

Fuel Efficiency vs. Electrification: The Race is On

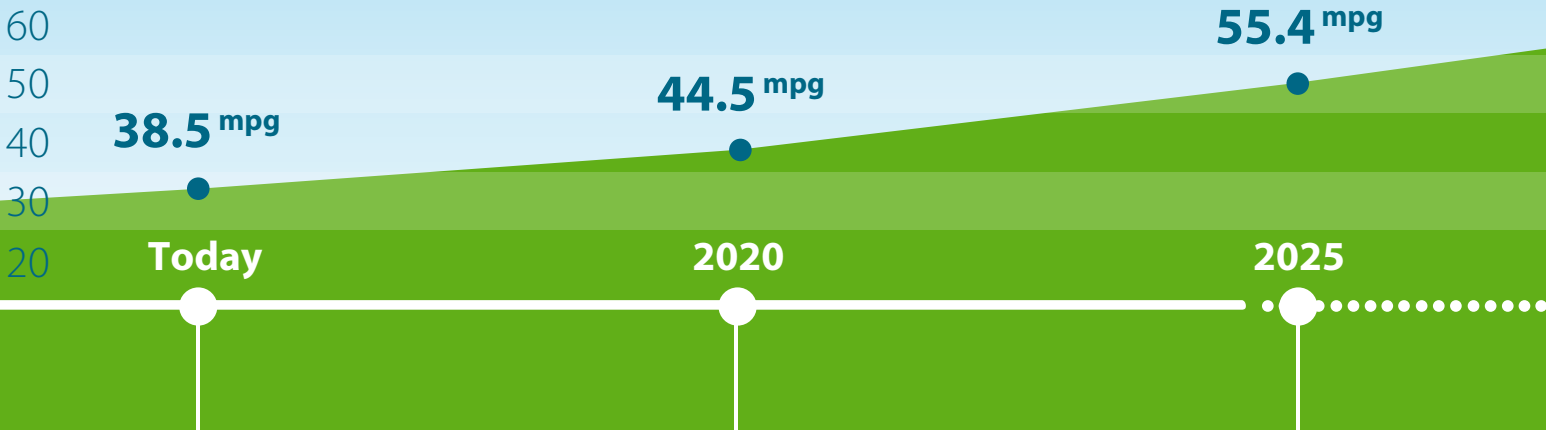
Thermoelectrics Boost MPG & Enable Computing Power for the Future Car

Thermoelectric generators (TEGs) **improve fuel efficiency by 5%** and provide necessary power for displays, sensors, LIDAR, and more.

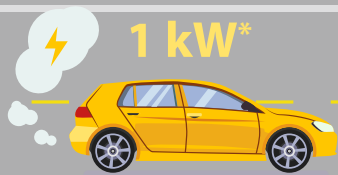
**eliminates
7,585,061**

metric tons of CO² / year

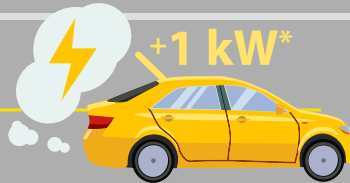
Fuel Efficiency – US CAFE Standards



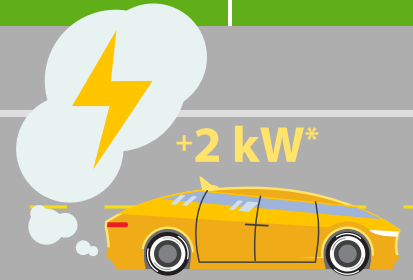
Electrification – Estimated Power Requirements



Today's Car



Connected Car



Semiautonomous

*For every 100 watts needed for electrical power requirements, there is a 1% fuel efficiency loss.

10% lost efficiency / 1kW^e = -3.85 mpg

20% lost efficiency / 2kW^e = -7.7 mpg

Waste heat is valuable

Sources:

US EPA Greenhouse Gas Equivalencies Calculator
US EPA, NHTSA CAFE_2017-25_Fact Sheet
what-when-how.com/automobile/vehicle-electrical-loads-automobile/
+1kW and +2kW electrical power requirement are assumptions

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