

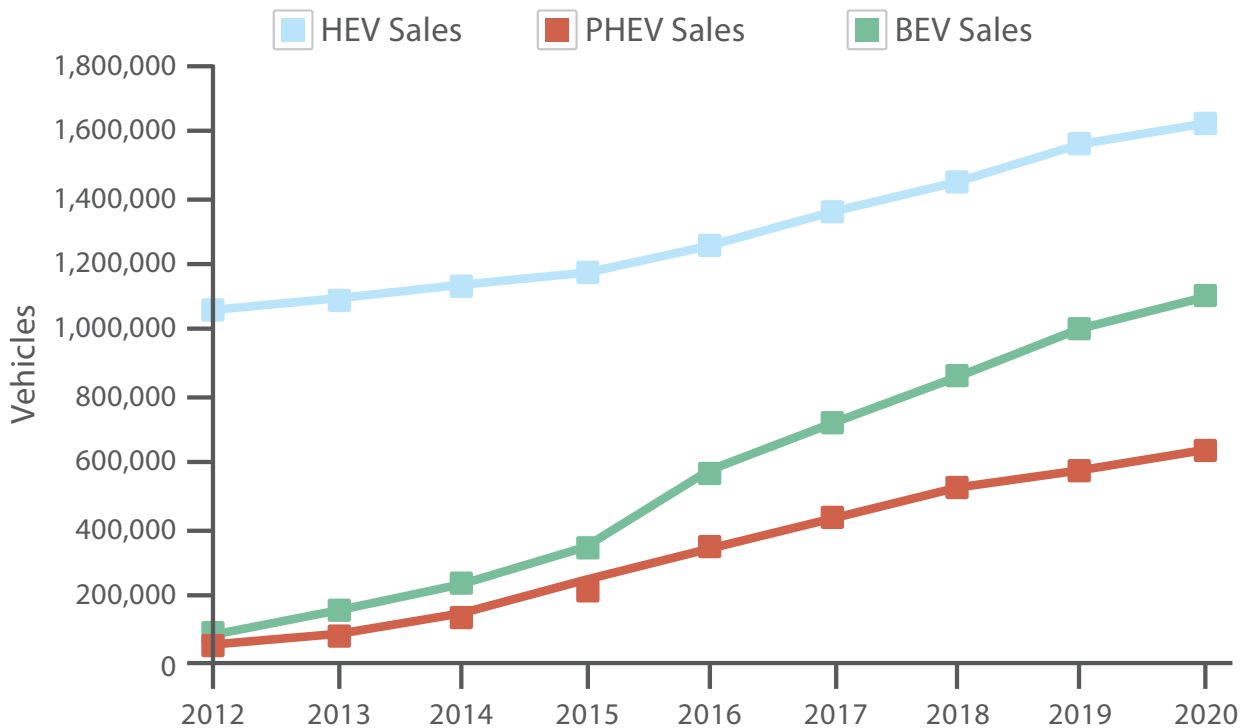
In 2016, Shouldn't the DeLorean be Electric?

The DeLorean Motor Company announced last week that the iconic DeLorean DMC-12, best known as the time machine in the "Back to the Future" series, will be back in production soon (CNBC, Jan 2016). The plan at the moment is to produce 300 replica cars using existing spare parts stock.

Is this an opportunity missed to really bring the famous time machine into the future? Collectors may want to see the classic DeLorean in an unaltered state but in keeping with the spirit of the iconic Spielberg film, perhaps the car should come back with a few bells and whistles of modernity.

It is obvious that the automotive industry is not quite ready to begin installing "Mr. Fusion" units - much has changed since 1986. Hybrid Electric Vehicles (HEV) and Plug-in Hybrid Electric Vehicles (PHEV) have become commonly accepted and

these powertrain types well understood. Now, with the meteoric rise in popularity of Tesla Motors, the Battery Electric Vehicle (BEV) is joining, and even surpassing in some ways, the likes of HEV's and PHEV's. Currently, depending on the market, BEV sales make up between 0.3% and 2% of all automotive sales as of 2015 (excluding Norway which is closer to 5%). The chart below shows that BEV's represent the greatest growth segment of the EV market. Considering that car sales have been relatively flat over the past 10 years, it could be said that BEV's represent the greatest growth segment of all automotive sales, especially in the long term.

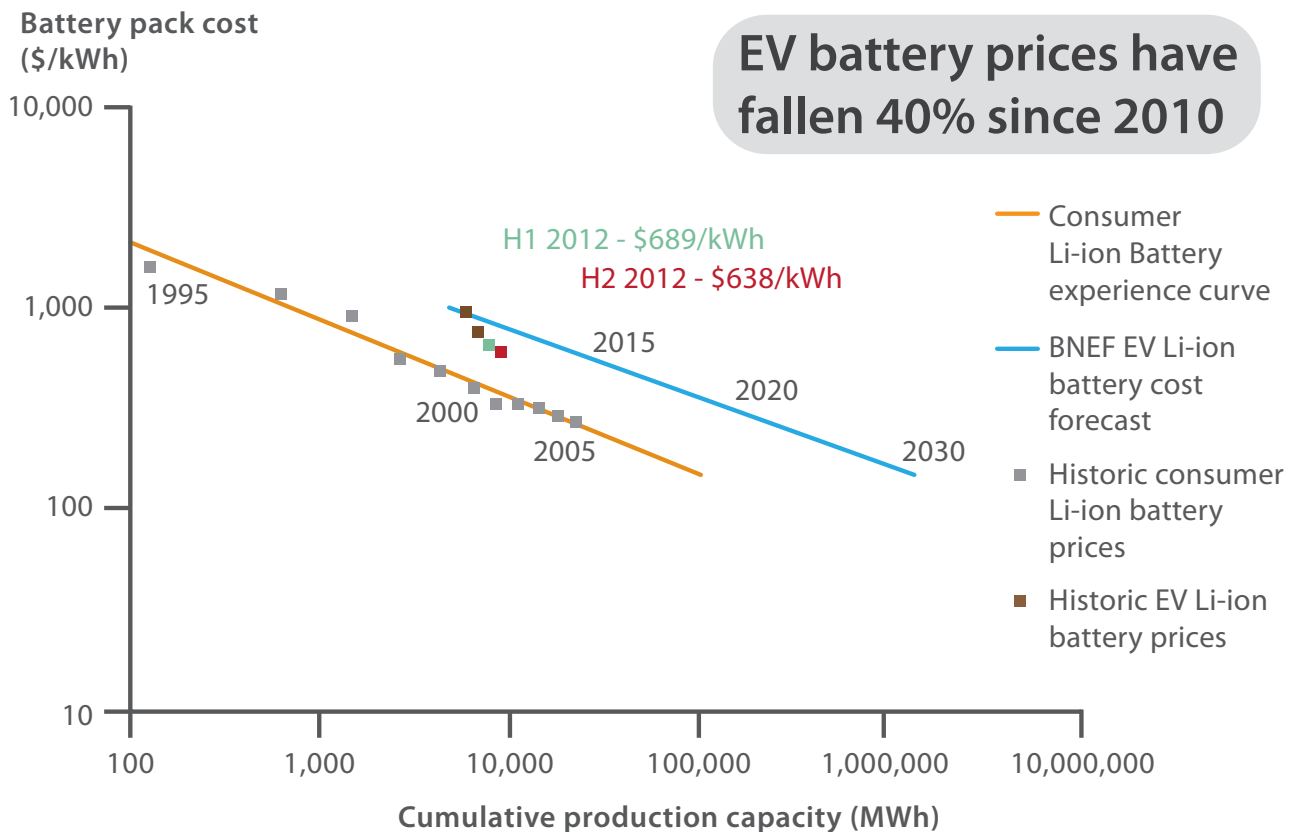


The obvious reduction in oil prices, which hit a 13-year low in January 2016, has dampened the uptake of Electric Vehicles in the short term. However, it seems that a confluence of economic factors are set to change this trend in the very near future:

As the lithium ion batteries move through the experience curve, they will become cheaper and more advanced. Bloomberg New Energy Finance has been plotting the experience curve of lithium ion batteries as used in consumer products and electric vehicles. As a consumer, it is easy to see how lithium ion batteries have evolved over the past twenty years in portable devices such as smart phones, laptops and digital cameras (in fact, advances in lithium ion battery technology have in large part been a key enabler for drone technology which has recently burst onto the scene). As EV lithium ion batteries follow the same trend line as have consumer lithium ion batteries, it is reasonable to suggest that a large market shift may be only a decade away.

As distributed renewable energy generation increases its presence on the utility grid, the cost of electricity will decrease over time. This has been modelled and is supported by the Australian Government's RET review in 2014. This reduction in the cost of electricity will only serve to further drive down the costs of operating an electric vehicle and it probably won't be long before EV charge points become commonplace at existing service stations.

The cost of oil will not stay down for long. It is widely considered that the current oil prices are being intentionally influenced by some producers in order to sustain or even advance the current oil glut to drive competitors out of the market (SMH, Jan 2016). Given the cost structure of oil production and the increasing market pressure on industry participants, it is only a matter of time before there is significant consolidation, after which producers will do all they can to claw back the deficit sustained during this period of depressed oil prices. Most experts agree that an oil price of around \$75USD,



equal to three times the current price, in the next five years is not unreasonable. A price increase of this magnitude, at a time when other attractive options exist, will likely serve to drive more consumers to Electric Vehicles.

So if Marty and Doc Brown were to come back from 2046, (30 years into the future in keeping with the theme), what suggestions and warnings might they give us? It is likely that they will recommend that the new DeLorean be made into an Electric Vehicle to align with its futuristic theme, but they may also suggest caution with regard to the wider adoption of advanced energy storage technology. With the benefits of moving down the Lithium Ion experience curve being quite clear, it is important that the industry not suffer any setbacks. Doc Brown in particular might suggest that the energy storage industry throw much of its weight behind the development of standards and training so that this technology can carry us safely and efficiently into the future.

GSES welcomes feedback on technical papers and other resources available on www.gses.com.au, please contact GSES by email at info@gses.com.au or by telephone on 1300 265 525.

Reference:

- CNBC, 2016, The DeLorean from 'Back to the Future' is back in production, available at: <http://www.cnbc.com/2016/01/27/the-delorean-from-back-to-the-future-is-back-in-production.html>
- Commonwealth of Australia, 2014, Renewable Energy Target Scheme Report of the Expert Panel, available at: https://retreview.dpmc.gov.au/sites/default/files/files/RET_Review_Report.pdf
- Sydney Morning Harold, 2016, Blackstone says oil price unsustainable, available at: <http://www.smh.com.au/business/blackstone-says-oil-price-unsustainable-20160131-gmiexv.html>

