

# School Bus Electrification

## Understanding EV Weight



### What is GVWR?

GVWR (Gross Vehicle Weight Rating) is the weight of the vehicle fully loaded, including passengers, fluids, and cargo.

### What is Unladen Weight?

Unladen weight is the weight of the vehicle when not carrying any passengers or cargo.

### What is a typical GVWR for a diesel, gas, or propane powered school bus?

A typical diesel, gas, or propane full size school bus has a 29,000 – 33,000 lb. GVWR.

### Can a school bus operate over the GVWR?

No. A vehicle may not operate or weigh in at more than the stated maximum.

### Do electric school buses have a higher GVWR?

Not always, this depends on vehicle options.

### How much do electric school bus batteries weigh?

On IC buses, each battery weighs 438 lbs. Battery weight will vary by manufacturer.

### How many batteries does an electric school bus have?

On IC buses, a standard bus will have 6 batteries but may have up to 9. This varies by manufacturer.

### How is student load weight calculated?

Load weight is calculated at 120 lbs. per child and 150 lbs. per adult.



### Real World Examples:

Powertrain	Capacity	GVWR	Unladen	Passenger Weight	Calculated Weight	Difference
Diesel (B6.7)	48C – 33A	27,800 lbs.	17,320 lbs.	5,910 lbs. - 4,950 lbs.	23,230 lbs. – 22,270 lbs.	+3,220 lbs.
Electric (210 kWh)	48C – 33A	30,280 lbs.	20,540 lbs.		26,450 lbs. – 25,490 lbs.	
Diesel (B6.7)	66C – 45A	29,800 lbs.	18,840 lbs.	8,070 lbs. – 6,750 lbs.	26,910 lbs. - 25,590 lbs.	+3,620 lbs.
Electric (210 kWh)	66C – 45A	33,000 lbs.	22,460 lbs.		30,530 lbs. – 29,210 lbs.	
Electric (*315 kWh)	66C – 45A	35,000 lbs.	24,600 lbs.		32,670 lbs. - 31,350 lbs.	+5,760 lbs.
The optional 315 kWh battery adds 3 additional batteries to the bus frame, increasing overall weight.						
Diesel (B6.7)	70C – 47A	29,800 lbs.	19,200 lbs.	8,550 lbs. – 7,050 lbs.	27,750 lbs. – 26,250 lbs.	+3,400 lbs.
Electric (210 kWh)	70C – 47A	33,000 lbs.	22,600 lbs.		31,150 lbs. – 29,650 lbs.	

### Where does the additional weight come from?

Primarily, additional weight comes from the chassis. Electric buses use a 120,000 PSI frame rail whereas a diesel, gas, or propane bus use a 60,000 PSI frame rail. The frame is on average, 3,000 lbs. heavier on an electric bus.

### Does the added weight require the driver to upgrade their license?

No. The licensing requirements remain the same. Class B licenses allow the operator to drive vehicles with a GVWR greater than 26,001 lbs.

### Is the weight distributed evenly?

Yes, more so than an ICE bus. Batteries are spread throughout the length of the bus, and the additional weight of the frame is even front to rear.

The information and conclusions contained herein are believed to be correct at time of publication, but do not necessarily apply to similar vehicles with different specifications or with production dates after the production of this publication. Vehicles with different specifications or later dates of production may yield different results. Vehicle specifications are subject to change without notice.



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