Project Narrative Table of Contents

Project Narrative

a Project Description

a.1 Project Goals and Objectives

The City of Oakland's (City) requests California Energy Commission (CEC) funds to install electric vehicle (EV) chargers in support of the City's light-duty vehicle (LDV) fleet electrification goals. This fleet is essential to delivering necessary services to our residents and enables us to effectively, courteously, and responsibly serve our 433,000+ residents and employees.

Our commitment to our residents and sustainability drives our decarbonization efforts. Two-thirds of our local emissions come from cars and trucks. In 2020, we committed to transition 56% of vehicles from fossil fuel dependence by 2030 and 100% of non-emergency response sedan purchases to zero emission vehicles.

In addition to reducing emissions, we will improve air quality for the health of the Oakland community. A significant portion of our population is a designated low-income and disadvantaged community (LIDAC). Many of these neighborhoods are adjacent to highways, including Interstate 580 (I580), Interstate 80 (I80), and Interstate 880 (I 880) thereby experiencing some of the highest rates of diesel particulate matter (DPM) exposure and asthma diagnosis in the state.[1] Expanding EV infrastructure will reduce the number of fossil-fuel-powered vehicles on these roads, which will decrease the quantity of harmful pollutants in these communities and across our city.

In alignment with our environmental justice goals and commitment to serving our most vulnerable residents, this project will install 100 EV charging ports across 5 strategic sites that power fleet vehicles for three target departments and offices: Public Works, the Police Department (PD), and our Administration Offices.

- Public Works maintains, improves, and preserves Oakland's infrastructure and environment for the residents, businesses, visitors, and future generations of every neighborhood in our diverse City. will manage the project. Public Works, supported by 270 LDVs at our Maintenance Service Center, oversees an illegal dumping program, storm drainage designs, capital contracts, sanitary sewers, creeks, watershed, stormwater, and more.
- The Police Department is committed to reducing crime and serving the community through fair, quality policing. Our PD is served by 136 critical response LDVs across the Police Administration Building and Eastmont Substation.
- Our Administrative Office fleet of 181 LDVs at the City Center West Garage and Frank Ogawa Plaza supports a wide range of 26 total departments that facilitate the delivery of our remaining City services.

This funding is essential to the City's ability to maintain, improve, and preserve Oakland's infrastructure and environment for our diverse city of residents, businesses and visitors both now and for future generations.

[1] OEHHA (2021). CalEnviroScreen 4.0. https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40

a.2 Current Fleet State

The City currently has 587 light-duty fleet vehicles domiciled at the 5 proposed project sites. Of these, 62 are EVs and 525 are internal combustion engine vehicles. Electric fleet vehicles charge at 53 chargers across 4 different sites: 52 ports are Level 2 (L2) and one is a direct-current fast charger (DCFC). The current utilization of these existing chargers is ~20%.

a.3 Proposed Chargers

This application seeks CEC funding to install 100 EV chargers at 5 sites: the Maintenance Service Center, City Center West Garage, Eastmont Substation, Frank Ogawa Plaza, and the Police Administration Building.

This funding will bolster our existing investments in charging infrastructure, increasing the number of chargers we own by 100%. The Maintenance Service Center houses the Public Works fleet and has 19 existing EV charger ports. Administration Office fleet vehicles are domiciled at The City Center West Garage and the Frank Ogawa Plaza adjacent to City Hall, which have 14 and 6 existing EV chargers, respectively. Police Department fleet vehicles are domiciled at the Police Administration Building and the Eastmont Substation, which have 8 and 6 existing EV chargers, respectively. This jump from approximately 50 chargers to 150 is essential to us meeting our future charging needs as we electrify.

The type and number of chargers to be installed at each project site, as well as the cost of the chargers, is shown in Table 1 below.

Table 1. Charging Locations and Costs

Site #	Site Type	Installation Location	Port Type	No. of Ports	Cost per Port	Total Site Cost
1	Maintenance Service Center	7101 Edgewater Dr, Oakland, CA 94621	L2	26	$51,000	$1,530,000
			DCFC	4		
2	City Center West Garage	1250 Martin Luther King Jr Way, Oakland, CA 94608	L2	30	$21,000	$620,000
3	Eastmont Substation	2651 73rd Ave, Oakland, CA 94605	L2	6	$82,000	$820,000
			DCFC	4		
4	Frank Ogawa Plaza	1 Frank H. Ogawa Plaza, Oakland, CA 94612	L2	10	$27,000	$270,000
5	Police Administration Building	Between 6th and Washington St & 6th and Broadway, Oakland, CA 94607	L2	16	$61,000	$1,220,000
			DCFC	4		
TOTAL			**L2**	**88**	**$45,000**	**$4,460,000**
			DCFC	**12**		

a.4 Service Territory bud

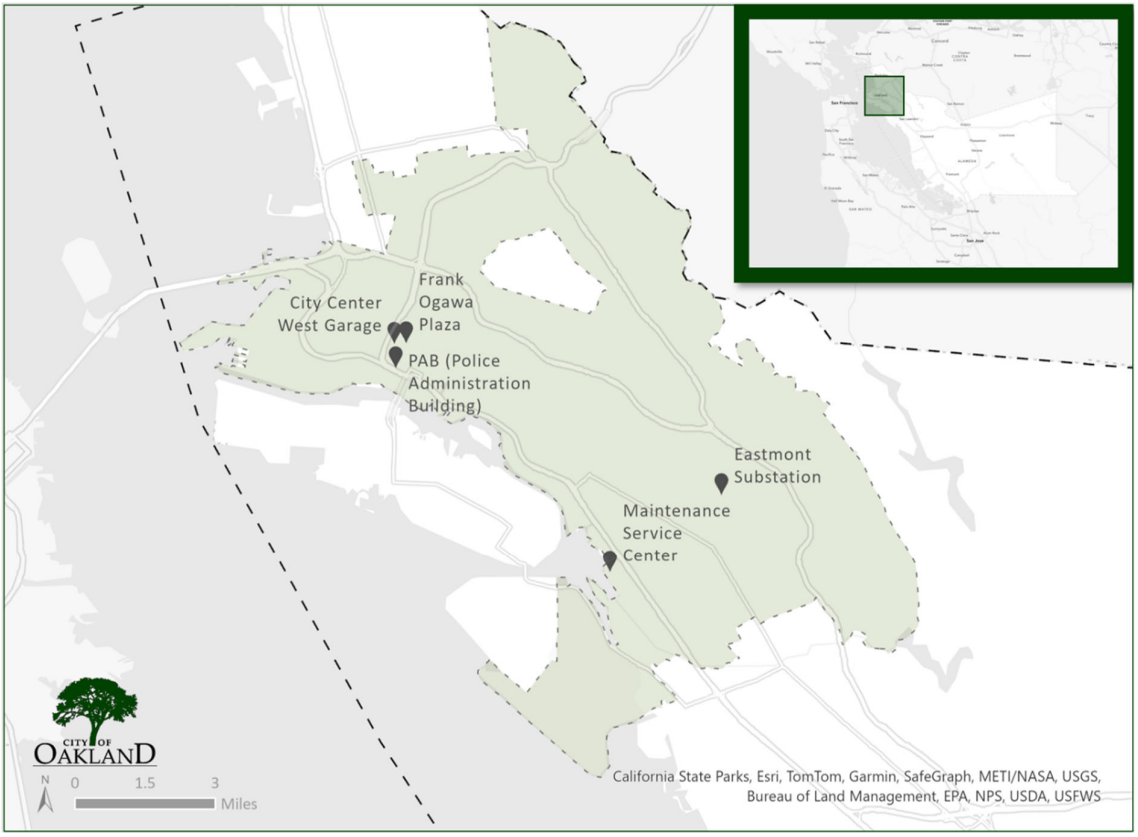

Figure 1. Proposed Sites and Service Territory.

b Electric Vehicle Fleet Procurement and Charger Utilization Plan

b.1 Electrification Strategy

In June 2020, the City adopted our Equitable Climate Action Plan (ECAP) with the primary goal of identifying an equitable and cost-effective path to reduce local climate emissions by at least 56% compared to our 2005 baseline by 2030 and an 83% emissions reduction by 2050. According to our 2019 Greenhouse Gas (GHG) Emissions Inventory, two-thirds of all local emissions come from cars and trucks. This ratio demonstrates the need for us as a city to lead by example and transition our municipal fleet vehicles away from fossil fuel dependence.

In response, the City adopted our Zero Emission Vehicle Action Plan (ZEV AP) in January of 2023 as a direct outcome of our ECAP. One key City leadership action from the ZEV AP (CL-8: Accelerate City Fleet Vehicle Replacement) drives our fleet electrification strategy: by 2030, we will ensure that over 50% of our fleet uses alternative fuels, with 100% of all non-emergency response sedan purchases being zero emission vehicles.

Eleven percent of the existing light-duty fleet vehicles at planned Project sites are EVs, and the City will target to electrify 50% of vehicles by 2030 and 100% by 2045. As we pursue our goals, all new and replacement vehicles will be EVs. Each year, we will replace aging and low-performing vehicles with EVs after first ensuring there is adequate EV charging infrastructure and that there are sufficient funds secured for their procurement.

Figure 2 presents our indicative EV procurement timeline over the next 20 years. Actual EV counts per site each year will vary based on maintenance and replacement timelines of individual vehicles, departmental budget opportunities, and other departmental considerations.

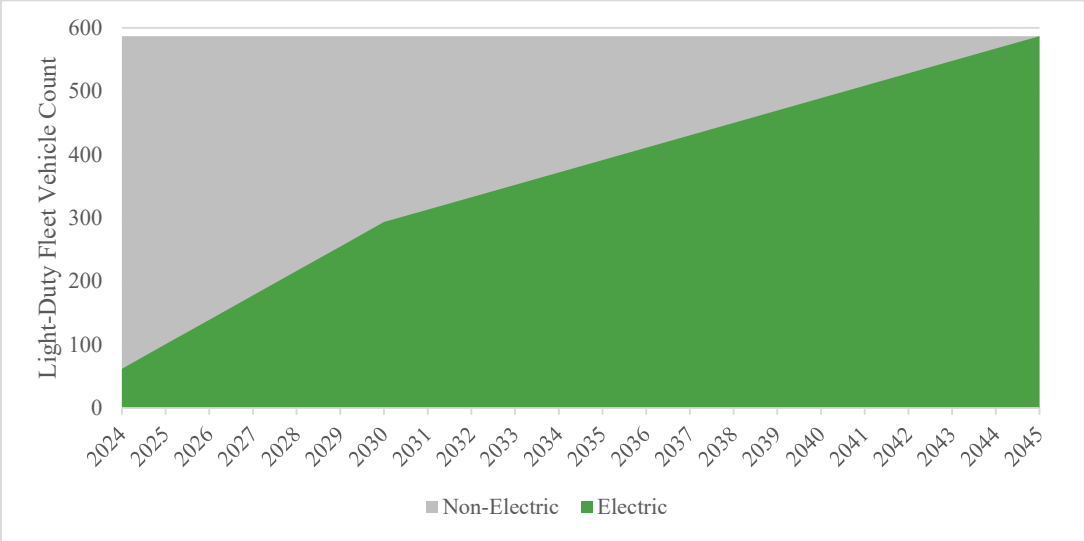

Figure 2. Fleet Electrification Timeline.

b.2 Charger Utilization

Each site's EV procurement timeline will align with when charger infrastructure installation is complete. Once chargers are installed and all LDVs are electrified in pursuit of our 2045 100% EV target, the number of ports will align with number of light-duty fleet EVs. Depending on each site's opportunities, needs, and constraints, up to 9 EVs will charge at each port procured under this grant with, on average, 6 vehicles per port.

Generally, EVs will plug into one of the 88 L2 ports every day at the close of business and charge overnight. While not every vehicle will need to charge every day, the anticipated utilization of the

ports will be at least 50%. Port utilization for the 12 planned DCFC ports will vary as the fleet of 587 vehicles electrifies.

We plan to maximize charger utilization by allowing light-duty fleet vehicles from other sites to charge during daytime, non-priority hours. No chargers will be made available for public use at any location. To maximize CEC's investment, we will also charge medium- and heavy-duty fleet vehicles during non-priority hours if utilization is low. Domiciled light-duty fleet vehicles will always have priority to access a charger when they need one. Clear signage will be installed to ensure compliance with the scheduled charging hours.

b.3 Future Planning

Although the Scope of Work outlined in this application satisfies our planned fleet requirements, we designed this project to remain flexible to the evolving needs of our City and its growing community. Our Zero Emission Vehicle Action Plan (ZEV AP) laid the foundation for us to consistently ensure the long-term benefits of charging infrastructure while fostering adaptability to meet future needs of both the EV market and our community.

Workforce Development: Our long-term strategy aims to connect workforce readiness with the anticipated growth in electric vehicle (EV) demand. Our first action is to fund and conduct a Local Economic Assessment for ZEV Transition (Action ZE-1). This assessment will evaluate regional supply-chains, businesses, and product requirements related to this transition, with a focus on workforce implications. Additionally, we are exploring programs such as apprenticeships, pre-apprenticeships, and on-the-job training. To ensure ongoing responsiveness to our evolving needs, we will actively collaborate with local labor leaders (Action ZE-6).

Future Energy Supply: Given the projected increase in energy demand resulting from expanding our EV infrastructure, we recognize the importance of proactive planning and collaboration with our energy providers. Therefore, we will continue to assess the forecasted energy requirements arising from our increased EV adoption. We will continue to actively collaborate with local energy providers, including Ava Community Energy, to ensure we have the necessary electricity supply and infrastructure to successfully electrify our municipal fleet.

Climate Resilience: We recognize climate resilience is an ever-growing concern to future-proof our assets. We view climate resiliency equally critical to ensuring the infrastructure we build now is protected from the worsening impacts of climate change. In California's coastal cities such as Oakland, rising sea-levels and more severe storms are already causing more frequent flooding, putting our infrastructure at risk. To protect our and CEC's investment, we strategically chose locations that are not projected to be impacted by coastal flooding.

c Project Benefits

c.1 Community Benefits

Our 2018 Climate Emergency declaration[2] emphasized the importance for a Just Transition. Our Just Transition framework envisions a future economy that has detached from fossil fuels in a manner that is both just and sustainable. Aligned with this vision, this project will directly benefit Oakland's Low-Income and Disadvantaged communities (LIDAC), see Figure 3. Low-Income and Disadvantaged Communities (LIDAC) Map.

Per the Council on Environmental Quality's Climate and Economic Justice Screening Tool (CEQ CEJST), neighborhoods in Oakland:

- Are in the 94th percentile for unemployment
- Are in the 92nd percentile for poverty (at or below the Federal poverty level)
- Are in the 99th percentile for low median income

Furthermore, this project directly addresses the disproportionate health challenges related to fossil-fuel transportation methods that our communities face. Many of our LIDAC communities are bordered by highways, including Interstate 580 (I 580), Interstate 80 (I80), and Interstate 880 (I 880). Living near a highway exposes residents to heightened levels of both air and poise pollution. Air pollution causes adverse health impacts including asthma, a condition particularly harmful for children and seniors. According to CEQ CEJST, Oakland has census tracts that are in the 97th percentile for PM 2.5 in the air, the 95th percentile for asthma, 91st percentile for traffic proximity and volume, and 90th percentile for diesel particulate matter (DPM) exposure.[3]

Alarmingly, it is estimated that many LIDACs face 98% higher rates of DPM, according to CalEnviroScreen 4.0[4] and asthma rates 99% higher than those in the rest of the state. This extensive environmental justice and public health issue underscores the urgent need for electrical vehicle infrastructure. Prioritizing the installation of EV chargers in Oakland could facilitate a transition a way from diesel-powered vehicles, ultimately improving the health and well-being of our city.

[2] Oakland's 2018 Climate Emergency Declaration. City of Oakland - File #: 18-0882 (legistar.com)

[3] Council on Environmental Quality's Climate and Economic Justice Screening Tool (n.d). https://screeningtool.geoplatform.gov/en/#14.45/37.80851/-122.27139

[4] OEHHA (2021). CalEnviroScreen 4.0. https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40

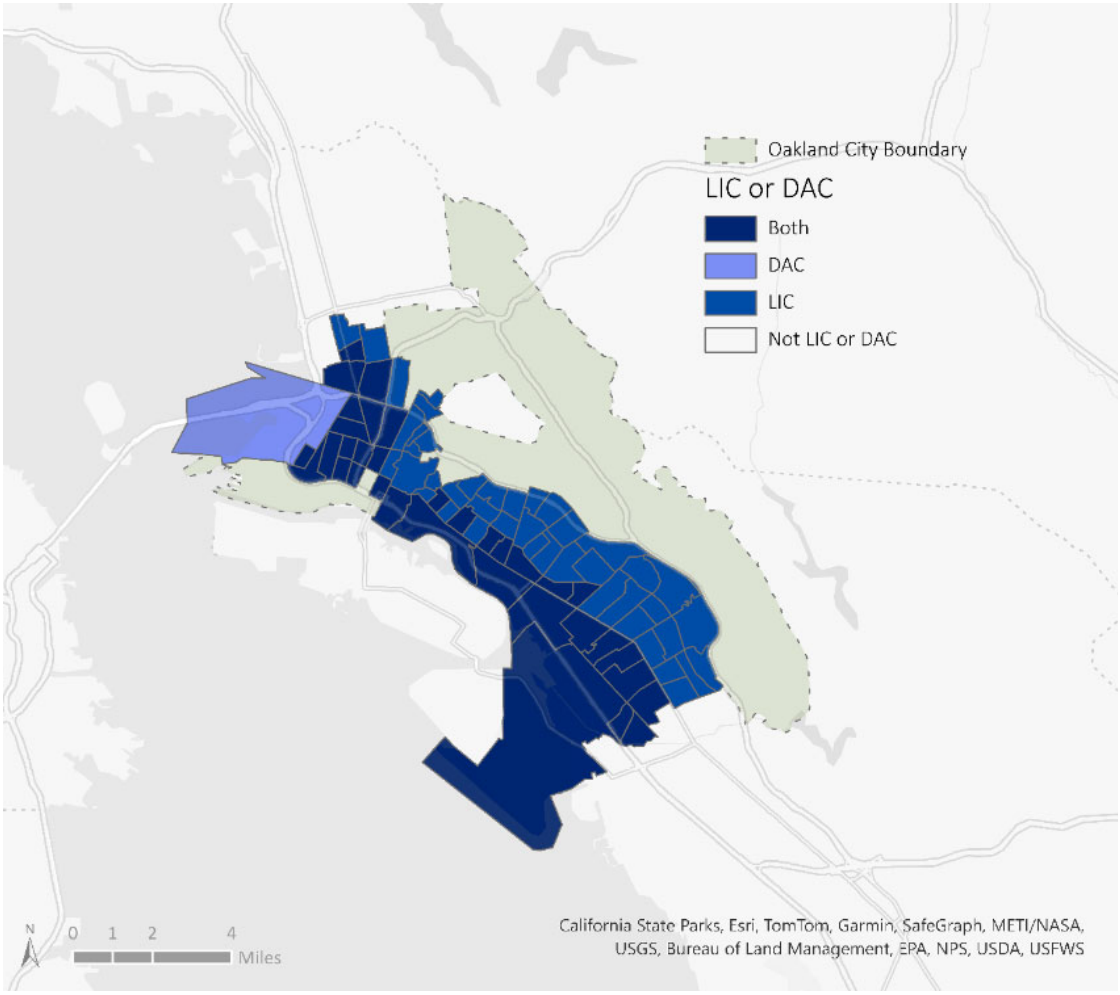

Figure 3. Low-Income and Disadvantaged Communities (LIDAC) Map

As detailed in our ZEV AP, our Just Transition framework also prioritizes strategies that maximize local business and workforce opportunities. We are committed to supporting local jobs related to selling EVs, installing EV chargers, and electricians critical to servicing our network. Our ZEV AP lays out a 'High Road' economic development approach. High road jobs are defined as "safe, family-sustaining careers that lead to high-wage employment." Our city-wide, codified approach provides support systems for expanding opportunities for workers from our disadvantaged communities by working with local programs such as Rising Sun Center for Opportunity and GRID Alternatives.

Furthermore, we recognize that to best prioritize our community's needs effectively, we must constantly gather community feedback and foster community engagement. We are proud that the development of our ZEVAP involved community-based organizations in West Oakland, Fruitvale, East Oakland, and Chinatown as well as volunteer boards and commission including the Mayor's Commission on Persons with Disabilities, the Bicyclist and Pedestrian Advisory Commission, the Parks and Recreation Advisory Commission and the Oakland Youth Advisory Commission.

In this context, we continue to push for equitable community engagement. We are committed, and excited, to hosted a Clean, Green and Just Business and Employment Expo annually (Action ZE-2) and to partner with local workforce training partners to co-create ZEV-specific training programs (Action ZE-3). In 2021-2022 multiple city entities collaborated with partners including Rising Sun Center for Opportunity and the Greenlining Institute to host a Decarbonization Workforce Stakeholder Series focused on the workforce and economic development needs of the electrification

transition. We will continue to find ways to ensure our, and CEC's, investment leads to cascading co-benefits in our community.

c.2 Continued Operations

We will choose an Operations and Maintenance (O&M) vendor through a competitive procurement process. The vendor will be contracted for a maximum of three years at the start of a partnership. To ensure our chargers will be proactively maintained through the six-year period, as required by this solicitation, we will consider negotiating an extension of the O&M contract for the equipment's useful life.

Our selected O&M vendor must have an Open Charge Point Protocol (OCPP)-compliant data management software to enable interoperability between existing and upcoming EV infrastructure. Digital data management will facilitate smooth O&M services, as-needed vendor and equipment upgrades, and system scalability. We will collect frequent, automated reports from our O&M vendor to plan for annual preventative maintenance.

See the Operation and Maintenance Plan for more details.

c.3 Greenhouse Gas (GHG) Emissions Reduction

This project will help the City avoid nearly 996,000 kgCO2e upon completion in 2028 and 18,686,000 kgCO2e by 2045. This is comparable to the amount of the carbon absorbed by 1,160 acres and 21,800 acres of U.S. forests in a year, respectively.[5] The cost benefit score for this project is 433 gCO2e reduction per dollar of CEC investment.

Our current fleet of 587 gasoline, diesel, and electric vehicles includes 4-door sedans and light-duty trucks vehicles. This fleet travels roughly 2,977,000 miles per year. Annual fossil-fuel consumption was estimated using the assumed fuel efficiencies tabulated below[6], and emissions factors from California Air Resources Board (CARB) Low Carbon Fuel Standard (LCFS)[7], also included in the table, were used to estimate CO_2e emissions per fuel type. The resulting baseline carbon emissions for the LDV fleet is 1,490,000 kgCO2e per year.

Table 2. GHG Estimate Assumptions.

Vehicle Type	**Gasoline**	**Diesel**	**Electric**
Efficiency	21 miles/gal	34 miles/gal	0.5 kWh/mile
Energy Density	115 MJ/gal	135 MJ/gal	Not Applicable
Emissions Factor	0.10045 kgCO2e/MJ	0.09944 kgCO2e/MJ	See **Error! Reference source not found.** below

The City purchases Ava Energy's Bright Choice plan which is gradually reducing its current emissions factor of 455 lbs CO2e/MWh to 100% clean energy by 2030, as seen in the figure below.

[5] U.S. Environmental Protection Agency (n.d). Greenhouse Gas Equivalencies Calculator. https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

[6] U.S. Department of Energy (n.d). Alternative Fuels Data Cener. https://afdc.energy.gov/data/10310

[7] U.S. Department of energy (n.d). Dashboard. https://ww2.arb.ca.gov/sites/default/files/classic/fuels/lcfs/dashboard/quarterlysummary/quarterlysummary_073121.xlsx

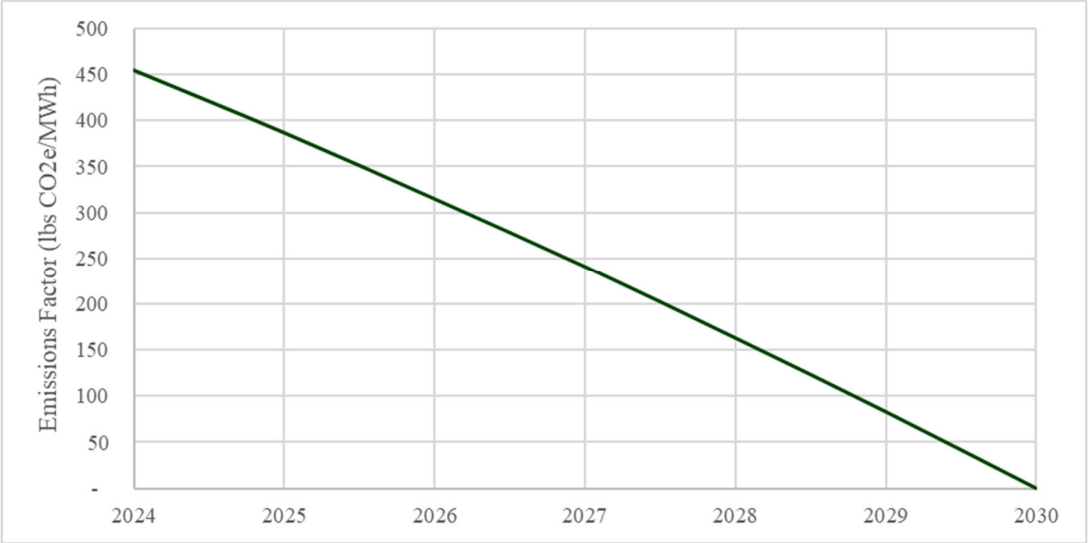

Figure 4. Projected Ava Electricity Emissions Factor Reduction Projection.

The City is aiming to electrify 50% of our municipal passenger fleet by 2030 and 100% by 2045. Figure 5 shows the estimated cumulative emissions of the business-as-usual baseline operations and the projected operations of the electrifying fleet (enabled by the grant-funded EV chargers) and calls out the avoided emissions at the project completion (2028) and key City vehicle electrification target points (2030 and 2045).

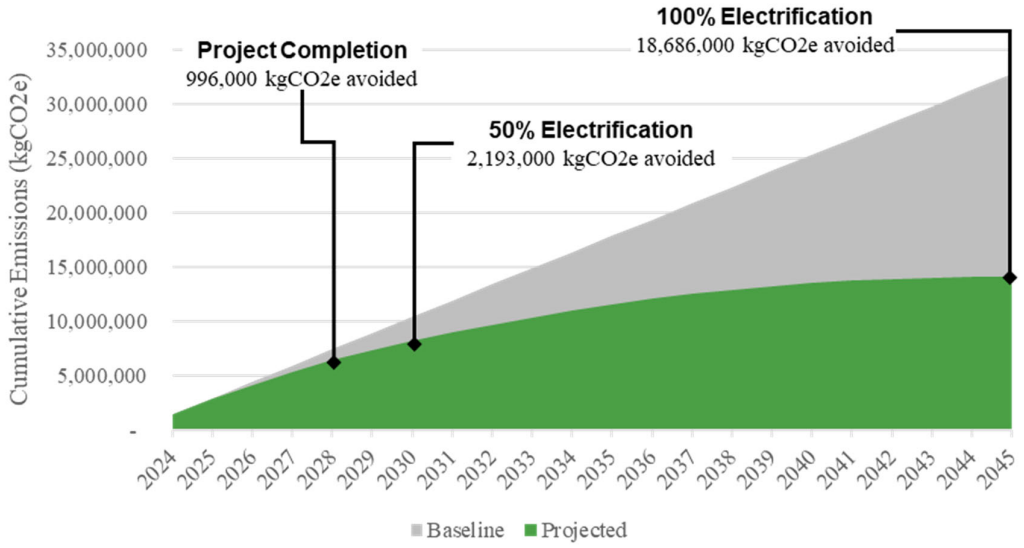

Figure 5. Cumulative Emissions (Baseline vs. Projected).

d Project Readiness

d.1 Site Ownership

Three of the five planned locations of EV charger installations are owned by the City of Oakland. The City-owned sites are approved for the Project to proceed.

The City is currently leasing the Eastmont Substation property from Tidewater Capital, who has approved the required alterations and improvements necessary for the EV charger infrastructure to be constructed and commissioned at the site.

The City is leasing the Police Administration Building parking lot property from California Department of Transportation (Cal-Trans). Cal-Trans Real Estate Manager has indicated approval of the Project provided that the design does not conflict with any structural limitations of the adjacent freeway overpass or exceed the electrical infrastructure limitations of the site. Please see the attached letter of commitment explaining the Police Administration Building's status. We do not foresee any conflicts or limitations that would impact our agreement with Cal-Trans.

d.2 Charger Acquisition Timeline

We anticipate a 6–12-month timeline to acquire EV chargers, panel boards, switchboards, and transformers, depending on the size of the equipment and delays in the supply chain. To minimize wait times, we will contract a design-build vendor who can initiate the procurement process early and secure long-lead procurement items. This will also ensure that we secure a high-value purchase price to maximize the grant funds and City funds expended.

d.3 Utility Connection Readiness Timeline

Three of the five sites will require coordination with the utility for new service connections. The minimum timeline for obtaining a new service at these sites is 12-18 months. We will begin schematic design for these sites first to prioritize early engagement with Pacific Gas and Electric (PG&E). None of these sites are expected to trigger upstream PG&E upgrades at switching stations or sub stations, based on our review of PG&E's latest Integration Capacity Analysis (ICA) Map.

We plan to minimize networked requirement for installed chargers, thereby reducing the requested capacity to PG&E and minimizing additional demand on the grid, by leveraging automated load management (ALMS) on Day 1 of installation.

d.4 California Environmental Quality Act (CEQA) Compliance

The City has completed a preliminary CEQA form included in this application and does not anticipate any environmental permitting issues at any of the sites herein. Furthermore, the City anticipates all sites will be exempt with no foreseen negative environmental impact per CEQA. If the CEC determines any sites are not exempt, the City will conduct a full CEQA review within six months of the fund awarded date.

d.5 Barriers and Solutions

Table 3. Barriers and Solutions

Barriers	Solutions
Utility Application: PG&E requires a $3,500 per site payment for utility upgrades.	Although we have not officially applied, we have communicated with PG&E to streamline the application process where relevant.
Delays in Fleet Electrification: The permitting, procurement, and installation processes all come with their own complexities that may delay the project.	We created a phased project schedule that leaves sufficient time for each phase of the project. In addition, we will maintain constant communication with stakeholders, including EV infrastructure companies and regional officials, to prevent delays.
Future-Proofing: We may need more capacity in the future for electric vehicle charging.	We are working with PG&E to ensure that the upgraded transformers will have additional capacity for future chargers. Additionally, DCFC chargers will use BTC Power chargers that have module components that facilitate scalable upgrades if we decide to install additional chargers at each site.
Grid Reliability: The reliability of the grid may be a challenge since the EV infrastructure will use more electricity. Specifically, there is concerns about sufficient power at Police Administration Building site.	The BTC Power chargers will allow for dynamic power sharing, which will decrease our energy use.

e Team Experience and Qualifications

e.1 Project Team Roles

Our experience with fleet electrification projects that range in scale (750 to 7,500 vehicles), and types (automative, heavy trucks, heavy equipment, police, fire, and landscaping equipment), sets us apart from other project teams. Cumulatively, we have worked in Oakland for over 50 years and have over 20 years of grant management experience.

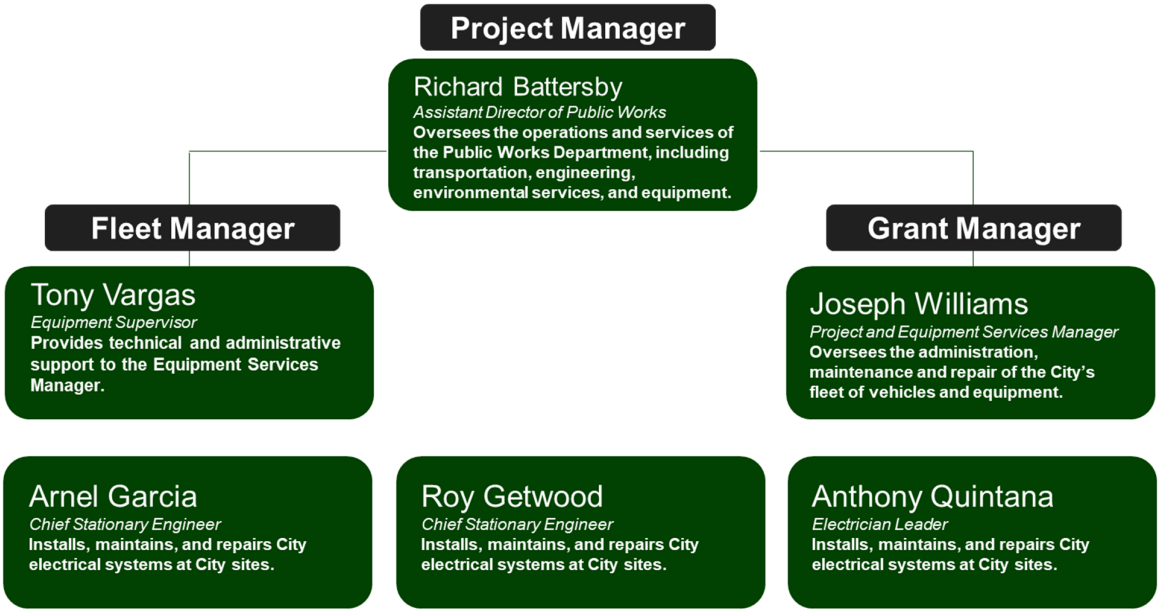

Figure 6. Project Team Organization

Project Manager: Richard Battersby

Richard Battersby, Assistant Director of Public Works, oversees the operations and services of the Public Works Department, including transportation, engineering, environmental services, and equipment. He will be responsible for providing strategic direction, leadership, and guidance to the project team, as well as ensuring alignment with the city's vision and priorities.

He is currently the Assistant Director of Maintenance and Internal Services for the City of Oakland Public Works and has been the Executive Director of the East Bay Clean Cities Coalition since 2003. He has over 30 years in the fleet industry and has managed public and private sector fleets ranging in size from 750 to 7,500 vehicles. Considered by many to be an expert on Renewable Diesel and other alternative fuels, he has over 20 years of experience with alternative fuel vehicles including the implementation of the first ever alternative fuel vehicle program for Airborne Express freight company, the EV Sacramento program, and the State of California CNG and hybrid electric vehicle expansion programs. He is also responsible for fielding over 2,500 alternative fuels and advanced technology vehicles and was involved in the design and construction of numerous alternative fuel and EV charging stations throughout California.

Richard is a Certified Automotive Fleet Manager (CAFM) and Certified Public Fleet professional (CPFP) and has been named Public Sector Fleet Manager of the Year by both Government Fleet Magazine and the American Public Works Association.

Fleet Manager: Tony Vargas

Tony Vargas, Equipment Supervisor, will provide technical and administrative support to the Equipment Services Manager. He will be responsible for ensuring the quality and safety of the equipment, as well as coordinating with vendors and contractors.

He brings over 54 years in the transportation sector. Before Oakland, he was a fleet manager in Sunnyvale and Fremont. In Oakland, he performs grant writing services including identifying opportunities for electric vehicle chargers, electric vehicles, and equipment. In addition, he plans and designs sites, matches installation vendors and hardware suppliers, and works with local electrical service provider and site owners. He is familiar with a variety of municipal fleet types, including automotive, heavy trucks, heavy equipment, police, fire, and landscaping equipment. He is specialized in upgrading city fleet to comply with clean air standards by replacing ICEs with plug in hybrids and electric vehicles.

Grant Manager: Joseph Williams

Joseph (Joey) William, Project and Equipment Services Manager, will oversee the administration, maintenance, and repair of the City's fleet of vehicles and equipment. He will be responsible for evaluation of project's needs, goals, and outcomes. He will assist with procurement, contract management, and reporting.

He has been with the City of Oakland since 1999. Currently, as Fleet Manager he directs and coordinates fleet maintenance and repair operations for 1,800 equipment units at several facilities, including both Automotive and Heavy Equipment. He also establishes and administers the Division's budget, ensures regulatory compliance with all governing agencies, prepares equipment and contract bid specifications, establishes vendor contracts, coordinates staff training and development, sets Division goals and objectives, creates and revises Standard Operating Procedures, prepares and distributes agenda reports and directly supervises 5 staff members. Joey's specialty in fleet maintenance and repair operations positions us to have a technically high standard in the installation of our electrical vehicle infrastructure.

Anthony Quintana, as Electrician Leader, acts as crew leader and performs a variety of the more difficult electrical installations, alternations, and repair work. He tests, locates, and troubleshoots electrical equipment and leads repairs. Additionally, he installs and maintains lighting systems for traffic signals and streetlights, repairs circuit diagrams, blueprints, schematics, and shop drawings, and modifies and repairs electrical systems, including conduits, transformers, pull boxes and switches. He also has experience replacing fuses and lamps, assembling traffic signal heads, and installing overhead and underground cable. Alongside his electrician work, he assigns and schedules work, conducts on-the job training, and assists in the performance evaluation process.

Roy Getwood, Chief Stationary Engineer, brings 10 years and **Arnel Garcia**, Chief Stationary Engineer, brings 12 years of experience as Chief Stationary Engineers. As engineers, they assign, schedule, supervise and review the installation, operation and maintenance of mechanical and electrical systems including heating, ventilation, air conditioning, security, and emergency power generators. They order materials, parts and supplies for maintenance and repairs from vendors and suppliers, and requisition mechanical and electrical building equipment for new installations or replacement installations. Additionally, they supervise emergency repairs of electrical, mechanical, and plumbing systems. If repairs are needed, they analyze cost for modifications to existing equipment and new installations and make recommendations regarding materials and type of systems. They inspect the installation of new equipment to ensure compliance with blueprints and specifications. They also work with external contractors and review their work and authorize payment for work in compliance with specifications.

As a team, we understand the complexities fleet electrification projects present and will leverage our decades of experience to streamline processes and meet deadlines. Our deep experience in the transportation sector, coupled with our successful track record in grant-funded electric vehicle and charge installation projects, uniquely positions us to excel in serving this initiative.

f Project Budget

f.1 Need for Funding

CEC funding is essential for ensuring that the EVs we procure have reliable and accessible charging infrastructure. The City of Oakland has budget constraints that pose a challenge to us meeting our rapid and ambitious fleet electrification goals.

In addition to enabling our LDV fleet transition, CEC funding will help the City lead by example and promote EVs to the broader public.

f.2 Proposal Budget

The Total Proposal Budget is $5,286,371 which is comprised of $2,300,000 for the CEC Share and $2,986,371 from Match Share.

The proposal budget includes the following categories which are expanded upon in the Proposal Budget Template Excel deliverable: Direct Labor, Fringe Benefits, Travel, Equipment, Materials and Misc, and Subrecipients and Vendors.

The project will minimize costs by selecting the appropriate charger type and quantity, and designing well planned charger locations to maximize their usage and meet the City's needs across our sites.

Costs for Direct Labor, Fringe Benefits, Travel, Equipment, and Materials and Misc were added into the Proposal Budget Template Excel directly. Travel and Equipment, will all be handled by the ECVS Vendors, so there is no anticipated costs related to jurisdiction staff in those categories. A federally pre-negotiated indirect cost of 24.38% was added to the direct labor costs to accommodate for indirect jurisdiction costs.

The table below illustrates the Vendor costs associated with purchasing and installing the ECVS costed for this grant. Those costs include all the material, equipment, and labor for each item below:

Table 4. Materials, Equipment, and Labor Costs Included.

Category	Details
EV Chargers and Infrastructure	• Receptacle Post • Weatherproof Outlet Cover • Automated Load Management System (ALMS) • EV Dispenser - Level 2 Network charger • EV Dispenser - Level 3 DCFC • Circuit Breakers
Materials and Equipment	• Step down transformers • Switchboards and electrical service panels • Conduit systems • Wiring • Receptacle (NEMA 14-50) • Smart Receptacle • Trenching and or directional drilling
Civil	• Remove pavement for trenching • Asphalt pavement • Striping • Vertical penetrations • Concrete pad
Additional Costs and Contingencies	• Testing and Commissioning (10% markup for electrical and EV equipment)

	• Indirect (26% markup for Supervision, QA, Documentation, OH&P)

These costs were estimated site by site by reviewing the electric vehicle charging station (EVCS) layout plans, existing site plans and Google Map/Earth mages, and reviewing existing site infrastructure and electrical capacity (where information was available). If existing electrical information was not available, it was conservatively assumed that a new electrical service would be required. Furthermore, it should be noted that the maximum grant funding per L2 port is $12,500 and per DCFC is $100,000, which was used for the estimate of the Maximum Grant Total.

Furthermore, it should be noted that the cost estimate is classified as a Class 5 Budget Control Estimate according to the Association for the Advancement of Cost Engineering (AACE) Cost Estimate Classification Matrix. The accuracy range of a Class 5 estimate may vary depending on project need and stage. In this estimate, the accuracy range is defined as -40% and +70%. The accuracy range represents what the construction market would likely return as bids should the project be tendered as per the project program.

Table 5. Summary of Estimated Costs.

The table below shows a summary of our estimated costs.

ECVS Costs Summary	Number of Ports	Estimated Cost ($)	Maximum Grant Total ($)	Estimated Cost Per Port ($)	Maximum Grant Per Port ($)	Total Dispensed Energy* (kWh)	Cost per Dispensed kWh ($/kWh)
L2 Ports	88	N/A	$1,100,000	N/A	$12,500	1,195,000	N/A
L3 DCFC Ports	12	N/A	$1,200,000	N/A	$100,000	657,000	N/A
Total	**100**	**$4,460,000**	**$2,300,000**	**$45,000**	**$23,000**	**1,852,000**	**2.41**

*Charging demand was estimated for one year of use during which each L2 port was utilized nightly for 6 hours at full capacity and each DCFC port was utilized nightly for 1 hour at full capacity. This assumption is consistent with ALMS assumptions.

Table 6. Estimate Costs per Site.

Site #	Site Type	Installation Location	No of L2 Ports	No of DCFC Ports	Estimated Cost ($)	Maximum Grant Total ($)
1	Maintenance Service Center	7101 Edgewater Dr, Oakland, CA 94621	26	4	$1,530,000	$725,000
2	City Center West Garage	1250 Martin Luther King Jr Way, Oakland, CA 94608	30	0	$620,000	$375,000
3	Eastmont Substation	2651 73rd Ave, Oakland, CA 94605	6	4	$820,000	$475,000
4	Frank Ogawa Plaza	1 Frank H. Ogawa Plaza, Oakland, CA 94612	10	0	$270,000	$125,000
5	Police Administration Building	Between 6th and Washington St & 6th and Broadway, Oakland, CA 94607	16	4	$1,220,000	$600,000
Total			**88**	**12**	**$4,460,000**	**$2,300,000**

Table 5. Proposal Budget Information.

The Table below includes the total Proposal Budget which can also be further explored in the Proposal Budget Template Excel.

Cost Category	CEC Share	Match Share	Total
Direct Labor	$-	$325,983	$325,983
Fringe Benefits	$-	$66,433	$66,433
Total Labor	**$-**	**$392,416**	**$392,416**
Travel	$-	$-	$-
Equipment	$-	$-	$-
Materials/Miscellaneous	$-	$354,480	$354,480
Subrecipients/Vendors	$2,300,000	$2,160,000	$4,460,000
Total Other Direct Costs	**$2,300,000**	**$2,514,480**	**$4,814,480**
Indirect Costs	$-	$79,475	$79,475
Profit (not allowed for grant recipients)	$-	$-	$-
Total Indirect and Profit	**$-**	**$79,475**	**$79,475**
Grand Totals	**$2,300,000**	**$2,986,371**	**$5,286,371**

f.3 Matching Funding

The City commits to a minimum 30% match to this project. Match funding will come from our estimation of the fair market value of property we own or lease. The City did a preliminary assessment of the fair market value of each relevant parking spot at each site to be used as match. In addition to the City's general fund, the three sites that are owned by the City and have parking spaces rented out generate cash that will be used to support funding the City's cash match for this grant. The two sites that are rented out by the City for its use of the parking spots will also be used as match; this cost is broken out in the materials and miscellaneous portion of the budget worksheet. These values were developed by the City's Economic and Workforce Development Department and estimate the rent the City will pay for the spots at the two rented sites over the course of the grant term.

This match from the City underscores a top-level commitment to the success of the project. CEC funding, combined with the City's match, allows us to be more efficient and provides an economy of scale as we transition our fleet.

g Sustainability and Innovation

g.1 Innovative Charger Technology

While the City has used ChargePoint and BTC Power chargers in the past, we are open to pursuing other vendors that provide innovative strategies and excellent customer service. When exploring vendor options, there are a suite of features that are important to us. Having worked on other fleet projects, we understand the many administrative and maintenance hurtles that we seek to reduce as much as possible through selecting a vendor that offers automated features.

Having ISO 15118 Plug-and-Charge function is another requirement. The feature allows us to automatically bill users with a Public Key Infrastructure (PKI) technology. The Plug-And-Charge can work with any new and or existing electric vehicle charging infrastructure. It not only streamlines payments and reduces administrative hurdles, but it allows for more transparency with our different users.

We are also interested in chargers that have automatic smart charging systems and dynamic power sharing. Smart sharing systems allows individuals to monitor the charging of their vehicle, set charging schedules, and have access to data the system collects to inform our operations decisions. Dynamic power sharing, or dynamic load management, allows multiple vehicles to charge from the same charger at faster speeds. The system automatically balances the charge between the vehicles, optimize charging times. This innovation will also help us reduce infrastructure costs.

These features will provide us with real-time availability of information like peak power pricing, greenhouse gas emissions, and charging station availability. Having access to this data can help us determine the best time of day to charge our vehicles to maximize our utilization. Additionally, it can help us better understand the usage rates of their charges. These features are critical to ensure the long-term success of our chargers.

g.2 Grid Sustainability and Innovation

We expect to minimize strain on the grid via ALMS which allows us to manage the power demand across all chargers at each site based on real-time conditions to optimize efficiency, prevent grid overload, and minimize electrical infrastructure upgrades. Most of our LDVs will plug-in overnight, and ALMS will manage the EV charging loads to minimize peak demand, shift demands to off-peak hours, and maximize the utilization of available renewable energy resources.

These sites are also compatible with vehicle-to-grid (V2G) technology, which allows any EV plugged into a charger to act as a battery storage system that can send power back to the grid during periods of utility grid instability and other high-demand periods. This will allow our planned projects to enhance grid reliability, minimize full black-outs, and preserve power for critical demands during planned and emergency outage events. Three of the five planned project sites require utility service connections, and none are expected to trigger upstream PG&E grid upgrades or place excessive burden on the utility grid.

The primary outcome of this project will be reduced carbon emissions resulting from our municipal fleet vehicles (as outlined in section c.3), improved air quality within our local communities, and a happier, healthier, and more sustainable Oakland.