

Investors in Technology Metals for EVs, Be Very Careful What You Wish For in 2022

The one-dimensional talking heads (aka, the elected officials, lifetime appointed bureaucrats, and academic “advisors” who make their decisions based upon the requirements of lobbyists) of Washington, D.C., have started off 2022 by choosing winners and losers for the parts of their home markets served by the domestic American OEM automotive industry. This is being done by fiat, not directly from the executive or legislative branch, but from the bureaucracy in the form of the Environmental Protection Agency, which last week decreed that all motor vehicles must have an average fuel use by 2026 of the equivalents of 55 miles per gallon of fossil fuel.

The consequences of this action, if it is not halted or overturned by the courts or a future election, will be catastrophic for the economy, because the only way such an edict could be fulfilled would be by the legerdemain practiced by the EPA when it measures the “range” of an electric vehicle without regard to its actual range in use real-time and under real conditions. In the world of EPA, an EV’s loss of 40% of range in cold weather and its loss of 30% in hot weather seem simply not to be taken into account. Nor is the shortened working life of a lithium-ion battery due to the degradation caused by “fast charging” taken into account.

The printing of money by the Federal Reserve and its spending by the economic-logic-free Congress has had a very foreseeable effect on the prices of critical metals required for the transformation of the fossil fuel powered vehicle industry to battery electric power. As investors watched the Chinese

government's fiat to its OEM automotive industry and anticipated the EPA's actions, as a feature of the current administration's commitment to the "greening" of the OEM automotive industry, they bid up the prices of the necessary critical materials for batteries and for electric traction motors for such vehicles to today's very high levels. This has ensured that the non-Chinese automotive industry's plans to produce and reduce the costs of batteries through economies of scale have been damaged fatally. The battery has been and remains the biggest cost of the parts needed to make EVs. The average EV sold in America in 2021 was \$55,000 because of that. While an average ICE was \$42,000. The national average income in the USA for a family of four is \$64,000. Unless EVs for sale in America meet at least the average price for an ICE the price differential wipes out any possible fuel savings over the life of the vehicle.

The Washington one-dimensionals sort of figured this out, so they proposed, in the traditional way of politics, not economics, to give a "tax credit" of up to \$12,500 to subsidize the price of EVs for American made vehicles made by "union" workers. Congressional phones rang and rang as those outside of the DC bubble told their elected officials that this "tax credit" was in fact a gift to the wealthiest Americas who needed it least. The subsidy for the moment has disappeared from the conversation in Washington, much to the dismay of the American OEM automotive industry.

Meanwhile, back in the former Motor City the remaining two American legacy car makers, neither of which is in the top five OEM auto producers in the world, announced that they would, between them, build 5 "Gigafactories" to make lithium-ion batteries. Recently one of them, General Motors, announced that it had made critical raw material and finished goods "arrangements" for the supply of its factories with American companies that have either not produced any such materials or are only in the early stages of doing so. The procurement

officers of the two relatively small American OEMs do not seem to understand the time frames required to not just bring a mine into production but also to achieve the multiple downstream processing steps required to turn a mineral into a battery, a magnet, or a motor in large volumes with on-time delivery, to specification, and at an agreed price! While all of this detail is not being addressed, the commodity metals continue to increase in price putting the OEM automotive purchasing paradigm of long term (at least three years) pricing in the toilet. The price of batteries alone has increased 20% just in 2021. The OEM auto and truck markets in the USA are now in turmoil due to technology parts supply limitations. What will it look like when the supply of EV battery and motor metals is recognized as permanently in deficit? Costs to make EVs will continue to increase and make them increasingly unaffordable to all but the top earners.

If there is a stock market correction (aka, a crash) in metals in 2022, the far-sighted (aka Asian) battery makers who have done their part for pushing up raw material pricing by stockpiling lithium, cobalt, and the rare earths, thus, driving up the prices, could find their balance sheets corrected and be facing margin calls on their loans using lithium, et al., as collateral. The US OEM automotive industry will be facing a customer base that is reluctant to buy big ticket items if and when liquidity is under siege and government spending on necessary infrastructure for EVs in the US is reduced. Of course, non-producing auto factories will not need workers or parts either. Deflation could come and be worse than inflation.

I will end this essay on a positive note. There isn't enough lithium produced today to satisfy even the most conservative estimate of EV demand in 2025 and there may never be enough produced to satisfy the most conservative demand for the 2030 model year. Even if lithium prices dip during a correction, I think they will bounce back enough to support good mining and

refining projects. If there is such a dip, buy into the EV material's supply chain markets then. If there is no dip, then hold on.