North American Powertrain Outlook

UMTRI “Focus on the Future” Automotive Research Conferences

Powertrain Strategies for the 21st Century: Revolution and Evolution

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Presentation Outline

- Introduction to IHS
- U.S. Regulatory Overview
- Technology Trends
- OEM Profiles
- Summary
IHS – What We Do

We offer information, analytics and expertise to organizations around the world.

They depend on our insights to help them make decisions about everything from day-to-day operations to long-term investments.
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ENERGY
Extensive Oil & Gas well information on 5.5+ million wells worldwide dating back as far as 1860

MARITIME
World’s largest maritime database with an information gathering heritage of 250+ years with comprehensive information on all vessels 100 GT and over
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U.S. CAFE and CO₂ Regulations

163 g/mile of CO₂ in 2025

= 54.5 mpg if all CO₂ emissions reductions are achieved with fuel economy technology

49.6 mpg in 2025 (unadjusted)
40-42 mpg (real world)

According to Michael Sivak at UMTRI, the average fuel economy of all vehicles sold in calendar 2014 was 25.3 mpg (real world)
U.S. CAFE Fuel Economy Status and Targets – Car Fleet

Source: NHTSA, December 2014 Summary of Fuel Economy Performance
U.S. CAFE Fuel Economy Status and Targets – Truck Fleet

Source: NHTSA, December 2014 Summary of Fuel Economy Performance
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North America Engine Technology Trends

Source: IHS Automotive May’15, Engine installation into Light Vehicles manufactured in North America
Higher Ratio Planetary and CVTs Grab the Lions Share of NAFTA Market...

Design Type By Year

Source: IHS Automotive May’15, Transmission installation into Light Vehicles manufactured in North America
Global Technology Islands in 2020

Legislation, drive cycle, and consumer choice dictate technology

Source: IHS Automotive
U.S. Powertrain Sales Technology Trends

The graph illustrates the sales trends of various powertrain technologies in the U.S. for the years 2012 to 2020. The technologies include Gas Boosted, Diesel, Electric, Hybrid, Stop/Start, GDI, Cyl Deac, DCT, CVT, and A8+. The bars represent the millions of units sold each year, with the bars indicating a peak in sales for GDI and Cyl Deac around 2014, and a decline thereafter.
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Toyota

Millions

Diesel  Electric  Hybrid  Stop/Start  GDI  Gas Boosted  Cyl Deac  CVT  DCT  A8+


8 cyl  6 cyl  4 cyl  3 cyl

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Final Thoughts

• Legislation is the most significant driver of industry change; this is creating the need for an abundance of new powertrain technologies to be created, refined, and manufactured

• CAFE and CO₂ regulations are extremely challenging for the U.S. market and some OEM’s are already better positioned to meet those regulations than others

• There isn’t one technology that will ultimately allow manufactures to meet the regulations. Whether by segment, or by OEM, there will be many different technology combinations

• Global powertrain platforms/architectures will continue to proliferate through the forecast horizon – driven by competition, speed to market, economies of scale, and fulfilling requirements in both developed and developing markets
Thank you.

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