सत्यमेव जयते
Ministry of Power
Government of India

Bureau of Energy Efficiency

Frequently Asked Questions
Electric Vehicles and EV Charging Infrastructure

GO ELECTRIC

What is the contribution of transport sector in emission?

Transport sector accounts for 23% of global greenhouse gas emission. A study conducted in New Delhi shows that transport sector contributes 19%, 39% and 81% in Particulate Matter (PM) 10, PM 2.5 and NOx emission respectively, toxic gases causing respiratory ailments. Through adoption of electric mobility, the transport sector related emission can be brought down significantly, hence enabling a healthier lifestyle.

What is a Battery Electric Vehicle?

A Battery Electric Vehicle (BEV) uses only electricity to power the vehicle. All the electricity comes from an energy storage source (batteries) and regenerative braking.

What are the types of Electric Vehicle?

Apart from Battery Electric Vehicles, there are Plug in Hybrid Electric Vehicles (PHEVs) and Hybrid Electric Vehicles (HEVs). PHEVs use both gasoline and electricity. These vehicles have two power systems, an internal combustion engine and a battery. The battery can be recharged by plugging the vehicle into an external source. HEVs combine conventional internal combustion engine systems with electric propulsion systems. They use regenerative braking to convert energy that is normally wasted during braking/coasting into electricity. This electricity is stored in a battery until it's needed by the electric motor.

Are electric vehicles cleaner than internal combustion engines vehicles?

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EVs can convert around 60% of electrical energy. While conventional petrol vehicles convert only around 20% of energy stored in petrol and compressed natural gas-based vehicles produce particulate emissions. Battery operated vehicles have zero tailpipe emission. Similarly, plug-in hybrid vehicles have lower emission as a part of their power comes from batteries. Electric vehicles have the potential of reducing the greenhouse gas emission apart from reducing air pollution.

How fast can an Electric car/ Bike go?

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As fast as you like. Just like a petrol-powered car/bike, you can modify and tune your EV to reach optimum levels of performance. While most EV's are commuter cars, there are a few production cars that offer great performance. For example, Tesla P100D an all-electric sport car can reach even up to 60 mph in 2.4 seconds and can offer 507 kms of driving range in a single charge.

How long does it take to charge an EV?

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On average, an EV with the older lead acid batteries or valve-regulated lead–acid battery packs or the new Lithium Ion packs will charge fully overnight. However, technology is changing constantly and with new battery technology comes faster charging times. With DC fast chargers, it is possible today to completely charge an electric car in a matter of 20 minutes.

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How long before we would need to change the battery pack on an EV?

Battery manufacturers are offering warranties ranging from 5 to 8 years. Post the warranties, an EV user can always replace the battery unit of the vehicle and use the car as new.

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How much does it cost to charge an Electric Vehicle?

The cost for a single charge shall vary as per your state's EV tariff and battery capacity of your vehicle.This can be estimated by the formula = Battery capacity (in kWh) X Price of charging (in INR/ kWh)

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Where can I charge my Electric Vehicle?

Electric vehicles can be charged at home. Additionally, Government is pushing deployment of public charging stations through various incentives. Many companies are also considering installing charging stations in their parking spaces.

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How can I find an EV charging station near me?

A lot of technology providers (i.e. network service providers) are developing mobile based apps which shall provide information about nearest charging point location, expected waiting time and price for charging.

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Are electric vehicles hazardous

All vehicles are hazardous. In fact, petrol / diesel vehicles are about 11 times more prone to catch fire than most electric vehicles available in the market.

12 Is it costly to own an electric vehicle over a period as compared to an ICE vehicle?

An electric vehicle has a higher upfront cost as compared to its Internal Combustion Engine (ICE) counterpart.

But, the cost of charging, maintaining and operating an EV is lower than the ICE vehicle which in turns improves the total cost of ownership of an EV.

For example, Tata Tigor and Tata Tigor EV and ICE and EV versions of the same vehicle respectively.

Tata Tigor has a claimed range of approximately 20 kms per litre. Assuming, a running of 200 kms, it would consume around 8 litres of petrol. Assuming the cost of petrol of INR 81.06 per litre, as of 3rd Nov 2020. Hence, the cost of travelling 200 kms for the user is **INR 648.48.**

For the EV counterpart, Tata Tigor EV has a claimed range of 213 kms at full charge, with a total battery capacity of 21.5 kWh . For a full charge of the EV, the total cost of charging the EV is 21.5 kWh x INR 7.5 per kWh (Assuming current EV tariff for the states is around INR 6 per kWh and a Charging Infrastructure Operator would assume a mark-up of 25% on the EV tariff as Price to the consumer), i.e around INR 165. Hence, the cost of travelling 200 kms for the user is INR 165.

13 What are the benefits from the government for purchase of electric vehicles?

Central as well as State governments have been promoting adoption of electric vehicles by providing fiscal as well as non-fiscal incentives. Capital subsidy on purchase of EV under schemes such as Faster Adoption and Manufacturing of Electric Vehicles II (FAME II), Goods & Services Tax (GST) on EVs has been reduced from 12% to 5%, an income tax deduction of around INR 1,50,000 can be claimed on the interest paid on loans taken for EVs.

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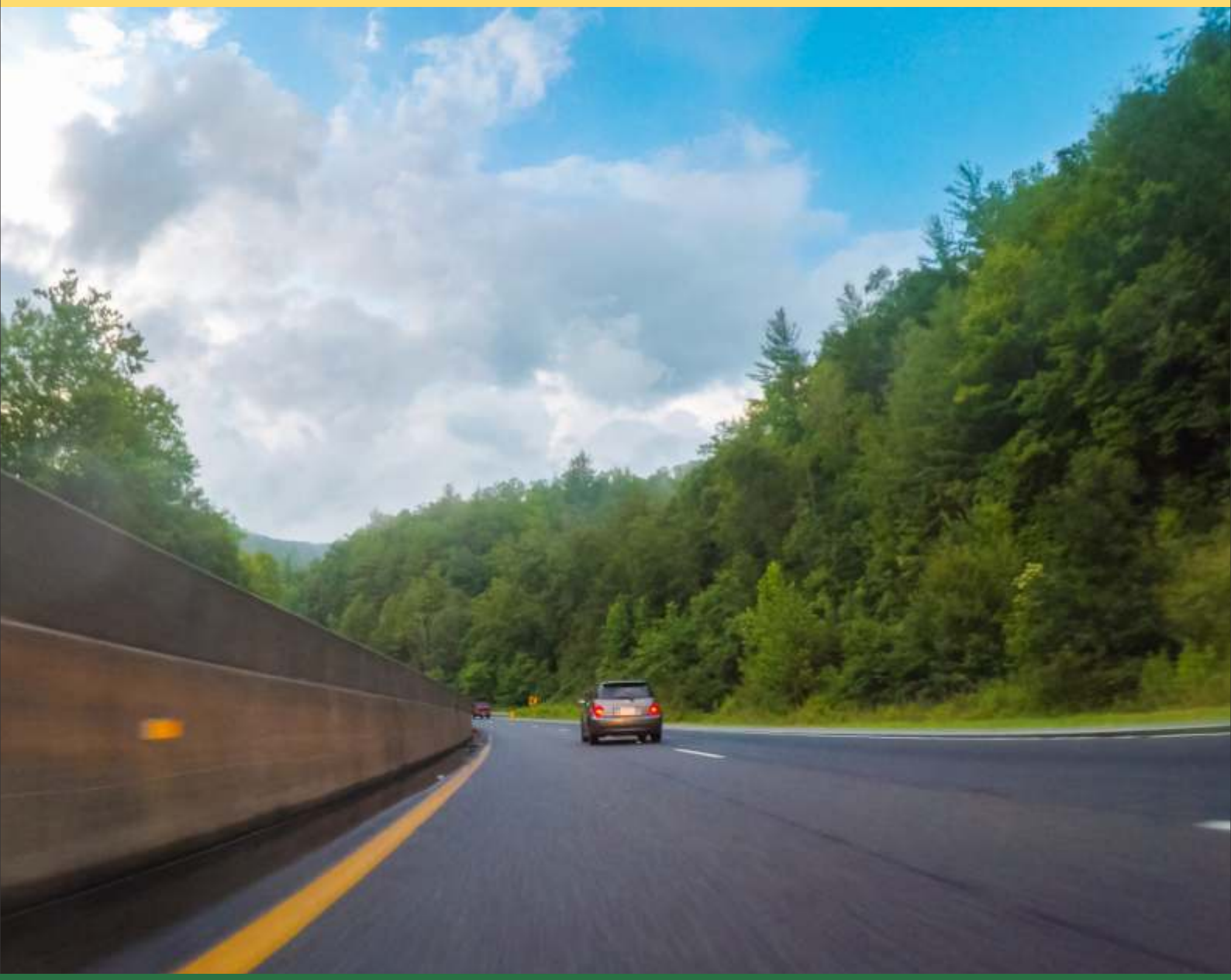
What will happen to the used batteries?

After using batteries for 5-8 years period, power generated by batteries is not enough for an EV to achieve the desired range. After drop-in capacity is below 70-80%, such batteries can be utilized in two ways:

1. Energy backups for powering stationary objects such as household loads (lights, fan, mobile charging etc.)

2. Recycling of such batteries can be undertaken to recover metals such as cobalt, lithium, nickel and others.



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