

## Bailey: Automakers should ensure EV transition is sustainable

**R. Scott Bailey** The Detroit News

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Despite global and domestic challenges, the electric vehicle (EV) landscape in Michigan has evolved significantly within just the past few years and will transform the industry despite concerns that EV manufacturing could threaten jobs.

However, in order to keep up with the growing demand for EVs, automakers will need to find more sustainable alternatives for one of the most controversial parts of conventional EVs — rare earth elements (REE).

As of March 2023, manufacturers have made over \$16 billion in EV and battery investments in Michigan, the most of any state in the U.S. behind Tennessee. In July, Gov. Gretchen Whitmer signed a \$57.4 billion omnibus budget bill aimed at supporting the EV transition in the state.

Some of the most well-known automakers in the world are adding more EVs to their lineups as the EV market continues to grow at a rapid pace. Ford, GM and Stellantis (formerly Fiat Chrysler Automobiles) have all set ambitious EV goals in recent years.



More still needs to be done to ensure the EV transition is truly sustainable and positive for the environment, Bailey writes.  
*Luke Duggleby, Bloomberg*

Earlier this summer, GM reiterated plans to reach 100,000 units in the second half of the year and 400,000 cumulative units by 2024. In July, Stellantis revealed the first of four planned EV platforms which will reportedly play an important role in the automaker's target of reaching 50% passenger car EV sales in the U.S. by 2030. Even though Ford pushed back EV production targets, the automaker still expects to build 600,000 EVs a year beginning sometime in 2024.

With increased support around EV manufacturing, Michigan has also seen a rise in EV registrations within the last five years. According to MICHauto, as of 2022, the state had over 33,000 registered EVs, compared to just 4,200 in 2018. While EV adoption rates over the next 10+ years are expected to be much higher in states like California and Colorado, the shift to EVs throughout the U.S. is inevitable as new proposals on the state and federal levels look to phase out the sale of new gas-powered vehicles.

The shift to EVs is breathing new life into the automotive industry; however, the heavy reliance on REE that are commonly used in conventional EVs is problematic. Sourcing REE results in two tons of toxic waste for every kilogram of REE, according to a report by the Harvard International Review, and a conventional EV typically uses well over a kilogram of REE-magnet.

The mining process for REE is often poorly regulated, which has led to environmental contamination and health complications for workers and communities located near mining sites. One example of this is Mitsubishi Chemical, which in 1992 had to shut down a rare earth refinery in Malaysia that caused serious health issues, including birth defects and leukemia, according to local residents.

Beyond environmental concerns, limited global supplies exacerbated by trade barriers and an uncertain geopolitical climate are putting a significant strain on EV production in the U.S. Regions around the world are limiting or banning the exportation of raw materials necessary for EV production, including Namibia's government, which announced a ban on the export of REE and unprocessed lithium in June.

China, which accounted for 70% of rare earths in 2022, announced limitations on the export of two rare metals used in semiconductors and EVs, germanium and gallium, which took effect on August 1. And in September, Malaysia announced plans to ban the export of rare earth raw materials, which will further limit global supplies once implemented. Even as new deposits of raw materials critical for EV production are found, such as lithium and REE, the demand is still expected to outstrip supply for the foreseeable future.

The race to net-zero emissions by 2050, bolstered by incentives laid out in the Inflation Reduction Act, continues to push EV production forward. Global sales of EVs surpassed 10 million in 2022 for the first time. 750,000 new EVs

were registered in the U.S. in 2022, 57% more than in the previous year, according to InsideEVs.

As EV production and sales ramp up throughout the country, automakers like Tesla, BMW and Nissan have announced plans to reduce or eliminate the use of rare earth magnets in select vehicles. More recent generations of externally excited synchronous motors (EESMs) have shown remarkable efficiency while also eliminating REE use.

More still needs to be done to ensure the EV transition is truly sustainable and positive for the environment. As one of the largest end-users of REE, the onus is on automakers to help mitigate the negative side effects of the EV transition by eliminating or significantly reducing their dependence on REE.

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