

HISTORY OF BATTERY ELECTRIC VEHICLES



1884 Thomas Parker Electric

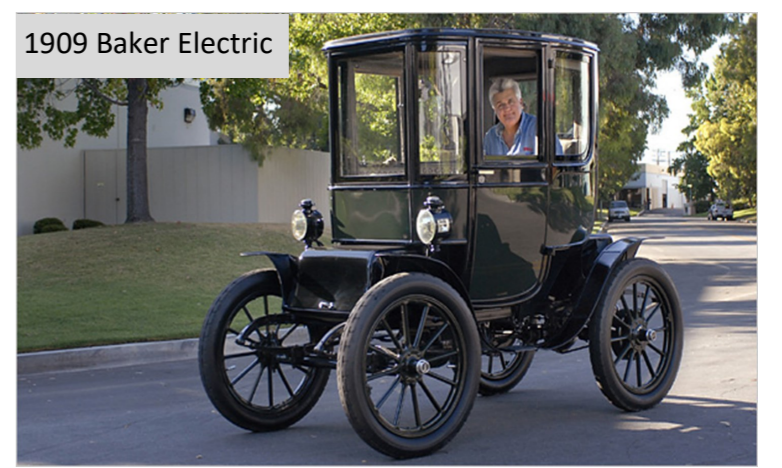
Electric vehicles have been in production ever since automobiles were invented.



100 yr old EV owner and charging station



1904 German Electric



1909 Baker Electric

In the early 20th century, there were as many EVs in Tasmania as petrol cars



1953 Deutsche Post



British milk floats 1940s—1980s



1961 Henny Electric

Widespread use was limited by the cost, weight and charge limits of lead acid batteries



1973 GM Urban Electric

In the 1970s and 80s poor air quality from vehicle emissions in California, NE US, Europe—and later China—led to restrictions on emissions and incentives for cleaner cars

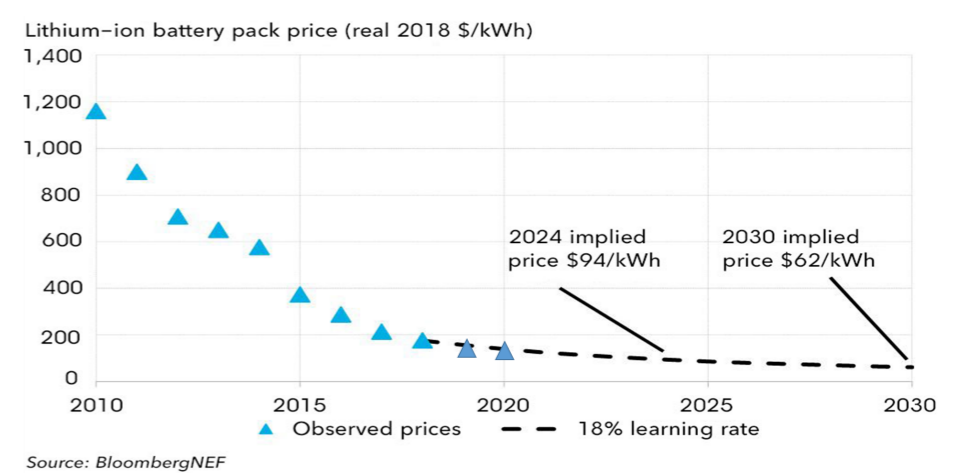


1990s EVs with NiMH batteries were expensive and not attractive to consumers.



Lithium ion batteries became widespread in consumer electronics in the 1990s.

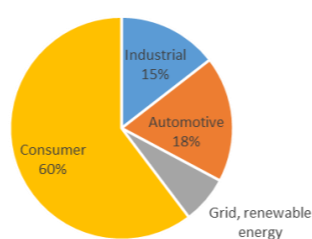
Costs fell from \$10,000/kWh in 1990 ...and are still falling.



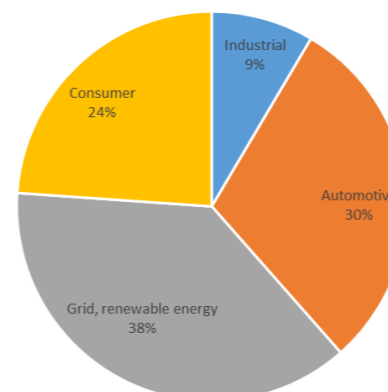
From 2015 to 2020 the main driver of price reductions was stationary storage



Global Li-ion Batteries, Revenue 2013



Global Li-ion Batteries, Revenue 2020



EVs will drive costs down further with ongoing R&D and increased scale of production