx TPY Calculation:

$$(0.1425 \text{ lbs/hr} \times 50 \text{ hours}) / 2000 \text{ lbs/ton} = 0.00356 \text{ or } 3.56\text{E-}3 \text{ tons/year}$$

(C) Calculating Toxic Air Contaminants

1) Diesel Particulate Matter

Diesel engines used at a stationary source are subject to the AB 2588 Air Toxics “Hot Spots” Act. Diesel engines are prioritized using the CAPCOA Facility Prioritization Guidelines⁸ based on their maximum PTE at the time the PTO is issued. Engines prioritized less than 1 are considered low priority and no further action is taken unless an application to modify the permit is received. Engines prioritized between 1 and 10 are considered intermediate priority and included on the District’s emission inventory

⁸ CAPCOA Air Toxic “Hot Spots” Program Facility Prioritization Guidelines, August 2016 <http://www.capcoa.org/wp-content/uploads/2016/08/CAPCOA%20Prioritization%20Guidelines%20-%20August%202016%20FINAL.pdf>

submittal to CARB. Engines prioritized over 10 are considered high priority and are processed according to District policy 2.12.1⁹.

2) Calculating Priority Score for Diesel PM

Diesel particulate matter is the main pollutant of concern in the prioritization score. Diesel particulate matter is assumed to equal particulate matter calculated per procedures above. Diesel PM in average pounds per hour is divided by the chronic reference exposure limit. That number is then multiplied by the receptor proximity and a normalization factor of 150 to calculate the chronic priority score.

Example Chronic Priority Score Calculation:

$$[(0.11 \text{ lbs/hr} / 50 \text{ hrs}) / \text{chronic REL}] \times 0.25 \times 150 = 0.00471$$

The diesel PM emissions in lbs/year are multiplied by the unit risk factor, the receptor proximity, and a normalization factor to calculate the cancer priority score.

Example Cancer Priority Score Calculation:

$$5.5 \text{ lbs/year} \times 0.0003 \times 0.25 \times 7,700 = 3.18$$

(D) Calculating GHG Reductions

1. Diesel-to-diesel conversions

GHG emission reductions = { (BSFC [BTU/hp-hr] * HP_baseline [hp] * Usage_baseline [hr/yr]) - (BSFC [BTU/hp-hr] * HP_replacement [hp] * Fuel Efficiency Factor [%] * Usage_replacement [hr/yr]) } / Diesel HHV [BTU/gal] * 134.47 [MJ/gal] * 74.10 [gCO₂e/MJ] / 1,000,000 [gCO₂e/MT-CO₂e] * Quantification Period

- BSFC is the brake-specific fuel consumption
- Diesel HHV is the higher heating value of diesel
- Fuel Efficiency Factor is calculated as follows:
 - If the baseline equipment model year is 2007 or newer, then the factor is 1.
 - If the baseline equipment model year is older than 2007, then the adjustment factor = 1 – ((2007 - Baseline Model Year [down to a minimum of 1980]) * 0.005)
- 134.47 MJ/gal is the energy density for diesel, sourced from [LCFS Regulation](#)
- 74.10 gCO₂e/MJ is the carbon intensity for diesel for stationary sources, sourced from [CA-GREET 3.0](#)
- Quantification period = Project Life

2. Diesel-to-electric conversions

⁹ <https://www.fragmd.org/air-toxics>

GHG emission reductions = $\{ \{ (\text{BSFC_baseline [BTU/hp-hr]} * \text{HP_baseline [hp]} * \text{Usage_baseline [hr/yr]}) / \text{Diesel HHV [BTU/gal]} * 134.47 \text{ [MJ/gal]} * 74.10 \text{ [gCO}_2\text{e/MJ]} / 1,000,000 \text{ [gCO}_2\text{e/MT-CO}_2\text{e]} \} - \{ \text{AverageLoad_replacement [kW]} * \text{Usage_replacement [hr/yr]} * 0.0002279 \text{ [MT-CO}_2\text{e/kWh]} \} \} * \text{Quantification Period}$

- 0.0002279 MT-CO₂e/kWh is the GHG emission factor for grid electricity, sourced from the [CCI Emission Factor database \(updated May 2019\)](#).
- If applicants do not know their average load, they can calculate it as = Generator Size [kW] * Load Factor [%]
- Quantification period = Project life

8. Attachments

A: Diesel to diesel project example calculations

A-1 Example Executive Order U-R-001-0621

B: Diesel to zero emission technology example calculations

POTENTIAL TO EMIT CALCULATIONS

COMPANY:
SOURCE:
ADDRESS:

Name
Emergency ICE
Address
City, ST ZIP

Permit #
ATC #
Date:
By:
FRAQMD Area:

23xxx
Research
7-May-21
Stricklin
North

SFNA or North

Engineer Input
Copied from another Cell
Calculated
Remove

	lbs/hour	lbs/day	Emission Reductions tons/year	Previous Facility PTE tons/year	New Facility PTE tons/year
VOC	1.13	22.77	0.011	0.011	0.0006
NOx	14.09	282.42	0.136	0.140	0.0036
SOx	1.08	22.33	0.005	0.009	0.0040
PM	1.00	19.98	0.010	0.010	0.0002
PM10	1.00	19.98	0.010	0.010	0.0002
PM2.5	1.00	19.98	0.010	0.010	0.0002
	1,013.98	22,265.42	-7,237	5.175	12.4119
CO	3.02	60.48	0.030	0.030	0.0004

Description of permit action.

PROCESS INFORMATION

APPLICATION STATUS
TYPE OF PROCESS
PROCESS MATERIAL USED
PROCESS MATERIAL - units
MATERIAL USE - rate/year
MATERIAL USE - rate/day
MATERIAL USE - rate/hour

	#1	#2
Remove: 23xxxResearch		
Emergency Sewage Pump Driver		
Diesel		
Gallons		
Install-Research		
Emergency Sewage Pump Driver		
Diesel		
Gallons		

Notes

MAIN PROCESS EQUIPMENT

MAKE/MODEL
Equipment rating
Engine Family
AIR POLLUTION CONTROLS
OPERATING hrs/day
TOTAL OPERATING hrs/year
Engine Type
Notes

	#1	#2
ICE		
Caterpillar D343		
450 hp		
Tier 0		
20		
20		
Compression Ignition		
ICE		
Caterpillar C9.3B		
456 hp		
LCPXL09.3NTF		
Tier 4		
24		
50		
Compression Ignition		

Notes

SCC

2-02-001-02

	#1	#2
2-02-001-02		
EPA-NRCI Certification Data for 2021, CARB EOU-R-0010621 & SBCAPCD (11/2002)		

EMISSION FACTOR SOURCE

	#1	#2
AP42 3.3-1 10/96		

EMISSION FACTORS:

	VOC	NOx	SOx	PM	PM10	PM2.5	CO2	CO
	0.00247	0.03100	0.00205	0.00220	0.00220	0.00220	1.15000	0.00668
	lb/bhp-hr	lb/bhp-hr	lb/bhp-hr	lb/bhp-hr	lb/bhp-hr	lb/bhp-hr	lb/bhp-hr	lb/bhp-hr
	0.030	0.190	0.161	0.010	0.010	0.010	662.000	0.020
	g/kW-hr	g/kW-hr	g/bhp-hr	g/kW-hr	g/kW-hr	g/kW-hr	g/kW-hr	g/kW-hr

FACILITY EMISSIONS BREAKDOWN

TONS/YEAR:

VOC	0.01	5.62E-04
NOx	0.14	3.56E-03
SOx	0.01	4.05E-03
PM	0.01	1.87E-04
PM10	0.01	1.87E-04
PM2.5	0.01	1.87E-04
CO2	5.18	12.41
CO	0.03	3.75E-04

LBS/DAY:

VOC	22.23	0.54
NOx	279.00	3.42
SOx	18.45	3.88
PM	19.80	0.18
PM10	19.80	0.18
PM2.5	19.80	0.18
CO2	10350.00	11915.42
CO	60.12	0.36

LBS/HOUR:

VOC	1.11	0.02
NOx	13.95	0.14
SOx	0.92	0.16
PM	0.99	0.01
PM10	0.99	0.01
PM2.5	0.99	0.01
CO2	517.50	496.48
CO	3.01	0.01

Comments:

G-lb Conversion	453.59	g/lb			
kW-hp conversion	0.746	kw/hp			
Diesel HHV	137,000	BTU/gal			
BSFC Spark-Ignited	10,000	Btu/bhp-hr	SBCAPCD IC Engine (11/2002)		
BSFC Diesel	7,000	Btu/bhp-hr	SBCAPCD IC Engine (11/2002)		
Diesel Sulfur Content	0.0015%		Diesel ATCM		
Propane Conversion	36.38	ft ³ /gallon			
			(PPM - g/bhp-hr * Factor)		
			PPM VOC Conversion Factor		
			PPM NOx Conversion Factor	57	80
			PPM CO Conversion Factor	93	123
			NSCR VOC control %	80%	BAAQMD IC engine staff report
			HC + NOx % breakdown	5% HC, 95% NOx	BAAQMD Policy

FEATHER RIVER AIR QUALITY MANAGEMENT DISTRICT
 541 Washington Avenue, Yuba City, CA 95991
 Authority to Construct Evaluation

Facility ID #:	23xxx
ATC #:	Research
SIC Code #:	xxxx
NAICS #:	xxxx

ENGINEER: _____
 FACILITY NAME: Stricklin _____
 LOCATION: Name _____
 Address _____

APPLICATION DESCRIPTION: Public agency proposes to replace the 450 hp Tier 0 engine with a 450 hp Tier 4 engine.

Rule 3.0 - Visible Emissions.

Facility shall not emit visible emissions for a period or periods aggregating more than 3 minutes in any one hour as dark or darker in shade as that designated as No. 2 on the Ringelmann Chart, as published by the United States Bureau of Mines; or of such opacity as to obscure an observers view to a degree equal to or greater than does smoke described above.

It is anticipated that the facility shall comply with this requirement.

Rule 3.2 - Particulate Matter Concentration.

Facility shall not discharge into the atmosphere from any source particulate matter in excess of 0.3 grains per cubic foot of gas at standard conditions. When the source involves a combustion process, the concentration must be calculated to 12 per cent carbon dioxide (CO2).

Enter Fuel Type from list:

Diesel	137,000 BTU/gal
Fc	1,420 scf/10 ⁶ BTU
%CO ₂	12 %
Conversion	7000 grains/lb

Fuel Type	Diesel	Natural Gas	Propane	Gasoline
Fc	1,420	1,040	1,200	1,420
HHV	137,000	1,020	2,520	130,000
Units	BTU/gal	BTU/scf	BTU/scf	BTU/gal

PM Emission Rate Emission Unit #4

hours/day	#REF!	0.18	lb/day
Fuel Rate	#REF!		hours/day
	#REF!		units/hr

C=EF _c (100/%CO ₂)=	#REF!		gr/dscf
--------------------------------------------	-------	--	---------

It is anticipated that the facility shall comply with this requirement.

Rule 3.3 - Dust and Fumes.

Facility shall not discharge in any one hour from any source whatsoever dust or fumes in total quantities in excess of the amounts as prescribe for and shown in District's Rule 3.3 Table of Allowable Rate of Emission Based on Process Weight Rate.

Process Weight (tph)	NA
Max Allowable Emissions (lb/hr)	NA

The emissions from an IC engine are not considered "dust and fumes." Therefore Rule 3.3 is not applicable to the IC engine.

Rule 3.10 - Sulfur Oxides.

A facility shall not discharge into the atmosphere from any single source of emission whatsoever, any sulfur oxides in excess of 0.2 percent by volume (2,000 ppm) collectively calculated as sulfur dioxide (SO2).

Diesel	137,000 BTU/gal
Fc	1,420 scf/10 ⁶ BTU
%CO ₂	12 %
Conversion	7000 grains/lb

1 ppmv-SO ₂ =	2.62	mg/m ³ (NIOSH)
Conversion	0.0004372	(gr/dscf)/(mg/m ³)
2000 ppmv-SO ₂ =	2.29	gr/dscf

SOx Emission Rate Emission Unit #4

hours/day	#REF!	3.88	lb/day
Fuel Rate	#REF!		hours/day
	#REF!		unit/hr

C=EF _c (100/%CO ₂)=	#REF!		gr/dscf
--------------------------------------------	-------	--	---------

It is anticipated that the facility will be in compliance with this requirement.

Rule 3.13 - Circumvention.

A facility shall not be build, erect, install, or use any article, machine, equipment or other contrivance, the use of which, without resulting in a reduction in the total release of air contaminants to the atmosphere, reduces or conceals an emission which would otherwise constitute a violation of the Health and Safety Code of the State of California or of these Rules and Regulations.

It is anticipated that the facility shall be in compliance with this requirement.

Rule 3.22 Stationary Internal Combustion Engines

All new and existing internal combustion engines rated above 50 horsepower shall not operate above the emission limitations (listed in the following tables) according to the area of designation and fuel type. Engines designated as emergency, portable, or low use (<200 hours/year) shall not be subject to the emission standards.

The engine is considered an emergency engine. Hence, the engine is not subject to Rule 3.22.

Nuisance (CH&S 41700)

Facility shall not discharge from any source whatsoever such quantities of air contaminants or other materials which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety of any such person or the public or which cause or have a natural tendency to cause injury or damage to business or property.

It is anticipated that the facility shall be in compliance with this requirement.

Public Notice (CH&S 42301.6)

"... prior to approving an application for a permit to construct or modify a source which emits hazardous air emissions, which source is located within 1,000 feet from the outer boundary of a school site, the air pollution control officer shall prepare a public notice in which the proposed project or modification for which the application for a permit is made is fully described." Additionally, each address within 1000 feet radius of the source shall also be notified."

Nearest School:	Covillaud Elementary School
Distance:	1,817 Feet
Source:	District Verified

Facility is not within a 1,000 feet of a school. Public Notice is not required.

NESHAPS - Major Source

40 CFR 63 Subpart ZZZZ - Reciprocating Internal Combustion Engines (03/2008)

Stationary RICE is not located at a major source of HAPS (Rule 10.7) & thus is not subject to major source NESHAPS.

NESHAPS - Area Source

At this time, FRAQMD is not the delegated authority for the requirements of compliance with any Area Source NESHAPS.

However, per interpretation of the California Health and Safety Code, Chapter 3.5, section 39658, b1, FRAQMD will verify that the site is in compliance with the NESHAP standards and will forward any materials related to the NESHAP to the EPA Region 9 office. Also, FRAQMD will also notify the affected plant of the NESHAP requirements as part of their operating conditions.

40 CFR 63 Subpart ZZZZ - Reciprocating Internal Combustion Engines (Adopted 6/15/2004)

1/18/2008 revisions: Area source standards applies to new & reconstructed SI & CI engines; the owners and operators of new and reconstructed stationary engines located at area sources of HAP emissions must meet the requirements of the final CI NSPS (40 CFR part 60, subpart IIII) or SI NSPS (40 CFR part 60, subpart JJJJ), as appropriate.

3/3/2010 revisions: Area source standards applies to existing CI engines. They'll be subject to CO emission limitations and have to install a crankcase emission control system by May 3, 2013. Portable analyzer test within 180 days after the compliance date will be required.

8/20/2010 revisions: Area source standards applies to existing SI engines by October 19, 2013: Prime Engines > 500 hp need to be source tested once every 8,760 hours of operation or once every three years.

3/9/2011 revisions: Minor definition changes.

	Type	Max Horsepower	Requirements
Any Emergency SI or CI engine	new	all	Comply with the requirements of NSPS, Subpart IIII, for CI engines or NSPS, Subpart JJJJ, for SI engines.
Any Emergency SI or CI engine	existing	all	none

The engine was manufactured after June 12, 2006, so it is new. NESHAP ZZZZ requires the engine to comply with NSPS IIII.

New Source Performance Standards

FRAQMD is not delegated by the EPA to enforce NSPS. However, FRAQMD is evaluating enforcement of NESHAP ZZZZ, which may require compliance with NSPS IIII/JJJJ.

40 CFR 60 Subpart IIII: NSPS for Stationary CI Engines (07/2006)

NSPS IIII requires the 2007 model year and later engines with a displacement of less than 30 liters per cylinder to comply with the emission standards for new non-road CI engines in §60.4201 for their 2007 model year and later stationary CI CE, as applicable. NSPS IIII also requires to use a diesel fuel with less than 15 ppm sulfur content. Emergency generators are limited to 100 hrs/yr for maintenance and testing.

For stationary emergency engines, 40 CFR 60 Subpart IIII requires the engine to meet the standards in 40 CFR 89.112 & 40 CFR 89.113.

§89.112

Emission Standards (g/kW-hr)

Rated Power (kW)	Tier	Model Year	NMHC+NOx	CO	PM
225 ≤ kW < 450	Tier 3	2006	4.0	3.5	0.2

§ 89.113

Smoke emission standard.

(a) Exhaust opacity from compression-ignition nonroad engines for which this subpart is applicable must not exceed:

(1) 20 percent during the acceleration mode; (2) 15 percent during the lugging mode; and (3) 50 percent during the peaks in either the acceleration or lugging modes.

(b) Opacity levels are to be measured and calculated as set forth in 40 CFR part 86, subpart I. Notwithstanding the provisions of 40 CFR part 86, subpart I, two-cylinder nonroad engines may be tested using an exhaust muffler that is representative of exhaust mufflers used with the engines in use.

This engine meets this criteria by being certified to the Tier 3 standard for 2017 Model Year engines. The facility will also be using CARB diesel fuel, which has a sulfur content of <15 ppm. Finally, since it is an emergency generator set, it needs to be limited to at least 100 hrs/yr for maintenance and testing. However, the Stationary ATCM is more stringent in terms of M&T hours, which will be explained in the next section. The generator will need to be equipped with a non-resettable hour meter.

Air Toxic Control Measures

ATCM for Stationary Compression Ignition Engines [CCR 17 §93115]

ATCM for Portable Compression Ignition Engines [CCR 17 §93116]

Applicable?

Yes

No

Emission Standards for New Stationary Emergency Standby Diesel-Fueled CI Engines g/bhp-hr (g/kW-hr)

Maximum Engine Power	Model Year(s)	PM	NMHC + NOx	CO
300 ≤ HP < 600 (225 ≤ kW < 450)	2008+	0.15 (0.20)	3.0 (4.0)	2.6 (3.5)

Stationary ATCM

Emission Unit
Classification: [New/In Use]
PM Emitted (g/bhp-hr)
Hours allowed

Process #1
New
0.01
50

New EMERGENCY		In-Use EMERGENCY	
PM Standard g/bhp-hr	Allowable Hours	PM Standard g/bhp-hr	Allowable Hours
0.01 < PM ≤ 0.15	50	> 0.40	20
PM ≤ 0.01	100	0.15 < PM ≤ 0.40	30
		0.01 < PM ≤ 0.15	50
		PM ≤ 0.01	100

The engine meets the PM, NMHC + NOx, and CO ATCM emission standards for new emergency engines.

The engine will be limited to 50 hrs/yr for maintenance and testing in accordance with the ATCM.

Air Toxics

Prioritization Score Results:

	Value	Value >1	Value >10
TS acute		NO	NO
TS chronic	0.00	NO	NO
TS cancer	3.18	YES	NO

The installation will result in an intermediate priority for the AB 2588 Air Toxics "Hot Spots" Program under the new prioritization procedures.

CEQA

The installation will result in a net decrease in emissions and the emissions are less than the New Source Review (NSR) Offset thresholds and Best Available Control Technology (BACT) is being met therefore this exempt from CEQA under CCR Section 15061 (b)(3).

District Rule 10.1 - New Source Review

E.1.b, c, & d: District BACT

Pollutant	Threshold (lbs/day)	Potential to Emit (lbs/day)						
		Process #1	Process #2	Process #3	Process #4	Process #5	Process #6	Process #7
ROG	25	#REF!	22.23		0.54			
NOx	25	#REF!	279.00		3.42			
PM10	80	#REF!	19.80		0.18			
SOx	80	#REF!	18.45		3.88			
CO	500	#REF!	60.12		0.36			
Lead	3.2							
Asbestos	0.03							
Beryllium	0.002							
Mercury	0.5							
Vinyl Chloride	5							
Fluorides	15							
Sulfuric Acid Mist	35							
Hydrogen Sulfide	50							
Total Reduced Sulfur	50							
Reduced Sulfur	50							
BACT Triggered for Process?		Yes			No			

BACT Comments:

Processes #1-#3 were evaluated in the last evaluation. Processes # 4 does not trigger BACT for NOx. BACT. This engine meets the Emission Standards for New Stationary Emergency Standby Diesel-Fueled CI Engines g/bhp-hr (g/kW-hr) Tier 4 standard, as required by the Stationary ATCM. Hence, the application meets BACT. No further evaluation is required.

OFFSETS

	Facility Tons per Year		Offset Threshold	Offsets Triggered	Title V Threshold	Title V Triggered
	New Facility PTE	Previous PTE				
VOC	0.00	0.01	25	No	100	No
NOx	0.00	0.14	25	No	100	No
SOx	0.00	0.01	-	-	100	No
PM	0.00	0.01	-	-	-	-
PM10	0.00	0.01	25	No	100	No
PM2.5	0.00	0.01	-	-	-	-
CO	0.00	0.03	-	-	100	No

Offset Comments:

The facility does not exceed 25 tpy of nonattainment pollutants. Offsets not triggered nor required.

APPLICATION HISTORY:

[Redacted]

APPLICATION COMMENTS:

[Redacted]

RECOMMENDATIONS:

[Redacted]

Engineer: _____ Date: _____

Reviewed by: _____ Date: _____

APCO Review: _____ Date: _____

GHG Emission Reductions: Diesel to Diesel

Data Needed:

BSFC (BTU/hp-hr)	Brake-specific fuel consumption	7500
Diesel HHV (BTU/gal)	Higher heating value of diesel	138490

Fuel Efficiency Factor	Engines 2007 or newer	1
	Enter MY of engine (1980-2006)	0.91

Energy density for diesel	134.47 MJ/Gal
Carbon Intensity for Stationary Source	74.1 gCO ₂ e/MJ

Horsepower Baseline	450
Horsepower Replacement	450

Usage Baseline (hr/yr)	20
Usage Replacement (hr/yr)	20

Project Life (yrs)	10
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GHG Emission Reductions	
For Baseline engines 2007 MY or newer	0.00000

For Baseline engines older than 2007	440.235
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1989

MT-CO2e

MT-CO2e

Prioritization Score for a Diesel Engine

Toxic Components	CAN	Hours of Operation	Total Emissions		Emissions Max lbs/hr	Acute REL (ug/m^3)	Acute Score	Emissions Avg lbs/hr	Chronic REL (ug/m^3)	Chronic Score	Emissions lbs/yr.	Unit Risk (ug/m^3)^-1	Carcinogen Score
			lbs/hr	lbs/yr.									
Diesel PM	9901	50	0.11	5.5	0.11			6.28E-04	5.0E+00	4.71E-03	5.5	3.0E-04	3.18E+00
					TS=	0.00E+00		TS =	4.71E-03		TS =	3.18	
					$TS = \sum(Et/Pt)(RP)NF$ TS = Total Facility Score Et = Maximum emissions, lbs/hr Pt = Unit risk factor for compound t RP = Receptor Proximity = 0.25 NF = Normalized Factor = 1500			$TS = \sum(Et/Pt)(RP)NF$ TS = Total Facility Score Et = Average emissions, lbs/hr Pt = Unit risk factor for compound t RP = Receptor Proximity = 0.25 NF = Normalized Factor = 150			$TS = \sum(EcPc)(RP)NF$ TS = Total Facility Score Ec = Annual Emissions, lbs/year Pc = Unit risk factor for compound c RP = Receptor Proximity = 0.25 NF = Normalized Factor = 7.7x10^3		

Source: Consolidated table of OEHHA/ARB approved Risk Assessment Health Values (02/2017)

R (meters)	RP (dimensionless)
0<R<100	1
100<R<250	0.25
250<R<500	0.04
500<R<1000	0.011
1000<R<1500	0.003
1500<R<2000	0.002
R>2000	0.001

Actual Distance (m) 150
 RP used: 0.250

GHG Emission Reductions: Diesel to Electric

Data Needed:

BSFC (BTU/hp-hr)	Brake-specific fuel consumption	7500
Diesel HHV (BTU/gal)	Higher heating value of diesel	138490

GHG Ems Factor for Electricity	0.0002279	MT-CO2e/kWh
Average Load Replacement	234.99	
Load Factor (%)	0.7	
Energy density for diesel	134.47	MJ/Gal
Carbon Intensity for Stationary So	74.1	gCO2e/MJ

Horsepower Baseline	450
Horsepower Replacement	450

Usage Baseline (hr/yr)	20
Usage Replacement (hr/yr)	20

Project Life (yrs)	10
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GHG Emission Reductions	1916.96473	MT-CO2e
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Project Ranking Form for Alternative Fueling Infrastructure Projects

Applicant:	
App. #	
Score:	0 out of 100 total points

Level of Project confidence

Points will be awarded based on the applicant's experience, level of expertise, and feasibility of the proposal.

<u>Points</u>	<u>Criteria</u>	<u>Score</u>
20	High level of confidence in project implementation - the project has a high likelihood of success based on experience of applicant, expertise, and project feasibility.	
10	Moderate level of confidence in project implementation - the project is likely to succeed based on experience of applicant, expertise, and project feasibility.	
0	Low level of confidence in project implementation - likelihood of project success is poor or not adequately assured based on experience of applicant, expertise, and project feasibility.	
20	Total Possible Sub-Category Points	

Station Location

Points will be awarded to projects that are strategically located

<u>Points</u>	<u>Criteria</u>	<u>Score</u>
20	Project location strategically located to compliment existing alternative fueling infrastructure and demand and is not redundant to existing nearby stations	
10	There is a marginal level of overlap with existing stations, however, the project still fulfills an unmet need in the County.	
0	Project is redundant with existing nearby stations and provides little additional benefit	
20	Total Possible Sub-category Points	

Estimated level of use

<u>Points</u>	<u>Criteria</u>	<u>Score</u>
15	days a week	
10	Project is expected to be used by at least 3 users a day, 2 to 5 days a week	
5	Project is expected to be used by 1- 3 users a day, any day of the week	
0	Project does not anticipate use within the lifetime of the project	
15	Total Possible Sub-category points	

Power Source not derived from Fossil Fuels

<u>Points</u>	<u>Criteria</u>	<u>Score</u>
10	Project powered by renewable natural gas, hydrogen, onsite solar or wind at least 50% of the time	
7	Project powered by renewable natural gas, hydrogen, onsite solar or wind least 25 - 49% of the time	
3	Project powered by renewable natural gas, hydrogen, onsite wind or solar 0% - 25% of the time	
10	Total Possible Sub-category points	

Established Demand

<u>Points</u>	<u>Criteria</u>	<u>Score</u>
10	Strong documented evidence suggests that there is a demand for the project and proposed station size is proportional to the established	
5	Demand cannot be documented but can be supported by anecdotal evidence	
3	There is no documented or reasonable anecdotal demand for the proposed project	
10	Total Possible Sub-category points	

Community Benefit

<u>Points</u>	<u>Criteria</u>	<u>Score</u>
10	There is a strong community benefit.	
5	Community benefit is moderate	
0	No significant community benefit	
10	Total Possible Sub-category Points	

Dedicated Co-funding

Co-funding includes in-kind contributions, equipment, labor or direct funding.

<u>Points</u>	<u>Criteria</u>	<u>Score</u>
15	50% or more of the total project cost from other funds.	
5	25-50% of the total project cost from other funds.	
0	Less than 25% of total project cost from other funds.	
15	Total Sub-category Points	