According to the Environmental Protection Agency (EPA), transportation contributes 27% of all greenhouse gas emissions in the United States.¹ Much of this pollution comes as a result of carbon monoxide (CO) and nitrous oxide (NOx) emissions in addition to other hydrocarbons and particulate matter. With the potential for an increase in Corporate Average Fuel Economy (CAFE) requirements looming on the horizon, automakers have been focused on improving the fuel efficiency of their fleets with increasing commitments to electric vehicle production. GM, for instance, has committed to bringing to market by 2023, twenty new electric vehicle models as part of their vision of zero emissions.² In fact, sales of electric vehicles (plug-in and battery) nearly doubled in 2018 both in the United States and globally.³ Additionally, OEM’s are implementing production strategies and stewardship programs that lessen the environmental impact of their manufacturing process and global supply chains.

The industry-wide growth of aluminum consumption for vehicle construction has allowed manufacturers to reduce average gross vehicle weights, thereby improving fuel economy, and also reducing energy consumption in the manufacturing process. A 2014 study by the Society of Automotive Engineers in partnership with Oak Ridge National Laboratory found that “aluminum-intensive vehicle can achieve up to a 20 percent reduction in total life cycle energy consumption and up to a 17 percent reduction in CO2 emissions.”⁴ One of the other benefits of increased reliance on aluminum is the fact that it can be recycled indefinitely and that new auto parts can be produced using aluminum scrap. Currently, about 85-90% of aluminum in end of life vehicles is recycled and new aluminum parts consist of about 60 and 70% mixed alloy aluminum scrap compared to only about 25% for steel parts and comparable steel scrap.⁵ ⁶ Ford began a program in 2017 that allowed the company to recycle the aluminum waste that is a byproduct of parts stamping and provides the scrap metal back to a reprocessing plant that funnels it into the manufacturing process, thus creating a completely closed loop system. Ford estimates that they have
been able to save 5 million pounds of aluminum, enough to build 37,000 F-150 truck bodies per month, and result in an opportunity cost savings of $11 million per month.\textsuperscript{7}

Recycling is taking place not only in terms of raw materials like aluminum but also for high voltage electric vehicle (EV) batteries which are also being re-used in second-life applications. BMW detailed in their 2017 Sustainable Value Report that EV batteries that are no longer suitable for in-car use are being repurposed as stationary energy storage to help support the energy needs of several office buildings as well as production facilities. BMW continues to make additional improvements toward environmental sustainability and has been able to reduce energy consumption in the vehicle production process by 36.5% since 2006, solvent emissions by 59% and waste production by 79.6%.\textsuperscript{8} BMW has continued to focus on the production and purchase of energy from renewable sources and has also taken steps to improve energy efficiency in their facilities by installing new combined heating and power sources as well as LED lighting throughout all of their facilities, reducing primary and secondary carbon dioxide emissions while achieving energy cost savings at the same time.

Efforts being made by manufacturers not only focus on the reduction of energy use and waste but also on helping improve the sustainability of natural resources and the environments surrounding their facilities. GM has transformed the grounds of their Michigan Customer Care and Aftersales Headquarters into a certified wildlife habitat, even going so far as to use recycled Chevy Volt battery covers to create nesting habitats for wild ducks.\textsuperscript{9} Subaru launched the Subaru Forest Project in 2017 with the aim of promoting biodiversity and improving the company’s coexistence with nature. Part of this program included activities such as tree planting and nature conservation programs at its 115 hectare Subaru Test and Development Center Bifuka Proving Ground. Subaru’s Indiana manufacturing plant was the first automobile manufacturing plant to receive a National Wildlife Foundation certification and is currently home to a variety of animal species such as bald eagles, Canadian geese, heron, and deer.\textsuperscript{10}

The efforts being made by automotive manufacturers to reduce their carbon footprint and minimize their impact on the environment demonstrate an increasing awareness of the role corporations play in the overall health of the planet. It is also an indication of the mindset of the OEM’s target consumers. A 2018 Reuters/Ipsos poll found that “35 percent of U.S. adults now see global warming as an ‘imminent’ threat, up from 32 percent in 2017 and 24 percent in 2015.”\textsuperscript{11} The environmental programs that manufacturers have implemented are not only helping their organizations to be better stewards of the planet and its natural resources but are also helping them to appeal to an increasingly eco-conscious customer base and reduce overall operational costs. We expect this trend to continue as the media place more attention on climate change while the EV market matures and OEM’s increasingly utilize lightweight substrates in new model construction.
OEM Efforts to Promote Environmental Stewardship
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5. https://www.steelsustainability.org/-/media/recycling-resources/driving-auto-recycling-success.ashx


