North America Production Volume by Quarter

3Q2021 may be the low point though 2022 is highly variable from a ‘pace’ perspective.

North American Production – Volume by OEM Grouping

Three Years of Extreme Output Variability

Source: IHS Markit © 2022 IHS Markit

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Production Outlook: North America – NA Regional Shift

Segment & OEM Shifts Pressure Logistics and Supply Structures

- Mix towards D/E-segment and Full Frame
- Detroit 3 still account for +55% of MW/ONT volume by 2028

- Remarkable stability – newer facilities w/export focus
- Higher concentration on BEV structures

- Rising principally with Tesla in CA & Texas
- Electrified propulsion allows for new supplier ecosystems

- Mid-Mexico has accounts for ~70% of Mex volume
- Rise of C-segment products with increasing luxury and export focus
North American Production Overview

BEV share increased on stimulus effects, product availability, hybrid timeline and preference

- Vehicles with internal combustion engines to decline to 64% of total volume by 2030 – a decline of ~ -5% CAGR from 2022 to 2030
- In this analysis, Hybrid Electric Vehicle (HEV) will refer to all forms of electric-assisted propulsion systems though still have an ICE engine present.
  - Mild-Hybrid Electric Vehicle (MHEV)
  - Full-Hybrid Electric Vehicle (FHEV)
  - Plug-In Hybrid Electric Vehicle (PHEV)
- Hybrid volume levels out by 2027 as BEV alternatives rise thereafter.
- BEV propulsion growth rises to ~6.2 mil units by 2030, 36% or a CAGR of 29% from 2022 to 2030.
- In the US, the rise in BEV is more precipitous (due to segment dynamics) – rising to 41% by 2030 – a CAGR rise of 27% per annum through 2030. Conversely, ICE installations will decline 5.6% per annum through 2030.

Note 1: Fuel-cell propulsion removed from analysis due to very low volumes: current and forecast.
Source: IHS Markit Nov 2021
BEV-Only After 2035?
Two More ICE Development Cycles - Finite, Restricted and Riskier

Suppliers need to work backwards to efficiently invest in Multi-Energy Platforms. Only two cycles to amortize major investments, new facilities, ICE innovations.

Life cycles will be longer for structural components – shorter for energy, electronics and styling differentiators.

Low investment & declining volumes – lightweighting, regulatory compliance and cost reductions.

OEMs are focused most of the innovation and resources towards BEV platform establishment.

2020

All New – 1 MCE
Major – 1 MCE

Multi-Energy Platforms
Development

All- New BEV Platform – 2 MCEs
Major BEV Platform w/ 2 MCEs

Possible extension

BEV Platforms
Development

2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035