# Zero-Emission Bus Rollout Plan

## Section A: Transit Agency Information

*Please provide the following information regarding your agency.*

**Lassen Transit Service Agency (LTSA)**
707 Nevada Street, Suite 4
Susanville, CA 96130

Lassen Transit Service Agency (LTSA) oversees and administers public transportation services throughout Lassen County, known as Lassen Rural Bus. Lassen Rural Bus provides fixed route and demand response services.

- **Fixed Routes**: LTSA provides a variety of fixed route, deviated fixed route, and demand response services around Susanville, throughout the county, and into Plumas County. These routes include the Eagle Lake Demand Response Route, South County Route, West County Route, South County Commuter, Susanville City Route, and Susanville "Express" City Route.

- **Dial-a-Ride**: door-to-door transportation services to those 60 years of age and older or to those with a disability. The service operates within the city limits of Susanville and customers must schedule their rides at least one day in advance.

LTSA currently operates a fleet of 13 revenue vehicles to provide these services: a combination of buses, freightliners, cutaways, and vans. All vehicles are stored at the maintenance facility located at 701-980 Johnstonville Road, Susanville, CA. LTSA service area is part of the Lassen County Air Pollution Control District (APCD) and the North East Plateau Air Basin.

With a countywide population of 29,904[1] and six vehicles used in maximum service, LTSA is classified as a small transit agency under the Innovative Clean Transit (ICT) mandate and is required to submit a zero-emission (ZE) rollout plan to the California Air Resources Board (CARB) by July 1, 2023[3].However, LTSA has approval from CARB to submit the ICT rollout plan by January 2024.

Peak vehicles: 6
Population: 29,904[1]

Contact Information:
John Clerici
Executive Director
Lassen County Transportation Commission
PH: 530-919-9739
jlfclerici@gmail.com

[1] https://www.census.gov/quickfacts/fact/table/lassencountycalifornia/PST045222

# Section B: Rollout Plan General Information

1. *Does your transit agency's Rollout Plan have a goal of full transition to zero-emission technologies by 2040 that avoids early retirement of conventional transit buses?*
   Yes, the goal is for a full transition.
2. *The ICT regulation requires 100% ZEB purchases in 2029. Conventional transit buses that are purchased in 2028 could be delivered in or after 2029. Please explain how your transit agency plans to avoid potential early retirement of conventional buses in order to meet the 2040 goal.*
   LTSA Rollout Plan has a goal of full transition by 2040 and that can be achieved with first year of ZEB purchases in 2031 and first year of 100% ZEB purchases in 2032. LTSA operates cutaways that currently lack equivalent operational capabilities in electric vehicles (e.g. range and battery size). Furthermore, three vehicles of the fleet have a freightliner chassis that are not currently commercially available as EV equivalents with the specific characteristics required by LTSA operations. For example, LTSA's electric freightliners will need to be equipped with automated snow chains critical for operations in heavy snow common in the region.
3. *When did your transit agency's board or governing body approve the Rollout Plan?*
   a. *Approval date: (add date)*
   b. *Resolution number (add resolution #)*
   c. *Is a copy of the board approved resolution attached to the Rollout Plan submitted to CARB?* Yes
4. *Contact information for follow-up on details of the Rollout Plan (optional)*
   a. John Clerici
   b. Executive Director Lassen County Transportation Commission
   c. 530-919-9739
   d. jlfclerici@gmail.com

5. *Who created the rollout plan?* A consultant
   a. *If consultant, please identify the company name:* Stantec Consulting Services Inc.
6. *Cost for Rollout Plan creation (optional)*
7. *How many person-hours did it take to create the Rollout Plan? (optional)*

# Section C: Technology Portfolio

*What type(s) of zero-emission bus technologies (e.g., battery electric and fuel cell electric buses) does your transit agency plan to deploy through 2040?*

Currently, LTSA's fleet propulsion portfolio includes diesel buses, Freightliners gasoline cutaways, and vans. LTSA plans to deploy a fleet of battery electric vehicles, including low floor buses, Freightliners and cutaways.

# Section D: Current Bus Fleet Composition and Future Bus Purchases

1. *Please complete Table 1 with information on each individual bus in your current bus fleet. Please identify the fuel type of each individual conventional bus as diesel, compressed natural gas (CNG), liquefied natural gas (LNG), diesel hybrid (dHEB), gasoline hybrid (gHEB), propane, or gasoline. For zero-emission technologies, identify the fuel type as hydrogen or electricity and indicate which charging technology (depot, wireless, and/or on-route) will be used. Bus types include standard, articulated, over-the-road, double decker, and cutaway buses.*

LTSA currently owns a fleet of 13 vehicles, including diesel, and gasoline vehicles. LTSA's fleet outlook aims to keep the total fleet size at 13 by the end of 2040.

Table 1: Current Bus Fleet

| Quantity | Vehicle Year | Vehicle Type | Vehicle Manufacturer | Vehicle Length (ft) | Fuel Type | Vehicle Age (Years) |
|---|---|---|---|---|---|---|
| 1 | 2010 | Bus | Gillig | 40 | Diesel | 13 |
| 1 | 2012 | Bus | Gillig | 40 | Diesel | 11 |
| 3 | 2014 | Cutaway | Arboc | 26 | Gasoline | 9 |
| 2 | 2016 | Freightliner | Freightliner | 30 | Diesel | 7 |
| 2 | 2019 | Cutaway | GMC | 26 | Gasoline | 4 |
| 1 | 2020 | Freightliner | Glaval | 32 | Diesel | 3 |
| 1 | 2020 | Van | Ford | 20 | Gasoline | 3 |
| 1 | 2020 | Bus | Gillig | 40 | Diesel | 3 |
| 1 | 2022 | Cutaway | Dodge Chrysler | 26 | Gasoline | 1 |

2. *Please complete Table 2 regarding expected future bus purchases, including the number of buses in total expected to be purchased or leased in the year of purchase. Identify the number and percentage of ZEBs of the total bus purchases each year, as well as bus types and fuel types. Identify the same type of information for purchases of conventional buses. Bus types include standard, articulated, over-the-road, double decker, and cutaway buses. For zero-emission technologies, please identify the fuel type as hydrogen or electricity indicate which charging technology (depot, wireless, and/or on-route). For conventional technologies, identify the fuel type as diesel, compressed natural gas (CNG), liquefied natural gas (LNG), diesel hybrid (dHEB), gasoline hybrid (gHEB), propane, or gasoline.*

Table 2 represents the anticipated revenue service vehicles that will be purchased in the future. The fleet replacement plan presented below indicates annual vehicle purchases until 2040.

Table 2: Future Vehicle Purchases (Required)

| Timeline (Year) | Total # of Buses to Purchase | # of ZEB Purchases | % of Annual ZEB Purchases | ZEB Bus Type(s) | ZEB Fuel Type(s) | # of Conv. Bus Purchases | % of Annual Conv. Bus Purchases | Type(s) of Conv. Buses | Fuel Type(s) of Conv. Buses |
|---|---|---|---|---|---|---|---|---|---|
| 2023 | 4 | 0 | 0% | N/A | N/A | 4 | 100% | 3-Cutaways, 1-Van | Gasoline |
| 2024 | 0 | 0 | 0% | N/A | N/A | 0 | 0% | N/A | N/A |
| 2025 | 1 | 0 | 0% | N/A | N/A | 1 | 100% | 1-40' Bus | Diesel |
| 2026 | 3 | 0 | 0% | N/A | N/A | 3 | 100% | 2-Freightliners, 1-Van | Diesel, Gasoline |
| 2027 | 2 | 0 | 0% | N/A | N/A | 2 | 100% | 2-Cutaways | Gasoline |
| 2028 | 0 | 0 | 0% | N/A | N/A | 0 | 0% | N/A | N/A |
| 2029 | 1 | 0 | 0% | N/A | N/A | 1 | 100% | 1-Freightliner | Diesel |
| 2030 | 1 | 0 | 0% | N/A | N/A | 1 | 100% | 1-Cutaway | Gasoline |
| 2031 | 4 | 1 | 25% | 1-40' bus | Battery electric | 3 | 75% | 3-Cutaways | Gasoline |
| 2032 | 2 | 2 | 100% | 2-Vans | Battery electric | 0 | 0% | N/A | N/A |
| 2033 | 0 | 0 | 0% | N/A | N/A | 0 | 0% | N/A | N/A |
| 2034 | 0 | 0 | 0% | N/A | N/A | 0 | 0% | N/A | N/A |
| 2035 | 2 | 2 | 100% | 2-Cutaways | Battery electric | 0 | 0% | N/A | N/A |
| 2036 | 2 | 2 | 100% | 2-Freightliners | Battery electric | 0 | 0% | N/A | N/A |
| 2037 | 1 | 1 | 100% | 1-40' bus | Battery electric | 0 | 0% | N/A | N/A |
| 2038 | 3 | 3 | 100% | 1-Cutaway, 2-Vans | Battery electric | 0 | 0% | N/A | N/A |
| 2039 | 4 | 4 | 100% | 1-Freightliner, 3-Cutaways | Battery electric | 0 | 0% | N/A | N/A |
| 2040 | 0 | 0 | 0% | N/A | N/A | 0 | 0% | N/A | N/A |

3. *Table 3 – Range and estimated costs of Future ZEB purchases (optional)*

4. *Is your transit agency considering converting some of the conventional buses in service to zero-emission buses?*

LTSA is not considering converting conventional buses to zero-emission buses. LTSA will purchase zero-emission vehicles for replacement of buses per the timeline above.

# Section E: Facilities and Infrastructure Modifications

1. *Please complete Table 5 with names, locations, and main functions of transit agency divisions or facilities that would be involved in deploying and maintaining zero-emission buses. Please limit the facilities to bus yards and facilities with maintenance, fueling, and charging functions, and exclude other operational functions like training centers, information and trip planning offices, and administrative buildings.*

LTSA's facility is located at 701-980 Johnstonville Road, Susanville, CA 96130, which houses vehicle washing, fleet parking, employee parking, maintenance, and operations. The facility consists of two buildings, the main building at 6,046 sq. ft. houses maintenance and operations and the 2,300 sq. ft. wash building. The property is bounded to the west by a slough/drainage channel and Johnstonville Rd. to the east. The property is paved within the parking area and space between the buildings with two driveways onto the road. The entire facility is fenced, and the driveways have motorized vehicle gates.

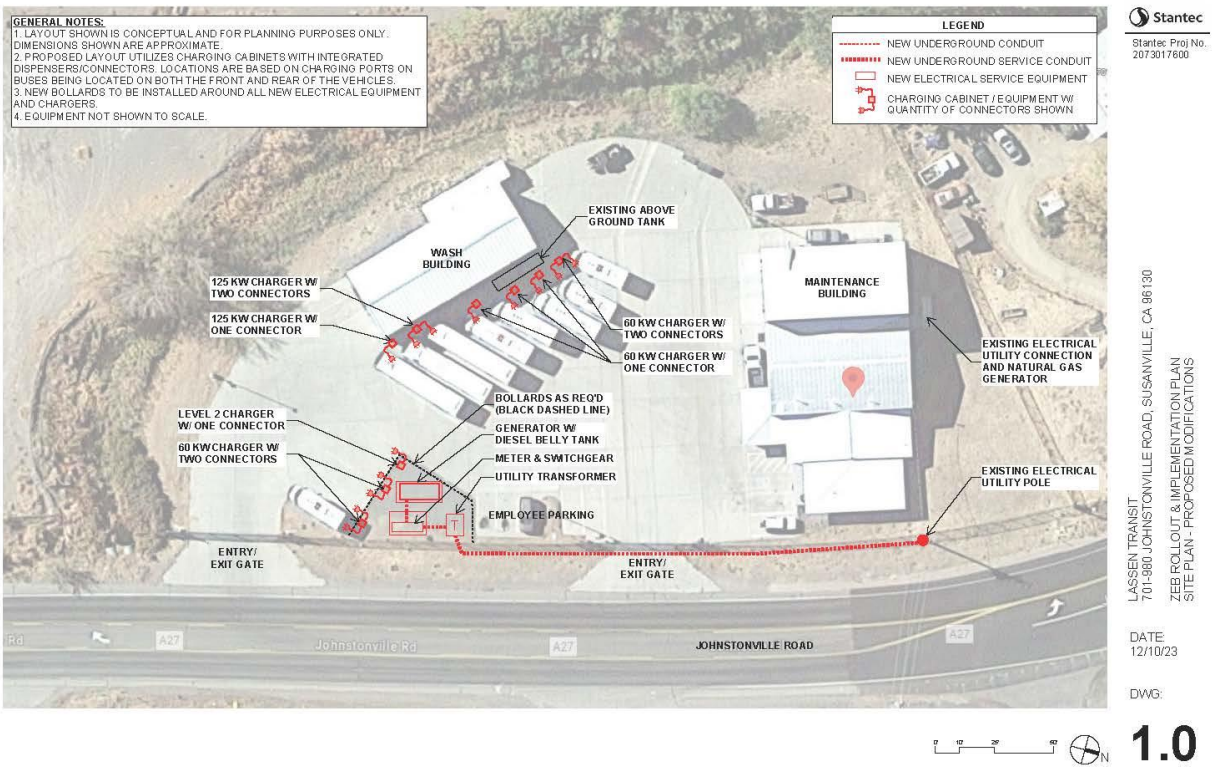
Figure 1: Aerial image of facility


Table 5: Facilities Information and Construction Timeline (Required)

| Division/ Facility Name | Address | Main Function(s) | Type(s) of Infrastructure | Service Capacity | Needs Upgrade? (Yes/No) | Estimated Construction Timeline |
|---|---|---|---|---|---|---|
| LTSA Facility | 701-980 Johnstonville Road, Susanville, CA 96130 | Operations, Maintenance, Training Fueling | New charging equipment, electrical upgrades, safety upgrades | 13 revenue vehicles | Yes | 2030-2039 |

The schematic below shows a potential layout of the charging infrastructure.

**Figure 1: LTSA's site plan with proposed infrastructure modifications**




*Questions 2 through 5 are optional.*

6. *Please identify the electric utilities in your transit agency's service area.*

LTSA's service area in Lassen County is covered by multiple utility providers: Lassen Municipal Utility District, Pacific Gas and Electric (PG&E), Surprise Valley Electrification Corp, and Plumas-Sierra Rural Electric Cooperative. However, an early engagement has been carried out with Lassen Municipal Utility District to identify the required power required at the facility and the anticipated timeline. The discussion also included details about potential electricity cost, payment for grid facility upgrades, and available capacity for nearby substations. Throughout this engagement, no red flags or obstacles were identified that would prevent the electrification of LTSA's facility.

# Section F: Providing Service in Disadvantaged Communities

1. *Does your transit agency serve one or more disadvantaged communities, as listed in the latest version of CalEnviroScreen? Yes/ No (required)*
   *a. If yes, please describe how your transit agency is planning to deploy zero-emission buses in disadvantaged communities (required)*

There are no CalEnviroScreen-defined disadvantaged census areas in Lassen County or in Plumas County where LTSA provides service to. However, to make the largest positive impact on low air quality and pollution, LTSA can explore prioritizing ZEB deployment in routes that go through the orange-colored census tract that encompasses Susanville, as it displays the highest pollution burden score percentile in the county, at 51%.

**Figure 2: CalEnviroScreen Disadvantaged Communities in LTSA service area**

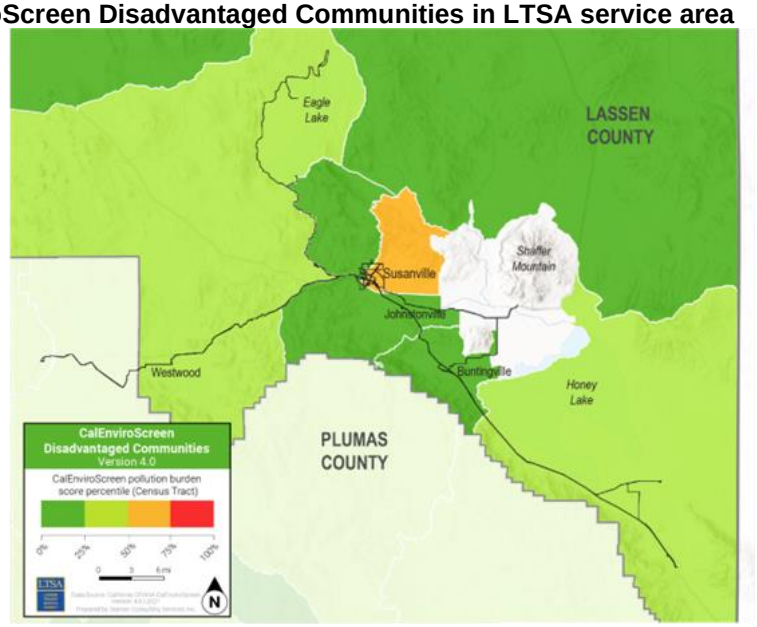



*Table 7: Service in Disadvantaged Communities (Optional)*

# Section G: Workforce Training

*Describe your transit agency's plan and schedule for the training of bus operators and maintenance and repair staff on zero-emission bus technologies. (Required)*

While maintenance services are not directly provided by LTSA's staff, the list below provides a high-level overview of LTSA's plan for the training requirements and potential agreement standards for third party bus maintenance and repair staff on ZEB technologies.

- BEB maintenance technician training
    - Preventative maintenance training
    - Electrical/electronic training
    - Multiplex training
    - HVAC training
    - Brake training
    - Energy Storage System (ESS), lithium-ion battery and energy management hardware and software training
    - Electric drive/transmission training

The required overall skillsets/knowledge areas include:

- Maintenance Staff
    - Safety protocols for high-voltage, batteries and chargers
    - Preventative maintenance – buses (and sedans)
    - Onboard diagnostic systems
    - Multiplexing
    - HVAC
    - Brake systems
    - Energy Storage System, lithium-ion battery and energy management hardware and software
    - Electric propulsion
    - Monitoring alerts and necessary updates to maintenance management software
    - Charging dispensers
        - Preventative maintenance
        - Charger diagnosis and repair
        - Smart Charger software
- Towing Staff/Contractors
    - Schedule and test towing training with staff and any contractors who will tow the BEBs for each type of BEB

Furthermore, LTSA will seek to implement bus operator training with the first arrival of battery-electric vehicles to ensure continuity of the work force and ensure efficiencies in the bus operations. Additionally, LTSA will coordinate training with first responders and internal scheduling/planning staff.

- Bus Operators
  - Drive training
  - Vehicle/system orientation
  - BEB driving techniques, including methods to maximize range and battery life
  - BEB vehicle and associated systems orientation including onboard diagnostics
  - Safety protocols
- First Responders
  - Training on layout, componentry, safety devices, and other BEB features
- Planning/Scheduling/Dispatching Staff
  - Training on BEB-specific features that impact operating parameters

*Table 8: Workforce Training Schedule (Optional)*

The following list provides a high-level overview of the schedule for training. LTSA will likely work with its future O&M contractor to refine this schedule, particularly depending on the scheduled delivery and lead time for ZEB production from manufacturers.

| **Year** | **Training: Operators, Maintenance staff, Technicians** | **Training - Other** |
|---|---|---|
| FY2031 | Original equipment manufacturer (OEM) training | OEM training for all other staff |
| FY2031 | Training to planning, scheduling, dispatching Staff, and bus operators | Coordination with local fire and emergency response department for ZE technology for emergency responses |
| FY2032 | OEM training | No activity |
| FY2033 | No activity | No activity |
| FY2034 | No activity | No activity |
| FY2035 | OEM training | No activity |
| FY2036 | OEM training<br><br>Refresher for planning, scheduling, dispatching staff, and bus operators | Local fire and emergency response department refreshers |
| FY2037 | OEM training | No activity |

| Year | Training: Operators, Maintenance staff, Technicians | Training - Other |
|---|---|---|
| FY2038 | OEM training | No activity |
| FY2039 | OEM training | Local fire and emergency response department refreshers |

# Section H: Potential Funding Sources

*Please identify all potential funding sources your transit agency expects to use to acquire zero-emission technologies (both vehicles and infrastructure).*

The table below shows all potential funding sources LTSA will explore to use to acquire zero-emission technologies.

Table 9: Potential Funding Sources

| Type | Agency | Fund/Grant/Program | Description | Applicability & Details |
|---|---|---|---|---|
| Federal | Federal Transit Administration (FTA) | Low or No Emission Program (Low-No Program) (5339(c)) | Low-No provides competitive funding for the procurement of low or no emission vehicles, including the leasing or purchasing of vehicles and related supporting infrastructure.<br>This has been an annual program under the FAST Act since FY2016 and is a subprogram of the Section 5339 Grants for Bus and Bus Facilities.<br><br>There is a stipulation for a 20% local match. | In FY2021 the FTA awarded $180 million to 49 projects for the Low-No program.[2]<br>In FY2022 the program had a budget of $1.1 billion.<br>In FY2023 the program had a budget of $1.2 billion.[3] |
| | | Buses and Bus Facilities Program (5339(a) formula, 5339(b) competitive) | Grants applicable to rehab buses, purchase new buses, and invest and renovate related equipment and facilities for low or no emission vehicles or facilities. A 20% local match is required. | FY2021 5339 funding totaled $409 million in grants to 70 projects in 39 states.<br>In FY2022 the program had a budget of 372 million.<br>In FY2023 the program had a budget of $473 million.[4] |

[2] https://www.transit.dot.gov/funding/grants/fiscal-year-2021-low-or-no-emission-low-no-bus-program-projects
[3] https://www.transit.dot.gov/bus-program
[4] https://www.transit.dot.gov/bus-program

| Type | Agency | Fund/Grant/Program | Description | Applicability & Details |
|---|---|---|---|---|
| | | Grants for Rural Areas (5311) | 5311 grant funding makes federal resources available to rural areas for transit capital, planning and operating assistance. Eligible activities include capital investments in bus and bus-related activities such as replacement, overhaul and rebuilding of buses.<br><br>The federal share is not to exceed 80% for capital projects. | Typically, the MPO or another lead public agency is the direct recipient of these funds and distributes these to local transit agencies based on TIP allocation. Agencies can allocate these funds for the purchase of ZEBs. |
| | | Enhanced Mobility of Seniors & Individuals with Disabilities (5310) | 5310 formula funding provides resources to help meet the transportation needs of older adults and people with disabilities. Eligible subrecipients (from the State for rural areas) include public transit operators. Eligible activities include capital investments in buses and vans, wheelchair lifts and harnesses, and other equipment. | For small urban and rural areas, the State is the direct recipient and distributes these funds as it wishes. Agencies can allocate these funds for the purchase of ZEBs. |
| | Federal Highway Administration (FHWA) | Congestion Mitigation and Air Quality Improvement Program (CMAQ) | The CMAQ Program provides funds to states for transportation projects designed to reduce traffic congestion and improve air quality, particularly in areas of the country that do not attain national air quality standards. | Projects that reduce criteria air pollutants regulated from transportation-related sources, including ZEBs. |
| | United States Department of Transportation (USDOT) | Local and Regional Project Assistance Program (RAISE) | Previously known as BUILD and TIGER, RAISE is a discretionary grant program aimed to support investment in infrastructure.<br>RAISE funding supports planning and capital investments in roads, bridges, transit, rail, ports, and intermodal transportation.<br>A local match is required.[5] | In FY2024, $1.5 billion in funding was announced for the RAISE Grant Program. [6] |
| State | California Air Resources Board (CARB) | Hybrid and Zero-Emission Truck and Bus Voucher Incentive Program (HVIP) | Voucher program created in 2009 aimed at reducing the purchase cost of zero-emission vehicles.<br><br>A transit agency would decide on a vehicle, contact the vendor directly, and then the vendor would apply for the voucher.<br><br>Voucher rebates vary by vehicle type and model.[7] | $101 million in funding for transit was available in the FY22-23 year allocations. |

[5] https://www.transportation.gov/RAISEgrants/about
[6] https://www.transportation.gov/RAISEgrants
[7] https://californiahvip.org/funding/

| Type | Agency | Fund/Grant/Program | Description | Applicability & Details |
|---|---|---|---|---|
| | | Carl Moyer Memorial Air Quality Standards Attainment Program | The Carl Moyer Program provides funding to help procure low-emission vehicles and equipment. It is implemented as a partnership between CARB and local air districts. | Transit buses are eligible for up to $80,000 funding. |
| | | Volkswagen Environmental Mitigation Trust Funding | VW's settlement provides nearly $130 million for zero-emission transit, school, and shuttle bus replacements. | Transit may be eligible for up to $65 million. Applications are open for transit agencies and are processed on a first come, first serve basis. |
| | | Sustainable Transportation Equity Project (STEP) | STEP was a pilot that took a community-based approach to overcoming barriers to clean transportation. The future of STEP is currently being determined by CARB and stakeholder groups through the FY22-23 Funding Plan and Three-Year Plan for Clean Transportation Incentives.[8] | In FY 22-23 CARB had $32.65 million available to fund planning, clean transportation, and supporting projects through the Planning and Capacity Building Grants, Clean Mobility in Schools (CMIS) and Sustainable Transportation Equity projects (STEP). Lead applicants must be a CBO, federally-recognized tribe, or local government representing a public transit agency. |
| | California Transportation Commission (CTC) | SB1 Local Partnership Program (LPP) | The Local Partnership Program provides funding to counties, cities, districts and regional transportation agencies to improve aging infrastructure, road conditions, active transportation, transit and rail, and health and safety benefits. Funds are distributed through competitive and formulaic components.[9] | To be eligible, counties, cities, districts, and regional transportation agencies must have approved fees or taxes dedicated solely to transportation improvements. $200 million is available annually. [10] |
| | | Solutions for Congested Corridors Program (SCCP) | The SCCP includes programs with both formula and competitive funds. Funding is available to projects that make specific performance improvements and are a part of a multimodal comprehensive corridor plan designed to reduce congestion in highly traveled corridors by providing more transportation choices for residents, commuters, and visitors. | Improvements to transit facilities are eligible projects. Cycle 2 funding of $500 million covers two years (FY2022 and FY2023).<br>To submit a SCCP application, the applicant needs to know exactly what sources will be funding the project and when the funds will be used, as well as which project phase they will be used for. Total estimated funding: $500,000,000 for FY22-23[11] |
| | California Department of Transportation (Caltrans) | SB1 State of Good Repair (SGR) | SGR funds are formula funds eligible for transit maintenance, rehabs, and capital programs. Agencies receive yearly SB1 SGR funding through their MPO, based on population and farebox revenues. | Agencies can decide to devote its portion of SB 1 funds to ZEB transition. |

[8] https://ww2.arb.ca.gov/our-work/programs/sustainable-transportation-equity-project
[9] https://catc.ca.gov/programs/sb1/local-partnership-program
[10] https://www.vcstar.com/story/news/local/2021/10/22/group-proposing-transit-sales-tax-measure-countys-2022-ballot/5988391001/
[11] https://www.grants.ca.gov/grants/solutions-for-congested-corridors-program/

| Type | Agency | Fund/Grant/Program | Description | Applicability & Details |
|---|---|---|---|---|
| | | Low Carbon Transit Operations Program (LCTOP) | The LCTOP provides capital assistance to transit agencies in order to reduce greenhouse gas emissions and improve mobility. 5% and 10% of the annual Cap and Trade auction proceeds fund this program. | Many agencies are already recipients of these funds and can use these funds to purchase ZEBs and related equipment. |
| | | Transit and Intercity Rail Capital Program (TIRCP) | The TIRCP was created to fund capital improvements that reduce emissions of greenhouse gases, vehicle miles traveled, and congestion through modernization of California's intercity, commuter, and rail, bus, and ferry transit systems.[12] | SB 125 (Chapter 54, Statutes of 2023) guides the distribution of $4 billion in General Fund through the TIRCP on a population-based formula to regional transportation planning agencies, which will have the flexibility to use the money to fund transit operations or capital improvements. |
| | | Zero-Emission Transit Capital Program (ZETCP) | The ZETCP will provide funding for zero-emission transit equipment, including zero emission vehicles and infrastructure. By October 31, 2025, and annually thereafter, funding recipients must submit a report to CalSTA on how funds were utilized. | $1.1 have been allocated to the ZETCP to be allocated to regional transportation planning agencies on a population-based formula and another formula based on revenues to fund zero-emission transit equipment and operations. |
| | | State Transportation Improvement Program (STIP) | The STIP is a five-year plan for future allocations of certain state transportation funds including state highway, active transportation, intercity rail, and transit improvements. The STIP is updated biennially in even-numbered years. [13] | ZEB procurement could compete for STIP funding. The 2022 STIP was adopted in March 2022 and included $796 million in available funding.[14]The current proposed 2024 STIP is expected to be adopted in March 2024. Funding is distributed via a formula for a variety of projects. |
| | | Transportation Development Act (Mills-Alquist-Deddeh Act (SB 325)) | The TDA law provides funding to improve existing public transportation services and encourage regional transportation coordination. There are two funding sources: the Local Transportation Fund (LTF) and the State Transit Assistance (STA) fund.[15] | Funding opportunities include transportation program activities, pedestrian and bike facilities, community transit services, public transportation, and bus and rail projects. |
| | California Energy Commission | Clean Transportation Program (Alternative and Renewable Fuel and Vehicle Technology Program) | The California Energy Commission's Clean Transportation Program provides funding to support innovation and acceleration of development and deployment of zero-emission fuel technologies. A local match is often required. | The Clean Transportation Program provides up to $100 million annually for a variety of renewable and alternative fuel transportation projects throughout the state, including specific projects for heavy-duty public transit buses. |

[12] https://calsta.ca.gov/subject-areas/transit-intercity-rail-capital-prog
[13] https://catc.ca.gov/programs/state-transportation-improvement-program
[14] https://catc.ca.gov/-/media/ctc-media/documents/programs/stip/2022-stip/2022-adopted-stip-32522.pdf
[15] https://dot.ca.gov/programs/rail-and-mass-transportation/transportation-development-act

| Type | Agency | Fund/Grant/Program | Description | Applicability & Details |
|---|---|---|---|---|
| | Department of Housing and Community Development | Affordable Housing and Sustainable Communities Program (AHSC) | The AHSC Program funds land use, housing, and transportation projects to support development that reduces GHG emissions. The program provides both grants and loans that reduce GHG emissions and benefit disadvantaged communities through increasing accessibility via low-carbon transportation. $405 million in available funds was announced in 2021.[16] The maximum award amount is not to exceed $30 million per project, with a minimum award of at least $1 million.[17] | Sustainable transportation infrastructure projects, transportation-related amenities, and program costs (including transit ridership) are eligible activities. Agencies can use program funds for assistance in construction or modification of infrastructure for ZEB conversion as well as new vehicle purchases. |
| | California Climate Investments | Clean Mobility Options (CMO) Voucher Pilot Program | CMO awards up to $1 million vouchers to develop and launch zero-emission mobility projects including the purchase of zero-emission vehicles, infrastructure, planning, outreach, and operations projects in low-income and disadvantaged communities.[18] Funding is limited. | In 2020, the CMO Voucher Pilot Program awarded $20 million worth of mobility project vouchers, with $18 million going to eligible under-resourced communities. For example, the City of Chula Vista received funding to launch an on-demand community shuttle service in northwest Chula Vista using four electric vehicles. Also, Fresno County Rural Transit Agency is on a wait list to potentially receive $36,885 in funding. |
| | California Pollution Control Financing Authority (CPCFA) | Medium-Heavy-Duty (MHD) Zero Emission Vehicle Financing Program | The CPCFA is developing a purchasing assistance program for MHD ZEV fleets. This will provide financial support and technical assistance to fleet managers deploying ZEV fleets. The program will be established by January 1, 2023.[19] | CPCFA will designate high priority fleets based on implications for climate change, pollution, environmental justice, and post-COVID economic recovery. A minimum of 75% of financing must be directed towards fleets that directly impact or operate in underserved communities. |
| Other | | Low Carbon Fuel Standard (LCFS credits) | LCFS credits are not necessarily funding to be applied for; rather, they are offset credits that are traded (through a broker) to reduce operating costs. | Once ZEBs are acquired and operating, agencies can collect LCFS and 'sell' them to reduce operating costs of ZEBs.<br>Both hydrogen and electricity used as fuels are eligible for LCFS credits. Credit prices range, but average credit price between 2016 and 2019 was between $65 and $200 per credit, with an average of $10,000 per vehicle. |
| | | Transportation Development Credits | Although they are not funds for projects, Transportation Development Credits, also called "Toll Credits", satisfy the federal government requirement to match federal funds.[20] | Toll credits provide a credit toward a project's local share for certain expenditures with toll revenues. FHWA oversees the toll credits within each state.[21] |

[16] https://www.hcd.ca.gov/grants-funding/active-funding/ahsc/docs/final_ahsc_nofa_round_6.pdf
[17] https://www.hcd.ca.gov/affordable-housing-and-sustainable-communities#:~:text=Communities%20Program%20(AHSC)-,Affordable%20Housing%20and%20Sustainable%20Communities%20Program%20(AHSC),(%22GHG%22)%20emissions.
[18] https://cleanmobilityoptions.org/about/#
[19] https://afdc.energy.gov/laws/12858
[20] https://dot.ca.gov/-/media/dot-media/programs/rail-mass-transportation/documents/f0010121-toll-credit-fact-sheet.pdf
[21] https://dot.ca.gov/-/media/dot-media/programs/rail-mass-transportation/documents/f0009899-2-toll-credits-fact-sheet-a11y.pdf

# Section I: Start-up and Scale-up Challenges

LTSA faces the following key challenges:

- At the moment, only a limited commercially available options exist for ZE technologies of cutaways, six out of LTSA's thirteen revenue vehicles are cutaways. Therefore, it will be important to track the performance and market availability of Altoona-tested cutaway vehicles that are part of current and will be of future fleet, since at this time, there are no vehicles that satisfy funding requirements and operational needs due to range limitations and limited battery size. The successful acquisition, deployment, and integration of non-heavy-duty transit ZEBs continues to be a challenge for transit agencies for their fixed-route and demand-response service portfolio.
- Lack of commercially available electric Freightliners, three out of LTSA's thirteen revenue vehicles, represents a significant challenge for LTSA, especially since significant customized features are required for these types of vehicles like automatic deployed chains to accommodate the snowy roads during winter seasons. It's crucial for LTSA to maintain the characteristics of these vehicle types through the electrification of fleet while ensuring the range requirements will be meet during and after the transition.
- The agency faces a limited pool of drivers available for their operations and that in turn limits the possibility for increase the fleet size and vehicle swaps as operational changes that could address the low range of existing ZEV freightliners and cutaways.
- LTSA vehicles are part of the county disaster preparedness plan and need to be available for evacuations. Response distances and evacuation times could be long since emergency coverage is county-wide. The current range of BEB limits the use of those vehicles for emergency response, as well as the long hours to replenish the battery to regain full range.
- Local access to BEB maintenance shops is expected to be limited in the next 10-15 years, especially in rural areas which will limit the subcontracting services for electric vehicles.
- The transition to ZEBs will require significant capital infusion for vehicles and associated infrastructure and facility upgrades. As such, LTSA staff will need to broaden its approach to competitive funding opportunities and be successful at winning these opportunities to execute the ZEB transition plan as laid out in Section D and refueling/charging infrastructure.
- Operating a mix of gasoline, diesel, and battery electric vehicles during the transition period will also represent an operational challenge for LTSA and constant training and communication will be key for their staff (either internal or subcontracted) that maintains and drives the buses.

# Appendix

Resolution/Council Approval