Electric School Bus Adoption in the United States

Washington
Green Transportation Program
Moving forward with Washington's public fleets

WASHINGTON STATE UNIVERSITY
Energy Program

Brad James - Green Fleet Specialist

Overview

1. Introduction
2. Current State of Electric School Bus Adoption
3. Funding Programs
    - EPA Clean School Bus Program
    - Washington State Department of Ecology Grant Program
4. Economic Analysis: Diesel vs. Electric
    - Upfront Costs
    - Operating & Maintenance Costs
    - Total Cost of Ownership
5. Challenges & Considerations
6. Where the GTP comes in
7. Future Outlook
8. Conclusion

Student Transportation

- School buses transport over 25 million children daily in the U.S.
- 484,177 School Buses in service
- 3,160,000,000 miles traveled per year
- 60% of students from low-income backgrounds ride the buses, compared to 45% of students from high-income backgrouds
- Black students and students with disabilities are more likely to be reliant on the bus

Diesel Bus

- ~$150,000
- Diesel Exhaust is a known carcinogen
- Loud
- Mature Market
- GHG Emissions
- Fueling Infrastructure exists already
- Transporting ~90% of students today

Electric Bus

- ~$500,000
- Zero Tailpipe Emissions
- Quiet
- Lower Fuel Cost per mile
- Developing Market
  - Several manufacturers are on gen 2 or gen 3 buses
- Lower GHG Emissions
  - Sometimes significantly lower depending on make-up of electric grid
- Need for installation of Charging Infrastructure (EVSE)

ESB's – On the Road

Click here to show all committed electric school buses

Click here to show only electric school buses that are currently on the road

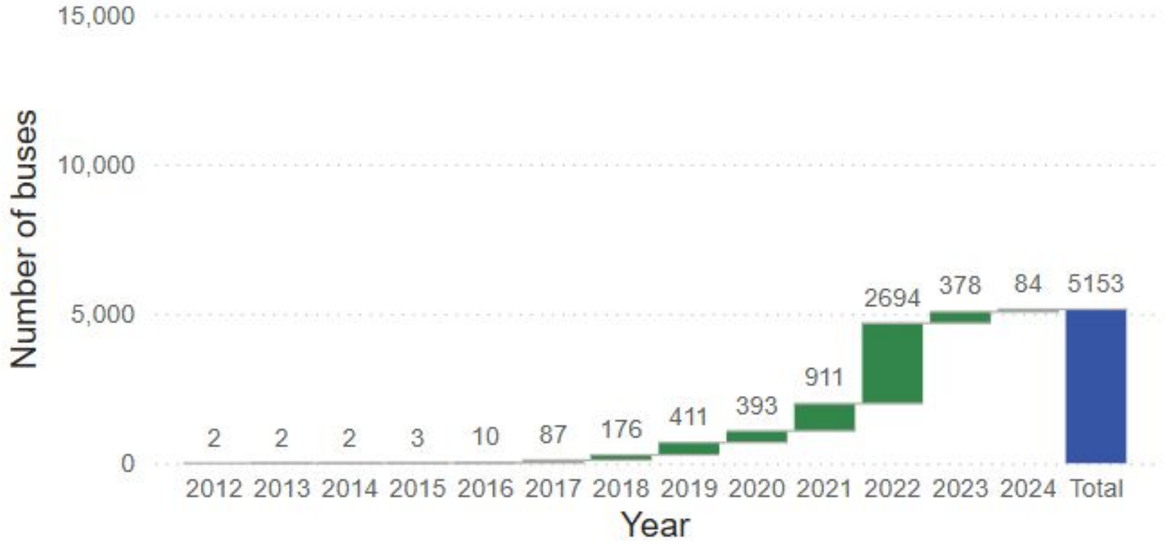
5,153
Electric school buses

891
School districts and fleet operators

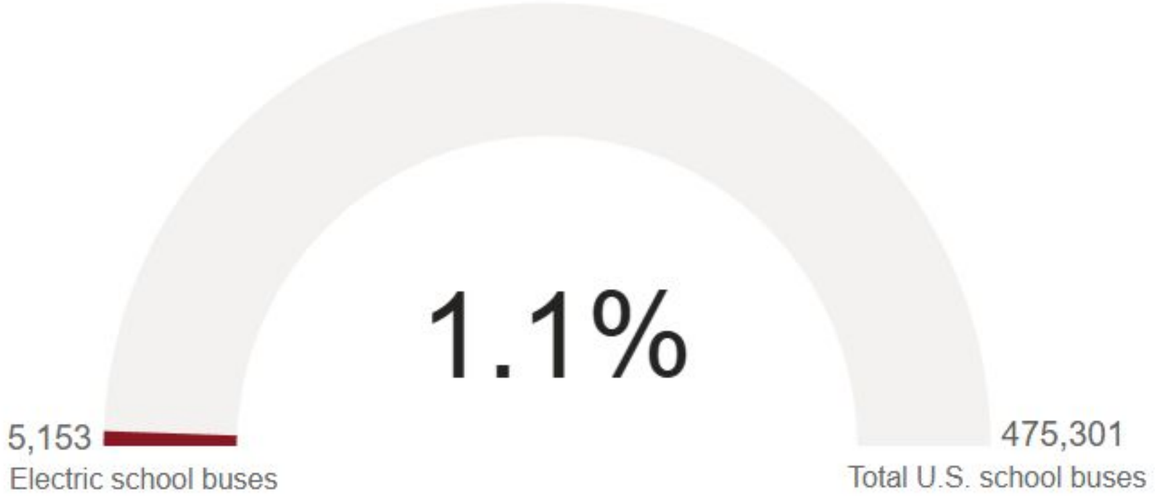
52
States and U.S. territories

What is a "committed" electric school bus? "Committed" describes a bus in any of the four stages of adoption: awarded, ordered, delivered or operating. We consider an electric school bus "committed" starting when a school district or fleet operator has been awarded funding to purchase it or makes a formal agreement to purchase it from a manufacturer - *not* when they have only expressed intent to acquire one. "On the road" describes delivered or operating buses.

New electric school buses, by year



Progress toward electrifying all U.S. school buses



This dashboard is updated monthly. Latest update: May 5, 2025

ESB's - Committed

Click here to show all committed electric school buses

Click here to show only electric school buses that are currently on the road

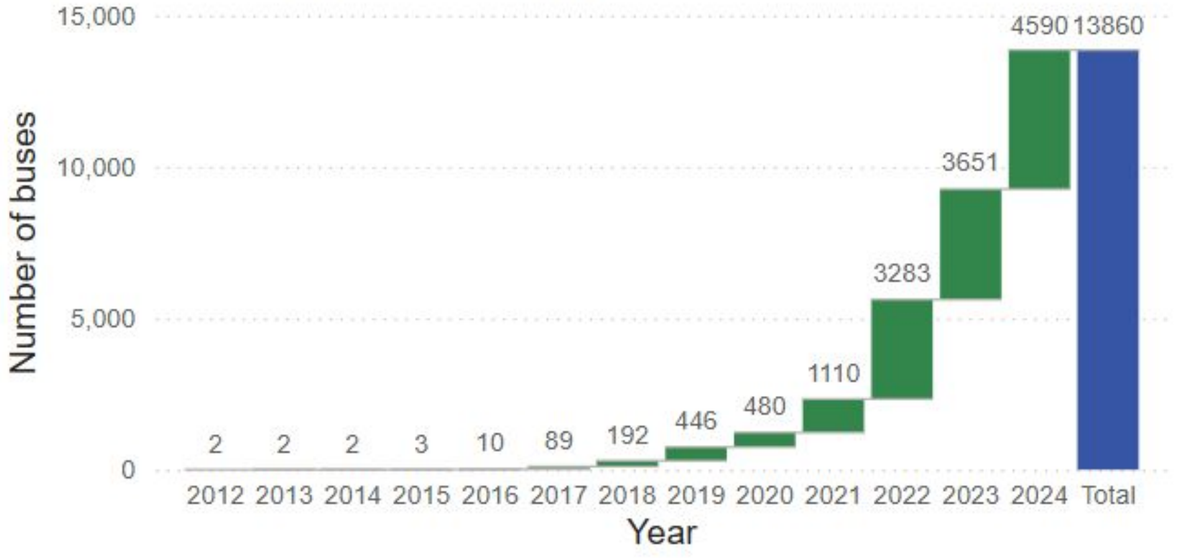
14K
Electric school buses

1,546
School districts and fleet operators

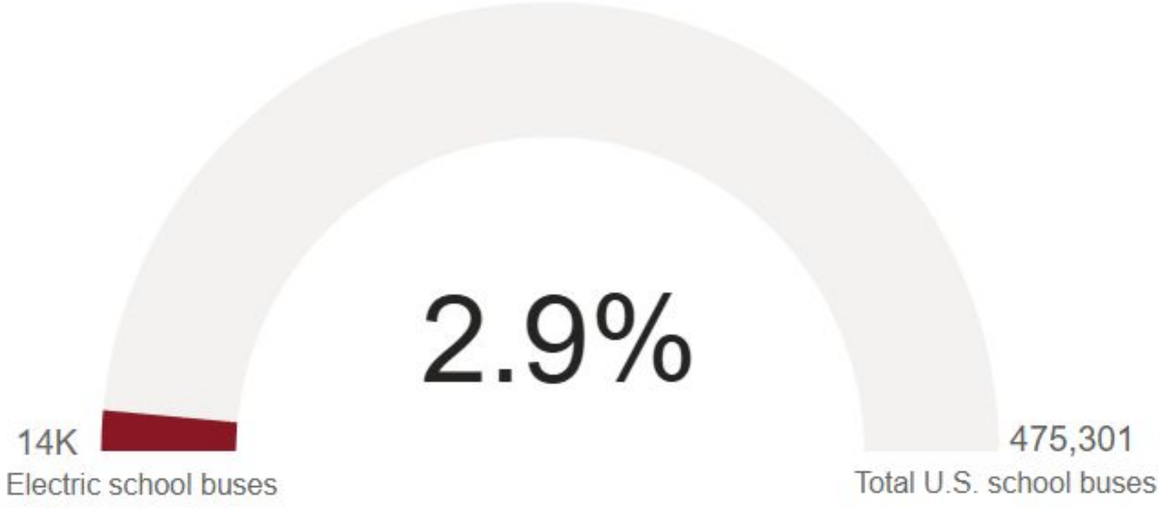
54
States and U.S. territories

What is a "committed" electric school bus? "Committed" describes a bus in any of the four stages of adoption: awarded, ordered, delivered or operating. We consider an electric school bus "committed" starting when a school district or fleet operator has been awarded funding to purchase it or makes a formal agreement to purchase it from a manufacturer - *not* when they have only expressed intent to acquire one. "On the road" describes delivered or operating buses.

New electric school buses, by year



Progress toward electrifying all U.S. school buses



This dashboard is updated monthly. Latest update: May 5, 2025

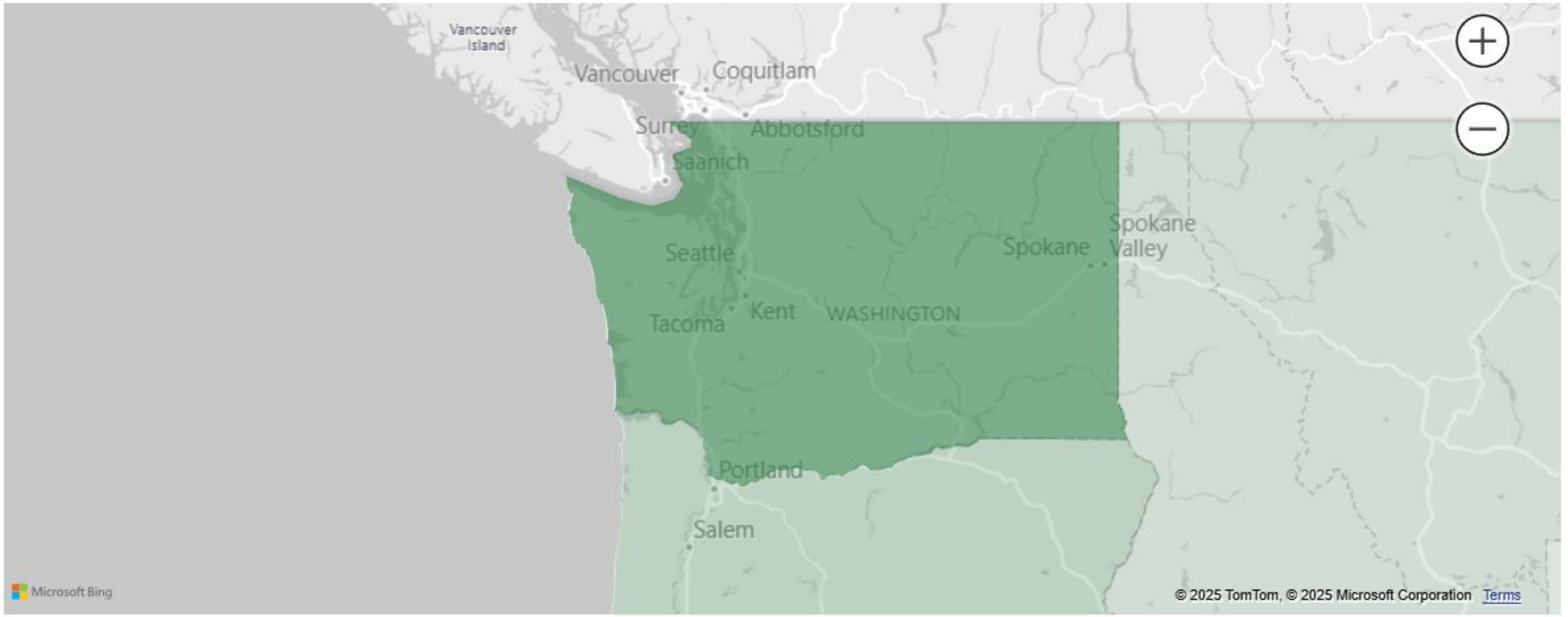
Committed electric school buses, by adoption status

Click on a state to filter

290	177	17	96	3,036
Total committed ESBs	Awarded ESBs	Ordered ESBs	Delivered or operating ESBs	Students riding ESBs

Committed electric school buses by state

Number of committed ESBs 1-10 11-100 101-500 501+



EPA Clean School Bus Rebate Program*

- $5 billion over five years (FY 2022-2026)
- Nearly $3 billion released across first three funding rounds
- 2024 Clean School Bus Rebate Program:
  - Applications closed January 14, 2025
  - Previously Expected to award up to $965 million
  - Focus on zero-emission and clean school buses
- Priority for low-income, rural, and Tribal schools
- Funding can cover up to 100% of bus and infrastructure costs

EPA Rebate Program: Funding Amounts

Table 4: Maximum Funding Amount per Replacement School Bus

School District Prioritization Status	Replacement Bus Fuel Type and Size					
	ZE – Class 7+	ZE – Class 3-6	CNG– Class 7+	CNG – Class 3-6	Propane – Class 7+	Propane – Class 3-6
Buses serving school districts that meet one or more prioritization criteria	Up to **$325,000** (Bus + Charging Infrastructure)	Up to **$245,000** (Bus + Charging Infrastructure)	Up to **$45,000**	Up to **$30,000**	Up to **$35,000**	Up to **$30,000**
Buses serving school districts that are not prioritized	Up to **$170,000** (Bus + Charging Infrastructure)	Up to **$115,000** (Bus + Charging Infrastructure)	Up to **$30,000**	Up to **$20,000**	Up to **$25,000**	Up to **$20,000**

**Funding amounts above do not reflect EPA funding available for ADA-compliant wheelchair lifts, EPA funding for shipping costs to non-contiguous U.S. states and territories, nor IRA funding available through IRS-disbursed tax credits for EV bus and infrastructure purchases. Please refer to Section 4 for more information on EPA funding and below for more information on tax credits.*

- Additional $20,000 for buses with wheelchair lifts
- Extremely high demand in all funding rounds to date
- 95% of funding in 2022 went to electric buses
- 99% of funding in 2023 went to electric buses

*Uncertainty...

Recent funding uncertainty (early 2025):

- **Temporary pause in disbursement of previously awarded funds**
- **Recipients unable to access funding portals**
- **Created challenges for districts, manufacturers, and dealers**

- **Current status (as of April/May 2025):**
  - **2023 Clean School Bus Grants funding access restored (February 2025)**
  - **2023 Clean School Bus Rebates funding now being processed**
  - **Payment Request Forms being approved again**
  - **EPA helpline (cleanschoolbus@epa.gov) active again**
- **Status of 2024 Rebate Program ($965 million) still pending**
- **Districts should verify portal access and funding availability**

Washington State Funding Programs

- Washington Department of Ecology Grant Program:
  - $49 million in current funding cycle (2023-2025)
  - $20 million from Climate Commitment Act
- Focuses on areas most affected by air pollution
- Prioritizes overburdened communities, rural areas, low-income districts
- Can be combined with EPA grants to cover up to 100% of costs
- Additional $825,000 for training mechanics and staff
- There is hope for a new round of funding in 2026

Washington State Funding Programs

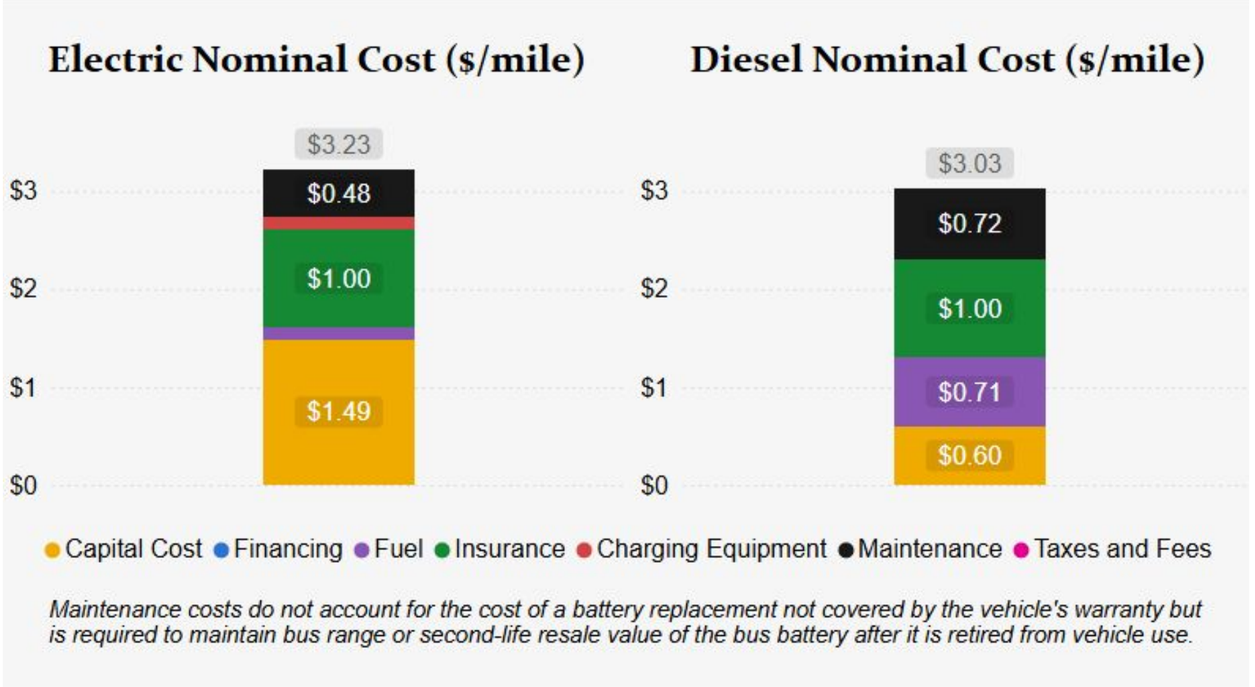
DEPARTMENT OF ECOLOGY
State of Washington

Table 1: Funding Levels:

Applicant District FRPL Percentage or Rural School District Status	Bus Replacement Funding Level	Max Number of Buses per Applicant	Infrastructure Funding Level
FRPL Greater than 95% Or Rural Low-Income LEA (Choose one Option)	Option 1: Up to 100% of the bus replacement or Option 2: Up to 115% of the cost difference between zero emission and fossil fueled replacement	Up to 3 Buses ——— Up to 10 buses	Up to $75k per bus replacement
FRPL 50%-94% Or SLEA	Up to 115% of the cost difference between zero emission and fossil fueled replacement	Up to 10 buses	Up to $75k per bus replacement
Less than 50%	Up to 100% of the cost difference between zero emission and fossil fueled replacement	Up to 10 buses	Up to $50k per bus replacement

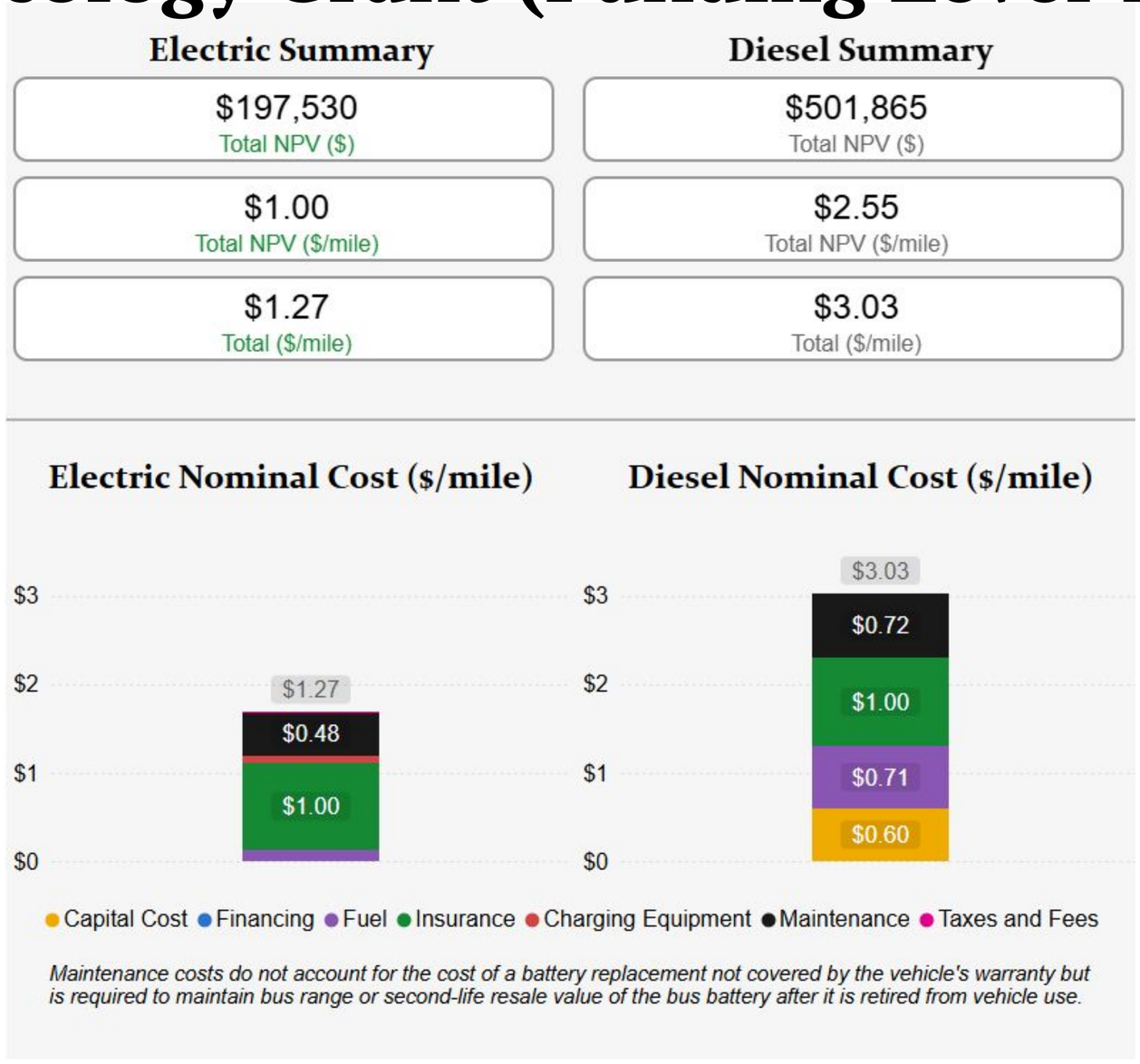
Total Cost of Ownership - No Grant/Rebate Funding

Electric Summary	Diesel Summary
$583,005 Total NPV ($)	$501,865 Total NPV ($)
$2.96 Total NPV ($/mile)	$2.55 Total NPV ($/mile)
$3.23 Total ($/mile)	$3.03 Total ($/mile)



Maintenance costs do not account for the cost of a battery replacement not covered by the vehicle's warranty but is required to maintain bus range or second-life resale value of the bus battery after it is retired from vehicle use.

Total Cost of Ownership - EPA Priority District or Ecology Grant (Funding Level 1)



Challenges to Electric School Bus Adoption

- High upfront costs remains biggest barrier
- Charging infrastructure installation and grid capacity
- Range Anxiety
- Workforce Development
- Route planning complexity
- Manufacturing capacity constraints
- Relatively Limited model options

Washington Green Transportation Program

- Education and Technical Assistance to Public Fleets
- Electric School Bus Fleet Accelerator Cohort
  - Climate Solutions
  - Breaking Barriers Collaborative
- Medium and Heavy-Duty Vehicle Voucher Program
- Electric School Bus Newsletter
- Bi-Monthly Alternative Fuel Vehicles Technical Assistance Group (AFV-TAG) Webinars

Green Transportation Program

Electric School Bus

Future Outlook

- Expected price declines as:
  - Battery costs continue to fall
  - Manufacturing scales up
  - More OEMs enter the market
- Battery improvements extending range
- Vehicle-to-grid (V2G) technology offering potential revenue + resiliency
- Increasing state mandates and requirements?

Conclusion

- Electric school buses offer significant health and environmental benefits
- Economic equation improving rapidly
  - Higher upfront costs
  - Lower operating costs
  - Favorable TCO with incentives
- Unprecedented funding available
- Washington State positioned as a leader
- Strategic approach needed to maximize benefits
- School districts should consider:
  - Available funding
  - Operational costs
  - Training requirements
  - Implementation timeline

Thank You

Washington
Green Transportation Program
Moving forward with Washington's public fleets

WASHINGTON STATE UNIVERSITY
Energy Program

Works Cited

- https://www.wri.org/initiatives/electric-school-bus-initiative
- https://electricschoolbusinitiative.org/electric-school-bus-data-dashboard
- https://electricschoolbusinitiative.org/state-electric-school-bus-adoption-us
- https://schoolbusfleet.mydigitalpublication.com/publication/?m=65919&i=810506&p=14&ver=html5
- https://apps.ecology.wa.gov/publications/documents/2402014.pdf
- https://pubmed.ncbi.nlm.nih.gov/21608489/
- https://electricschoolbusinitiative.org/how-electric-school-buses-benefit-kids-health-school-budgets-jobs-and-more
- https://schoolbusfleet.mydigitalpublication.com/fact-book-2024/page-12