



Zero-Emission Bus Rollout Plan



2025

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Section A

Transit Agency Information

Transit Agency Name

SunLine Transit Agency

Mailing Address

32505 Harry Oliver Trail
Thousand Palms, CA 92276

Name of Transit Agency's Air District(s)

South Coast Air Quality Management District

Name of Transit Agency's Air Basin(s)

Salton Sea Air Basin, South Coast Air Basin

Total Number of Buses in Annual Maximum Service

47

Population of the Urbanized Area a Transit Agency is Serving

441,586
2023 American Community Survey 5 Year Estimates

Contact Information of General Manager

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Chief Executive Officer/GM
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Section B

Rollout Plan General Information

SunLine Transit Agency (SunLine) provides public transportation services throughout the Coachella Valley in Southern California. The agency has been a leader in zero-emission bus deployments focusing on sustainability and innovation with hydrogen fuel cell electric buses (FCEBs) and supporting infrastructure. Early adoption of alternative fuel solutions led



SunLine to become the first transit agency in California to convert its entire fleet to compressed natural gas (CNG). As part of its ongoing commitments to the environment, SunLine is transitioning its fleet to 100% zero-emission vehicles in line with the Innovative Clean Transit (ICT) Regulation.

SunLine's Rollout Plan will enable the agency to fully transition its bus fleet to zero-emission by 2035, five years ahead of the deadline set in the ICT Regulation of 2040. This phased rollout plan outlines the process for systematic replacement of aging vehicles and the integration of hydrogen fuel cell electric buses for both its fixed-route and paratransit fleets. SunLine's strategy aims to maximize the lifespan of existing vehicles, obtain grant funding for zero-emission vehicle purchases and infrastructure, and ensure procurement decisions reflect the latest advancements in zero-emission technology.

The primary objective is to completely transition the fixed-route fleet from compressed natural gas (CNG) to hydrogen fuel cell buses by 2035. The current CNG paratransit fleet will be maintained until reliable hydrogen technology becomes available. This approach ensures SunLine meets its ICT regulatory goal, maintains service reliability, and remains a leader in sustainable transportation. Through this rollout plan, SunLine will deliver a fully zero-emission, cost-effective, and dependable fleet that supports long-term operational excellence.

Section C

Current Bus Fleet Composition

Fixed Route

As of 2025, SunLine directly operates a bus fleet of **100 vehicles**, divided into an active and contingency fleet. The current active fleet is comprised of a mixture of 13 CNG, **44** Hydrogen Fuel Cells (FCEB), and 4 Battery Electric Buses (BEB) for a total active fleet of **61** buses. This composition also includes 3 CNG over-the-road buses that operate on SunLine's 10 Commuter Link route between Indio and San Bernardino, California. In the active fleet, alternative fuel vehicles account for 78.68% of the total fleet makeup, while CNG vehicles account for 21.3%. The average age of SunLine's active fixed-route fleet is approximately **4.02 years**, with bus model years ranging from **2014 to recent acquisitions in 2025**. Vehicle types in the active fixed-route fleet are primarily large, heavy-duty 40' buses with only three 45' over-the-road commuter coaches.

Paratransit

SunLine's paratransit fleet stands at a total of 39 CNG cutaway buses with an average age of approximately **4.69 years**. All paratransit fleet vehicle types can be categorized as medium-size, light-duty transit buses and vary by model year.

Table 1 summarizes SunLine's current active fixed-route fleet, and **Table 2** summarizes the current paratransit fleet. Although not detailed here, information about the agency's contingency fleet is available in SunLine's Contingency Fleet Plan.



Table 1: General information on current active fixed-route bus fleet

Bus Model Year	Number of Buses	Fuel Type	Bus Type
2014	3	Hydrogen	40' heavy-duty
2015	1	Hydrogen	40' heavy-duty
2018	10	Hydrogen	40' heavy-duty
2018	4	Electric	40' heavy-duty
2020	1	CNG	45' over-the-road
2020	10	CNG	40' heavy-duty
2021	5	Hydrogen	40' heavy-duty
2022	5	Hydrogen	40' heavy-duty
2022	2	CNG	45' over-the-road
2024	8	Hydrogen	40' heavy-duty
2025	12	Hydrogen	40' heavy-duty
Total	61		

Table 2: General information on paratransit bus fleet

Bus Model Year	Number of Buses	Fuel Type	Bus Type
2018	14	CNG	Cutaway
2020	15	CNG	Cutaway
2024	10	CNG	Cutaway
Total	39		

As a federal funding recipient, SunLine adheres to the Federal Transit Administration Circular 5010.1F Minimum Useful Life Policy for Rolling Stock, operating fixed-route buses up to 12 years or 500,000 miles and paratransit buses for 5 years or 150,000 miles.

FTA C5010.1F – Minimum Useful Life Policy for Rolling Stock

Property Type	Minimum Useful Life
Buses	
Large, heavy-duty transit buses including over-the-road buses (approximately 35' to 40' or larger including articulated buses)	At least 12 years of service or an accumulation of at least 500,000 miles
Medium-size, light-duty transit buses	At least 5 years or an accumulation of at least 150,000 miles

According to the FTA's useful life policy guidelines for rolling stock, SunLine's active fixed-route fleet is expected to reach the replacement threshold in years beginning in 2026. For paratransit, 29 vehicles, or approximately 74% of the fleet, have met, will meet, or have exceeded their 5-year useful life by the end of 2025 and require replacement.



Section D

Procurement and Replacement

SunLine will implement a strategic fleet procurement and replacement plan by adopting a one-for-one replacement approach, ensuring that each new vehicle acquired retires an older model. At the same time, the agency will streamline procurement by batch purchasing buses of the same model year, simplifying maintenance, training, and parts inventory while eliminating multiple model types. All vehicle acquisitions will align with SunLine's zero-emission transition goals and comply with FTA useful life guidelines. To optimize costs and procurement efficiency, the agency will establish planned purchasing cycles on a calendar year basis (ICT^{***}), allowing time to assess emerging technologies, secure funding, and negotiate favorable terms. Figures reflecting bus purchases indicate the buses to be ordered within that calendar year. This strategy ensures a cost-effective, sustainable, and operationally efficient fleet that meets regulatory requirements and long-term agency objectives.

Fixed Route

SunLine's fixed-route fleet replacement strategy will utilize hydrogen fuel cell buses (FCEBs) for all vehicle replacements, aligning with the agency's commitment to a 100% zero-emission fleet by 2035. The agency plans to procure vehicles every three to four years, beginning in 2025. The total number of vehicles procured in each cycle will be determined by two factors.

- The vehicle has met the FTA Circular 5010.1F minimum useful life (UL)(12 years) threshold.
- The vehicle to not exceed two years past UL for replacement year.

The replacement strategy also incorporates an estimated two-year lead time for vehicle procurement, meaning that any order placed in 2025 could potentially result in a vehicle delivery in 2027. Including this lead time in the planning process allows SunLine to account for market delays, production timelines, and funding coordination. This ensures the agency can maintain a steady replacement rhythm, align infrastructure and training needs, and avoid service disruptions due to late manufacturer vehicle delivery.

Paratransit

SunLine's paratransit fleet replacement strategy will focus on procuring alternative fuel vehicles, including hydrogen fuel cells and other emerging technologies, as they become available. Specifically, the procurement of hydrogen fuel cells is slated to begin in 2031. This timeline allows for technology development while ensuring a smooth fleet transition to meet the 2035 zero-emission deadline. The agency plans to procure vehicles every other year, starting in 2026, with the goal of transitioning to a zero-emission fleet while maintaining reliable service. The total number of vehicles procured in each cycle will vary depending on two factors.

- The vehicle has met the FTA Circular 5010.1F minimum useful life (UL) (5 years) threshold.
- The vehicle to not exceed three years past UL for replacement.

The replacement strategy for paratransit vehicles incorporates an estimated **six-month** lead time for vehicle delivery.

Results

By executing this phased procurement and replacement strategy, SunLine remains on track to meet its goal of achieving a 100% zero-emission fleet by 2035, in alignment with the ICT regulation 2040 deadline. While the final fixed-route hydrogen fuel cell electric bus (FCEB) purchase is scheduled for 2034, the plan’s built-in two-year lead time allows for flexibility and adaptability for potential delays in vehicle delivery. Deliveries from that final order may extend into 2036, but the agency’s early and proactive planning enables it to absorb these delivery windows without jeopardizing overall compliance.

For paratransit, procurements starting in 2026 with a **six-month** lead time will facilitate a complete transition by 2035, assuming that technological advancements in zero-emission options for smaller vehicles continue.

The incorporation of planned cycles, batch purchasing, and lead times ensures that SunLine can maintain service reliability while remaining agile in response to funding timelines, production schedules, and emerging technologies. As a result, SunLine is well-positioned to fulfill its commitment to a fully zero-emission fleet by 2035, demonstrating leadership in sustainable transit while supporting long-term operational efficiency.

Figure 1 and **Figure 2** show the anticipated number of bus purchases each year for fixed-route and paratransit.

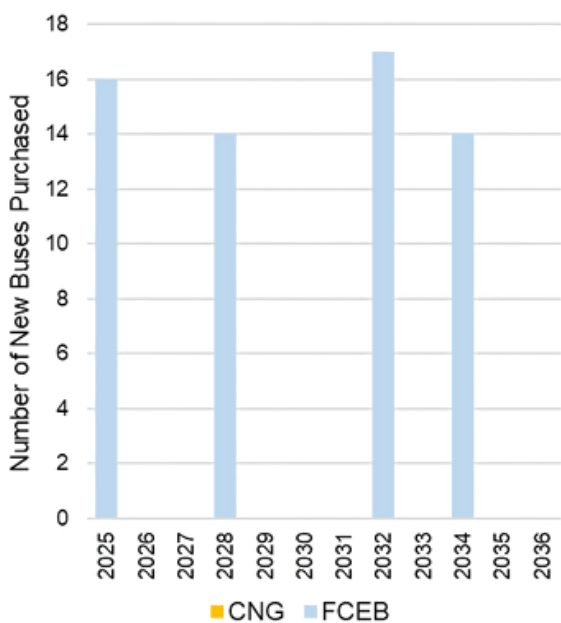


Figure 1: Fixed-route bus purchases by year

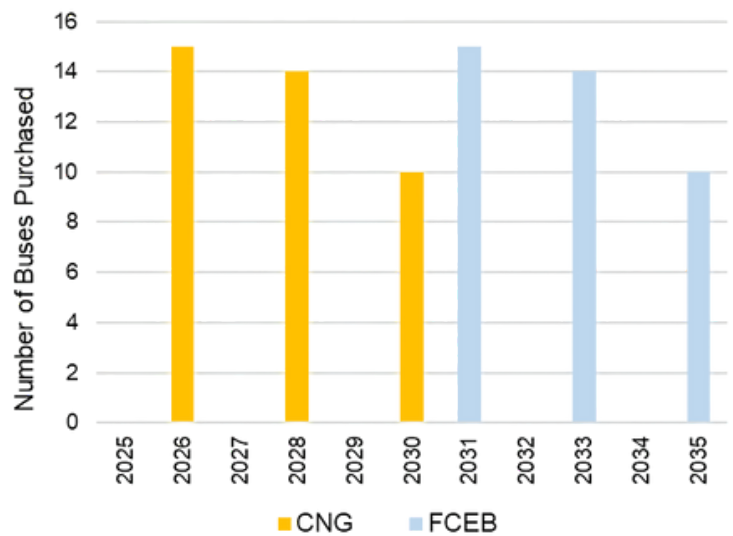


Figure 2: Paratransit bus purchases by year

Figure 3 and **Figure 4** show the composition of SunLine's fixed-route and paratransit fleets between 2025 to 2040.

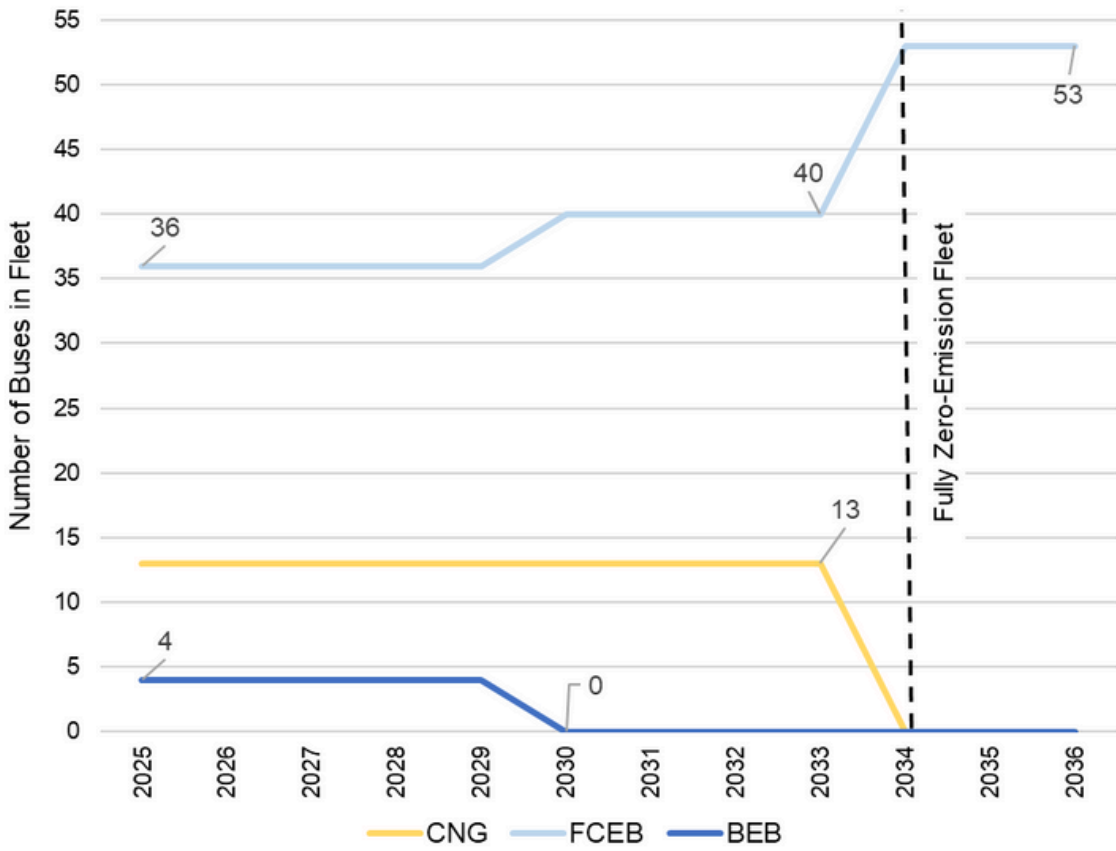


Figure 3: Fixed-route bus fleet composition by year

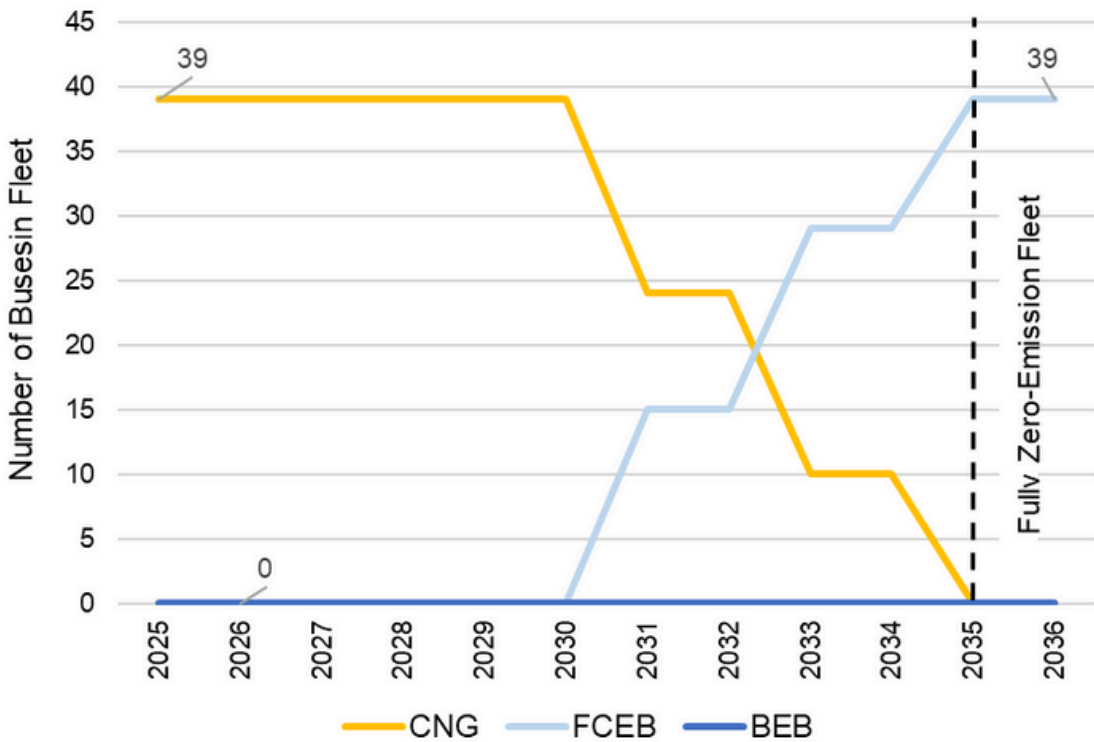


Figure 4: Paratransit bus fleet composition by year



SunLine’s transition to a 100% zero-emission fleet will require significant capital investment, with costs structured around the agency’s phased, one-for-one vehicle replacement strategy. The procurement plan accounts for the purchase of 61 fixed-route hydrogen fuel cell electric buses (FCEBs) between 2025 and 2034 and 78 paratransit vehicles between 2025 and 2035. These purchases are timed to match vehicle useful life thresholds while incorporating industry-standard lead times, consideration for available technology and aligning with funding availability.

The cost estimates for new vehicle acquisition incorporate an annual 3.5% inflation factor, based on the Producer Price Index (PPI). The current estimated cost (2025) for a Hydrogen Fuel Cell Electric Bus (FCEB) is \$1.8 million. For paratransit vehicles, the current cost (2025) for CNG models is approximately \$220,000. A projected cost (2025) of \$595,000 is used for hydrogen fuel cell paratransit vehicles. This results in a total fixed-route transition cost of around \$129.8 million and a projected paratransit cost of about \$39.77 million.

Figure 5 and Figure 6 show the estimated annual purchasing costs for fixed-route and paratransit vehicles based on the adoption schedule in this rollout plan.

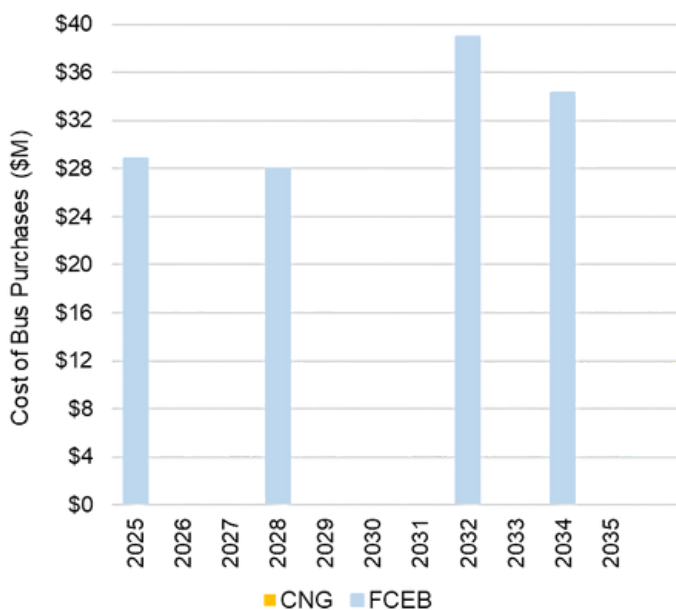


Figure 5: Cost of fixed-route bus purchases

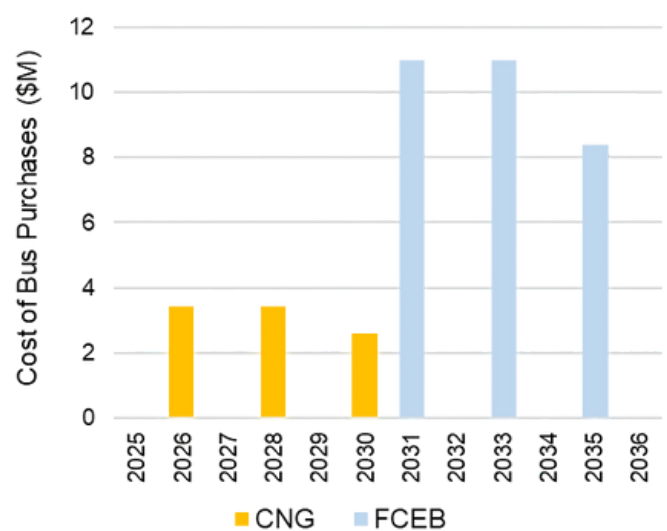


Figure 6: Cost of paratransit bus purchases

Table 3 and **Table 4** show the estimated cost of each fixed-route zero-emission bus (ZEB) purchase outlined in the plan, and the estimated cost for the projected paratransit low-emission (LEB) and zero-emission bus (ZEB) purchases.

Table 3: Estimated cost of future fixed-route and paratransit projected ZEB purchases

Timeline (year)	Fixed-Route		
	Number of ZEBs	Bus Type(s)	Estimated Total Cost of Buses Purchased
2025	16	40' FCEB	\$28,800,000
2028	14	40' FCEB	\$28,000,000
2032	17	40' FCEB	\$39,000,000
2034	14	40' FCEB	\$34,000,000
Total	61		\$129,800,000

Table 4: Estimated cost of projected future paratransit LEB and ZEB purchases

Timeline (year)	Paratransit		
	Number of LEB and ZEBs	Bus Type(s)	Estimated Total Cost of Buses Purchased
2026	15	Cutaway CNG	\$3,420,000
2028	14	Cutaway CNG	\$3,410,000
2030	10	Cutaway CNG	\$2,610,000
2031	15	Cutaway FCEB	\$10,970,000
2033	14	Cutaway FCEB	\$10,970,000
2035	10	Cutaway FCEB	\$8,390,000
Total	78		\$39,770,000

Section E

Facilities and Infrastructure

SunLine Transit Agency is committed to advancing its hydrogen fuel cell electric bus (FCEB) fleet, and our facilities and infrastructure are being upgraded to meet the future needs of a fully zero-emission transit system. The focus of our infrastructure strategy is on hydrogen fueling stations and maintenance facility upgrades to support both operations and workforce training.

Currently, our Division I – Thousand Palms location serves as the primary fueling and maintenance hub for SunLine’s hydrogen fleet. The recent completion of a 2,400 kg/day delivered liquid hydrogen station at this facility marks a major milestone in this transition. Equipped for both fleet and public dispensing, this station will serve as the cornerstone of our hydrogen fueling strategy.

Looking ahead, SunLine plans to:

- Construct a new delivered liquid hydrogen station at Division II – Indio to provide fueling redundancy and network resilience.
- Fully upgrade our maintenance facilities to meet the demands of a hydrogen fleet.
- Construct a Workforce Training Center to provide hands-on workforce training and public education aligned with our clean fuel vision.

These upgrades are part of our strategy to increase capacity, ensure operational redundancy, and create a sustainable future for zero-emission transit in the Coachella Valley. **Table 5** provides a comprehensive list of these upgrades, organized by Division location and including expected completion dates



Table 5: SunLine Transit Agency Infrastructure Overview by Division

Division / Facility Name	Address	Main Function(s)	Type(s) of Infrastructure	Service Capacity	Needs Upgrade?	Estimated Timeline
Division I: Thousand Palms	32-505 Harry Oliver Trail Thousand Palms, CA 92276	Primary Hydrogen Fueling & Maintenance Facility	On-site Electrolyzer	20 buses/day	No	Existing
			2 Internal Hydrogen Dispensers	360 kg-H2 per 8 hrs each	No	Existing
			NEW: Delivered Liquid Hydrogen Station	100 buses/day	No	2025
			Planned: Maintenance Building	n/a	Yes	Planned
			Planned: New Workforce Training Center	n/a	Yes	2027

Table 5: SunLine Transit Agency Infrastructure Overview by Division (Cont.)

Division / Facility Name	Address	Main Function(s)	Type(s) of Infrastructure	Service Capacity	Needs Upgrade?	Estimated Timeline
Division II - Indio	83-255 Highway 111 Indio, CA 92201	Secondary Fueling & Maintenance Support Site	Planned: Delivered Liquid Hydrogen Station	12-15 buses/day	Yes	2028
			Planned Hydrogen Safety & Detection Systems	n/a	Yes	2028
			Planned: Maintenance Facility Upgrades	n/a	Yes	



Section F

Providing Service for All Valley Communities

SunLine provides transportation services across both cities and unincorporated areas throughout the Coachella Valley. Service areas supports all communities and areas identified as the top 25% scoring areas according to CalEnviroScreen. **Figure 7** shows the geographical distribution of these communities within SunLine's service area, with boundaries defined by the latest CalEnviroScreen data.

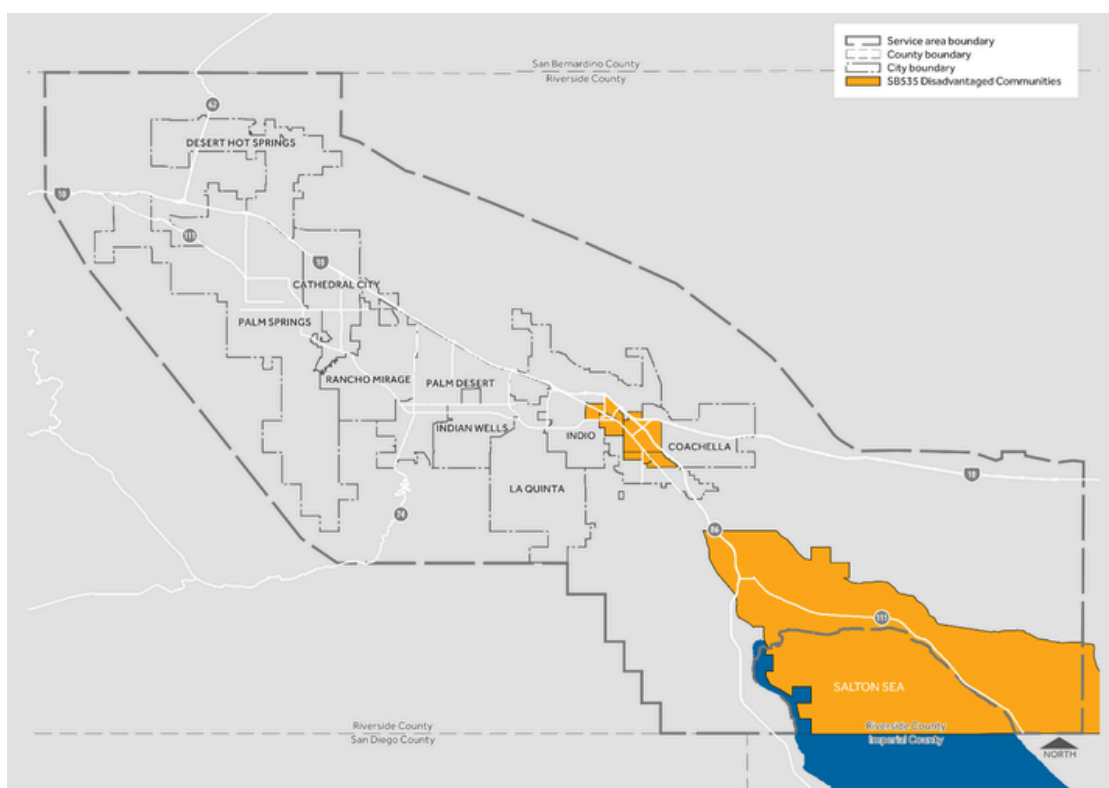


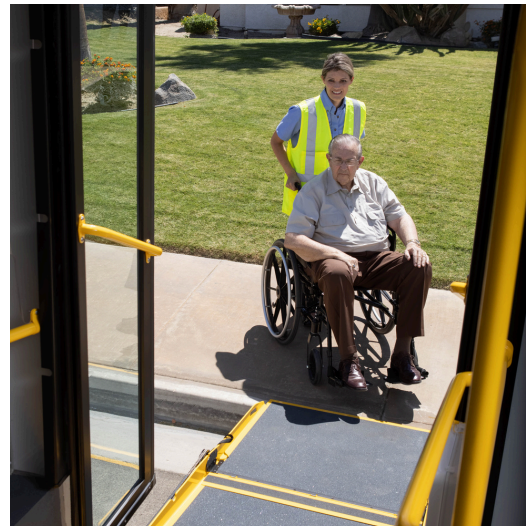
Figure 7. SunLine Service Area Overlap with CalEnviroScreen

The Census Tracts located within SunLine's service territory are:

- 6065045303
- 6065045502
- 6065045604
- 6065045706
- 6065045707
- 6065049500
- 6065940400

SunLine strives to meet the mobility needs of the Coachella Valley by offering essential transportation options for residents traveling to workplaces, medical appointments, government agencies, and more. SunLine's fixed-route trunk routes operate along the main corridors, while paratransit services are available for those who are unable to use the fixed-route buses. Additionally, SunRide microtransit provides connections to both fixed-route and paratransit services, further helping to reduce carbon emissions.

SunLine's continued evolution into a fully zero-emission fleet will dramatically amplify these environmental benefits. As buses are transitioned from CNG to zero-emission, it will continue to eliminate critical criteria pollutant emissions of nitrogen oxides (NOx), carbon monoxide (CO) and volatile organic compounds (VOCs), along with particulate matter (PM2.5) and greenhouse gases (GHGs). This improvement in air quality will benefit the citizens of the local community throughout the Coachella Valley.



Pollution and noise resulting from bus operation are concerns for citizens living adjacent to bus transit routes. Buses also drive in stop-and-go traffic where they spend considerable time idling, wasting additional fuel and creating even more pollutant emissions. FCEBs and BEBs produce no emissions when idling, use far less fuel and offer virtually silent operation. SunLine will operate the zero-emission buses on routes providing service within disadvantaged communities providing cleaner, quieter service to the local ridership.

Assembly Bill 617 (AB 617), effective in 2017, is focused on improving public health in communities that experience disproportionate burdens from exposure to air pollutants. Eastern Coachella has been selected as an AB 617 community. To implement AB 617, CARB requires community-focused action to reduce air pollution and improve public health in these communities. A series of community outreach efforts were conducted, during which residents communicated that their primary concern was related to mobile source emissions. Deploying zero-emission buses not only supports the South Coast Air Quality Management District in implementing the AB 617, but also provides vehicle emission reductions that residents have requested.

Section G

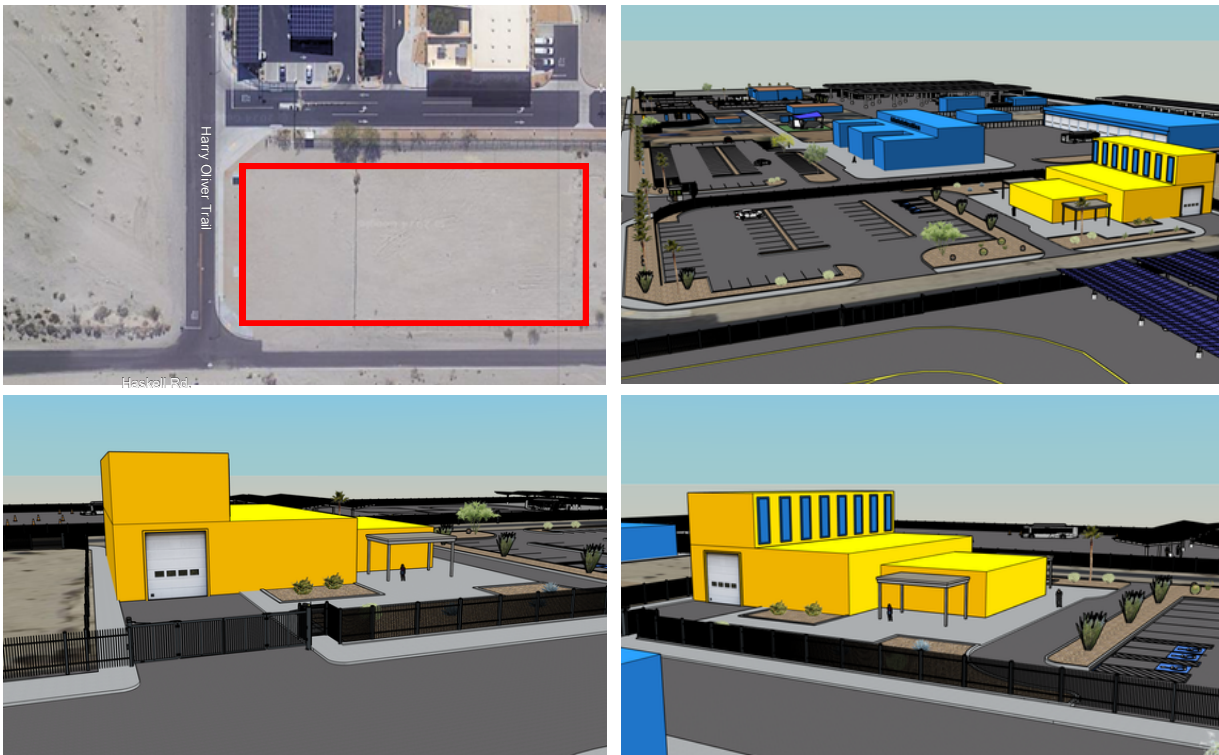
Workforce Training

SunLine is advancing its workforce development strategy through strong partnerships with the California Transit Training Consortium (CTTC) and College of the Desert (COD), and is focused on building a pipeline of skilled workers to support the agency's zero-emission goals. As part of this effort, SunLine is planning the construction of a Workforce Training Center that will serve as a local hub for clean transportation education and hands-on training.

In collaboration with COD, SunLine is helping to shape customized educational programs that align with the unique needs of the transit industry. These include certificate and degree pathways in zero-emission vehicle technology, clean energy systems, and transit operations and maintenance. The curriculum is being designed to reflect real-world requirements, incorporating input from SunLine's maintenance and operations teams to ensure students gain job-ready skills.

Figure 8 presents conceptual renderings of the proposed Workforce Center, illustrating its location and massing in relation to the existing buildings at Division I.

Figure 8: Digital Model of Proposed Workforce Center





32505 Harry Oliver Trail
Thousand Palms, CA 92276

sunline.org

