

CALIFORNIA AIR RESOURCES BOARD
Zero-Emission Truck and Bus Pilot Commercial Deployment Project Applications
Posted March 16, 2016



Page	Project Applicant	Project Title	Location	Disadvantaged Community Status	Funding Amount Requested
1	Anaheim Transportation Network	ATN Zero Emission Bus Pilot Project	Anaheim	Located within	\$4,429,045
2	San Joaquin Valley Air Pollution Control District (SJVAPCD)	IKEA Zero Emission Truck and Bus Pilot Project	Lebec and Compton	Located within	\$4,295,382
3	Southern California Regional Energy Network/County of Los Angeles-Office of Sustainability (SoCalREN/COS)	Increased Mobility Options in the County of Los Angeles through Zero-Emission Shuttle Buses	Los Angeles	Located within	\$8,408,223
4	Bay Area Air Quality Management District (BAAQMD)	UCSF ZE Shuttle Bus Pilot Project	San Francisco	Provides benefits to	\$5,692,662
5	SunLine Transit Agency	SunLine Transit Agency H2 Fuel Cell Bus Deployment	Thousand Palms	Located in	\$10,310,840
6	South Coast Air Quality Management District (SCAQMD)	Battery Electric School Bus with Vehicle – to-Grid Technology Commercialization Project	Los Angeles, Rialto, Colton & Coachella	Located in	\$11,828,074
7	Napa County Transportation Planning Agency	VINE Transit Zero-Emission Bus Project	Napa	Neither	\$2,989,755
8	Orange County Sheriff-Coroner	Zero-Emission Inmate Transportation Bus Pilot Commercial Deployment	Santa Ana	Provides benefits to	\$2,973,200
9	Antelope Valley Air Quality Management District	High Desert Pathways to Commercialization Pilot Project	Antelope Valley/ Imperial Valley	Located in (Imperial only)	\$14,891,651
10	Monterey-Salinas Transit (MST)	Extending the Reach of Zero-Emission: MST Inductive Charging Commercial Deployment Pilot Project	Salinas	Located in	\$9,654,075

11	Lake County Transit	Northern California Rural Zero Emission Bus Commercial Deployment Project	Clear Lake/Lakeport	Neither	\$1,775,760
12	OmniTrans	Road to the Future: OmniTrans Battery-Electric Commercial Deployment Program	San Bernardino Valley	Located in	\$4,125,000
13	City of Gardena's GTrans	City of Gardena's GTrans Project Solas	Gardena	Located in	\$9,964,574
14	Tahoe Transportation District	Tahoe Electric Fleet Pilot Project	Lake Tahoe	Neither	\$2,276,386
15	Livermore-Amador Valley Transit Authority	LAVTA Zero Emission Battery Electric Bus Pilot Project	Livermore/Pleasanton	Neither	\$4,577,048
16	SoCalREN/COS	Repowering Electric Delivery	Los Angeles, Anaheim, Baldwin Park and Visalia	Located in	\$3,835,685
17	Center for Transportation and the Environment	Fuel Cell Electric Bus Commercialization Consortium Project	Emeryville and Santa Ana	Located in	\$22,347,502
18	Solano County Transit (SolTrans)	SolTrans Zero Emission Bus Project	Vallejo	Provides benefits to	\$4,341,161
19	Gas Technology Institute	Zero-Emission Armored Delivery Truck Pilot Commercial Deployment	Pico Rivera and surrounding areas	Located in	\$5,212,480
20	Sacramento Metropolitan Air Quality Management District (SMAQMD)	Sacramento Regional Zero-Emission School Bus Deployment Project	Sacramento and Elk Grove	Located in	\$7,696,955
21	Central Unified School District	Central Valley ZEV School Bus & Truck Pilot Project	Fresno, Madera, Parlier and Woodlake	Located in	\$2,476,317
22	SJVAPCD	The Green On-Road Linen Delivery Project	Fresno, Merced, Stockton and Bakersfield	Located in	\$7,125,515
23	SJVAPCD	Southern San Joaquin Valley Electric Transit Bus Pilot Deployment Project	Fresno, Kings, Kern and Tulare Counties	Located in	\$14,611,660
24	SJVAPCD	Increased Mobility Options in the San Joaquin Valley through Zero-Emission Shuttle Buses	Fresno and Coalinga	Located in	\$2,536,222
25	SJVAPCD	USPS Zero-Emission Delivery Truck Pilot Commercial Demonstration	Stockton and Fresno	Located in	\$4,573,690

26	City of Torrance, Transit Department	Return of the Red Car	Torrance	Not available	\$1,870,000
27	City of Santa Monica's Big Blue Bus	Purchase Five Electric Vehicles and Infrastructure	Santa Monica	Provides benefits to	\$5,325,000
28	Los Angeles Department of Water and Power	City of Los Angeles Cluster Zero Emission Vehicle Deployment	Los Angeles	Located in	\$14,363,612
29	SunLine Transit Agency	SunLine Fuel Cell Buses and Hydrogen Onsite Generation Refueling Station Pilot Commercial Deployment Project	Thousand Palms	Located in	\$12,586,791
30	BAAQMD	Goodwill Industries Electric Delivery Vehicle Project	San Francisco, San Mateo and Marin	Neither	\$2,738,557
31	Los Angeles County Metro Transportation Authority	Los Angeles Metro Orange Line Bus Rapid Transit Zero Emission Project	San Fernando Valley	Located in	\$25,000,000
32	City of Porterville	City of Porterville Transit Electrification	Porterville	Located in	\$9,516,422
33	SJVAPCD	The San Joaquin Valley Transit Electrification Project	Fresno, Modesto, Visalia, Stockton and Selma	Located in	\$13,416,215
34	EV Alliance	California Grid Integrated Vehicle Project	Ontario	Located in	\$4,921,050
35	American Lung Association	Help Yellow Go Green Project	Moreno Valley and Sacramento	Located in	\$2,845,805
36	SMAQMD	Sacramento Regional Zero-Emission Bus Deployment Project	Sacramento, West Sacramento, Woodland, Roseville and Auburn	Located in	\$18,226,000
37	Alameda-Contra Costa Transit District	AC Transit Fuel Cell Bus Power Plant Retrofit (Extended Service) Project	Oakland and Emeryville	Located in	\$3,516,022
38	Center for Transportation and the Environment	Fuel Cell Hybrid Electric Delivery Van Project	Several potential sites listed	Provides benefits to	\$2,749,845

Application scoring criteria are described in the Zero-Emission Truck and Bus Pilot Commercial Deployment Project Grant Solicitation at <http://www.arb.ca.gov/msprog/aqip/solicitations/msc1524solicit.pdf>.

Project Summary for Public Posting

Name of Applicant: Anaheim Transportation Network (ATN)

Brief description of proposed project including location:

The Anaheim Transportation Network Zero Emission Bus Pilot Project will deploy six (6) zero-emission battery electric buses, along with supporting charging infrastructure, on a highly traveled route serving popular destinations within Anaheim. Each year, Route 20 provides more than 3 million riders with connectivity between Anaheim Regional Transportation Intermodal Center (ARTIC), The Disneyland® Resort, Disney’s California Adventure, Anaheim Convention Center, GardenWalk, and a variety of other employment establishment and destinations. Anaheim receives more than 21.7 million visitors every year, and this highly visible, heavily traveled route provides a perfect location and unique opportunity to deploy zero-emission battery electric bus technology. This project will serve as a showcase for advanced transit technology and demonstrate ATN’s and CARB’s commitment to environmental, social justice, and economic sustainability and livability within the region.

To accomplish the objectives of the project, ATN will collaborate with both public and private sector entities including BYD Coach & Bus (BYD), the Center for Transportation and the Environment, CALSTART, Anaheim Public Utilities (APU), the Disneyland® Resort, and the Southern California Regional Transit Training Consortium (SCR TTC).

This project is relevant to CARB’s AQIP objectives as ATN operates within the South Coast Air Basin (SCAB), which is classified as an “extreme non-attainment area for the eight-hour ozone” and a “serious maintenance area for carbon monoxide.” Our growing population causes more vehicles to be driven more miles under more congested conditions. This zero emission project can offset part of these emissions as well as provide much needed ‘clean,’ quiet, and attractive alternative transportation options to professionals, college students, and minorities who live and work in the Resort area.

Amount of funding requests: The total cost of this project is estimated at \$7,117,945. ATN is requesting \$4,429,045 in ARB AQIP funding to support this project. This project is providing a total of \$2,688,900 in cash match.

Whether the project is expected to be located within or provide benefits to a disadvantaged community: The Anaheim Transportation Network (ATN) operates 22 fixed routes, serving over 8.9 million riders per year, in one of the nation’s top travel destinations, the City of Anaheim. The areas surrounding these routes are designated as California Environmental Disadvantaged Communities (DACs).

IKEA Zero-Emission Truck and Bus Pilot Project

Executive Summary

The San Joaquin Valley Air Pollution Control District is requesting funding from the California Air Resources Board in the amount of \$4,295,382 to deploy two (2) all-electric yard tractors and two (2) extended range, compressed natural gas (CNG)-electric hybrid class 8 truck tractors with associated electric support infrastructure at the massive IKEA warehouse facility located in Lebec, CA in the San Joaquin Valley. Match funding in the amount of \$1,706,434 is available from the project participants. Total project cost is \$6,001,816.



The project will demonstrate the opportunity to greatly reduce the impacts of inland freight facilities by electrifying the prime facility support vehicles along the full freight movement process; for cargo containers traveling from the Port of Los Angeles along 110 miles of the I-5 corridor to the IKEA warehouse in Lebec; for zero emissions goods handling at IKEA's trans-shipment warehouse; and for product delivery back to IKEA stores in the Los Angeles area. Successful completion of this demonstration will validate – with a World-class facility operator – the ability to transform key segments of the intra-regional heavy truck transportation sector into alignment with California goals for reducing greenhouse gas (and NOx) emissions through electrification, and specifically address San Joaquin Valley goods warehousing impacts.

The project participants include the San Joaquin Valley Air Pollution Control District (Grantee); Transportation Power, Inc. ("TransPower" – Technology Provider); IKEA (facility operator); and CALSTART (commercialization and support subcontractor).

Project Emission Benefits for a two-year demonstration period are:

- 696.86 metric tons of greenhouse gas emissions (GHG)
- 0.2488 tons of NOx emissions
- 0.0005 tons of ROG emissions
- 0.0102 tons of PM₁₀ emissions

The project will benefit Disadvantaged Communities in both the San Joaquin Valley and the Los Angeles area.

The County of Los Angeles Office of Sustainability (COS) is pleased to submit a request for \$8,408,222.63 to the California Air Resources Board for the enclosed project "Increased Mobility Options in the County of Los Angeles through Zero-Emission Shuttle Buses". Through a joint partnership with Green Commuter (technology provider), CALSTART (technology coordinator), and an array of pilot deployment site types (Hospitals, Non-profits and Universities), this project will allow the COS to introduce a highly scalable project targeting public and nonprofit entities with identified and existing needs for shuttle services located within many of the County's disadvantaged communities. This opportunity would allow these important sustainable shuttle services to be offered at no cost to the end users.

By piloting twenty-seven all-electric shuttle vehicles for such entities to have early access to zero-emission technologies that they would otherwise not be able to afford, the County of Los Angeles hopes to lead the effort in bringing ZEV awareness to different types of organizations through high visibility applications of these medium-duty shuttle buses. The COS is thrilled to have an array of partner types, with hospital and medical center sites such as LAC+USC, Harlor-UCLA, and MLK MACC, university sites such as Cal State Northridge and Los Angeles, the Los Angeles County Sheriffs Teaching At-Risk Teens Program, and non-profits such as LA-Mas, LA Kitchen and the Los Angeles Ronald McDonald House. With such a diverse array of deployment sites and shuttle needs, this project will support the evolution, development, commercialization and transition of ZEV technology advancement in the County of Los Angeles, and most importantly, have the opportunity to offer this sustainable service at no cost to its end users. In order to advance these medium-duty zero-emission technologies toward higher volume commercialization, these partnerships identify existing demand through a variety of shuttle applications in order to accelerate early adoption and broaden consumer acceptance of such all-electric vehicles. In addition, by offering a menu of shuttle need partner types, such a proposal sets up a very scalable application in the County of Los Angeles, one that includes multiple partner prongs from which to expand upon additional partners in the future.

By leasing zero-emission Zenith buses from Green Commuter, the proposed partner deployment sites will experience an elimination of cost of ownership, gasoline, insurance and maintenance. All the while, use of the pilot zero-emission shuttle buses will reduce carbon emissions and create healthier societies within the disadvantaged communities where the Office plans to pilot deployment. Pilot partners will also be offering only ADA compliant shuttle services to benefit users with disabilities. The high visibility of these electric vehicle fleets will project a positive image aligned with the County of Los Angeles and its partners' environmental or energy-security objectives, while also demonstrating community leadership, improving public image, and differentiating the organization from competitors.

This pilot project will lead to a significant and immediate reduction in entity GHG emissions from the shuttle routes directly funded, offer a scalable pilot program in areas with limited access to advanced medium-duty vehicle technology, and offer greater exposure to and knowledge about the benefits of all zero-emission vehicles in the County of Los Angeles. Directly supporting many of the State's near-term and long-term emission reduction goals through reduced traffic congestion, energy consumption, dependence on fossil fuels, and air emissions, this pilot proposal will improve access to safer, more convenient mobility options for the County of Los Angeles residents and employees.

University of California, San Francisco Zero-Emission Shuttle Deployment Demonstration

The Bay Area Air Quality Management District (BAAQMD), in partnership with Build Your Dreams Motors (BYD) and the University of California San Francisco (UCSF), respectfully requests \$5,692,662 in funding from ARB's Zero Emission Truck and Bus Pilot Commercial Deployment Projects Program to deploy a fleet of thirteen (13) zero emission battery electric buses. BAAQMD and UCSF will contribute \$10,564,754 in match funding (65% of the total project budget of \$16,257,416).

The purpose of this pilot commercial deployment is to prove the viability of utilizing zero emission battery electric coaches as the primary means of providing shuttle services across all of the University of California's campuses and across the geographic region of the BAAQMD. The University of California requires its campuses to make half of new vehicle purchases be low to zero emission technologies by 2025. As the second largest employer in the City of San Francisco, UCSF has the opportunity to use its size, visibility, and mandate to demonstrate to its population, the UC system, the local government, and regional authorities that a zero emission fleet program is both possible and practical at this scale.

Following a successful deployment of the 13 battery electric buses in this project, UCSF plans to pursue innovative ways to finance, acquire, and deploy additional clean vehicles for its fleet. This will include the replacement of older gas burning shuttles with ZEVs and conversions of existing newer model shuttles. UCSF and BAAQMD will also share information from this pilot with the other 10 UC campuses in an effort to demonstrate the feasibility of transitioning the broader fleets for the entire UC system to zero emission technology. Finally, BAAQMD will use this pilot to demonstrate to other public and private fleet operators in its geographic region that zero emission technology can meet or exceed their transit needs.

Based upon census tracts, UCSF shuttles travel through the following areas in San Francisco that contain disadvantaged communities: Tenderloin, Lower Haight, Mission District, Potrero Hill, Mission Bay, and South of Market. In these neighborhoods, this pilot project seeks to increase access to local employment, improve air quality, reduce noise, and reduce shuttle frequency while still maintaining current levels of service.

Funding this project will provide irrefutable evidence to the entire UC system, Bay Area fleet operators, and the State that utilizing zero emission buses in significant quantities as the primary mode of transportation is not only viable on even the most challenging of transportation routes but, in fact, leads to superior outcomes across every service, performance, cost, and operational metric. BAAQMD and UCSF pledge to execute a successful project, and are committed to leveraging and socializing positive project outcomes to the broader marketplace in order to facilitate the pathway to enhanced market commercialization of zero emission transportation buses.

Project Summary for Public Posting

Name of Applicant: SunLine Transit Agency

Brief description of proposed project including location: SunLine is a leader in alternative fuel vehicles and since converting their entire fleet from diesel to compressed natural gas in 1994, they have been on a path to a zero emission vehicle fleet. SunLine was an early adopter for hydrogen fuel cell technology and in 1999 began their hydrogen fuel cell program. SunLine currently operates six hydrogen fuel cell buses and is the first transit agency to procure a Buy America compliant fuel cell bus, the American Fuel Cell Bus (AFCB). Since 2011, SunLine's American Fuel Cell Bus fleet has continued to grow and has seen significant increases in reliability, performance, and reductions costs on its way to commercialization. In February 2015, FTA announced that SunLine was awarded a project to deploy five additional AFCB in revenue service.

SunLine proposes to deploy five additional American Fuel Cell Buses (AFCB) in revenue service and continue down the path to deploy an all zero emission transit bus fleet. The bus specified in this proposal is a further commercialized version of the American Fuel Cell Bus being produced today. The AFCB is built by a team that includes ElDorado National, Ballard Power Systems, and BAE Systems. The AFCB is based on the ElDorado National AXESS 40' Heavy Duty Urban Transit Bus. The bus will include Ballard Power System's FCvelocity®-HD85 fuel cell engine. The FCvelocity®-HD85 is the company's seventh generation fuel cell module designed for transit bus and light rail applications. BAE Systems will provide the hybrid-electric propulsion system. BAE Systems' HybriDrive® Solutions is a world leader in hybrid electric technology, offering a family of proven, heavy-duty hybrid-electric products to meet the propulsion and power management needs of the global transportation industry.

SunLine has existing hydrogen refueling infrastructure but will need to expand the station to accommodate the growing number in its hydrogen fleet. Linde will be responsible for the station expansion. Linde is a global leader in hydrogen fueling represented by more than 80 hydrogen fueling stations commissioned in 15 countries, achieving more than one million hydrogen fueling performed in the U.S. alone. Linde has more than 25 years' experience in hydrogen fueling and more than 100 years' experience in handling hydrogen.

The team is supported by the Center for Transportation and the Environment (CTE). CTE will provide technical project management and guide the entire project through established control and risk management procedures. CTE will also support SunLine by leading other project management-related tasks.

Amount of funding request: \$10,310,840

Whether the project is expected to be located within or provide benefits to a disadvantaged community: The project will provide benefits both within and to disadvantaged communities. The routes on which SunLine proposes to deploy the buses include stops both within disadvantage communities and within ½ mile of the disadvantaged communities.

Attachment 2: PROJECT EXECUTIVE SUMMARY

Applicant: South Coast Air Quality Management District

Project Technology Demonstrators: Blue Bird Corporation, Transportation Power Inc.

Project Partner: National Strategies

Project Title: Battery Electric School Bus with Vehicle-to-Grid Technology Commercialization Project

Project Objectives: This project will provide technology development and commercialization progress to support ARB's long-term air quality and greenhouse gas reduction goals. The technology partnerships build upon recent zero-emission bus demonstration success via a practical, two-phase rollout plan that will benefit disadvantaged communities and reduce toxic and GHG emissions. The goal of this project is to use practical field demonstrations of battery electric propulsion system and vehicle to grid (V2G) technologies across a fleet of school buses within the SCAQMD operating in disadvantaged community's school districts. The data will be reproducible and support the certification, case studies, and economic models that will lead to greater adoption of battery electric zero emission school bus technologies.

Project Description: In order to rapidly commercialize battery electric school buses, SCAQMD has engaged a major U. S. OEM bus manufacturer and a California zero emission technology integrator to bring together an existing electric propulsion system into an existing production bus chassis. This project will: build Type C school buses based on proven battery-electric technology; work with experienced, early adopter school districts throughout the SCAQMD to demonstrate and optimize the vehicles; and facilitate large-scale knowledge and technology transfer via new and expanded partnership with the nation's foremost school bus OEM and zero emission technology developer. In addition to zero emissions technology this project will address the affordability of electric school buses by the creation of a battery leasing model and full participation by the buses in ancillary grid services markets using the innovative V2G capability of the buses.

Approach: SCAQMD will implement the proposed project with products that incorporate previously developed technologies into Phase 1 of the project. In Phase 2, OEM and integrator will optimize products and support larger deployments.

Benefits: The estimated GHG emissions benefits and associated with the 34 project school buses are 639 MT/year of GHG, 0.23 MT/year of NOx and .01 MT/year of PM10.

Outcomes: This project will develop, deploy, and optimize 34 pre-commercial zero emission school buses. The product development and knowledge gained will provide immediate emissions benefits to improve the public health and the health of school children in California living in heavily impacted communities and support a pathway to commercialization for next-generation of battery electric school buses.

Implementation Partners:

- End User Fleets: Los Angeles Unified School District, Colton Joint Unified School District, Rialto Unified School District, Coachella Valley Unified School District
- Technology Partners: EVgo, A2Z Bus Sales, Olivine Inc.

Funding Request: \$11,828,074

California Air Resources Board
Zero-Emission Truck and Bus Pilot Commercial Deployment Projects
Vine Transit Zero Emission Bus Pilot Project

Project Summary for Public Posting

Name of Applicant: Napa County Transportation and Planning Agency (NCTPA)

Brief description of proposed project including location:

NCTPA's current transit fleet is aging, higher polluting, and less energy efficient than today's standards. NCTPA's adopted Short Range Transit Plan calls for an aggressive replacement of public transit buses. The VINE Transit Zero Emission Bus Project will replace six (6), 12 – 20 year old diesel buses, all well beyond their useful life, with new zero emission battery electric buses. This would bring the Agency up to date with the replacement schedule called for in our Short Range Transit Plan and have a significant positive impact on air quality. This project will significantly enhance the livability of the city by improving the connectivity of Napa's vibrant downtown distinct neighborhoods, new residential developments and industrial and commercial developments as well as increasing the comfort and convenience for users.

To accomplish the objectives of the project, NCTPA will collaborate with BYD Coach & Bus (BYD), and the Center for Transportation and the Environment (CTE).

This project is relevant to CARB's AQIP objectives as NCTPA operates within the San Francisco Bay Area CA 8-hour Ozone nonattainment area under both the 1997 and 2008 standards and the 1-Hr Ozone nonattainment area under the 1979 standard. They also operate in the San Francisco-Oakland-San Jose, CA Carbon Monoxide maintenance area under the 1971 standard. .By introducing these zero emission buses, this project will help directly reduce criteria and GHG emissions in the Bay Area and encourage potential riders to consider using transit, which indirectly yields air quality benefits over personal automobile use.

Amount of funding requests:

The total cost of this project is estimated at \$4,001,434. NCTPA is requesting \$2,989,755 in ARB AQIP funding to support this project. This project is providing a total of \$1,011,679 in cash match.

Whether the project is expected to be located within or provide benefits to a disadvantaged community:

The County of Napa and NCTPA's transit operations area does not contain a Disadvantaged Community as defined by SB 535.

Zero Emission Inmate Transport Deployment Bus Pilot Deployment

The Orange County Sheriff's Department (Sheriff), in partnership with BYD Motors (BYD), respectfully requests \$2,973,200 in project funding from ARB's Zero Emission Truck and Bus Pilot Commercial Deployment program to deploy four (4) zero emission buses for the purposes of inmate transport. To support the successful deployment of this project, the Sheriff will commit a total match of \$9,556,190. The cash match will be comprised of \$8,707,390 in labor and \$823,800 in money combined with \$25,000 in-kind. The project budget totals \$12,529,390 of which the Sheriff will provide a combined match of 76%.

This commitment is a unique opportunity to validate zero emission technology for operational fit within a corrections environment. Successful deployment of this pilot project would prove that viability of utilizing zero emission battery electric buses as the primary means of providing inmate transportation services would change the law enforcement and corrections sectors and patrol operations. Law enforcement agencies are conservative by nature, making it difficult for new technologies to penetrate this particular market. The diverse and lengthy routes run by the Sheriff, however, will show that zero emission technology is ready to meet the rigors and needs of the state's corrections agencies. Success in this arena will broadcast a clear message: if the technology is realizable for law enforcement, it will far exceed the needs of both transit and private fleet commercialization.

Placement of zero emission vehicles would provide significant benefits to several of the top 25% Designated Disadvantaged Communities (DACs). Locally, the City of Santa Ana is an area disproportionately affected by environmental pollution and other hazards that lead to adverse public health, exposure, and environmental degradation. Although the project hub itself is located in a census tract with a CalEnviroScreen score of 60%, tracts that score between 75%-90% are immediately within a half-mile (or less) of its surrounding borders. Santa Ana has high concentrations of low socioeconomic burdens which tend to incrementally contribute to other community development and sustainability factors such as high rent, low levels of educational attainment and workforce readiness, and depleting skill sets. The public health benefits associated with cutting emissions provide further evidence that Santa Ana is the most appropriate site for this deployment.

Funding this project will provide irrefutable evidence to all California corrections agencies, and to the national prisoner transportation sector at large, that utilizing zero emission buses in significant quantities as the primary mode of transportation is both viable on even the most challenging of transportation routes and leads to superior outcomes across every service, performance, cost, and operational metric. The Sheriff's Department pledges to execute a successful and excellent project, and is committed to leveraging and socializing positive project outcomes to the broader marketplace in order to liaise the pathway to enhanced market commercialization of zero emission technologies amongst public agencies.

High Desert Pathways to Commercialization Project

The Antelope Valley Air Quality Management District (AVAQMD), in partnership with the Antelope Valley Transit Authority (AVTA), the Imperial County Transportation Commission (ICTC), and the Imperial County Air Pollution Control District (ICAPCD), respectfully request \$14,891,651 in funding from ARB's Zero Emission Truck and Bus Pilot Commercial Deployment Projects program to add to \$7,997,898 in match funding (34.94% of the total project budget of \$22,889,549) for the opportunity to deploy a transformative fleet of 23 zero emission battery electric buses across multiple transit and air quality regions in California, while directly serving disadvantaged regions in both the Imperial Valley and the Greater Los Angeles Region.

The purpose of this proposed pilot commercial deployment project is to prove up to the wider bus transit sector the viability of utilizing zero emission battery electric buses as the primary means of providing bus transit services on some of the most challenging routes in some of the most difficult of transit environments in California – geographic regions characterized by long routes, widely dispersed communities, and brutal weather factors such as extreme high temperatures. This confluence of factors would be formidable for any transit agency, but it creates particular hurdles for the smaller transit agencies that typically serve these regions and that usually have limited resources at their disposal to work with. As such, these transit agencies face an uphill battle to dramatically transition their fleets from legacy fossil fuel vehicles to zero emission vehicles. However, this environment offers a powerful test to ARB and other transit stakeholders: if zero emission vehicles can succeed in these most challenging of environments, they can succeed almost anywhere in California.

This scalable project will achieve these objectives and directly facilitate far greater market commercialization of zero emission battery electric buses in California by deploying 23 zero emission battery electric buses on routes across difficult environments in the Antelope Valley region and the Imperial Valley region. AVTA will utilize 17 buses, while ICTC will utilize 6 buses. Enhanced service on these routes will increase the mobility, economic, and health prospects of these environmentally and economically depressed regions, including for numerous disadvantaged communities. Funding this project will provide irrefutable evidence to all California transit agencies, and indeed to the broader transit sector across the entire country, that utilizing zero emission buses in significant quantities and as the primary mode of transportation is not only viable on even the most challenging of transit routes but in fact leads to superior outcomes across every service, performance, cost and operational metric. This evidence will demonstrate that regulatory requirements, like those being considered in ARB's Advanced Clean Transit proceeding, that are seeking to move transit agencies to zero emission technology are fully justified. AVAQMD, AVTA, ICTC and ICAPCD are pleased to put this project forward for consideration and are committed to leveraging and socializing all positive project outcomes to the broader marketplace in order to

Extending the Reach of Zero Emission: MST Inductive Charging Commercial Deployment Pilot Project

Monterey-Salinas Transit (MST), in partnership with CALSTART, BYD and WAVE, respectfully requests \$9,654,075 in funding from ARB's Zero Emission Truck and Bus Pilot Commercial Deployment Projects program to add to \$6,758,025 in match funding (41% of the total project budget of \$16,412,100) for the opportunity to deploy a fleet of 9 zero emission battery electric buses as well as a network of wireless inductive chargers. Of note, all zip codes within Salinas have a disadvantaged community designation, so 100% of all miles driven by the zero emission vehicles associated with this project would be travelled within the boundaries of ZIP codes containing disadvantaged census tracts.

Zero emission battery electric bus technology has advanced dramatically in recent years, with the latest battery electric buses capable of traveling 150+ miles on a single charge. This places a majority of transit routes within the duty cycle of zero emission buses. However, there are still some transit routes that, due to their long distances, require some means of additional opportunity charging in order to enable zero emission vehicles to complete those routes. This creates a variety of hurdles: for example, overhead catenary charging is extremely expensive and obtrusive, while manual opportunity charging requires drivers or other operators to physically initiate the charging process, with sometimes mixed results. But a new elegant technology has the ability to solve all these problems and place any transit route, no matter the distance, within reach of zero emission – and that game-changing technology is wireless inductive charging.

The purpose of this scalable project (also known as the Salinas Electrification Project) is to utilize wireless inductive charging technology as the foundation for a fleet of 9 zero emission battery electric buses in order to put forward a viable model for how to best leverage the robustness of zero emission vehicles when used in conjunction with wireless inductive charging – a model that other transit agencies can then emulate across the state. By funding this project, ARB has the opportunity to demonstrate to the entire transit sector that through the use of innovative range-extending technologies such as wireless inductive chargers, there is hardly a single transit route in California that cannot be completed by a zero emission transit bus.

MST, CALSTART, BYD and WAVE are pleased to offer up this exciting, innovative project to the ARB for consideration. These organizations together pledge to do everything in their power to execute a successful project, and are committed to leveraging and socializing positive project outcomes as a case study to the broader market place in order to facilitate enhanced market commercialization of zero emission transit buses and wireless inductive charging technology.

Northern California Rural Zero Emission Bus Commercial Deployment Project

The Lake Transit Authority (LTA) respectfully requests \$1,775,760 in funding from ARB's Zero Emission Truck and Bus Pilot Commercial Deployment Projects program to add to \$593,500 in match funding (25.05% of the total project budget of \$2,369,260) for the opportunity to deploy a proportionally sizable number of 4 zero emission battery electric buses across a large area of rural Northern California. The purpose of the proposed pilot commercial deployment project is to prove up to the viability of utilizing zero emission battery electric buses in an environment that has long presented enormous hurdles for transit agencies seeking to embrace zero emission solutions – rural, low-density, geographically challenging regions of California. Rural transits face a significant set of challenges that must be addressed if efforts to commercialize zero emission vehicles across California, including the large portion of the state that is predominately rural, are to be successful. And while this project does not directly serve communities that meet the official definition of disadvantaged communities, it is important to note that rural communities are both typically socioeconomically disadvantaged as well as severely underserved. Enhanced service on these routes will increase the mobility, economic, and health prospects in geographically dispersed communities across the entire region while proving up the capabilities of zero emission buses in difficult rural environments.

This project represents an opportunity for ARB to make a relatively small investment in a project that will have an overwhelmingly high return on investment by addressing the transit needs of California's large rural areas. In fact, without providing funding for a rural transit pilot of this nature, the ARB will leave rural transit agencies throughout the state with little to no evidence that their unique challenges can be met by zero emission transit technology. It is also important to stress that this project represents an enormous investment on behalf of LTA who, like many small rural transit agencies, have limited resources with which to work. Yet perhaps most the most important feature of this project, and indeed the key to achieving large-scale commercialization of zero emission vehicles in rural transit districts across California, will be in the creation of multi-agency, multi-jurisdictional partnerships. To this end, LTA has formed new relationships with several other more urban transit agencies as part of preparing this submission in order to increase overall transit interconnectivity between rural and urban communities in Northern California. LTA also proposes the creation of a statewide rural transit working group to pool expertise and resources in order to further market adoption of zero emission transit buses within rural transit environments. This will be a model to ARB and other transit agencies for what future successful rural-urban partnerships look like – and will offer up a compelling formula for how to further the market prospects for zero emission vehicles in perhaps the most difficult remaining frontier in commercialization efforts.

Road to the Future: Omnitrans Battery-Electric Commercial Deployment Program

Omnitrans, in partnership with BYD, respectfully requests \$4,125,000 in funding from ARB's Zero Emission Truck and Bus Pilot Commercial Deployment Projects program to add to an extraordinary \$16,307,000 in match funding (80% of the total project budget of \$20,432,000) for the opportunity to deploy an initial fleet of 5 zero emission battery electric buses in the San Bernardino Valley that will eventually fold into a larger fleet of 24 zero emission battery electric buses. In fact, a successful deployment of the 5 vehicles in this project may lead to an electrification of the entire San Bernardino region, starting with our West Valley Connector Corridor. Omnitrans' service area spans approximately 456 square miles and includes fifteen municipalities as well as many unincorporated areas of San Bernardino County. Of note, Omnitrans serves 35 zip codes with 82% of these zip codes intersecting at least one disadvantaged community. Vehicles funded through this project will provide service to these disadvantaged communities.

Omnitrans has significant experience with CNG fleets and, for that reason, is uniquely situated to provide ARB with rigorous analytics and data comparing CNG technology to the battery electric technology that is the subject of this project. Moreover, testing battery electric fleets through Omnitrans will provide valuable information for other California transit fleets since Omnitrans is strongly representative of the majority of transit agencies in California. While California contains a broad variety of transit agencies in terms of fleet size and the types of services provided, a majority of transit agencies within the state: 1) are located in urban areas; 2) that have significant fleets (100+ vehicles); and 3) that have at least some experience with zero or near zero technologies but have yet to transition to utilizing zero emission vehicles beyond mostly modest proportions. This means that the road to any successful effort to achieve widespread market commercialization of zero emission vehicles in California will be centered around exactly these types of transit fleets – and they will determine how quickly, or how slowly, California's bus transit sector as a whole moves towards greater utilization of zero emission technologies.

This proposed commercial deployment pilot project offers ARB the opportunity to test and refine the types of strategies and approaches that will be key to transitioning similar types of fleets around the state over to zero emission technologies. To this end, the intention of this project is to deploy five battery electric buses to assist in evaluating what Omnitrans' next generation of vehicles will be. This project will help accelerate Omnitrans' deployment of zero emission buses and provide a great benefit to the disadvantaged communities that Omnitrans serves. And a successful conclusion of the proposed pilot project will position Omnitrans to launch an even more ambitious project – the development of Omnitrans' West Valley Connector Corridor (WVCC) eventually involving a fleet of 24 new zero emission electric buses.

Zero Emission Transit Bus Commercialization "Solus" Project

The City of Gardena's GTrans (GTrans), in partnership with BYD Motors and the Southern California Regional Transit Training Center (SCR TTC), requests \$9,964,574 in funding from ARB's Zero Emission Truck and Bus Pilot Commercial Deployment Projects program for its Zero Emission Transit Bus Commercialization "Solus" Project. Comprised of 12 40-foot battery electric buses, a solar collection system, and an energy storage system, Project Solus aims to leverage cutting edge technologies and the power of the sun to put forward a self-contained, renewable energy-powered zero-emission bus transit system that has the ability to operate independent from the electrical grid. ARB funds will be paired with a sizeable \$4,041,856 in matching funds from GTrans. Of note, GTrans has already secured outside funding for 6 of the zero emission buses, which essentially means that ARB has the opportunity to fund a large 12-vehicle pilot and collect rigorous operational data at half price!

In Celtic mythology, Solus was the life-giving goddess of the sun. Just as her rays of light enhanced the lives of her worshippers, Project Solus will use the solar energy that pours freely from the Southern California skies to enhance the lives of Gardena's residents. It will do this by leveraging three cutting-edge technologies:

- 1) Zero Emission Bus Service - Procurement and deployment of 12 40-foot zero emission battery-electric buses that will be powered by the solar energy generation and storage system.
- 2) Solar Energy Generation - A modern solar energy generation system built with advanced materials and capable of generating 1.4 megawatts (MW) of solar energy
- 3) Solar Energy Storage- An advanced battery storage system with a capacity of 4 megawatt hours (MWh), allowing for the capture and storage of solar energy. Once operational, the solar power generation and battery storage system will use solar energy captured during the day to power the facility and the buses, while storing surplus electricity in the battery storage system. Going completely off-grid means that Project Solus will avoid reliance on non-renewable dirty energy sources, such as coal-fired power or natural gas power that contribute greatly to GHG emissions produced from the transit sector.

This scalable project would be the first of its kind in the United States, making it truly transformational and a model for other transit agencies interested in embracing renewable and self-sustaining energy to power zero-emission vehicles. Additionally, Project Solus will serve as the first step in transforming the GTrans' fleet of primarily gasoline-electric hybrid buses into an advanced, all-electric fleet. However, the paradigm shift in transit operations embodied in Project Solus cannot occur without ARB funds. Assuming this project is executed successfully and the technology tested during the pilot is proven to meet GTrans' needs, this project will serve as the foundation of the agency's plan to replace its entire fleet of gasoline-electric hybrid buses with a new, all-electric fleet by 2022 and it will be a shining example of a completely green transit project ARB can tout to the world.

Project Summary for Public Posting (500 words max)

Tahoe has assembled a high caliber team to pilot our region's first-ever battery electric heavy duty bus and truck deployment: the Tahoe Electric Fleet Pilot Project. The Tahoe Transportation District (TTD) will serve as the lead agency, proposing to operate two Proterra Catalyst buses on their two most heavily utilized routes in South Lake Tahoe. The South Tahoe Public Utility District will partner with TTD, proposing to operate two BYD T5 delivery trucks to transport materials, equipment, and services throughout El Dorado County territory. Proterra and BYD will serve as subcontractors, providing electric vehicles and charging stations, along with usage and maintenance training.

In recognition that this pilot serves as an opportunity to encourage electric vehicle adoption among Tahoe regional stakeholders, our proposal also includes the engagement of a project performance review committee. The committee will be composed of north and south Tahoe municipalities, agencies, schools, and large businesses, all of whom have expressed their support in adopting electric vehicles in their fleets and for Tahoe. The Tahoe Electric Fleet Pilot Project team will include two Tahoe-based consultants, EN2 Resources, Inc. and Catalytic Connections, to help manage project partners, facilitate the review committee, and support data collection and reporting.

Lake Tahoe is a unique region; it offers unparalleled scenic beauty amidst economically disadvantaged and isolated communities. It also offers some of the most challenging terrain and weather in California, with high elevation and steep mountainous hills, as well as winter's cold temperatures and snowy conditions. With an estimated eight and a half million annual visits to Tahoe from the California drive-up market alone, our region is as heavily visited as the most popular national parks, without the equivalent protections. Innovative alternative transportation technologies, such as electric vehicles, will provide Tahoe the opportunity to protect the lake and our community, as well as serve as a model strategy for the multitude of visitors.

The Tahoe Electric Fleet Pilot Project team is requesting a funding amount of \$2,276,386 from the California Air Resources Board Zero-Emission Truck and Bus Pilot Commercial Deployment Project. Tahoe does not meet the EnviroScreen Disadvantaged Communities qualifications.

Project Summary for Public Posting

Name of Applicant: Livermore-Amador Valley Transit (LAVTA)

Project Description:

LAVTA is currently undertaking a route restructuring project to redesign their service to more effectively serve their community. As part of this restructuring, LAVTA intends to incorporate the unique service requirements of battery electric buses and on-route charging. In September 2016, LAVTA will launch its new Route 10, in what will become the nation’s first all electric last mile solution. The line, dubbed the Volt, links bus commuters and riders in the Tri-Valley area of the San Francisco East Bay with two major rail lines – BART and the ACE train.

The **LAVTA Zero Emission Battery Electric Bus Pilot Project** includes eight (8) 35’ to 40’ fast charge battery electric buses and supporting on route and depot charging stations. Six (6) buses will be dedicated for exclusive use on Route 10. One fast charging station will be located at the East Dublin BART Station, and a second station will be placed at the Livermore Transit Center. Two (2) buses will be dedicated for Route 53. These buses will also use the charging station located at the East Dublin BART Station.

To ensure successful deployment and operations, the project scope of work includes Bus Simulation & Route Modeling, Route Validation, Data Collection and Key Performance Indicator (KPI) reporting. The project also includes Quality Assurance Oversight and Vehicle Inspection during the build of the project vehicles as well as safety, operational, and maintenance training of LAVTA staff and safety training for local first responders.

The LAVTA project is unique in two ways. First, it will be the first project in the country where routes are restructured and designed for on-route fast charge battery electric buses. Second, it will also be the first project in the county to co-locate an on-route fast charging station with heavy-rail transit system.

Requested Funding: \$4,577,048

Disadvantaged Community Benefits: LAVTA will deploy the zero emission buses on highly populated routes that connect residents of disadvantaged communities to jobs throughout the San Francisco Bay area. LAVTA will launch its new Route 10, in what will become the nation’s first all electric last mile solution. The line, dubbed the Volt, links bus commuters and riders in the Tri-Valley area of the San Francisco East Bay with the ACE train from the San Joaquin Valley and the BART trains running into the Oakland/San Francisco area. The route is critical to reducing the commuter gridlock in the San Francisco-Sacramento “mega-region.”

Attachment 2 – Project Executive Summary and Project Summary for Public Posting

Title: Repowering Electric Delivery

Applicant: Southern California Regional Energy Network (SoCal REN/COS)/County of Los Angeles County Office of Sustainability (COS) – referred to as SoCal REN/COS

Technology Demonstrator: UPS

Technology Provider: BYD

Objective: Deploy repowered UPS delivery trucks with battery electric technology at four depots located in disadvantaged communities in California. Successful implementation will allow the project team to scale the project and educate the marketplace regarding the viability of zero emission delivery trucks.

Description:

This proposal is requesting funding to accelerate a project that the partners have been working on for more than six months, repowering diesel UPS step vans to battery electric vehicles. The project, which will be led by SoCal REN/COS, will demonstrate 21 repowered UPS trucks that will be located in some of the most heavily disadvantaged communities in California: Los Angeles (6), Anaheim (6), Baldwin Park (6), and Visalia (3). These vehicles are expected to meet or exceed the performance of diesel equivalents and the range of the vehicles will address 80% of UPS's routes. BYD will be the technology provider and they have already paid for and completed an initial prototype. UPS and BYD are in the final stages of product testing on the prototype and to date it has met all performance expectations. The deployed technologies will prove the viability of the technology for UPS's fleet and will reduce 341 metric tons of carbon dioxide equivalents per year and 0.0472 tons of criteria pollutants per year.

Approximately 15,000 comparable step vans are purchased each year. If the deployed technologies perform the way that the project partners anticipate, then there will be an immediate opportunity to scale the project with UPS, the world's leading delivery fleet. Each project partner will also play a role in scaling the project to other fleets: UPS will advocate for the technology with industry peers; CALSTART will perform a market assessment, customer outreach, and create a commercial roadmap all aimed at priming and educating the market; and BYD and SoCal REN/COS will leverage the project success, UPS's endorsement, and CALSTART's work to introduce the technology across California.

Total Budget Amount: \$10,488,136

Grant Request: \$3,835,685

Comment: While SoCal REN/COS and this partnership have spent extensive effort and time developing this project, we are extremely open to working with ARB should it be determined that modifications to size, scope, and cost of the proposal would be appropriate.

Project Summary for Public Posting

Name of Applicant: Center for Transportation and the Environment

Brief description of proposed project including location: In order to realize near- and long-term commercialization goals and to establish fuel cell electric buses as an industry standard, the unit cost of fuel cell electric buses will have to decrease significantly and more transit agencies will have to deploy these vehicles in revenue passenger service.

The *Fuel Cell Electric Bus Commercialization Consortium* (FCEBCC) will address these two challenges directly by engaging a major bus OEM as the prime manufacturer, increasing the volume of production to reduce the unit cost, expanding the utilization of these vehicles by deploying them in more transit agencies, and helping to launch fuel cells for use in other heavy-duty vehicle applications.

The project proposes to build 20 fuel cell electric buses for deployment in revenue service at Alameda-Contra Costa Transit District (AC Transit) and the Orange County Transportation Authority (OCTA). Each transit agency will deploy 10 buses. The buses are being built through an industry collaboration between New Flyer and Ballard Power Systems. New Flyer is the leading manufacturer of heavy-duty buses in the United States and Canada, with nearly 50% market share. Their commitment to deploying fuel cell technology continues to grow as they are currently developing the only manufacturer warranted hydrogen fuel cell bus. Collaborating with a fuel cell and power plant supplier, Ballard, opens the supply chain for commercialization. Ballard has deployed more than 100 fuel cells in transit fleets around the world and accumulated in excess of five million miles of operation. These industry partnerships are key to driving costs down, enabling accessibility to zero emission technology for transit agencies nationwide.

A successful vehicle deployment of this magnitude requires access to a reliable fuel supply and fueling technology capable of meeting the demands of the transit industry. The project will deploy a proven constant pressure storage system to fuel the last buses as quickly as the first bus. Linde will rely on its extensive experience designing and building large-scale fuel cell bus infrastructure worldwide. Linde's technology is well-established, commercially available, and fully capable of providing the high-volume throughput and rapid fills necessary to support the operation of these high-capacity, heavy-duty vehicles.

The Center for Transportation and the Environment (CTE) rounds out the team, further augmenting the experience of the participants in the FCEBCC. CTE has worked with numerous transit agencies and bus manufacturers engaged in publicly-funded programs to develop and deploy zero-emission, fuel cell electric, and battery-electric transit buses. CTE's research, development, demonstration, and deployment projects have helped bridge the gap to commercialization for zero-emission buses.

Amount of funding requests: \$22,347,502

Whether the project is expected to be located within or provide benefits to a disadvantaged community: AC Transit and OCTA have identified potential routes on which the fuel cell electric buses could operate and there are locations both within disadvantaged communities (DAC) as well as offering benefits to DACs. On average for the 25 routes identified by AC Transit, 56% of the miles are within in zip codes containing DACs and 27% of the miles are within a DAC. For the five routes identified by OCTA, on average the percentages are 82% and 36%, respectively.

PROJECT SUMMARY FOR PUBLIC POSTING

Name of Applicant: Solano County Transit (SolTrans)

Project Description: On July 1, 2011 the Benicia Breeze, Vallejo Transit, and Vallejo Runabout consolidated to form Solano County Transit (SolTrans). This consolidation has enabled the City of Benicia and the City of Vallejo to streamline, simplify, and improve access for transit riders through enhanced service coverage, frequency, affordability, and mobility options contingent upon available funding. The SolTrans Zero Emission Bus Project allows the agency to further improve their transit services by introducing five state-of-the-art, zero emission battery electric buses to their fleet. To accomplish this deployment, SolTrans will partner with BYD Coach & Bus (BYD) and the Center for Transportation and the Environment (CTE), both recognized leaders in clean transit deployments. To prepare for this project, SolTrans has conducted a demonstration of the BYD K9M in revenue service. Also, in October 2015, SolTrans engaged CTE to conduct a Route Modeling and Bus Simulation Analysis to determine the best routes for deployment of these buses.

BYD is the largest electric bus OEM in the world. Their 40' K9M low floor battery electric bus model includes a 324 kWh Iron-Phosphate (LiFePO4) battery pack capable of achieving 155 miles on a single overnight charge. BYD's bus performance and safe, dependable batteries translate to substantial operator cost savings over the course of a standard FTA 12 year contract on comparable 40' diesel, CNG, and hybrid electric buses, as well as competitive battery electric buses.

CTE uses a collaborative project management approach based on key principles that have emerged from their experience with large, technical, multi-partner grants and cooperative agreements. These principles include establishing and maintaining a high degree of client-staff involvement and application of project management controls and best practices to ensure proper information tracking, timely completion of tasks and milestones, and quality assurance of deliverables.

This project will result in several significant benefits, including but not limited to: substantially lower energy and maintenance costs, zero tailpipe emissions, reduced SolTrans greenhouse gas emission (GHG) footprint, reduced SolTrans dependence on fossil fuels, reduced noise pollution in surrounding neighborhoods, better vehicle performance and propulsion system durability, and increased comfort for operators and passengers.

These benefits make this project a high priority for Solano County and the cities of Vallejo and Benicia, which are located in the San Francisco Bay Area non-attainment area. The EPA currently classifies this area as nonattainment under the 8-hour Ozone standards (1997 and 2008) and the 1-Hr Ozone standard (1979). The county is also in the San Francisco-Oakland-San Jose CA Carbon Monoxide maintenance area under the 1971 standard. By introducing these zero emission buses, this project will help directly reduce criteria and GHG emissions in the Bay Area and encourage potential riders to consider using transit, which indirectly yields air quality benefits over personal automobile use.

Requested Funding: \$4,341,161

Disadvantaged Community Benefits: Deployment of zero emission buses on highly populated routes that connect residents of disadvantaged communities to jobs throughout the San Francisco Bay area.

Project Summary for Public Posting

The Zero-Emission Armored Delivery Truck Pilot Commercial Deployment

The Applicant, Gas Technology Institute (GTI), and a project team that includes Sectran Securities Inc. (SECTRAN), Efficient Drivetrains, Inc. (EDI), North American Repower (NAR), and CALSTART, propose to accelerate the deployment of commercially available medium- and heavy-duty zero-emission vehicles by leveraging a California Energy Commission (Energy Commission) grant to build a 16-vehicle clean-technology fleet of armored delivery trucks at SECTRAN's Southern California base of operations. Located at 7633 Industry Ave. in Pico Rivera, California—at the heart of a disadvantaged community (DAC)—this advanced vehicle technology hub will deploy near-zero-emission Plug-in Hybrid-Electric Vehicles (PHEV) with renewable natural gas (RNG) range extension capabilities.

By implementing the proposed solution at this facility, the project will support potential future SECTRAN deployments of electric trucks in Southern California by providing shared infrastructure, trained mechanics and drivers, and ready access to common spare parts—all of which will drive down per-vehicle costs.

With the modernized trucks, SECTRAN will be able to completely eliminate diesel engine idling—while maintaining security and driver comfort—by operating in all-electric mode during stop-and-go operations. If necessary, the vehicles can use the range-extended hybrid mode for highway operations outside of DACs, but, through the use of geofencing technology, can operate in full zero-emissions mode whenever within the bounds of a DAC. When operating in hybrid mode, the trucks will run on Redeem[®], the first RNG made from organic waste and available as commercial vehicle fuel. According to California Air Resource Board estimates, Redeem enables up to a 90% reduction in carbon emissions when displacing diesel or gasoline¹

The proposed project will deliver immediate GHG emissions reductions, help reduce vehicle and infrastructure technology costs, and provide economic, environmental, and public health co-benefits to DACs.

For the proposed \$8.5-million project, GTI requests a total of \$5,212,480 in state funds and—in collaboration with SECTRAN and EDI—will bring an additional \$3,316,494 in match contributions, \$1,750,000 of which is in-kind and \$1,566,494 of which is cash match. Thus, the Project Team will provide a strong match, equal to 39 percent of the total project budget.

¹ <http://redeem.cleanenergyfuels.com>

Project Summary for Public Posting

The *Sacramento Regional Zero-Emission School Bus Deployment Project* will provide a large-scale success story that proves commercially available zero-emission school buses have the best total cost of ownership, substantially improved maintenance and performance, and optimally serve the needs of school districts to sustainably transport California's children to and from school, as well as school activities.

The Sacramento Metropolitan Air Quality Management District (SMAQMD), the project applicant, will implement the *Sacramento Regional Zero-Emission School Bus Deployment Project*, with the support of the California Air Resources Board, to accelerate the deployment of commercially available heavy-duty, zero-emission, school buses and benefit disadvantaged communities throughout the Greater Sacramento Metropolitan Area. The project will significantly reduce greenhouse gas (GHG) emissions and will provide economic and environmental benefits to disadvantaged communities – while demonstrating the immediate scalability, practicality and economic viability of wide-spread adoption of purpose-built zero-emission school buses and the direct transferability to sustainable freight, goods movement and freight. Furthermore, it will help eliminate mobile criteria pollutants and provide public health co-benefits to both schoolchildren and the greater community. The project will serve as a large-scale success story that battery electric buses best serve school's transportation needs, substantially reduce GHG emissions, and eliminate toxic emission exposures to children.

The *Sacramento Regional Zero-Emission School Bus Deployment Project* will deploy zero-emission school buses throughout the Sacramento County, including Elk Grove, Sacramento City, and Twin Rivers Unified School Districts. First Priority Bus Sales (FPBS), a leading U.S. manufacturer and distributor of commercial fleet vehicles, is responsible for deploying the battery-electric, zero-emission, Type A Trans Tech SSTe school bus, with the Motiv Power Systems powertrain, and zero-emission, battery-electric Type C eLion school bus for this project. EV Connect will provide, implement, and maintain the charging infrastructure. SunEdison will deploy a Data Management System (DMS) to support data and reporting, as well as effectively manage electricity costs and demand.

The *Sacramento Regional Zero-Emission School Bus Deployment Project* will deploy 29 state-of-the-art zero-emission school buses with 29 charging ports in disadvantaged communities in the Greater Sacramento Region. The project will include a 47% match - \$3,202,618 cash-match and \$3,585,896 in-kind match from private, eligible state, and local funding to leverage the proposed \$7,696,955 Air Resources Board Investment, for a total project budget of \$14,485,469.

Project Summary

The lead applicant, Central Unified School District, has partnered with 3 school districts, the local air pollution control district and industry leaders for the Central Valley ZEV School Bus & Truck Pilot Project. Through this project eight zero-emission, all-electric Lion buses will be deployed to 4 school districts located in the central San Joaquin Valley. Central Unified (located in the western portion of the city of Fresno) will receive four buses; Woodlake Unified (located in Tulare County, north-east of the city of Visalia), Madera Unified will receive one bus; Parlier Unified (located in Fresno County, south-east of the city of Fresno) will receive one bus. The Central Valley project includes four cities and three counties, covering 293 miles daily.

For the purchase of the buses and the installation of the charging stations, we are requesting \$2,470,126 which includes a five percent Administrative Fee of \$123,816. Central Unified and the project partners have committed a total cash match of \$784,167 and a total in-kind match of \$703,837. This requested funding amount is 62% of the entire project cost.

The electric buses deployed during the Central Valley ZEV Truck and Bus Pilot Project will serve predominantly disadvantaged communities. Nearly 98 percent of the combined routes are in a disadvantaged community and 100 percent are within a half mile from a disadvantaged census tract.

This project expects to demonstrate (on a per bus basis or in the aggregate):

- GHG cost effectiveness for a two year life during the time of the proposed project: \$5,342/Metric Ton
- GHG cost effectiveness for a 10 year life of the proposed project: \$1,151/Metric Ton
- Criteria pollutant and toxic air contaminant cost effectiveness for a two year life during the time of the proposed project: \$324,819/Ton
- Criteria pollutant and toxic air contaminant cost effectiveness for a 10 year life: \$70,009/Ton

Attachment 2: PROJECT EXECUTIVE SUMMARY AND PROJECT SUMMARY FOR PUBLIC POSTING

The Green On-Road Linen Delivery Project



In this proposal from the San Joaquin Valley Air Pollution Control District, Industry Partners & Demonstrators: Motiv Power Systems, AmeriPride Services, CALSTART, and First Priority Bus Sales will deploy 20 zero-emission all-electric walk-in-van delivery vehicles to be used in linen deliveries.

This project requests \$7,125,515 from the California Air Resources Board and the team is providing \$5,818,168 in match funds, with a 44.95 match percentage.

The San Joaquin Valley Air Pollution Control District is a public health agency whose mission is to improve the health and quality of life for all Valley residents through efficient, effective and entrepreneurial air quality management strategies. The SJVAPCD has over 22 years of experience implementing highly successful voluntary incentive programs aimed at reducing emissions.

This project will work with AmeriPride Services, a one-stop solution for uniforms, linens, and facility service. Since 1889, their success has been built on products and services that exceed industry standards and customer expectations. AmeriPride's locations in Fresno, Bakersfield, Stockton, and Merced allow them as a business to demonstrate the technology in disadvantaged communities where they currently operate, while at the same time evaluating the technology for use in their other locations throughout North America. With more than 115 production facilities and service centers throughout the United States and Canada – AmeriPride provides linen, uniforms, floor mats, restroom and cleaning products to nearly 150,000 customers every week.

The zero-emission vehicles in this project use the Motiv Powertrain, a flexible and scalable all-electric powertrain option for commercial medium and heavy-duty trucks and buses. Motiv partners with existing truck builders who manufacture electric versions of their traditional fossil-fueled vehicles on their current assembly lines using the Motiv All-Electric Powertrain. Motiv manufactures this technology in disadvantaged community within Hayward, CA. This powertrain can be used in work, delivery and refuse trucks, as well as school and shuttle buses.

This project offers a chance to scale a specific delivery segment that has an ideal route for electrification, while at the same time increasing the volume of sales for a zero-emission powertrain that can be applied to most truck applications. These benefits dovetail with community benefits for the residents of the San Joaquin Valley who will enjoy a reduction in carbon emissions, criteria pollutants, and support for existing employers who will be training their staff on this emerging technology as part of the project.

Project Summary for Public Posting

Name of Applicant: **San Joaquin Valley Air Pollution Control District, a public entity**

Title: **San Joaquin Valley Zero Emission Rural Transit Bus Pilot**

Project Description: A partnership consisting the San Joaquin Valley Air Pollution Control District, CALSTART, a national non-profit organization dedicated to environmental protection by reducing air pollutants, and four (4) county transit systems are uniting resources, expertise and leadership to address the air quality control issues that make the San Joaquin Valley the most distressed region of the state for poor air quality.

The project will deploy the first all-electric transit buses in the four southern counties in the San Joaquin Valley. These counties suffer from the worst air quality in the region and are home to some of the poorest residents in the state. Electrified transportation options have not been available to most of the residents in the cities served by this project.

This is the first large scale attempt to reduce pollutants by putting electric buses into use across four large counties, thereby reducing emissions and ultimately improving air quality. This pilot project will demonstrate how the use of electric vehicles is a viable solution in transportation and for transit agencies. This project will serve as a nationwide role model on partnership initiatives to affect change and demonstrate that improvements in air quality that can be replicated.

Project will include the purchase and fleet integration of 15 e-buses and EV Solar Charging Stations for transportation of disadvantaged residents living in the small, rural cities of Coalinga, Huron, San Joaquin, Mendota, Firebaugh, Kerman, Fowler, Selma, Kingsburg, Sanger, Reedley, Parlier, and Orange Cove and 10 e-buses for Hanford, Bakersfield and Visalia.

Project vehicles will be used to replace obsolete units in Disadvantaged Areas of the San Joaquin Valley, primarily in 13 rural and highly rural communities providing transportation for work or other appointments such as medical or legal.

Project is located within and provides benefits to disadvantaged communities including all thirteen (13) highly rural, small, economically disadvantaged cities in Fresno County, one (1) city in Tulare County, one (1) city in Kings County, and one (1) city in Kern County. Vehicles and infrastructure, at end of project will be incorporated into transit agency fleet and maintained as such.

Project Funding Amount Requested: Project Funds in the amount of \$14,611,660/ Match funding in the amount of \$5,749,223. Total project cost is \$20,360,883.

ATTACHMENT 2: Project Executive Summary and Project Summary for Public Posting

The San Joaquin Valley Air Pollution Control District (SJVAPCD) kindly requests \$2,536,221.87 from the California Air Resources Board for its enclosed project entitled “Increased Mobility Options in the San Joaquin Valley through Zero-Emission Shuttle Buses”. This project is in partnership with our technology provider Green Commuter, our technology coordinator CALSTART and our pilot deployment site and transit agency partners of West Hills Community College District, California State University, Fresno, and Fresno Economic Opportunities Commission.

This project will allow the SJVAPCD to introduce all-electric Zenith shuttles throughout the SJV by targeting public and nonprofit entities with identified existing needs for shuttle services located within many of the Central Valley’s disadvantaged communities. Very importantly, it would allow for such mobility options to be at no cost to its end users, which are made up of students, faculty, staff, San Joaquin residents, and CalWorks recipients and their children. The proposal will pilot seven all-electric shuttle vehicles in order for such entities to have early access to zero-emission technologies that they would otherwise not be able to afford given high comparable cost. The project will support the evolution of ZEV technology advancement, including development, commercialization and ultimately, transition to widespread deployment. In order to advance these zero-emission technologies toward higher volume commercialization, this project identifies existing demand in the SJV to accelerate early adoption and broaden consumer acceptance through high visibility applications of these medium-duty shuttle buses.

By leasing zero-emission Zenith buses from Green Commuter, the proposed partner deployment sites, all identified as having existing shuttle needs within disadvantaged communities in the San Joaquin Valley, will experience an elimination of cost of ownership and gas, and reduction in insurance and maintenance costs. All the while, use of the pilot zero-emission shuttle buses will reduce carbon emissions and create healthier societies within the disadvantaged communities where the SJVAPCD plans to pilot deployment. Pilot partners will also be able to offer ADA compliant shuttle services to benefit users with disabilities. The high visibility of these electric and state of the art vehicle fleets will project a positive image aligned with the SJVAPCD and partners’ environmental or energy-security objectives, while also demonstrating community leadership, improving public image, and differentiating the organization from competitors (See Attachment 16).

This pilot program will directly support many of the State’s near-term and long-term emission reduction goals through reduced traffic congestion, energy consumption, dependence on fossil fuels, and air emissions, all while improving access to safer, more convenient mobility options for San Joaquin Valley residents. The all-around appeal of this pilot project will lead to a significant and immediate reduction in entity GHG emissions from the shuttle routes directly funded, offer a scalable pilot program in areas with limited access to advanced medium-duty vehicle technology, and in turn, offer greater exposure to and knowledge about the benefits of all zero-emission vehicles to the broader San Joaquin Valley area. Such behavior and collective change will then further impact future emission reductions by accelerating large-scale ZEV Shuttle bus market penetration and technology transfer to other entities within the SJV with existing or projected shuttle needs.

Project Summary for Public Posting

The USPS Zero-Emission Delivery Truck Pilot Commercial Deployment

The San Joaquin Valley Air Pollution Control District (Applicant)—in collaboration with the U.S. Postal Service (USPS), Efficient Drivetrains, Inc., Motiv Power Systems, Morgan Olson, CALSTART, and SunEdison—proposes a transformative pilot electric delivery truck demonstration within two cities in California’s Central Valley, a disadvantaged area with some of the highest pollution burdens and highest poverty rates in the country. The project team will deploy 15 zero-emission, electric USPS “step vans” and associated charging infrastructure across two USPS hubs in Stockton and Fresno.

Together, these two connected USPS hubs will form the basis of a USPS Advanced Vehicle Cluster, from which the USPS can, if it so chooses in the future, continue to explore the electrification of its massive fleet of vehicles, both in California and nationwide.

During the proposed project, the USPS will drive—with frequent stops—each vehicle on routes located primarily in disadvantaged communities, with daily average distances ranging between 50 and 75 miles. When all trucks are operational, the team estimates that the proposed project will deliver a net reduction of 247.9 metric tons (MT) of carbon-dioxide equivalents per year (CO₂e/year). Furthermore, the project will provide economic, environmental, and public health co-benefits to disadvantaged communities, while demonstrating the practicality and economic viability of the widespread adoption of a variety of zero-emission medium- and heavy-duty vehicle technologies.

For the proposed \$6,746,305.74 project, the District requests a total of \$4,523,402.89 in state funds and—in collaboration with USPS, EDI, and Motiv—will bring an additional \$2,222,902.85 in cash and in-kind match contributions. Thus, the Project Team will provide a strong match, equal to 32.9 percent of the total project budget.

Attachment 2: PROJECT SUMMARY FOR PUBLIC POSTING

THE "RETURN OF THE RED CAR"

In collaboration with Ebus of Downey, California, and CALSTART, the Torrance Transit System humbly requests funding for the construction and deployment of five (5) all-electric trolley buses as part of the "Return of the Red Car" project.

Funding in the amount of \$1,870,000 is being requested for this project. Combined with a local match of \$550,000 (\$330,000 in cash and \$220,000 in-kind), the total budget for this project is \$2,420,000. This will allow the project to procure five all electric trolley buses to operate the "Return of the Red Car" project. Operation of the service will utilize local funding.

The "Return of the Red Car" is an urban circulator project that will connect the Historical, Financial and Commercial districts of Torrance to the local Beach Cities and other areas in the region. The Pacific Electric "Red Car" system was a privately-owned mass transit system that once operated throughout Southern California, including the South Bay and Torrance. The "Red Car" manufacturing facility itself was located in Torrance, not far from the present location of Torrance Transit Park and Ride Regional Terminal. When the "Red Car" ceased operation in 1940, this led to the creation of Torrance Transit and many other municipal transit operators in the region to help fill the void in the public transportation infrastructure. The "Return of the Red Car" project hopes to reintroduce the historical service via an all-electric trolley bus that is a close replica of the original "Red Car" trolley to the community.

Project Executive Summary

City of Santa Monica's Big Blue Bus (BBB) seeks funding to procure five electric buses and shop chargers to introduce to the BBB fleet. The buses and chargers would be purchased from a known manufacturer that have been Altoona Tested. The project total is \$7,100,000 and BBB is requesting funds in the amount of \$5,325,000 with a local match of \$1,775,000.

The zero emission buses procured with the requested funds, will be placed into new and expanded fixed route service. Per the Disadvantaged Communities (DAC) map, the majority of BBB's fixed route service, including six new routes and expanded service, serve disadvantaged communities. BBB provides high quality transportation at an affordable cost to these communities. Therefore, 100% of the funding requested from the Air Quality Improvement Program (AQIP) and Low Carbon Transportation Greenhouse Gas Reduction Fund (GGRF) Investments, will be used to provide benefits to identified disadvantaged communities throughout the new and expanded fixed route services, where the project vehicles would be placed.

Project Summary for Public Posting

City of Los Angeles Cluster Zero Emission Vehicle Deployment

The City of Los Angeles Cluster, led by Los Angeles Department of Water and Power (LADWP) and in collaboration with the City of Los Angeles, Los Angeles World Airports (LAWA), Los Angeles Department of Transportation (LADOT), Port of Los Angeles (POLA), and CALSTART, is a transformative pilot electric bus and truck demonstration that will lay the foundations for a zero-emission City of Los Angeles. Consistent with Mayor Garcetti's Sustainable City pLAn and their Climate Action Report, the proposed City of Los Angeles Cluster will deploy 26 zero-emission vehicles (ZEV) in disadvantaged area communities (DAC), including:

- LADWP: Seven all-electric delivery trucks to bring electric infrastructure supplies to work sites
- LAWA: Six all-electric 40-foot airport shuttle buses at Los Angeles International Airport (LAX)
- LADOT: Four all-electric commuter buses serving residents and businesses of the City of Los Angeles and surrounding neighborhoods along Commuter Express Route 438 and Metrolink Shuttle Service
- LADOT: Six all-electric cutaway CityRide shuttle buses, serving individuals age 65 or older and qualified disabled persons with curb-to-curb transportation services
- POLA: Two all-electric Hometown Trolley Villager passenger trolleys at San Pedro Historic Waterfront Business Improvement District in the Port of Los Angeles
- POLA: One all-electric Zenith Motors passenger shuttle at the Tra-Pac terminals in the Port of Los Angeles

The City of Los Angeles Cluster deployment will deploy 26 vehicles throughout DAC regions in the City of Los Angeles serving more than 100 DAC census tracts with 13 of the vehicles serving exclusively DAC regions and other 13 vehicles spending more than 65 percent of their time serving DAC regions.

To successfully complete the proposed pilot deployments, the Project Team seeks \$14,363,612 to leverage \$4,810,488 of committed match funding (\$3,877,368 cash, \$933,120 in-kind).

Project Summary for Public Posting

Project Title: SunLine Fuel Cell Buses & Hydrogen Onsite Generation Refueling Station Pilot Commercial Deployment Project

Name of Applicant: SunLine Transit Agency

Project Partners: New Flyer of America, Inc.
Hydrogenics Corp
Federal Transit Agency (Match Partner)
South Coast Air Quality Management District (Support)

Description of the Project:

To increase the deployment of various fuel cell transit buses and to further reduce our carbon footprint by expanding our zero emission bus fleets, SunLine Transit Agency (“SunLine”), as an applicant, is applying for the California Air Resources Board’s AQIP/GGRF Zero-Emission Truck and Bus Pilot Commercial Deployment Projects Solicitation.

This proposed project is to procure five (5) New Flyer Fuel Cell Electric Bus equipped with Hydrogenics Celerity Plus heavy duty fuel cell power systems and to upgrade the existing hydrogen refueling infrastructure with an onsite PEM water electrolyzer, compressor, storage tanks and fueling station provided by Hydrogenics Corp. SunLine will operate all five (5) New Flyer fuel cell buses and the upgraded hydrogen refueling station with Hydrogenics electrolyzer for 12 months from March 1st, 2018 to Feb 28th, 2019 for data collection.

The proposed five (5) zero emission New Flyer Fuel Cell Buses will be operated on SunLine’s regular revenue routes 91 and 95 daily from Indio to Mecca/Oasis with over 98% coverage in disadvantaged communities.

The proposed water electrolyzer is capable of producing 300 kilogram per day of hydrogen to fuel the proposed 5 New Flyer fuel cell bus, public use and to accommodate future fuel cell buses fleet expansion SunLine has in plan. All zero emission buses and hydrogen generation and dispensing equipment will be operated for the life of the equipment for fleet operation and public use. SunLine and project partners will also conduct public outreach to share the outcomes and lesson learned in this deployment, educate the public of the health and economic benefits of deploying zero emission transit buses and the State’s climate goals.

All buses and the upgraded hydrogen refueling station are domiciled at the Thousand Palms facility located at 32505 Harry Oliver Trail, Thousand Palms, CA 92276 in unincorporated Riverside County.

SunLine is requesting ARB Funding Amount of \$12,586,791 for bus and hydrogen equipment purchase and plans to use \$2,750,000 FTA funding for subsidizing the bus purchase. SunLine will contribute in kind the labor and material for project administration and management, bus operation, service and maintenance, data collection and public outreach.

California Air Resources Board
Zero-Emission Truck and Bus Pilot Commercial Deployment Projects
Goodwill Industries Electric Delivery Vehicle Project
Project Summary for Public Posting

Name of Applicant: Bay Area Air Quality Management District (BAAQMD)

Brief description of proposed project including location:

BAAQMD is partnering with Goodwill Industries of San Francisco, San Mateo and Marin, Inc. (SFGoodwill) and the Center for Transportation and the Environment (CTE) to deploy eleven BYD zero-emission battery electric trucks within the SFGoodwill collection donation areas. Demonstration of the electric vehicles will be included in job training for Goodwill's workforce, which includes individuals who have been chronically unemployed and under-employed (more than 1 year) due to homelessness, military service, single parenting, incarceration, addiction, or job displacement. In addition, the proposed project has the intent of building a statewide and nationally replicable model with Goodwill's across California and the U.S. There are 12 Goodwill's in California and 165 Goodwill's in the U.S. covering all U.S Territories and States. Building this national model for electrifying Goodwill Industries' fleet of trucks will provide a road map and best practices for Goodwill and other fleets considering electric vehicle technologies, helping to build support and adoption of clean vehicle technologies. This project will also reduce emissions and provide economic, environmental, and public health benefits to disadvantaged communities while demonstrating the practicality and economic viability of widespread adoption of zero-emission trucks operating in a dense urban environment.

To accomplish the objectives of the project, BAAQMD will collaborate with both public and private sector entities including BYD Coach & Bus (BYD), Goodwill Industries of San Francisco, San Mateo and Marin, Inc. (SFGoodwill), and the Center for Transportation and the Environment (CTE).

This project is relevant to CARB's AQIP objectives as it will displace diesel vehicles with zero-emission alternatives that will operate within disadvantaged communities. Furthermore, the vehicles will be deployed by Goodwill, whose mission is to disrupt the cycle of poverty by providing job training and apprenticeships that lead to credentialed and marketable skills

Amount of funding requests:

The total cost of this project is estimated at \$4,435,919. BAAQMD is requesting \$2,738,557 in ARB AQIP funding to support this project. This project is providing a total of \$1,338,894 in cash match and \$358,468 in-kind match.

Whether the project is expected to be located within or provide benefits to a disadvantaged community:

Goodwill serves disadvantaged communities in the San Francisco bay area in a multitude of ways, including: increasing job readiness and career opportunities through workforce development programs; on-the-job training and industry-recognized certifications; and through creating quality jobs (at Goodwill) and increasing family income by providing access to health insurance and retirement benefits with long-term job retention. Furthermore, the vehicles deployed under this project will operate in several disadvantaged communities within SFGoodwill's service territory; ensuring emission reductions are benefiting those communities.

Attachment 2: PROJECT EXECUTIVE SUMMARY/PROJECT SUMMARY FOR PUBLIC POSTING

The Los Angeles Metro Orange Line Bus Rapid Transit Zero Emission Project (the "Project") consists of the commercial deployment of articulated zero-emission buses (ZEB) and charging stations for Metro's bus rapid transit (BRT) system in the San Fernando Valley region of Los Angeles County. The Metro Orange Line (MOL) is the only BRT system in California and is one of a handful of true BRT systems in the country. The MOL operates on a two-lane exclusive busway that is about 20-miles long with 18 stops in each direction. About 30,000 passengers use the MOL each day (over 7 million passengers annually). The Los Angeles County Metropolitan Transportation Authority (LACMTA or Metro) is the primary applicant and proposed grantee with the responsibility for overall Project implementation.

The Project is in partnership with New Flyer of America Inc. ("New Flyer") and the Advanced Transit Vehicle Consortium (ATVC). New Flyer is the technology provider (both ZEB and charging stations). ATVC would be responsible for Project management and oversight, including monitoring the testing and delivery of the buses, as well as of charging equipment. The Project scope of work consists of procuring and deploying the following assets: twenty-five New Flyer, heavy-duty, 60-foot articulated, battery-electric buses (Xcelsior® XE60); six opportunity charging stations; and fourteen shop/depot charging stations. The funding request from the California Air Resources Board (ARB) is for \$25,000,000. LACMTA is committed to providing \$21,735,000 in local voter-approved Measure R funds (a 46.5% local match all in cash, with the exception of \$450,000 committed as in-kind labor) to implement the Project, which has an estimated total cost of \$46,735,000.

The Project has several objectives, mainly: i) implement the 2011 directive of the Metro Board of Directors for the transition of the bus fleet to super low emission buses and ZEB; ii) benefit disadvantaged communities in the San Fernando Valley by improving air quality conditions and providing an enhanced transit option; and iii) expedite the full electrification of the MOL, which was determined to be the top candidate among Metro's 170 bus routes to transition from the operation of compressed natural gas (CNG) buses to ZEB, by replacing more than half of its current fleet of forty-three 60-ft buses, most of which are approaching their useful life design standard (12 years/500,000 miles of revenue service).

The Project serves an area with high a population density and large populations living in disadvantaged communities that depend on transit for their travel needs. About 25 percent of the alignment of the MOL and of its total vehicle miles of travel (VMT), over 2 million per year, is within census tracts that include disadvantaged communities. However, 50 percent of the stops of the MOL are located within census tracts that include disadvantaged communities. Similarly, about 90 percent of the alignment of the MOL and of its total VMT is within zip codes that comprise census tracts with disadvantaged communities. The Project is completely comprised within zip codes that include disadvantaged communities, except at one bus stop location.

Project Summary for Public Posting

Applicant:	City of Porterville
Technology Provider:	GreenPower Motor Company, Inc.
Title:	City of Porterville Transit Electrification
Funding Amount:	\$9,516,422

City of Porterville proposes to purchase and operate ten GreenPower Motor Company, Inc. (“GreenPower” or “GPMC”) EV350 40-foot zero-emission all-electric transit buses and deploy them on all nine Porterville Transit fixed routes based from the Porterville Transit Center. To accommodate the ten zero-emissions buses, the City of Porterville will purchase from GPMC one dual nozzle charger to be located at the Porterville Transit Center. The City of Porterville will also purchase from GPMC five single nozzle chargers and five dual nozzle chargers to be located at the Porterville Transit Maintenance Facility. The City will construct one new dedicated bus canopy, 45kW PV system, and new and dedicated utilities at the Porterville Transit Maintenance Facility. The City will also deploy a 45kW PV system and new and dedicated utilities at the Porterville Transit Center. The City proposes that all ten EV350 buses will operate daily and 100% of the miles traveled will be within zip codes that contain disadvantaged communities.

Based on Emission Reduction calculations, the City has determined that the EV350 buses will reduce GHG emissions by over 75%. In addition to providing the electric buses, the City is currently partnering with GPMC who has obtained a business license to manufacture in the City, and is in negotiations to secure a manufacturing facility in their community. It is estimated that GreenPower would bring 400 direct and indirect jobs in the first full year of operations with more job growth over the years. In addition to manufacturing GPMC’s heavy duty all-electric buses, this facility will also be the GreenPower Technology Center. GreenPower has already secured as subtenants its battery manufacturer, its manufacturer of charging systems and programmers for its battery management system. GreenPower will require skilled and labor positions, which would provide desperately needed jobs in disadvantaged communities of the Southern San Joaquin Valley.

The total project cost is \$16,953,702, the City’s request for financial assistance from the ARB is \$9,516,422 to complete this project. To ensure this project is the most cost-effective project, the City has committed \$7,437,280 in total project match. This represents a 43.87% project match, which includes \$7,039,280, or 41.52% in cash local match. The level of project match well exceeds the required 25% project match, with a 10% cash local match.



Project Summary for Public Posting

The *San Joaquin Valley Transit Electrification Project* will accelerate the commercial deployment of heavy-duty zero-emission technologies by deploying state-of-the-art Proterra battery-electric transit buses in strategic public hubs located in disadvantaged communities throughout the San Joaquin Valley.

This project will serve as a regional-scale deployment to show that California-made battery electric transit buses better serve communities' transit needs, substantially reduce greenhouse gas emissions (GHG), and eliminate criteria emissions—which provides needed public health co-benefits for disadvantaged communities in one of the state's most challenging regions for achieving important air quality standards. In addition, the project will provide direct GHG and localized air quality benefits, help drive down per-vehicle zero-emission bus costs, and offer opportunities for shared infrastructure, mechanics, spare parts, and workforce training. The most important outcome will be a regional-scale heavy-duty zero-emission success story that will provide scalable lessons learned and lasting marketing opportunities to better inform and educate transit operators and other commercial fleet operators to help drive additional deployments of zero-emission heavy-duty technologies throughout California.

The San Joaquin Valley Air Pollution Control District (SJVAPCD) is the project applicant and will be administering the project for the grant agreement term. Proterra Inc., the leading U.S. manufacturer of zero-emission, battery, all-electric transit solutions, will be the technology provider for both the vehicles and charging infrastructure. For this project, Proterra's zero-emission, battery electric buses will be deployed throughout the San Joaquin Valley – including the City of Visalia Transit Division, Fresno County Rural Transit Agency (FCRTA), California State University Fresno, San Joaquin Regional Transit District, and City of Modesto Transit Service.

The *San Joaquin Valley Transit Electrification Project* will deploy a total of 15 Proterra battery-electric zero-emission public transit buses, 11 Proterra depot-chargers, and 4 Proterra fast-chargers along the transit routes. The project will bring 40% match funding - \$3,112,725 of cash match and \$5,651,881 of in-kind match from private, federal, eligible state, and local funding to leverage the proposed \$13,416,215 Air Resources Board investment, for a total project budget of \$22,180,821.

Project Summary for Public Posting

Name of applicant. EV Alliance

Description of Project and Location: The CalGIV mission is to accelerate large-scale deployment of Medium-Duty (MD) all-electric E-trucks and E-buses throughout California. The Project's 2016-2018 goal is to deploy 1,000 Medium-Duty EVs through targeted outreach to shuttle bus operators, delivery companies, and public agencies, with an emphasis on environmentally and economically disadvantaged communities.

The Project's first phase will leverage California Air Resources Board and private funding to:

- Deploy 16 state-of-the-art medium-duty E-Buses at the Ontario International Airport
- Develop and disseminate compelling use cases for all-electric shuttle operations and zero-emissions "last mile" delivery hubs, including practical Vehicle-Grid-Integration (VGI) strategies with cost-saving and revenue-enhancing potential;
- Engage world-class transportation and facility management companies (led by ABM and Prevok) to strongly promote E-bus and E-truck solutions to key EV fleet targets.

To achieve its goal of directly causing the deployment of 1000 new Medium Duty EVs, the CalGIV partnership will launch a bold "Experience Electric" Ride and Drive Campaign reaching at least 1000 key fleet stakeholders via 40 days of high-profile outreach over the 2016-2018 project period. ABM, Prevok, Energy Solutions, and EV Alliance will publicize the Campaign and provide matching funds for a luxury E-bus tour that will bring fleet managers to wineries and other scenic destinations for an "EV Concours" experience that will present multiple E-bus and E-truck models for viewing, riding, and driving. ABM will target its network of 8,000 large California facilities under management, while other CalGIV partners will engage the state's 40 largest cities and counties.

Benefits to Disadvantaged Communities: The first phase of the project (involving direct deployment of CARB-funded vehicles) will reduce high diesel particulate matter (PM) and other air contaminants in the targeted area of Ontario Airport by substituting all-electric zero emission vehicles for fossil-fueled buses. Phase 2 of the CalGIV initiative will focus on effective direct marketing to fleet decision makers, to achieve measurable impact on clean vehicle deployment and consequent emissions reductions in targeted disadvantaged communities.

A breakthrough price/performance point for the new class of medium-duty vehicles developed by the Joint Venture of Prevok, Smith Electric Vehicles, and FDG Electric Vehicles provides initial purchase price parity with diesel, while enabling operating cost reductions in the 70% range. These economies of operation and purchase will enable much broader penetration of the disadvantaged community market than possible with previous generations of Medium-Duty EV technology.

Requested Funding: \$4,921,050

Applicant: American Lung Association in California

Brief Project Description: The ALA-ADOMANI: Help Yellow Go Green (HYGG) Project will convert 15 diesel engine Class C and D school buses to an all-electric drivetrain that produces zero emissions in high priority disadvantaged communities. The buses will be located in the Moreno Valley Unified School District (USD) and the Twin Rivers USD. Both these districts are adjacent to Air Bases and have a Pollution Burden over 60 percent. Poverty and unemployment are extremely high, as are the rates for asthma and low birth weight. The HYGG Project will provide immediate benefits to both of these communities and will serve as a benchmark pilot for other similar conversions throughout communities in California. The HYGG Project will result in an estimated total greenhouse gas (GHG) emissions reduction of 305.76 metric ton per year (MT/Year) and a reduction of criteria pollutant emissions of 0.2760 tons per year.

Funding Amount Requested: \$2,845,805

ATTACHMENT 2: SACRAMENTO REGIONAL ZERO-EMISSION BUS DEPLOYMENT PROJECT EXECUTIVE SUMMARY

The Sacramento Regional Zero-Emission Bus Deployment Project brings together four transit agencies of the greater Sacramento Metropolitan Statistical Area (MSA), Sacramento Regional Transit District (SacRT), Yolo County Transportation District (YCTD), City of Roseville Public Works (Roseville Transit) and Placer County Transit (PCT), who will pool resources to procure, evaluate and place into revenue service pure battery-electric transit bus technologies (BEBus). The Sacramento Metropolitan Utility District (SMUD), also a project partner, will provide electric power infrastructure and electric power to the transit agencies that are located within its service territory, contributing a \$1MM third-party cash contribution to supplement the local and state funds. The total project budget is \$26.5MM of which the project Partners seek \$18.2MM in California Air Resources Board (ARB) 2014/15/16 AQIP/GGRF funds. The successful award of these grant funds from the (ARB) would significantly supplement the limited financial resources of these four transit agencies, jumpstarting the implementation of zero-emission transit bus technologies in the region.

The primary objectives of this Project are two-fold: the first is demonstrating to the State of California the capabilities of BEBuses across a wide range of route types, climates, and topography; the second is directly familiarizing transit agencies of the greater Sacramento Metropolitan Statistical Area (MSA) with zero-emission bus technologies through real-world deployments into revenue service, accelerating the adoption of these technologies in the region and the state. The outcome of this Project provides the partner transit agencies insight into methodology for fulfilling ARB's stated Advanced Clean Transit goal of 100% zero-emission transit bus service statewide by 2040. It provides the embryonic backbone implementing a solution in the Sacramento MSA through coordinated Battery Electric Bus (BEBus) purchases and necessary electric vehicle supply equipment (EVSE) infrastructure installations at strategic locations throughout the region. This provides opportunities for economies of scale through group purchasing and shared resources, such as battery charging infrastructure and maintenance staff cross training, which will reduce overall costs. We intend for this project to be a replicable model for regional BEBus deployments throughout the state and nation.

While this project will reduce short-term GHG and criteria pollutant emissions, the project's real strength is in its ability to set-up long-term environmental and economic co-benefits to the region as a whole through future expansion. This addresses the intent of AB 32 (Nunez, Chapter 488, Statutes of 2006) by providing a solution to the challenges facing wide-spread commercialization of zero emission bus technologies (i.e., economies of scale production, workforce training and vehicle maintenance and repair, and refueling infrastructure).

SMAQMD specifically designed this project to meet ARB's goals under the Zero Emission Truck and Bus Pilot Commercial Deployment Project Solicitation, the FY 2014-15 Funding Plan, and the FY 2015-16 Funding Plan. The Project will accelerate the deployment of commercially available BEBuses in a coordinated and strategic manner throughout the Sacramento MSA, forming a coordinated regional advanced technology transit hub through the strategically placed EVSE, maximizing the BEBus service territory and range. Furthermore, 92% of Project BEBus activity, as measured through VMT, is deployed to routes in zip codes containing OEHHA-recognized disadvantaged communities (DAC) and 57% of Project BEBus stops are in DAC census tracts, ensuring that short- and long-term benefits will impact the Sacramento area residents who need them the most.

Project Summary for Public Posting

Name of Applicant: Alameda-Contra Costa Transit District

Brief description of proposed project including location: In order for heavy-duty fuel cell vehicles to gain widespread acceptance, fleet operators need to have access to real-world data and lessons learned when making future fleet decisions. The goal of the *AC Transit Fuel Cell Bus Power Plant Retrofit Project* is to extend the service life of the AC Transit fuel cell bus fleet through a competitively bid fuel cell power plant retrofit and provide the data and lessons learned that can assist other transit and heavy-duty vehicle fleet operators.

The project proposes to retrofit six power plants operating currently in AC Transit's fuel cell bus fleet with the latest fuel cell technology. Each failed fuel cell power plant will be replaced with one of the original fuel cell power plants in storage. Most fuel cell suppliers are now offering newer fuel cell system models, which have been marketed as more durable, reliable, and compact. The proposed project will select the highest performing fuel cell power plant model commercially available. The power plants with the least amount of operating hours will be removed from the buses and will be stored on-site. Six next generation fuel cell power plants will replace the original fuel cell power plant. The remaining seven fuel cell power plants will be kept in service until each one catastrophically fails, which is anticipated within the project timeframe.

The proposed project intends to determine two important findings necessary for fuel cell bus commercialization: 1) fuel cell power plant durability, and 2) improved fuel cell power plant performance. Durability of a fuel cell power plant in real-world operation has yet to be determined. For instance, the 2004 model fuel cell power plants operating in AC Transit's fuel cell bus fleet was originally anticipated to operate up to 5,000 hours. Every fuel cell power plant in AC Transit's fuel cell bus fleet has exceeded 5,000 hours. The longest operational fuel cell power plant is currently at 21,500 hours, nearing the durability of a diesel engine at 25,000 hours. It will be a critical milestone for fuel cell technology if any of AC Transit's fuel cells exceed the durability of conventional technology. All of AC Transit's fuel cell power plants will be run until catastrophic failure to produce a statistically significant conclusion of fuel cell durability.

AC Transit will also be able to evaluate and provide data for heavy-duty fuel cell technology. All active fuel cell bus fleets are operating last generation fuel cell systems, resulting in outdated fuel cell bus performance data are based on older fuel cell power plant models. AC Transit can concurrently operate seven fuel cell buses with the original fuel cell power plants along with six buses operating new fuel cell power plants. The old and new fuel cell power plants will be operated on identical and similar routes for an apples-to-apples comparison that will indicate the potential performance of commercial fuel cell technology. The outcomes of this project can help build confidence for fuel cell technology in other heavy-duty applications.

Amount of funding requests: \$3,516,022

Whether the project is expected to be located within or provide benefits to a disadvantaged community: AC Transit has identified potential routes on which the fuel cell electric buses could operate and there are locations both within disadvantaged communities (DAC) as well as offering benefits to DACs. On average for the 25 routes identified by AC Transit, 56% of the miles are within in zip codes containing DACs and 27% of the miles are within a DAC.

Project Summary for Public Posting

Name of Applicant: Center for Transportation and the Environment

Brief description of proposed project including location:

A Project Team consisting of Center for Transportation and the Environment (CTE), Unique Electric Solutions LLC (USL), University of Texas – Center for Electromechanics (CEM), Hydrogenics, Valence, and UPS is currently developing and building an initial fuel cell delivery van for delivery to West Sacramento, CA, for real-world demonstration and validation for up to six months. Validation of established performance objectives is required in the DOE program prior to building additional vehicles with sponsor funding. The vehicle includes the integration of proven components including the fuel cells, batteries, electric motors, hydrogen storage systems, and propulsion system controllers.

With this proposal, CTE is seeking additional funding to support the build and deployment of the follow-on 16 vehicles under the Fuel Cell Hybrid Electric Delivery Van Project (FCHEDV). Based on the initial propulsion system design and demonstration results, the Project Team proposes to manufacture, test, deliver, and deploy 16 fuel cell delivery vans for operation by UPS in regular package delivery service at multiple locations in northern and southern California. Existing diesel-powered delivery vans will be refurbished and integrated with the propulsion system kits in Riverside, CA. Data collection and commercialization are critical components of the vehicle deployment.

The selection of deployment sites for the vehicles is dependent on available fueling locations and proximity of UPS service centers. While undertaking the evaluation of potential locations, the team is strongly considering using hydrogen fueling stations and UPS distribution routes that service disadvantaged communities. The team has preliminarily identified four potential deployment locations for the vehicles, including: West Sacramento, Ontario, Fullerton, and City of Industry.

Amount of funding requests: \$2,749,845

Whether the project is expected to be located within or provide benefits to a disadvantaged community: The project has the potential to domicile vehicles within disadvantaged communities. The W. Sacramento and Fullerton locations are each located within a DAC census tract. The Ontario location and the City of Industry location are both located within a census tract adjacent to a DAC tract. Additionally, three of these four domicile centers will require their vehicles to drive through DAC areas each day to access a local hydrogen fueling station. The areas served by each of the four centers include a varying number of zip codes that contain DACs, offering the benefits associated with zero-emission vehicle deployment to these surrounding communities.