

TMC S.11 – BEV Calculator

- **What is it?** It's a Life Cycle Cost Analysis Tool – or TCO Calculator. ***Must decide what this will ultimately be for TMC.***
- **What's different from all the other calculators out there?** (Everyone has one or at least says they do.) All the other calculators are looking at Operating Cost of a BEV - not the total life cycle cost. (*Cost of fuel* - diesel vs. electricity and *M&R expense* - diesel vs. EV) ***This can compare total cost, including financing, over specific term.***
- **Unbiased Approach** – Most calculators come from the OEM and push towards going green. OEM's are trying to convince the end user that the specific asset they are modeling is going to be less expensive to operate compared to its diesel equivalent. Our goal should simply be comparing diesel vs. BEV for a specific term without trying to force anyone down a certain path. If you go into an analysis with a bias towards one fuel or another, you are likely to manipulate the analysis to match your bias.
- **How are you going to pay for it?** Financing is going to be key. Nobody wants to drop a bunch capital on these trucks and take risk with so many unknowns. Uncertainty creates risk. You need to know what the RV, residual value, may be at a given term. You should mix diesel with BEV when making a purchase.
- **Battery Avg kWh** = 300 (Avg of all major OEM battery capacity) – Currently on the market
- **Avg Range per charge of 300 kWh** = 150 miles – Nothing proven BEYOND that
- **Mileage** – Why 65,000 mi default? 250 mi max range per day x 5 days/wk x 50 weeks/yr rounded to nearest 5,000 = 65,000 miles
- **Grant/Subsidy** – Calculator includes ability to add a grant which uses avg 45% reduction in OEC
- **Charger Cost** – Ability to include cost of charger (single/multi) – Avg cost of a charger single is \$55k, can be Capitalized.
- **Cost of Energy** – Cost to charge the battery is dependent on State of operation, so it included cost per kW by state on an average cost. Meaning all hours, peak demand to lowest demand.
- **Tires** – M&R cost includes tires.
- **What about OEM?** The approach is agnostic to OEM. The assumptions use avg OEC, Battery Capacity, and Range for KW, PB, FRT, and Volvo.

Weight Day Cab

- ICE Avg 15,500lb to 17,500lb
- EV Avg Traditional (FRT, Volvo, Mack, Int, Etc...) 22,000lb to 23,000lb
- EV AVG Non-Traditional (Tesla, Nikola) 28,000lb to 31,000lb

Batt cost Replacement Avg \$35,000 – **After 7 to 10 years of use.**

R&M EV 25% less than ICE

Some states allow a 2,000lb weight allowance

Opportunity charging is recommended to extend range