



MHD Fleets on the Grid

Ryan Stanton

Sr. Project Manager – EV Evolution

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Who is TVA?



About:

- Largest public power utility
- TVA serves 153 Local Power Companies (LPCs)
- ~10 million people
- 33 GW system peak (dual), 55% carbon-free (FY23)

Mission:

- Energy
- Environment
- Economic Development

TVA Innovation & Research Portfolio



Advanced Nuclear Solutions



Decarbonization Options



Storage Integration



Future Grid Performance (Inertia)



Regional Grid Transformation



Connected Communities



Electric Vehicle Evolution

Innovation Scouting

Partnerships

Innovation Network



Generation >>>

<<< Transmission >>>

<<< Distribution >>>

<<< End Customers

Optimizing Existing Assets

Federal Funding

Environmental Stewardship

Strategy

TVA's history with EVs



TVA's Henney Killowatt EV (1961)



TVA's Advanced Vehicle Test Facility
AVTF (1980's)



EPRI – TVA electric van conversion
(1979)

Electric Transportation Research (dating back to the 1970's)

- Vehicle Evaluation and Demonstrations
- Charging Infrastructure Evaluation and Standardization
- Consumer Research

Evaluating (Technology + Consumers) as EVs moved from “R&D” to Market

ELECTRIC VEHICLE EVOLUTION INITIATIVE MISSION

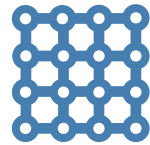
**Prepare for and enable
adoption of electric
vehicles to benefit our
communities and the grid.**

Electric Vehicle Evolution Focus Areas



Preparing for EV Impacts

Ensure our energy system is prepared for millions of EVs on Valley roadways in the future.



Understanding EVs as a Resource

Accelerating research, testing and demonstration of EV-grid technologies which improve the energy system.



Enabling EV Adoption

Collaborating with stakeholders to identify and address barriers to large-scale adoption of all EV types.

Powerful Forces are Driving EV Adoption

1 Legislation, Policy and Regulation

- IIJA: ~\$20B for EVs
- IRA: EV tax credits
- EPA: Emissions regulations
- CA: ZEV, ACT, ACF

2 Technology “Tipping Points”

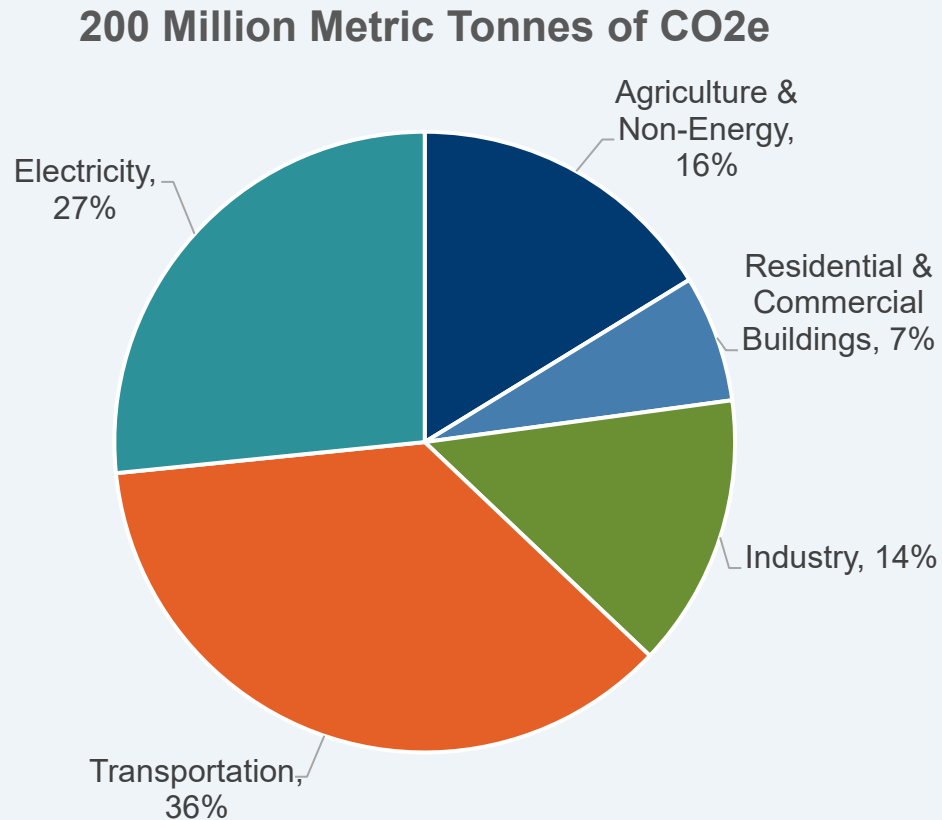
- 300+ mile range
- 300k+ mile batt. longevity
- Vehicle autonomy
- V2H, V2G

3 Compelling Vehicles



Customer Adoption

Valley Pathways Study: GHG Baseline for the Valley



Key Insights

- 200 MMTCO₂e is ~3% of US GHG emissions – the Tennessee Valley is home to about 10 million people, or about 3% of US population.
- Transportation is, by far, the largest source of greenhouse gas emissions in the Valley.

Tennessee Valley 2019 Greenhouse Gas Emissions (estimated). Commissioned by TVA and UTK Baker Center. Prepared by Guidehouse and VEIC. Draft, Nov. 2023.

EVs in the Valley

CHARGING

40

**Fast Charge
Network
stations**

VEHICLES

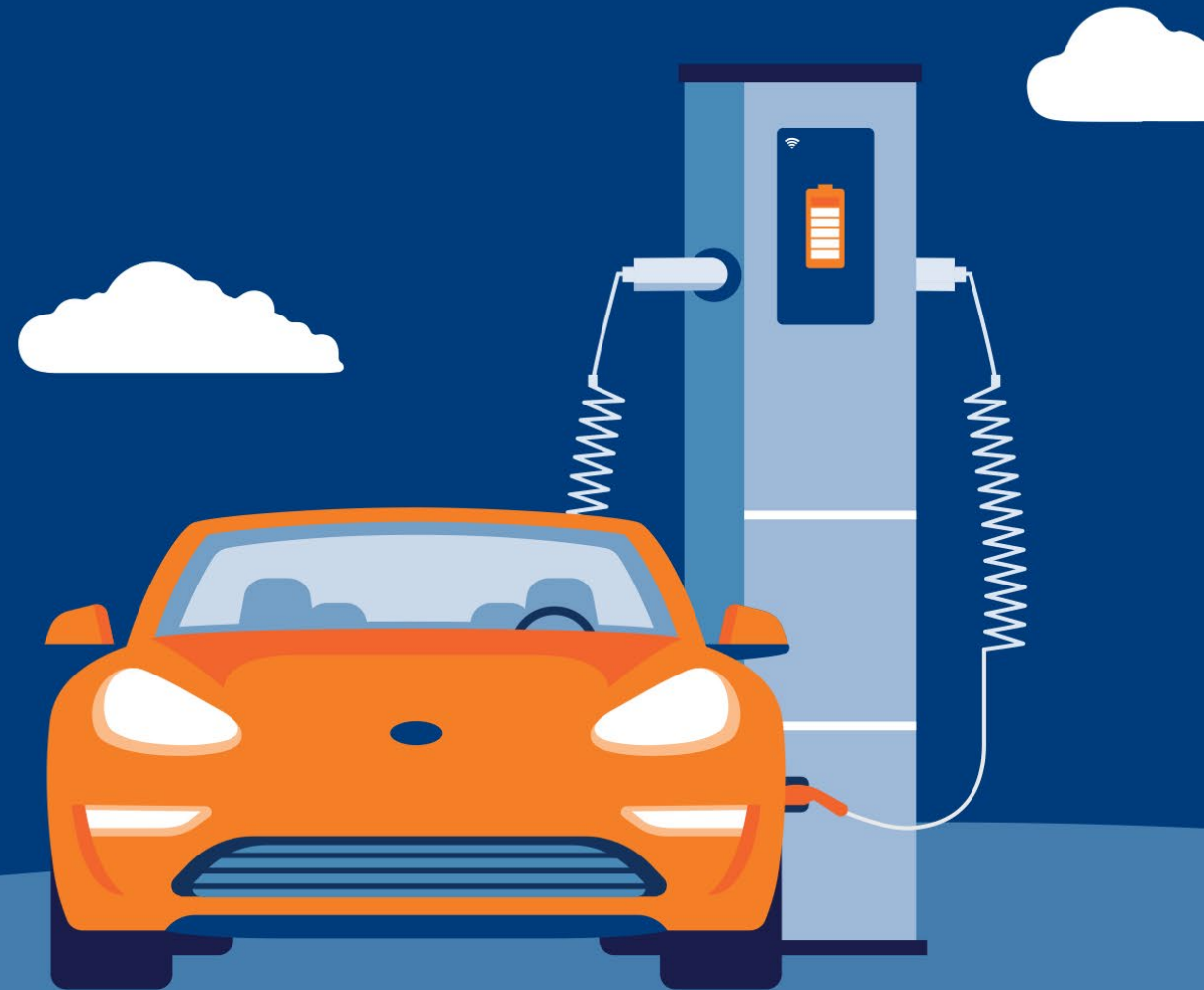
65k

**electric
vehicles**
as of Aug 2024, a
40% YoY increase
(~75% BEV)

FLEETS

115+

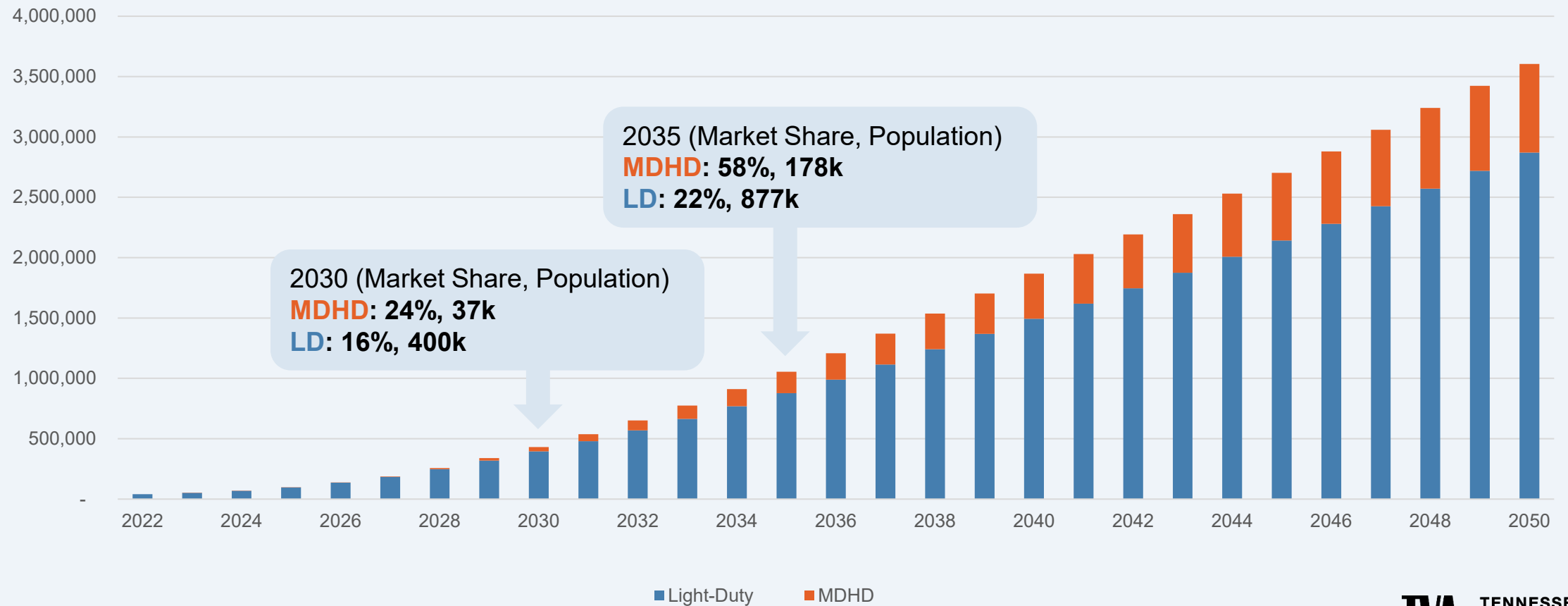
**electric
school
buses**
operating in TVA
service area (as of
June 2024)



Looking forward: How many EVs do we expect?

Projected EV Population in the Valley

LIGHT, MEDIUM, AND HEAVY DUTY EV POPULATION IN TN VALLEY, MEDIUM SCENARIO



TVA

**TENNESSEE
VALLEY
AUTHORITY**