



AVTA

Where the Future Lives Today

Zero Emission Transit Made Easy



April 1, 2022



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Executive Summary

AVTA has achieved a Zero-Emission bus fleet! AVTA's accomplishment comes 28 Years ahead of the Biden-Harris Administration's Goal of 2050 and 18 Years ahead of the State of California's 2040 goal.

As of the filing of this report, AVTA's fleet has traveled over 7 million zero emission miles and avoided 1,750,000 gallons of diesel fuel, resulting in a \$2,362,500 net savings after accounting for electricity expenses. Environmentally the agency has reduced 41.58 million pounds of CO₂ and 130,900 pounds of particulate matter. Therefore, this report does not read like reports from other agencies. Rather than discussing goals, metrics to measure progress, and methods of maintaining accountability, it attempts to chronicle the accomplishment of a zero-emission fleet and hopefully inspire others to accelerate their important contributions of saving our planet and reversing the devastating effects of climate change.

As electric bus technology improved, AVTA's forward-thinking Board of Directors developed a vision for an all-electric fleet. In 2014, AVTA placed two BYD 40' electric buses into service as part of a demonstration project to see if zero emission buses were viable in the high desert. This project started AVTA on a historic journey to becoming the first transit agency in the nation to operate a 100% all-electric zero emission fleet.

In 2018, along with the transformation to a zero emission fleet, AVTA began installing the first four 250 kW WAVE charging stations to charge its electric buses on wireless charging pads strategically located at transit centers throughout their bus routes.

In May of 2019, AVTA celebrated the significant milestone of achieving the first one million miles driven by its all-electric zero emission fleet of buses.

In April 2020, as the country struggled with the beginning of a global pandemic, without fanfare and barely noticed by the transit industry, AVTA decommissioned the last diesel bus from service in its local fleet and became the first all-electric local bus fleet in the nation.

After a Regional Transit Plan conducted in 2019 concluded that AVTA's route system would benefit from Micro Transit service, AVTA added eight GreenPower EV Star electric vans and launched an all-electric Zero Emission Microtransit pilot program in the rural Los Angeles County communities in the eastern part of its service area.

Finishing 2020 strong, AVTA's local fleet of 65 electric buses and electric Microtransit vehicles reached four million electric miles on December 11, 2020.

On August 24, 2021, AVTA christened the first of 24 battery-electric zero emission MCI commuter coaches, launching into service the first electric commuter coach in North America.

On September 21, 2021, AVTA Executive Director and CEO, Macy Neshati, was awarded the 2021 William J. "Pete" Knight Achievement in Reducing Emissions (AIRE) Award by the Antelope Valley Air Quality Management District.

Then in October, California Transit Association's Small Operators Committee named AVTA the Transit Agency of the Year award.

As 2021 ended, AVTA was on the verge of both 7 million electric miles and becoming the first all-electric transit agency in North America.

AVTA's journey does not end here. The AVTA Board has already started the process of building a solar field coupled with battery energy storage that will enable AVTA to charge its battery electric fleet with 100% solar energy, further reducing the agency's carbon footprint.

AVTA's successful transition to electrification should inspire and challenge other agencies across this nation to begin their own journey. AVTA has created a blueprint that others can follow in achieving their own goals in reducing climate change issues and creating cleaner air for all.

1. Introduction

AVTA set-out to transform itself to a sustainable fleet with a net neutral carbon footprint. The journey took root back in 2004 when we became the first public transit operator to install a 100 kW solar facility installed over the bus parking shade structures.

Since that first historic decision AVTA has continuously evolved our plan as technology and availability of electrification opportunities have become viable. The visionary board of directors clearly articulated their objective of being the first zero emission fleet in 2016.

The process of developing this plan and accomplishing our goal have been a fluid and ever evolving process.

The visionary board of directors at AVTA articulated a clear and easily understood directive to staff: "convert the AVTA fleet to be a 100% zero emission fleet and simultaneously work towards becoming a self-contained sustainable agency, running the facility on solar and charging the fleet with solar."

2. Agency Overview

- AVTA provides Transit Services to the Cities of Lancaster, Palmdale and the unincorporated areas of North Los Angeles County including Littlerock, Pearblossom, Sun Village, and Lake Los Angeles.
- Transit services provided include fixed route local transit, commuter service to downtown Los Angeles, including San Fernando Valley, and Century City as well as dial-a-ride paratransit services and demand response Microtransit service to residents in the remote unincorporated areas.
- AVTA operates a centralized maintenance and operations facility which also includes the administrative offices. AVTA also owns and operates a small strip mall in Lake Los Angeles which is being equipped with chargers for the Microtransit and dial-a-ride fleet as well as providing restroom and lunch room facilities for the vehicle operators. In addition, AVTA operates four transit transfer hubs which serve as on-route opportunity charging depots, with a fifth hub under construction at the Antelope Valley College Lancaster campus.

3. Emissions Inventory

From our commitment in 2016 to transition to a 100% zero emission fleet, the results have been amazing:

Electric Milestones KPIs

May 2019- 1 Mil Electric Miles

252,000 gallons of diesel fuel avoided
\$310,000 Net Savings
5.9 million pounds of CO2 reduced
18,700 pounds of particulate matter reduced

December 2019- 2 Mil Electric Miles

512,821 gallons of diesel fuel avoided
\$801,190 Net Savings
12 million pounds of CO2 reduced
29,063 pounds of particulate matter reduced

June 2020- 3 Mil Electric Miles

769,231 gallons of diesel fuel avoided
\$1,018,207 Net Savings
18.2 million pounds of CO2 reduced
43,594 pounds of particulate matter reduced

December 2020- 4 Mil Electric Miles

1,025,641 gallons of diesel fuel avoided
\$1,283,449 Net Savings
24.3 million pounds of CO2 reduced
58,125 pounds of particulate matter reduced

May 2021- 5 Mil Electric Miles

1,282,051 gallons of diesel fuel avoided
\$1,640,352 Net Savings
30 million pounds of CO2 reduced
72,500 pounds of particulate matter reduced

August 2021- 6 Mil Electric Miles

1,500,000 gallons of diesel fuel avoided
\$1,950,000 Net Savings
35.6 million pounds of CO2 reduced
112,000 pounds of particulate matter reduced

February 2022- 7 Mil Electric Miles

1,750,000 gallons of diesel fuel avoided
\$2,362,500 Net Savings
41.58 million pounds of CO2 reduced
130,900 pounds of particulate matter reduced

4. Past and Current Initiatives

In January 2022, Antelope Valley Transit Authority received their 20th electric MCI coach for their commuter routes and became the first all-electric transit agency in North America.

The journey to electrification did not happen overnight. It arrived through many steps taken by the staff of AVTA as they fulfilled the vision laid out by their Board of Directors.

In April of 1992, in response to an expressed desire from high desert area residents for public transportation, Antelope Valley Transit Authority was established.

A Joint Powers Agreement between the cities of Lancaster, Palmdale, and Los Angeles County was developed to govern the organization of the newly-formed agency.

Three months later, the first AVTA bus, a diesel-powered Gillig, rolled down the streets of Lancaster and Palmdale. That first year, AVTA launched three services: Local Transit, Commuter, and Dial-A-Ride.

In 2004, AVTA became the first public transit operator to install a 100kW photovoltaic (PV) solar panel system at its facility. These panels, installed over bus parking structures, generated 175,000 kWh of electricity at a savings of \$25,000 in utility charges each year and generating \$470,000 in rebates from Southern California Edison under the California Solar Initiative.

By 2009, AVTA had expanded and completed a solar panel project, funded by the American Recovery and Reinvestment Act (ARRA), which generated approximately 75% of the power used by the AVTA facility. The expanded system generated approximately 590,000 kWh yearly, saving the agency about \$82,000 a year. This also qualified AVTA to receive \$945,000 in utility rebates over the next five years.

In 2012, with an eye toward more environmentally friendly transportation, AVTA added fifteen new diesel hybrid buses to its local transit fleet.

In 2013 during an office expansion project, AVTA used funds from the ARRA to add solar canopies to the parking lots and bus yard at the AVTA facility.

As electric bus technology improved, AVTA's forward-thinking Board of Directors, developed a vision for an all-electric fleet. In 2014, AVTA placed into service two BYD 40' electric buses as part of a demonstration project to see if zero emission buses were viable in the high desert. This project started AVTA's early steps on an historic journey to becoming the first transit agency in the nation to operate a 100% all-electric zero emission fleet, and was highlighted on FTA's ARRA Homepage.

5. Emission Reduction Goals and Targets

- **Achieve net zero fleet emissions by 2022 (Federal Administration's goal is 2050)**

Status - Achieved 28 years ahead of Administration's goal.

- **Use 100 percent renewable electricity for facility operations by year end 2023 (Federal Administration's goal is 2030)**

Status - PPA completed with Duke Energy for 18 megawatts of solar and 6 megawatts of battery storage. Documentation submitted to the FTA for approval of the purchase of 43 acres of land to construct the solar field. Projected to be completed 17 years ahead of Administration's goal.

- **Modify or build all new maintenance facilities to accommodate zero-emission technologies**

Status - Existing facilities are all compatible with zero-emission technologies. Expansion of maintenance facility in 2021 included 3 new maintenance bays which are all zero-emission compatible.

6. Strategies and Actions

Strategy	Actions	Metric to Track Progress	Timeframe	Comments
Convert to 100% renewable energy by 2030	Develop an energy action plan	Plan Developed	September 2004	
	Install on-site solar photovoltaic installations at facility	facilities with solar photovoltaic installations	December 2004-201	Currently 90% of facility energy is from solar
	Increase purchase of renewable energy to 100%	% change in renewable energy purchased	December 2023	
	Increase charging of fleet from renewable energy to 100% electric	% change in renewable energy purchased	September 2023	Pending FTA approval of land purchase

Strategy	Actions	Metric to track progress	Timeframe
Electrify Bus Fleet	Develop bus electrification investment plan	Plan Developed DONE	2015
	Upgrade maintenance facility to accommodate replacement electric buses	Facility Updated DONE	December 2016
	Complete electric bus pilot/testing	Pilot Completed DONE	December 2015
	Purchase 85 electric buses	Buses purchased DONE	December 2021

Appendix A: FUNDING SOURCES

AVTA gratefully acknowledges the following funding that made our drive to zero a reality:

AVTA's Journey to Electrification Funding Sources

<u>FEDERAL</u>	\$52,063,517
BUILD	\$8,683,489
FTA Formula (Sect. 5307, 5337, 5339)	\$34,374,728
5307 Formula through MTA	\$2,884,769
Low or No Emission	\$6,120,531
<u>STATE</u>	\$44,258,639
Heavy Duty Vehicle Incentive Program	\$11,179,000
Low Carbon Transit Operations	\$466,252
VW Mitigation	\$2,340,000
PTMISEA	\$3,049,203
SB1 - STA/SGR	\$3,735,200
Transit & Intercity Rail Capital Program	\$23,488,984
<u>LOCAL</u>	\$459,872
AVAQMD	\$265,794
Measure R	\$194,078
<u>AVTA</u>	\$8,004,019
Capital Reserve	\$8,004,019
<u>TOTAL</u>	\$104,786,047

Appendix B: Comments from AVTA Leadership

Quotes:

"At AVAQMD, we track ozone standards for this community, especially compared with Federal and State standards, which allow for a measurement of no more than 70 parts per billion. We carefully track how often the Antelope Valley area goes over that standard. For example, in 2003, we tracked 92 days over the limit. In 2014, AVTA started this project and in 2018, we started putting our electric fleet into service in the Antelope Valley. By 2019, this area dropped to 18 days over the standard, then in 2020 it went to 13 days, and last year it was 6 days over. We attribute that decline to AVTA's electric buses replacing their diesel powered buses. For the environment, this shows that what we're doing works!"

AVTA Chairman of the Board Marvin Crist, November 2021

"Many of the impacts of our electric fleet conversion are not as obvious to our riders and the Antelope Valley community. AVTA has improved our Miles between Service Interruptions metric from 11,200 miles to 16,000 miles and improved our Fleet Availability metric from 89% with our old diesel fleet to 97% with today's all-electric fleet."

Martin Tompkins, AVTA Executive Director/CEO

"AVTA could not have accomplished our journey to electrification without the support and funding from Federal, State, and Local agencies. The funding table shows the major contributors to AVTA's success and achievements."

Judy Vaccaro-Fry, AVTA Chief Financial Officer

"AVTA has a very dynamic and visionary Board of Directors. We started this path in 2014, I just happened to be lucky enough to be the one shepherding it through its final phases. But again, I attribute it all to the vision of the AVTA Board of Directors that started this journey for us and to the amazing AVTA staff."

Macy Neshati, AVTA Executive Director/CEO from 2018 through 2021