BATTERY ELECTRIC VEHICLES

Houston-Galveston Area Council

BATTERY ELECTRIC VEHICLES (BEV), also known as all-electric vehicles, are growing in popularity. They offer an alternative to gasoline powered vehicles and may fit your lifestyle and transportation needs. This fact sheet provides answers to common questions, to aid in informed decision making about BEVs.

What powers a BEV?

BEVs are powered by electricity that is stored in an on-board battery pack. Most of the vehicle's energy comes from an external source such as a charger or even a common electrical outlet. A small portion is generated on-board while driving through regenerative braking, where kinetic energy created by braking is converted into electrical energy. Most BEV use lithium-ion batteries, the same technology used by most consumer electronics like cell phones or laptops.

How are BEVs charged?

The U.S. Department of Energy (DOE) estimates that over 60% of charging takes place at single family homes. For those unable to charge at their residence, or are traveling, public charging ports are available. Nation-wide public charging availability has increased by an average of 18,500[1] ports each year since 2018.

There are three levels of charging, these levels that indicate a charger's voltage and charging speed. Actual charging speeds depend on a combination of vehicle/ and charger specifications.

Most publicly available charging ports are capable of Level 2 speeds, but the number of Level 3 chargers able to quickly charge any BEV is increasing rapidly.

Will I be able to drive far enough on a single charge of a BEV?

The average median range of a BEV was 270 miles in 2023. Though BEVs range continues to increase, it has not reached parity with gasoline vehicles (which have a median range of ~400 miles). Considering as many as 98% of passenger trips are 75 miles or less,[2] a BEV generally offers plenty of range for most daily driving.

Do BEVs generate air pollution?

Because there is no internal combustion engine on board BEVs, there are no tailpipe emissions. While there are emissions associated with both manufacturing and electricity generation, Argonne National Laboratory estimates place the air pollution emissions over the lifecycle (inclusive of manufacturing) of a BEV at roughly half that of gasoline vehicles.[3]

Compared to gasoline vehicles, BEVs are significantly more energy efficient, meaning 87-91% of input energy (electricity or gasoline) is converted to propel the vehicle, compared to 16-25% for gasoline vehicles.[4]

Are BEVs affordable?

BEV prices have declined over the years, with lower-price models entering the market quickly. The average transaction cost of a BEV is still slightly higher than a conventional vehicle, approximately $56,000 vs $48,000. Lower-price models, like the Nissan Leaf S begin around $30,000.

Are BEVs safe?

Yes. BEVs must meet the same safety standards as conventional vehicles.

[1]https://afdc.energy.gov/data/10972

[2]https://nhts.ornl.gov/od/?utm_medium=email&utm_source=govdelivery

[3]https://www.anl.gov/ev-facts/benefits

[4]https://www.fueleconomy.gov/feg/atv-ev.shtml

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