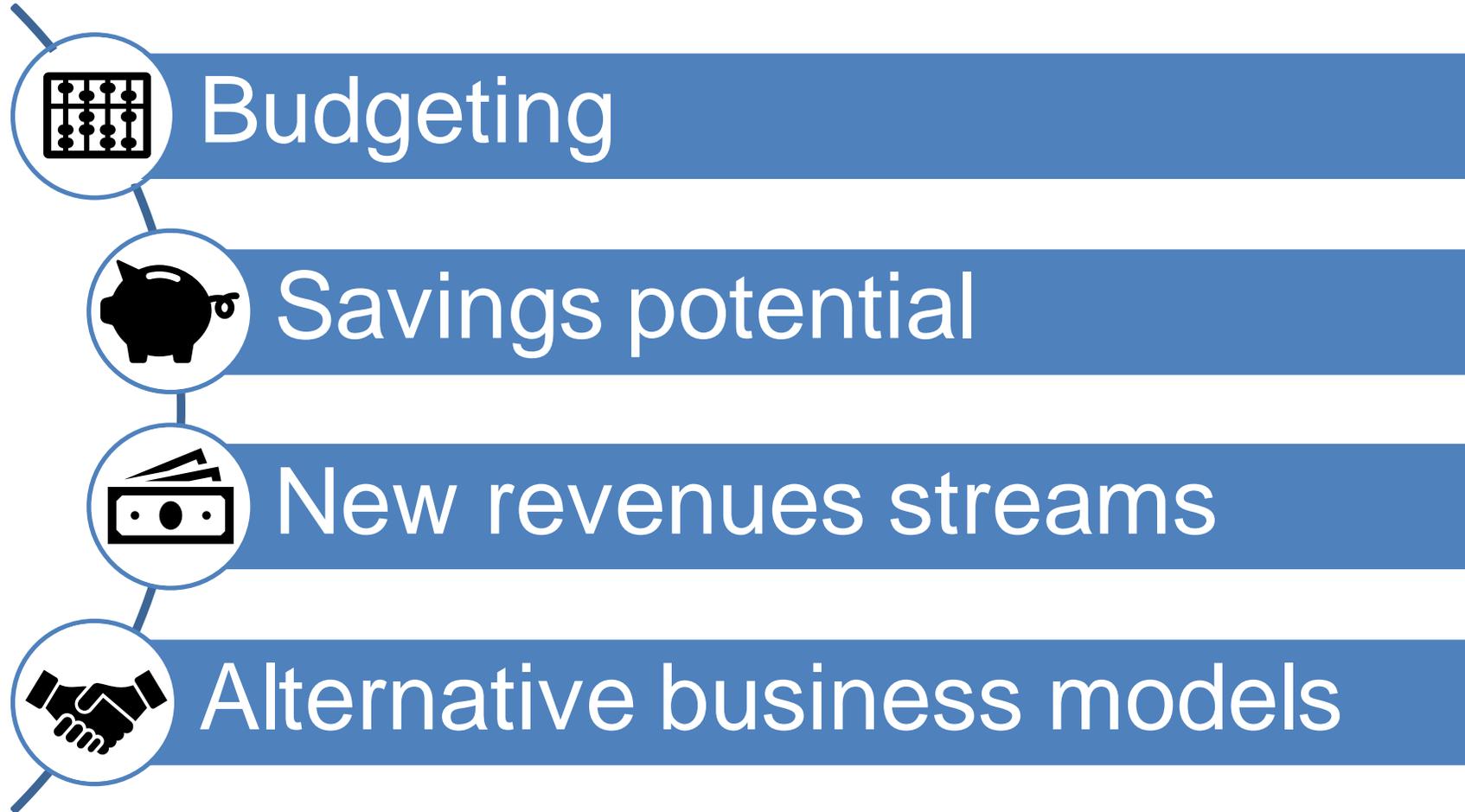


TOTAL COST OF OWNERSHIP FOR ESBS IN MICHIGAN

WHY TOTAL COSTS MATTER



KEY COMPONENTS



ELECTRIC VS. DIESEL BUS MODEL INPUTS

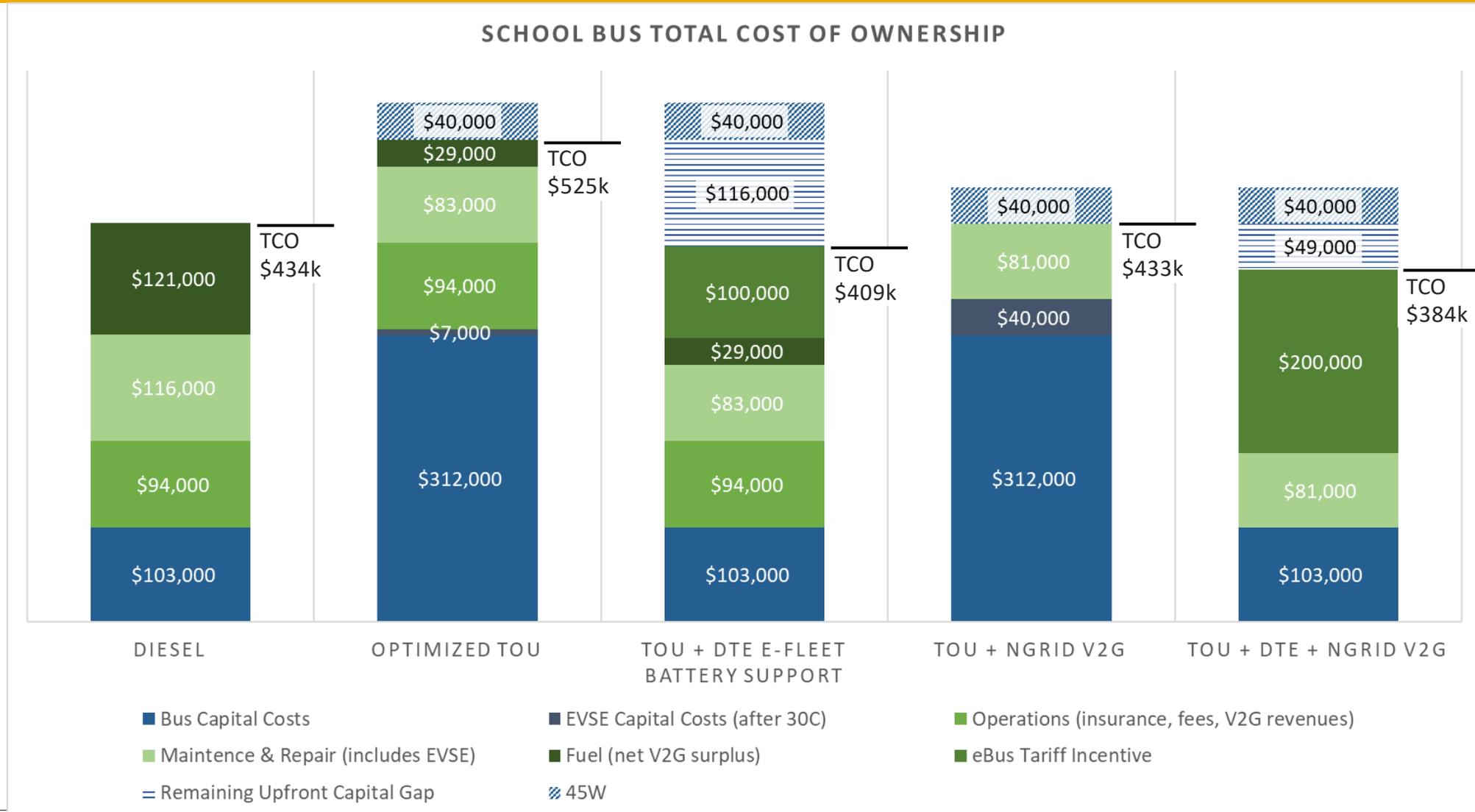
| Component | Electric | Diesel |
|------------------------------------------------------|-----------------------------------|---------------|
| Expected Vehicle Lifetime (Years) | 13.5 | |
| Annual Vehicle Mileage (VMT/Year) | 14,084 | |
| Bus MSRP | \$352,000 | \$103,000 |
| Energy infrastructure & installation | L2 19.2 kW charger \$10,475 | n/a |
| Average Fuel Economy (weighted 55% city/45% highway) | 22.1 | 6.59 |
| Full Coverage Annual Cost to Insure (\$/yr) | \$6,800 | \$6,800 |
| Fuel prices | \$0.11-0.13/kWh | \$3.98/gallon |
| Overall Average Maintenance & Repair Cost (\$/Mile) | \$0.30 | \$0.60 |
| Discount Rate for NPV Calculations (%) | 2% | |
| Pricing Approach | MSRP Less Tax Credits (45W & 30C) | |

MICHIGAN PROGRAMS

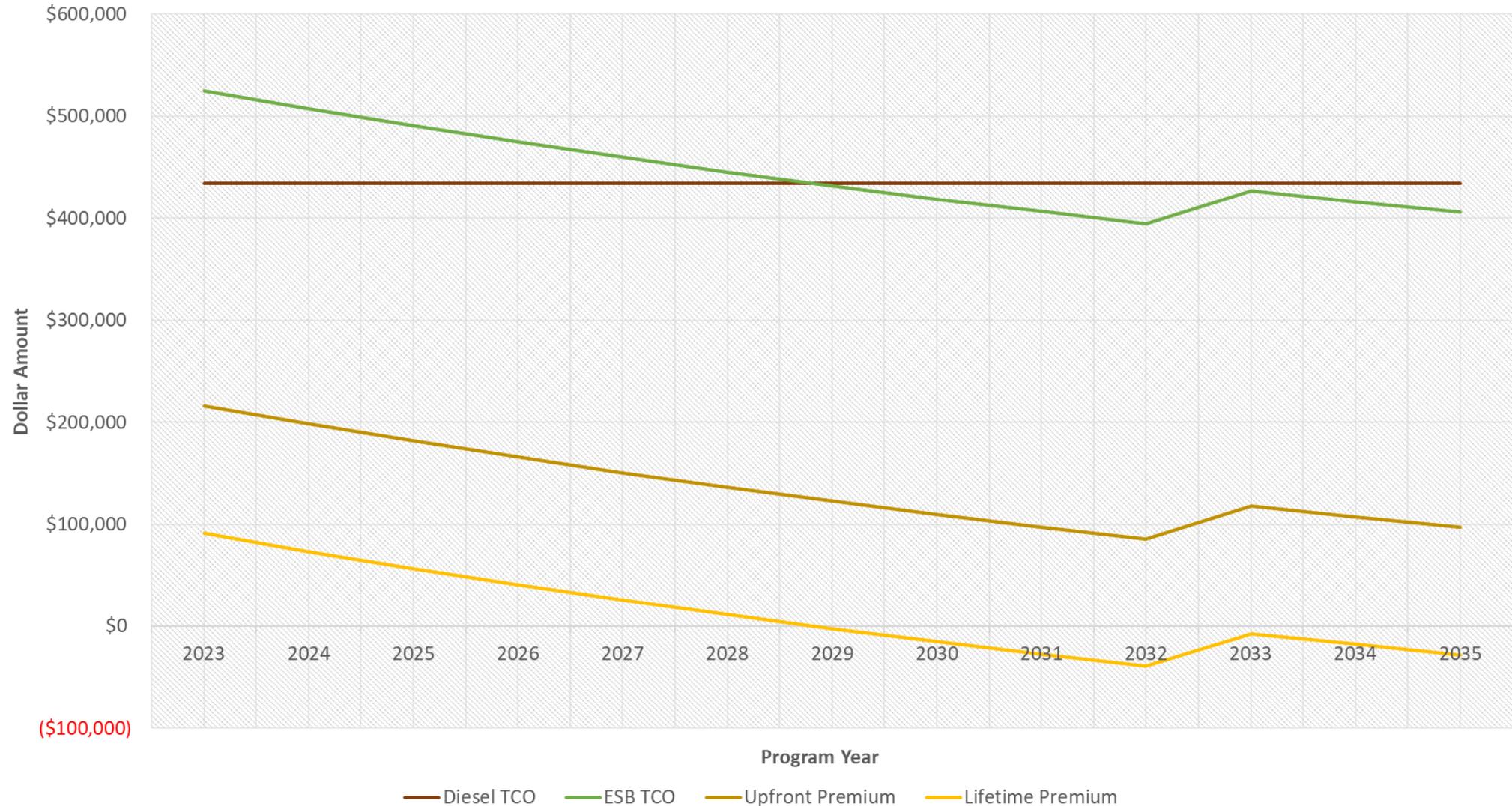
Utility Programs

Volkswagen Settlement Funds

ILLUSTRATIVE TOTAL COST OF OWNERSHIP



POTENTIAL TCO PARITY BY LATE 2020s



Source: WRI Illustrative calculations

RESOURCES

Electric School Bus Calculator

Select the options that best fit your situation and then press "Show Results."
Press "Start Over" to run another analysis.

<https://atlaspolicy.com/electric-school-bus-calculator>

School Bus Type State VMT (mile/year) City M

Type A Michigan 10,000 55
 Type C 14,084 75
 Type D 18,000

Electric Inputs

Charging Equipment

DCFC (150kW) Dual
 DCFC (50kW) Dual
 DCFC (70kW) Dual
 L2 (19.2 kW)
 L2 (19.2 kW) Dual
 L2 (7.7 kW)

Electricity Price

Average Electricity Price
 Low Electricity Price (\$0.05/kWh)

Average Electricity Price is the U.S. EIA statewide average electricity prices for commercial customers. The Low Electricity Price is a scenario to simulate a discounted electricity price.

Diesel Inputs

Ownership Structure

Cash Purchase
 Loan for 10 years
 Loan for 10 years
 Loan for 5 years a
 Loan for 5 years a

Incentive

Current Clean School Bus Rebate (Non-Priority)

Select incentives for the vehicle and/or charger. These incentives are a way to vary upfront cost of the vehicle and/or charging equipment.

Electric School Bus Characteristics

Fuel Economy City (mpge): 24
Fuel Economy Highway (mpge): 20

Charging Configuration

Vehicle-to-Charging Station Ratio: 1:1
Upfront Cost: \$0
Maintenance Cost (\$/year): \$991

Summary of Other User Selections

Vehicle MSRP including federal incentives:
Vehicle Down Payment: \$0
Electricity Price (\$/kWh): \$0.12
Electricity Emissions Region: RFC
Year of Use: 14
Vehicle Incentive: \$250,000
Charging Incentive: \$13,000

Your Results

Start Over



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Technical Note

Recommended Total Cost of Ownership Parameters for Electric School Buses: Summary of Methods and Data

This Technical Note is a reference guide for those conducting the total cost of ownership (TCO) analysis of diesel and electric school buses. The publication presents a landscape analysis of information related to school bus procurement, performance, and operations, such as purchase costs, maintenance and operating costs, fuel economies, vehicle lifetime, charger and installation costs, and more. The recommended default specifications for key calculation parameters will improve understanding of the economics of school bus electrification.

Download

<https://www.wri.org/research/recommended-total-cost-ownership-parameters-electric-school-buses-methods-data>

Electric School Bus Initiative

<https://electricschoolbusinitiative.org/clearinghouse-electric-school-bus-funding-and-financing-opportunities>

ARTICLE | December

Clearinghouse: Electric School Bus Funding and Financing Opportunities

Looking for funding and financing options for electric school buses? Download our Clearinghouse and start exploring.

Download the Clearinghouse

Finding information about the many opportunities to access funding and financing for electric school buses can be challenging. That's why the Electric School Bus Initiative has compiled many of the available options in a single file, which contains information regarding type of funding, program eligibility, funding levels, and more.

Download our [Clearinghouse of Electric School Bus Funding and Financing Opportunities](#) today to see programs that you may be interested in.



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