AIR POLLUTION CONTROL DISTRICT

# IMPERIAL COUNTY COMMUNITY EMISSIONS REDUCTION PROGRAM: PROJECT PLAN

## SCHOOL BUS REPLACEMENT

## EL CENTRO-HEBER-CALEXICO CORRIDOR

**June 2024**

**REVISED JANUARY 2025**


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**Imperial County Air Pollution Control District**

**Comite Civico del Valle**

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# SCHOOL BUS REPLACEMENT
# FOR THE EL CENTRO-HEBER-CALEXICO CORRIDOR

Prepared for

El Centro-Heber-Calexico AB 617 Community Steering Committee

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JUNE 2024

# Contents



## Appendix

# Abbreviations and Acronyms

| | |
|---|---|
| AB | Assembly Bill |
| CAP | Community Air Protection |
| CAPP | Community Air Protection Program |
| CARB | California Air Resources Board |
| CARL | Carl Moyer Program Clean Air Reporting Log |
| CCV | Comite Civico del Valle |
| CERP | Community Emissions Reduction Program |
| CHP | California Highway Patrol |
| CSC | Community Steering Committee |
| DMV | Department of Motor Vehicle |
| DPM | diesel particulate matter |
| ICAPCD | Imperial County Air Pollution Control District |
| JPA | Joint Power Authority |
| $NO_X$ | nitrogen oxides |
| PM | particulate matter |
| RFP | Request for Proposals |
| ROG | reactive organic gases |
| SB | Senate Bill |
| TAC | toxic air contaminants |
| USEPA | United States Environmental Protection Agency |
| VOC | volatile organic compounds |

# 1 Project Identification

## 1.1 Background

In 2019, the El Centro-Heber-Calexico Corridor AB 617 Community ("Corridor" or "Community") developed a Community Emissions Reduction Program (CERP)[1] to address local air quality concerns as part of the state-wide Community Air Protection Program (CAPP). The CERP was a collaborative effort by the Imperial County Air Pollution Control District (ICAPCD or "District"), Comite Civico del Valle (CCV) and the Community Steering Committee (CSC). As part of CERP development, the Community was granted funding by the California legislature for the implementation of projects for reducing pollutant emissions or community exposure through mobile source, stationary source, and community-identified projects and strategies. Various strategies were identified during development of the CERP through Community engagement. These strategies were included in the final CERP that was approved by the California Air Resources Board (CARB) Board in January 2020. One of these key strategies was Strategy M-6, *School Bus Replacement*.

This document serves as the "Project Plan" for the Heber School Bus Replacement strategy. It was drafted according to CARB's Community Air Protection (CAP) Incentives Program Guidelines.[2] It describes the nature of the strategy, its history of 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 or exposure reduction, as well as other key aspects like project selection criteria and reporting requirements.

## 1.2 Project Description

Heavy-duty vehicles associated with school activities (school buses) can contribute to the emission of harmful air pollutants including nitrogen oxides ($NO_X$), reactive organic gases (ROGs) or volatile organic compounds (VOCs), particulate matter (PM), and toxic air contaminants (TAC) among others. Children at schools are exposed to these pollutants both while riding in these vehicles and from the vehicles idling in and around the school premises. Additionally, diesel-operated school buses can expose students to diesel particulate matter (DPM), which is a significant contributor to cancer risk within the El Centro-Heber-Calexico Corridor. Student exposure to air pollution at schools is not limited to exposure from older, dirtier school buses (often referred to as the "yellow and white fleets"); students also face health risks from staff and parent vehicles that may be idling on school premises.[3]

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[1] ICAPCD. 2019. *Imperial County Year 1 Community Emissions Reduction Program Plan for the El Centro-Heber-Calexico Corridor.* October. Available at: https://docs.wixstatic.com/ugd/99eb03_080a305618f5453cb0c69272eb622946.pdf. Accessed: June 2024.

[2] CARB. 2020. *2019 Community Air Protection Incentives Program 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: June 2024.

[3] Ibid.

Mitigating these exposures can be achieved through upgrading current school bus fleets to non-emitting zero-emission models.[4] In the CAP Incentives Program Guidelines, CARB notes that to mitigate emissions associated with school transportation, AB 617 communities may utilize CAP incentive funds for certain eligible projects including school bus replacements. Accordingly, when developing the CERP, the CSC opted to incorporate Strategy M-6: *School Bus Replacement*.

The primary goal of the school bus replacement strategy in the CERP is to reduce school children's exposure to both cancer-causing and smog-forming pollution. Under this strategy, the District is proposing to replace five old, diesel school buses with zero-emission buses between 2020 and 2025 with this project plan. The three replacement buses for the Heber Elementary School District are planned to be two BYD | RIDE Type D School Bus ("The Dreamer") and one BYD | RIDE Type A School Bus ("The Achiever"); bus specifications are available in **Appendix A**.

## 1.3 Benefits

The main benefit of the school bus replacement strategy is a reduction in the emissions of and exposure to harmful air pollutants including $NO_x$, ROGs, PM, and TACs. The conversion of the school bus fleet to zero-emission will also provide non-quantified reductions in greenhouse gas (GHG) emissions. While students are the primary population using school buses and will be the primary beneficiaries of pollution reduction, the measure will reduce smog-forming emissions across bus routes, thus delivering cleaner air and reduced public health impacts in the larger community as well. The emission reductions from this strategy would fall within the on-road mobile sources category of the community-level emission inventory developed in the CERP.

[4] Ibid.

# 2 Community Support

## 2.1 Background – Community Steering Committee

In late 2018, ICAPCD in conjunction with CCV assembled a steering committee for the El Centro-Heber-Calexico Corridor. Referred to as the AB 617 CSC, this body is involved with all aspects of the CERP and is tasked with maintaining communication with other community members throughout the planning process to gather input from concerned citizens and facilitate ongoing discussion. The CSC consists of 15 members made up of two ex-officio co-chairs (representing ICAPCD and CCV) and 13 Community representatives. Each member has an alternate who participates in meetings if a member is unable to attend.[5]

In February 2019, the CSC's charter was approved which describes the manner in which the CSC will conduct their regular meetings, and the voting process for making decisions related to the CERP and its programs/projects. It describes this process as: "Each member of the Committee, excluding the two ex officio members, shall be entitled to one (1) vote. A vote of the majority of the members present with at least a quorum in attendance shall be required to take action, and/or make a recommendation, except for adjournment of a meeting which shall require only a majority of those present…".[6] During CERP development, the CSC met on a monthly basis to discuss key issues and progress. Following approval of the CERP by the CARB Board, the CSC has continued meeting monthly through 2024.

This monthly meeting schedule is anticipated to continue as the CERP Project Plans are developed, and the CSC meetings will serve as the chief mechanism for informing the Community on development of the projects and key funding decisions. The CSC will determine the need for additional public outreach mechanisms, as necessary.

## 2.2 Community Support for School Bus Replacement

Community engagement was a critical part of the CERP development. This involved regular meetings of the CSC, as described in **Section 2.1**, which sometimes included polls to gauge the opinions of CSC members and the public in attendance on a variety of topics. At one CSC meeting in 2019,[7] a survey was conducted to gain feedback on various emission/exposure reduction strategies for inclusion in the CERP. The results of this survey indicated that approximately 70% of Steering Committee members were in favor of implementing school bus replacement projects in the Corridor. Additionally, approximately 75% of public attendees were also supportive of the strategy. Polling was conducted again during the July 13, 2022 CSC meeting, reaffirming CSC and community member support (93% in agreement) for funding to be used for an incentive program for replacing diesel school buses with zero-emission school

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[5] ICACPD. 2024. *Community Steering Committee*. Available at: https://www.icab617community.org/community-steering-committee. Accessed: June 2024.

[6] ICAPCD. 2019. *Imperial County Year 1 Community Emissions Reduction Program Plan for the El Centro-Heber-Calexico Corridor, Appendix B: AB 617 Community Steering Committee Charter.* October. Available at: https://docs.wixstatic.com/ugd/99eb03_080a305618f5453cb0c69272eb622946.pdf. Accessed: June 2024.

[7] July 24, 2019 meeting of the El Centro-Heber-Calexico AB617 Community Steering Committee.

buses. Given this relatively strong support, Strategy M-6: *School Bus Replacement* was included in the 2019 CERP. The Request for Proposals (RFP) for Electric Bus and/or Charging Infrastructure was presented by ICAPCD during the February 8, 2023, CSC meeting. This specific project, the replacement of three school buses with zero-emission buses for the Heber Elementary School District, goes towards achieving the CERP replacement target of five buses by 2025, and was voted on and approved by the CSC during the September 13, 2023 meeting. The details, including progress and results, of the project will be shared with the community through annual progress reports and status updates during CSC meetings.

# 3 Participant Requirements and Application Process

Per the CAP Incentives Program Guidelines, Electric School Bus grants may be awarded to public school districts in California that own their own school buses, a Joint Power Authority (JPA) that has been formed by several public school districts, and private transportation providers that own their own school buses and contract with public school districts to provide transportation services for public school children. Non-profit organizations, private schools, and other private companies that do not directly provide transportation for public school students are not eligible to receive funding under the CAP Incentives Program. Applicants must commit to the criteria listed in order for projects to be considered for funding grants. The Program and Participant criteria is consistent with that of the CAP Incentives Program Guidelines Chapter 6: Community-Identified Projects with the alteration of District discretion as to the project cost effectiveness based on CAP Guidelines Chapter 2, Section J given the consideration of other factors, notably community support for the project.

A subset of the CAP Incentives Program criteria as relevant to the Project is listed below:

- The project must be a replacement of an existing diesel school bus with a new zero-emission (electric) one.
- Projects must operate at least 51% of their total annual usage in Imperial County, California.
- Projects will be reviewed against the cost-effectiveness threshold established by the District and calculated in accordance with the cost-effectiveness methodology in the Carl Moyer Program Guidelines and the CAP Incentives Program Guidelines.[8,9] As further detailed in **Section 7.1**, the District will have discretion to consider other factors and assess project cost-effectiveness
- No emission reductions generated by the CAP Incentives shall be used as marketable Emission Reduction Credits, or to offset any emission reduction obligation of any person or entity. No project funded by the CAP Incentives shall be used for credit under any federal or State emission averaging banking and trading program.
- Zero emission replacement technologies must be certified/verified by CARB and must comply with durability and warranty requirements. These requirements, and CARB Zero-Emissions Powertrain Certification (ZEP Certification Regulation), for vehicle

[8] CARB. 2022. *2022 Carl Moyer Program Guidelines*. Available at: https://ww2.arb.ca.gov/guidelines-carl-moyer. Accessed: June 2024.

[9] CARB. 2020. *2019 Community Air Protection Incentives Program Guidelines*. Available at: https://ww2.arb.ca.gov/resources/documents/community-air-protection-incentives-guidelines. Accessed: June 2024

replacements are included under Carl Moyer Program Guidelines.[10] Requirements for eligibility under the CAP Incentives Program are included within the Guidelines: "Air districts should obtain written proof of any required certification/verification by the U.S. EPA or CARB for any technology that reduces emissions."[11]

- Applicant must make the project available for inspection if requested by ICAPCD and/or CARB staff during the entire contract period.
- All costs must be current at the time of application.
- Recipient is responsible for obtaining any permits required.
- The applicant or their sponsor must have financial capacity to complete, operate, and maintain the project.
- Any funds required from other sources must reasonably be expected to be available in the time frame needed to carry out the project.

## 3.1 Participant Eligibility

The participant eligibility criteria for this project plan is consistent with the requirements of the CAP Incentives Program Guidelines Chapter 6, Section C, 3. Participant Requirements. The requirements as to participant eligibility are included below[12]:

(1) Adhere to all applicable federal, state, or local regulations relevant to the project type.

(2) Possess authority or written consent to make any necessary modifications to the engine, equipment, facility, source, or other relevant property.

(3) Provide evidence of regulatory compliance or a valid operating permit, if required.

(4) Maintain the funded technology according to the manufacturer's guidelines throughout the contract period.

(5) Do not claim emissions reduction credits under relevant rules or regulations during the contract period.

[10] CARB. 2022. *2022 Carl Moyer Program Guidelines*, Chapter 4. Section A. April 7. Available at: https://ww2.arb.ca.gov/sites/default/files/2022-05/Carl_Moyer_Program_Chapter_4_Updated_040722.pdf. Accessed: October 2024.

[11] CARB. 2020. *2019 Community Air Protection Incentives Program Guidelines*. Chapter 6, Section C, 3, (C). 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: October 2024

[12] CARB. 2020. *2019 Community Air Protection Incentives Program Guidelines*. Chapter 6, Section C, 3, (B). 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: October 2024

(6) Follow local air district requirements during the contract period, including any necessary monitoring and reporting.

(7) Ensure equipment or source permits are current and all associated requirements are met during the contract period, as required by the air district.

(8) Allow for project inspections by air district or CARB staff, if requested, during the contract period.

## 3.2 Project Eligibility

Summary of Eligibility Criteria for Old and Replacement School Buses

*Eligible Old School Buses to be Replaced*

To be eligible for replacement, existing school buses must comply with the following requirements:

- The existing bus must be in operational condition and have operated in the fleet for at least two years prior to the application.
- The existing bus must have operated at least 51% of its total annual usage in California and provide supporting documents to demonstrate this (maintenance logs, logbooks, odometer reading logs, etc.)
- The existing vehicle must be based in California as shown through a Department of Motor Vehicle (DMV) registration.

*Eligible New Zero-Emission Replacement Buses*

To be eligible as a replacement, new buses must comply with the following requirements:

- The replacement bus must be a new zero-emission school bus. Used school buses are not eligible as replacements.
- The replacement engine horsepower must be no more than 25 percent greater than the existing engine horsepower. However, as defined under the Carl Moyer Program Guidelines, "the air district may approve a greater than 25 percent increase in horsepower" in applications where the original horsepower range is not available.[13]
- The replacement vehicle must be in the same service class as the existing vehicle. The replacement vehicle must have the same axle and body configuration as the old vehicle. Final eligibility decisions, particularly due to differences in the design and weight of ZE

[13] CARB. 2022. *2022 Carl Moyer Program Guidelines*, Chapter 4. Section C.5.(E). April 7. Available at: https://ww2.arb.ca.gov/sites/default/files/2022-05/Carl_Moyer_Program_Chapter_4_Updated_040722.pdf. Accessed: October 2024.

school buses, will be made at the discretion of the District. Common exceptions for ZE school bus projects (weight class, work equivalence) are included under the Carl Moyer Program Guidelines and will be used as District guidance.[14]

- The replacement vehicle must have a clean title prior to purchase and must be registered in California or in the California International Registration Plan.
- The replacement school bus must serve schools and school districts within the community, and operate at least 51% of its total annual usage in Imperial County, California.
- The vendor warranty requirements are defined under the ZEP Certification Regulation and included in the Carl Moyer Program Guidelines; the vendor warranty must provide protection for a minimum of 60 months or 75,000 miles, whichever comes first, and provide full warranty coverage of, at a minimum, zero-emission or all-electric motor, drive train, batteries/energy storage system(s), parts and labour.[15] Warranties must be fully transferable to subsequent school bus purchases for the full warranty coverage period. Warranties must cover the following for the full warranty period (unless otherwise denoted):
    - Extended Motor, Drivetrain (including Battery), and Zero-Emission Components: Provide warranty coverage against defects in material and workmanship for the motor, transmission, rear axle, and electric or zero-emission system components including the battery. Gaskets and seals are not required to be included under the warranty coverage.
    - Frame Rails, Cross Members, and Cab: For new school buses, coverage extends to structural cracks in the frame caused by defects in material workmanship and against corrosion perforation of the cab. Battery Degradation Warranty: Provide warranty coverage against battery degradation below 80 percent of capacity.
    - Battery Degradation Warranty: Provide warranty coverage against battery degradation below 80 percent of capacity.

A list of resources for project applicants can be found in **Section 10**.

## 3.3 Application Process

Entities will submit applications that include the required information as described in this Project Plan. Once ICAPCD has collected applications from interested entities, the review process will begin. This may involve ICAPCD requesting additional information from applicants or visiting potential project sites. When the application review process is complete, ICAPCD will inform

[14] CARB. 2022. *2022 Carl Moyer Program Guidelines*, Chapter 4. Section C.1(B)(3)(a-c). April 7. Available at: https://ww2.arb.ca.gov/sites/default/files/2022-05/Carl_Moyer_Program_Chapter_4_Updated_040722.pdf. Accessed: October 2024.

[15] CARB. 2022. *2022 Carl Moyer Program Guidelines*, Chapter 4. Section C.5.(K)(3). April 7. Available at: https://ww2.arb.ca.gov/sites/default/files/2022-05/Carl_Moyer_Program_Chapter_4_Updated_040722.pdf. Accessed: October 2024.

applicants if they have been selected and provide details on the project award amount and next steps.

### 3.3.1 Application Requirements

- Project applicants will need to submit a completed application form and supporting documentation as follows. Completed application form, which includes:
    - Project summary, including how the project will meet environmental goals or have an environmental benefit
    - Equipment and engine information for existing bus
    - Equipment and powertrain system (inclusive of the engine, motor, or other propulsion source, battery pack, inverter, etc.) information for proposed replacement bus
    - Estimated cost of replacement bus based on dealer quote
    - Project goals and objectives
    - Proposed timeline for project implementation
    - Individuals responsible for assuring completion of the project
    - Proposed amount and term (in years) for grant funding
- Current California Highway Patrol (CHP) certification
- Proof of vehicle insurance for the past 24 months (e.g., Certificate of Liability Insurance Form)
- Proof of existing equipment usage documenting annual miles travelled in California covering the previous 24 months prior to application date and certifying that at least 51% of total usage has been in California (e.g., maintenance logs, logbooks, odometer reading logs, etc.)
- Proof of ownership covering the previous 24 months prior to application (e.g., existing vehicle title and DMV registration)
- Itemized quote for replacement bus (including dealer and warranty information)
- Executive Order for existing and replacement buses
- Scope of work letter
- Expected emissions reductions and co-benefit quantification, using methodology as described in **Section 4.2**

In addition to the application requirements, the District may also ask project applicants to provide the following information outlined in the Carl Moyer Program Guidelines, as needed:

- A disclosure about whether the engine/vehicle in the application has been awarded funds from another public agency or if it is being considered for funds, and if so, certification that

the funding requested for this grant has been reduced by the amount of such financial incentive.

- A commitment to annually report mileage, proof of insurance, and DMV registration for the new school bus(es).
- A commitment to ensure that the vehicle is in operational condition throughout the agreement period, with at least one California service provider approved by the manufacturer available for repair and service of the engine/vehicle, as needed.
- Invoices of the purchase and all work performed. If work was performed on the replacement vehicle, the invoices must include all engine or motor, transmission, engine horsepower derating, body and other work performed on the replacement vehicle.
- Digital photographs and/or video featuring different views of the existing vehicle and the replacement vehicle or engine/motor, which includes all VIN and engine or motor serial numbers. If a contractor conducts any inspections, the air district will specify the required digital format.
- Certification from a dealer, provider, installer, or ICAPCD that the old engine and/or vehicle will be delivered to a qualified dismantler within 60 calendar days of receipt of the old engine or vehicle.

### 3.3.2 Application Submittal

Applications were submitted to the ICAPCD during the Request for Proposals (RFP) period. To initiate the RFP period, ICACPD issued a public notification to advertise the availability of grant funds for this project type, provided instructions to access and submit the application, and included a due date by which applications were to be submitted. Once the RFP period ended, ICAPCD reviewed the applications received and contacted applicants as necessary to gather additional information. ICAPCD responded to prospective applicants within 60 days following the end of the RFP period to alert them if their projects had been selected to receive funding.

# 4 Emissions Reductions Quantification Methodology

## 4.1 Compliance

ICAPCD used the CARB online CARL Tool database to ensure that the emissions reductions quantification methodology performed conforms with Chapter 4 of the Carl Moyer Program Guidelines.[16]

## 4.2 Emission Reductions

To use the CARL Tool, applicants provided the ICAPCD with the information in the following table to quantify emissions reductions for their school bus replacement project.

| Project-specific parameter to be provided by Applicant | Units | Guidance on parameter, if applicable |
|---|---|---|
| Model Year of Existing Diesel School Bus | -- | Model year of existing diesel school bus engine, as noted in engine certification documents. |
| Annual Usage for Existing Diesel School Bus | Miles per year | This can be estimated as a historical average over several years of use and can also be averaged across all buses within the existing fleet to account for any variability by vehicle. Applicants should exclude usage during the COVID-19 pandemic and disaster-related school closures since these are anomalous periods. |
| Proportion of Existing Diesel School Bus Annual Usage Occurring within California | % | At least 51% of total annual usage must occur in California, and only usage in California is eligible for funding. |
| Expected Annual Usage for Replacement Electric School Bus | Miles per year | -- |
| Expected Proportion of Replacement Electric School Bus Annual Usage Occurring within California | % | At least 51% of total annual usage must occur in California, and only usage in California is eligible for funding. |
| Expected First Year of Operation for Electric Bus | -- | -- |

[16] CARB. 2022. *2022 Carl Moyer Program Guidelines.* Chapter 4. April 7. Available at: https://ww2.arb.ca.gov/sites/default/files/2022-05/Carl_Moyer_Program_Chapter_4_Updated_040722.pdf. Accessed: June 2024.

| **Project-specific parameter to be provided by Applicant** | **Units** | **Guidance on parameter, if applicable** |
|---|---|---|
| Expected Project Life for Replacement Electric Bus | years | Per the Carl Moyer Program Guidelines, the maximum project life for school bus replacements is 10 years;[17] applicants can opt to use this default value instead of a project-specific estimate. |
| Expected Purchase Cost for Replacement Electric Bus | $ | Quoted cost of replacement electric bus from dealer. |

[17] CARB. 2022. *2022 Carl Moyer Program Guidelines.* Chapter 4, Table 4-8. April 7. Available at: https://ww2.arb.ca.gov/sites/default/files/2022-05/Carl_Moyer_Program_Chapter_4_Updated_040722.pdf. Accessed: June 2024.

# 5 Relative Exposure Reduction

## 5.1 Mechanism of Exposure Reduction

Diesel school buses emit high levels of black carbon and particle-bound polycyclic aromatic hydrocarbons (PAHs), which can accumulate inside the buses during commutes, causing health exposure risks for students within. Studies conducted by CARB have indicated that modern buses, such as those powered by natural gas or equipped with particulate traps, reduce these emissions, but electric buses eliminate them entirely, creating a healthier environment for children. Reducing exposure to these pollutants can decrease the risk of mortality, heart attacks, and hospitalizations for heart disease and cancer. Students are the primary recipients of exposure reduction benefits, but other Community residents will also experience ancillary benefits through reduced exposure along the bus route.[18] Quantitative emission reduction benefits associated with replacing diesel school buses with electric school buses will be estimated according to the methodology in **Section 4**, and other qualitative benefits, primarily the reduction in exposure to harmful air pollutants from diesel school bus replacements, are described in **Section 6**.

## 5.2 Estimates of Exposure Reduction

Per the CAP Incentives Program Guidelines, air districts must quantify emission reductions or other quantifiable benefits for projects for which they are seeking incentive funding.[19] CARB directs districts towards the *Quantitative Methodologies to the Community Air Protection Incentives 2019 Guidelines*[20]; zero emission school bus projects are eligible for $NO_X$, ROG, and PM emission reductions under the Carl Moyer Program Guidelines.[21] The District will quantitatively assess exposure reductions from proposed projects as described in **Section 4**.

[18] CARB. 2023. *School Buses*. Available at: https://ww2.arb.ca.gov/our-work/programs/school-buses/about. Accessed: June 2024.

[19] CARB. 2020. *2019 Community Air Protection Incentives Program 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: June 2024

[20] CARB. 2020. *Quantitative Methodologies to the Community Air Protection Incentives 2019 Guidelines*. May 1. Available at: https://ww2.arb.ca.gov/sites/default/files/2020-05/2019_cap_gl_qm.pdf. Accessed: October 2024.

[21] CARB. 2022. *2022 Carl Moyer Program Guidelines*, Chapter 4. Section C.2.(B)(6). April 7. Available at: https://ww2.arb.ca.gov/sites/default/files/2022-05/Carl_Moyer_Program_Chapter_4_Updated_040722.pdf. Accessed: October 2024.

# 6 Qualitative Benefits

Electric school buses offer a multitude of benefits that serve students, drivers, and the community at large. One of the most prominent advantages is the elimination of tailpipe pollution, which drastically reduces the exposure to harmful diesel emissions such as PM (including diesel particulate matter, DPM) and $NO_X$. In addition to decreased air pollution, electric buses also contribute to lower greenhouse gas emissions when compared to their diesel counterparts. Under the CAP Incentive Guidelines: CAP Incentives Action, the Evaluation Criteria for Providing Benefits to Priority Populations for Clean Transportation and Equipment[22] was reviewed and this project aligns with the benefit criteria as "eligible project types will provide direct, meaningful, and assured benefits via incentives for vehicles, equipment, or renewable transportation fuel that reduce criteria air pollutant or toxic air contaminant emissions, such as diesel particulate matter" and "[a]ll CAP incentives projects will reduce criteria air pollutants and/or TACs as co-benefits, thereby reducing health harms due to air pollutants."[23]

From a financial perspective, electric school buses can provide significant savings on maintenance costs. The regenerative braking systems lead to less brake wear, and with no engine or exhaust systems to maintain, school districts can save substantially on these typical expenses. Electric school buses also present the potential for reduced fuel costs depending on local electricity prices. Quiet and clean operation is another benefit relative to internal combustion engine vehicles, which can contribute to a more pleasant and less disruptive environment both inside and outside the bus.

Finally, electric buses can also be used in synergistic partnerships with local utilities, as they have the capability to feed power back into the electric grid during times of high demand and non-operation. The United States Environmental Protection Agency (USEPA) notes that these environmental and health benefits can foster a healthier environment, leading to better student attendance and potentially even enhancements to academic achievement.[24]

[22] CARB. 2023. *California Climate Investments 2018 Funding Guidelines Benefit Criteria Table*. August. Available at: https://ww2.arb.ca.gov/sites/default/files/auction-proceeds/criteria-table-cte.pdf. Accessed: January 2025

[23] CARB. 2020. *2019 Community Air Protection Incentives Program Guidelines*. Appendix B. 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: October 2024

[24] USEPA. 2023. *Benefits of Clean School Buses*. Available at: https://www.epa.gov/cleanschoolbus/benefits-clean-school-buses. Accessed June 2024.

# 7 Key Project Parameters

## 7.1 Funding Amount and Eligible Costs

Applicants who are awarded funding are required to solicit and select project materials and suppliers through a competitive bidding process. A minimum of two competitive bids must be obtained before a supplier is selected, and the selection must be approved by the District. It is the District's role to ensure that all costs are reasonable and applicable.

The following costs are eligible for funding as part of this CERP strategy[25]:

- Capital cost of the cab
- Capital cost of the chassis including parts that are integrated into the vehicle, which may include but is not limited to: the engine or motor, transmission, suspension system, steering system, frame, electrical system, cooling systems, fuel system, and emission system.
- Other costs of acquisition, implementation, and eligibility will be subject to District discretion to ensure project implementation, including: taxes, warranty, insurance, and transportation fees.

For projects sponsored by schools, grants for qualified projects will be provided up to 100% of eligible costs. For projects sponsored by municipal entities or non-profits, cost sharing ranges from 60-95% of the total eligible project costs depending on the fleet size. For projects sponsored by non-public entities, cost sharing is required at 50% of the total eligible project costs.

The following costs are ineligible to receive funding as part of this CERP strategy[26]:

- Overhead (i.e., rent, utilities, office equipment/supplies)
- Ongoing project maintenance or repairs related to the operation of the electric school bus[27]

The District has opted not to utilize the Carl Moyer Program cost-effectiveness funding cap.[28]. Chapter 2, Section J of the CAP Incentives Guidelines provides guidance for CERP incentive

[25] CARB. 2022. *Carl Moyer Program Guidelines*, Chapter 4. Section B.8. Available at: https://ww2.arb.ca.gov/sites/default/files/2022-05/Carl_Moyer_Program_Chapter_4_Updated_040722.pdf. Accessed: June 2024.

[26] CARB. 2022. *Carl Moyer Program Guidelines*, Chapter 4. Section C.5.(K)(4). Available at: https://ww2.arb.ca.gov/sites/default/files/2022-05/Carl_Moyer_Program_Chapter_4_Updated_040722.pdf. Accessed: June 2024.

[27] CARB. 2017. *Carl Moyer Program Guidelines*, Volume 1: Program Overview, Table 4-2, Program Administration and Project Criteria. Available at: https://ww2.arb.ca.gov/sites/default/files/classic/msprog/moyer/guidelines/2017/2017_cmpgl.pdf. Accessed: June 2024.

[28] CARB. 2022. *Carl Moyer Program Guidelines*, Appendix C: Cost-Effectiveness Calculation Methodology. Table C-3. Nov 17. Available at: https://ww2.arb.ca.gov/sites/default/files/2022-12/2017_gl_appendix_c_2022%20Board%20Approved%20Changes_Final.pdf. Accessed: June 2024.

strategies to include both cost-effectiveness and relative exposure reduction in making funding decisions. In order to include less cost-effective projects, these programs "must consider the support of the community steering committee, community-based organizations, and community members," supporting the District's discretion to award projects separate from their cost-effectiveness.[29]

Projects eligible for this funding must be located within the Corridor and meet the eligibility requirements described in **Section 3** of this Project Plan. However, certain projects may be prioritized based on the criteria described in **Section 8** of this Project Plan.

Payments will be made on a reimbursement basis. The Grantee pays for services, products, and supplies, submits invoices and proof of payment, and is then reimbursed for eligible expenses. If the applicant is unable to carry the financial responsibility of a reimbursement program on their own, they may partner with a local public agency or 501(c)(3) non-profit.

## 7.2 Project Life

Entities that receive grants to fund applicable school bus replacement projects are expected to maintain their project for the entirety of the project life, which is a maximum of 10 years for school bus replacement projects.[30] During this time, entities must maintain the project and comply with other requirements described in **Section 3.1** of this Project Plan. Additionally, entities must make the project available for inspection if requested by ICAPCD and/or CARB staff during this same contract period.

[29] CARB. 2020. *2019 Community Air Protection Incentives Program Guidelines*. Chapter 2: Guiding Principles, Section J. 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: October 2024

[30] CARB. 2022. *Carl Moyer Program Guidelines*. Chapter 4. Table 4-8. April 7. Available at: https://ww2.arb.ca.gov/sites/default/files/2022-04/Carl%20Moyer%20Program%20Chapter%204%20Updated%20040722.pdf. Accessed: June 2024.

# 8 Project Selection

## 8.1 Selection Criteria

Applications were received and reviewed by the ICAPCD and distributed to the CSC. After reviewing applications for project eligibility, projects were prioritized and selected for funding by ICAPCD staff in accordance with the criteria described in the CARB California Climate Investments Quantification, Benefits, and Reporting Materials Funding Guidelines.[31] These guidelines provide direction to administering agencies to target investments that benefit priority populations, with a focus on maximizing disadvantaged community benefits; maximizing economic, environmental, and public health "co-benefits"; and providing fiscal and program transparency and accountability. Priority populations include residents of census tracts which are identified as disadvantaged by the California Environmental Protection Agency per Senate Bill (SB) 535, census tracts identified as low-income according to Assembly Bill (AB) 1550, and low-income households per AB 1550.[32]

[31] CARB. 2018. *Funding Guidelines for Agencies that Administer California Climate Investment*. August. Available at: https://ww2.arb.ca.gov/sites/default/files/auction-proceeds/2018-funding-guidelines.pdf. Accessed: June 2024.
[32] Ibid.

# 9 Reporting Requirements

All projects that receive funding under this program must comply with the requirements described in Chapter 3, Section H of the CAP Incentives Program Guidelines.[33] This will involve the preparation of Yearly reports, which ICAPCD will prepare based on information collected from project participants. Some of the information to be included in these reports is described below:

- CAP Incentives reporting requirements for Yearly Reports:
    - Report the required project information in the CARL Database
    - Report program-level information (e.g., employment outcomes, public transparency, and outreach events) in the CAP Incentives Supplemental Document for CERP projects funded with CAP Incentives
    - Output generated by the Required Reports utility of CARL Database
    - Contract execution and liquidation status for each grant year of CAP incentive funds
    - A list of any projects identified as nonperforming and a brief narrative of any related enforcement actions

Participants must ensure that project-related information is complete, correct, supported by documentation, and supplied to the ICAPCD upon request for the preparation of reports. Meanwhile, the ICAPCD must acknowledge that the most up-to-date reporting requirements have been received and incorporated, and commit to maintaining documents in support of the reports at the ICAPCD office. Finally, this documentation must be made available to CARB staff upon request.

The above is not an exhaustive list of reporting requirements for participants in this program. Participants should refer to the CAP Incentives Program Guidelines for a complete list.[34]

[33] CARB. 2020. *2019 Community Air Protection Incentives Program 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: June 2024.

[34] CARB. 2020. *2019 Community Air Protection Incentives Program Guidelines*. Chapter 3, H. Reporting. 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: October 2024

# 10 Helpful Resources

Applicants are encouraged to review the following resources as they prepare their proposals and reach out to the contacts provided with questions, as appropriate.

## State Guidance Documents

- Community Air Protection Incentives Guidelines (Updated 2019)
    - https://ww2.arb.ca.gov/sites/default/files/2020-10/cap_incentives_2019_guidelines_final_rev_10_14_2020_0.pdf
- Carl Moyer Project Guidelines, Volume 1: Program Overview, Program Administration and Project Criteria (Updated 2017)
    - https://ww2.arb.ca.gov/sites/default/files/classic/msprog/moyer/guidelines/2017/2017_cmpgl.pdf
- Carl Moyer Project Guidelines, Appendix C: Cost-Effectiveness Calculation Methodology (Updated 2022)
    - https://ww2.arb.ca.gov/sites/default/files/2022-12/2017_gl_appendix_c_2022%20Board%20Approved%20Changes_Final.pdf
- Carl Moyer Project Guidelines, Chapter 4: On-Road Heavy-Duty Vehicle (Updated 2022)
    - https://ww2.arb.ca.gov/sites/default/files/2022-04/Carl%20Moyer%20Program%20Chapter%204%20Updated%20040722.pdf

## Tools for Estimating Emissions from School Buses

- CARB Emission Factors (EMFAC) Tool (v. 1.0.2. April 2022)
    - https://arb.ca.gov/emfac/

# APPENDIX A
# REPLACEMENT BUS SPECIFICATIONS

# Type D School Bus – The Dreamer


BYD's Type D battery-electric school bus is perfect for transporting students to classes, field trips, as well as athletic and band events.

The Type D can seat up to 84, and can be equipped with an ADA liftgate. The bus has a range of up to 155 miles on a single charge.

# Type D Specification

| DIMENSIONS | |
|---|---|
| Length | 40.5 ft |
| Width | 101.6 in. |
| Height | 131.5 in. |
| Wheelbase | 274 in. |
| Curb Weight | 28,880 lb. |
| GVWR | 339,153 lb. |
| Passenger Seats | Up to 72+1 |

| PERFORMANCE | |
|---|---|
| Top Speed | 65 mph |
| Max Gradeability | 20% |
| Range | Up to 155 miles |
| Turning Radius | 37.8 ft |
| Approach / Departure Angle | 8.3° / 9° |

| CHASSIS | |
|---|---|
| Front Axle | ZF |
| Rear Axle | BYD in-wheel drive axle |
| Suspension | Air suspension with mechanical leveling valves |
| Brakes | Front & Rear Disc-breaks, EBS+ESC |
| Tires | 305/70R22.5 |

| POWERTRAIN | |
|---|---|
| Motor Type | AC Synchronous |
| Max Power | 150 kW x 2 |
| Max Torque | 550 N▪m x 2 |
| Battery Type | Lithium Iron Phosphate |
| Battery Capacity | Nameplate 255 kWh / Usable 230 kWh |
| Charging Type | DC–CCS Combo & AC–J1772 |
| Charging Capacity | 110 kW DC / 19.2 kW AC |
| Charging Times | DC 2.1 - 2.6 hr / AC 11.9-12.4 hr |

# Type A School Bus – The Achiever

With length options of 23, 25, and 27 feet, BYD's Type A battery-electric school bus is the future of pupil transportation.

The Type A can seat up to 30, and can be optioned with a wheelchair area. The bus has a range of up to 105 miles on a single charge.

# Type A Specification

| DIMENSIONS | |
|---|---|
| Length | 26.7 ft |
| Width | 96 in. |
| Height | 128 in. |
| Wheelbase | 185 in. |
| Curb Weight | 17,030 lb. |
| GVWR | 21,500 lb. |
| Passenger Seats | Up to 30 |

| CHASSIS | |
|---|---|
| Front Axle | Fangsheng |
| Rear Axle | Fangsheng |
| Suspension | Leaf Spring Suspension |
| Brakes | Front & Rear Disc-breaks, EBS+ESC |
| Tires | 215/75R17.5 |

| PERFORMANCE | |
|---|---|
| Top Speed | 65 mph |
| Max Gradeability | ≥40 mph (2.5%)<br>≥10 mph (10%) |
| Range | Up to 105 miles |
| Turning Radius | 25.9 ft |
| Approach / Departure Angle | ≥20° / ≥10° |

| POWERTRAIN | |
|---|---|
| Motor Type | AC Synchronous |
| Max Power | 160 kW |
| Max Torque | 1,000 N▪m |
| Battery Type | Lithium Iron Phosphate |
| Battery Capacity | Nameplate 156 kWh / Usable 141 kWh |
| Charging Type | DC–CCS Combo & AC–J1772 |
| Charging Capacity | 110 kW DC / 19.2 kW AC |
| Charging Times | DC 1.5 hr / AC 7.5-8 hr |