130 kWh lithium battery pack

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The two main drivers of mass electrification are battery energy density (related to range) and battery costs (related to affordability), and both have improved tremendously over the past 15 years.

According to the Department of Energy"s (DOE"s) Vehicle Technologies Office, the average cost of a light-duty electric vehicle"s lithium-ion battery pack decreased by 90% between 2008 and 2023 when using 2023 constant dollars to reflect purchasing power (adjustment for inflation).

A kilowatt-hour of usable EV battery capacity cost $139 in 2023, and using 2023 constant dollars, it was $1,415/kWh in 2008. That"s a huge drop in battery cost.

The report says that a kilowatt-hour of usable EV battery capacity costs about $139 in 2023, and using 2023 constant dollars, it was $1,415/kWh in 2008. The estimate was calculated for production at a scale of at least 100,000 battery packs per year.

It"s said that three main elements allowed battery costs to be brought down: improvements in battery technologies and chemistries, improvements in manufacturing, and simply a higher production volume.

Considering a $35,000-$40,000 price tag for a car, it"s still a substantial part of the price, but let"s also recall that over 10 years ago, in a similar bracket, we would get only an EV with a 24-30-kWh battery and a few times shorter driving range.

The question is whether the battery cost will continue to decrease substantially in the coming years. There are still new technologies on the table and the scale might be increased. In the long term, recycling should come into play to reduce material costs.

The RAV4 Prime is bigger than the Volt, so there was surely an option to have even higher battery capacity, but we will not complain, especially since the Japanese company seems to not compromise on the number of seats or trunk space (which soon will be verified in reviews).

The cost of electric vehicle battery packs has fallen to $132 per kWh - continuing decades of cost improvements. However, it might go up over the next year as increased material prices are catching up to incremental cost improvements.

In the auto industry, it is generally accepted that $100 per kWh for battery packs is the price point needed for electric vehicles to be cost-competitive with gasoline-powered vehicles.

“Lithium-ion battery pack prices, which were above $1,200 per kilowatt-hour in 2010, have fallen

89% in real terms to $132/kWh in 2021. This is a 6% drop from $140/kWh in 2020. Continuing cost reductions bode well for the future of electric vehicles, which rely on lithium-ion technology.”

That’s down from $137 per kWh last year and therefore, another small but good incremental improvement. However, these steady cost improvements might end in 2022 due to increasing material prices.

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