

Cajon Valley Union School District Electric School Bus Report

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Agenda

Intro

CVUSD Transportation Logistics and Student Busing

CVUSD's Clean Energy Portfolio

Why Electric School Buses

Why Electric School Buses

Considerations, Route and Range Planning

Revenue Streams

Pilot Introduction

Cost Breakdown at a Glance

Why should CVUSD Expand Vehicle Electrification

Questions

Vehicle and Transportation Logistics



135 Total District Vehicles

42 Total School Buses

8 E Buses (three additional on Order)

**5 Passenger Vans (two additional on order)
for Student Transportation**

10 Total Warehouse Delivery Trucks

5 E Trucks

Miscellaneous Passenger E Vehicles



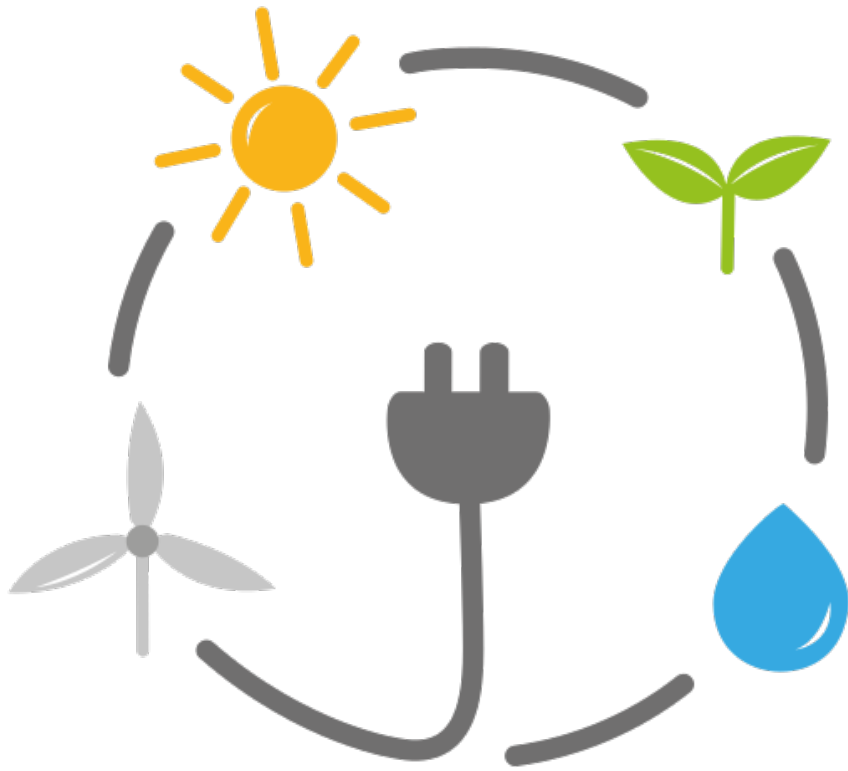
Student Transportation

**Home to School Transportation to 10
District School Sites**

**Special Needs Transportation to 26 School
Sites**

**Special Needs Transportation to 11 Non-
Public Schools**

Average about 1,200 Field Trips annually



- **CVUSD Clean Energy Portfolio**
 - **Solar at all 26 School Sites**
 - **Electric School Buses on the Road Since 2019**
 - **Five Temporary Chargers 2019-Present**
 - **14 Vehicle to Grid Charging Stations Online**
 - **Infrastructure for 15 Additional Charging Stations**
 - **SDG&E V2G Pilot Project Participation**
 - **Passenger Vehicle Charging Stations Online in 2022**

Why Electric School Buses:

- Funding
- Reduce Emissions
- Lower Long Term Operational Costs?
- Improve Community Health and Air Quality
- Reduce Noise Pollution
- Predictable Usage Patterns
- Charge During Off Peak Hours
- Large Fleets
- Not in Use During Peak Demand



Considerations

Upfront costs vs. total cost of ownership (TCO)

Federal, state, and local funding opportunities

How many chargers are needed?

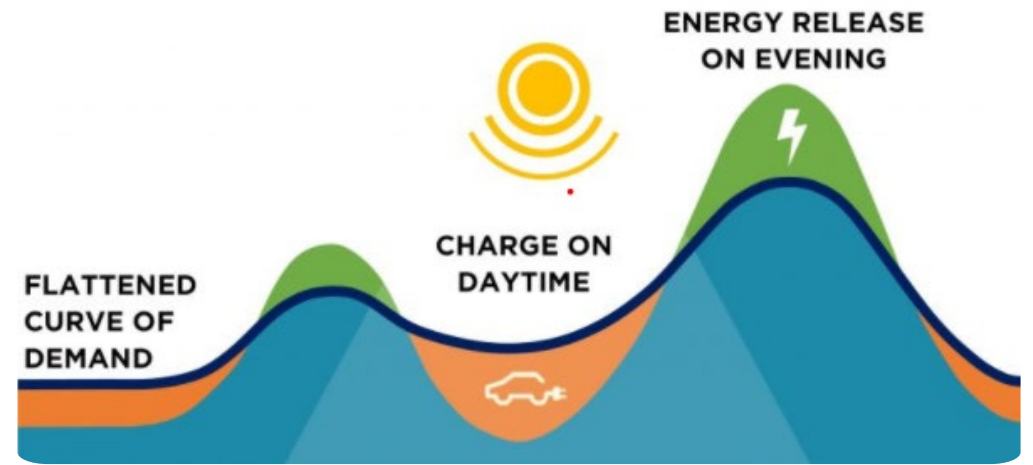
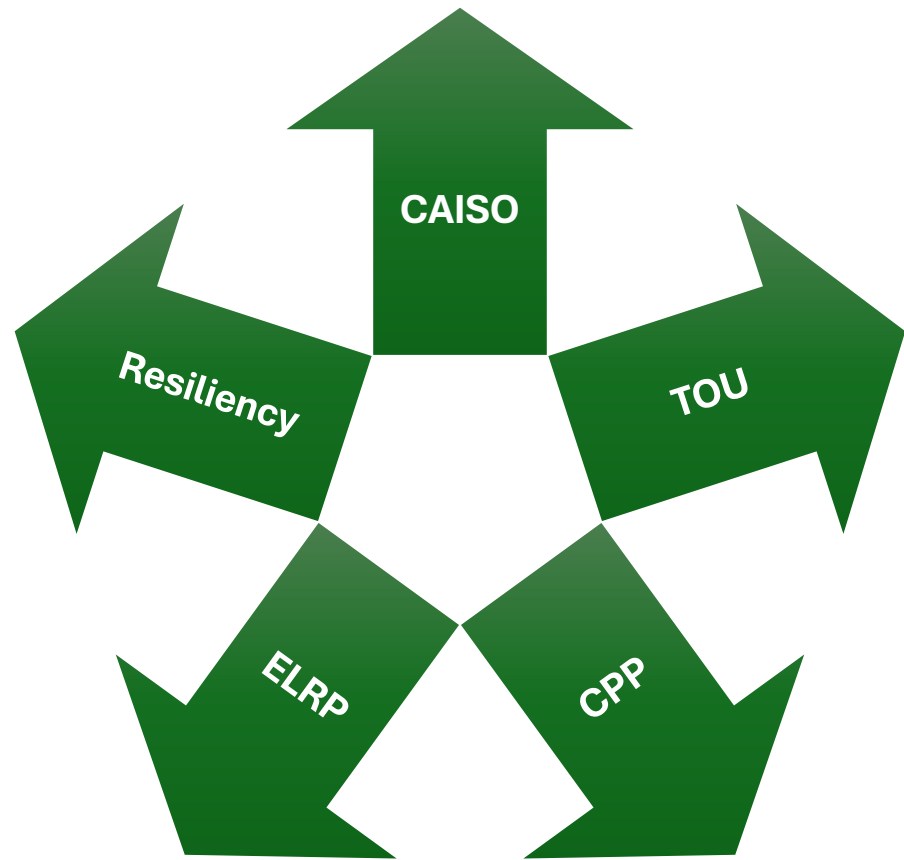
What type of chargers (Level 2 or DC fast)

Is the local grid capacity sufficient

Locations for chargers

Exploring renewable energy options

Energy cost management (e.g., time-of-use rates)



- **Route and Range Planning**

- Driver Training and Buy In
- Daily route distances and bus range
- Factors affecting range: terrain, climate, auxiliary power needs
- Scheduling charging times
- Overnight vs. mid-route charging
- Assessing Feasibility
- Fleet Management Integration
- Warranty, Repairs & Maintenance
- Back Up Plan





CVUSD V2G PILOT PROJECT

Pilot Project Features

- **Vehicle to Grid Technology**
- **Six 60 kW DCFC V2G Charging Stations**
- **Retrofit 6 Electric School Buses with Unidirectional L2 Charging Capabilities and Upgrade to Enable DCFC V2G**
- **Five Year Vehicle-to-Grid (V2G) Pilot**
- **One Year V2G study**
- **Third party data evaluation and published report**



Vehicle Cost Breakdown

Cajon Valley

\$75,000



**HVIP (Hybrid and
Zero Emission Truck
and Bus Voucher)**

\$175,000



**EPA/ DERA (Diesel
Emissions Reductions
Act)**

\$175,00



Charging Infrastructure Breakdown

Cajon Valley

\$ 0



Nuvve

< \$445,000



SDG&E

1.1 Million





Final Discussion

Thank you for your time today