THE ROAD TO 2030
SOFTWARE – SDV, CYBERSECURITY, OTA

INTRODUCTION

Mobility Sectors

Mobility Sector Definitions for Road to 2030 Initiative

Light Vehicle: Passenger cars, pickups and light commercial vehicles up to 6 tons

Medium & Heavy: Trucks above 6 tons and bus chassis

Construction, Agriculture, Mining & Off-Road: Tractors, off-road vehicles and ATVs

Aerospace: Aircrafts -Piston airplanes, turboprop airplanes, business jets, helicopters, and eVTOLs

Maritime: Recreational boats - personal watercrafts, wake sport, fishing & pontoon and others

First Mile & Last Mile: Commercial drones

Software Technology Domains

Software-Defined Vehicle (SDV)

- Allows software-driven vehicle dynamics customization
- Requires readiness of hardware, software, and connectivity
- Serves as the basis for integration of new technologies and advanced features, including charging, predictive maintenance, autonomous driving, connected vehicles, and enhanced safety systems
- Full SDV has the potential to be in place for some OEMs between 2030 and 2035

Cybersecurity

- Focused predominantly on in-vehicle technologies
- Detection and prevention of cyber breaches
- Enhanced connectivity requires Cloud & outside-the vehicle solutions
- Driven by new technologies such as AI and machine learning for detecting and taking action on cyberattacks, quantum computing for large data, 5G technology, and cloud computing

Over-the-Air (OTA)

- Capability to wirelessly update select vehicle software
- Currently focused on infotainment and telematics
- Future capabilities include wider updates of control modules in powertrain and other key vehicle systems
- Key technology for enabling and updating SDV features without dealership visit requirement

Software Technology Key Findings

+56% Growth
Forecast from 2023-2030

In Michigan employment tied to Software-Defined Vehicles (SDV)

+475% Growth
Forecast from 2022-2029

In spending on Electric Vehicle-related software solutions

83% Penetration Rate in Light Vehicle Sector
In the U.S. in 2024

Providing the Detroit Region with an entry point into other mobility sectors

+35% Growth in Penetration Rate
from 2024-2030

In Software Technology applications in the Medium & Heavy-Duty Sector

KEY OPPORTUNITY SECTORS: **Light & Medium Vehicle, Off-Highway, Aerospace Maritime, First/Last Mile**

Source: DRP/GEM analysis of data from S&P Global Automotive
For background information and a glossary of terms, please visit https://gemdetroitregion.com/wp-content/uploads/2025/05/3-FMTS-Background-Methodology.pdf

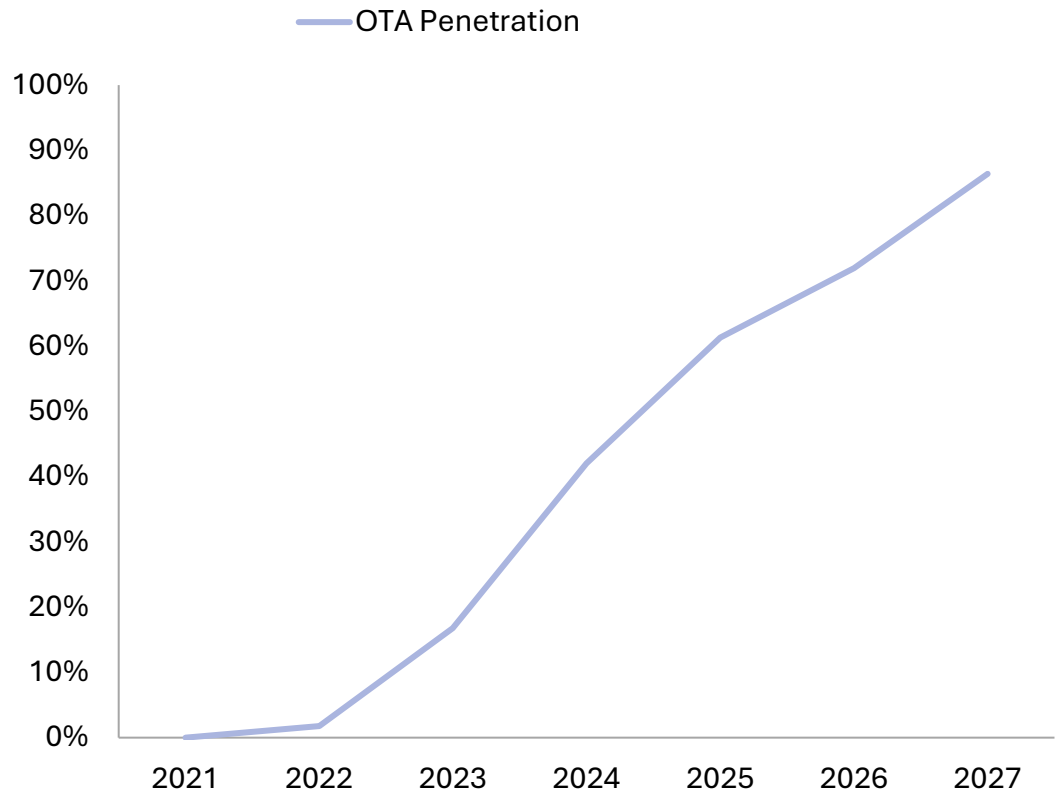
DATA & FORECASTS

Mobility Sector Growth Analysis: Software

The penetration of Over the Air (OTA) capabilities in Light Vehicles is rising rapidly, from nearly 0% in 2021 to a forecast level of 86% by 2027.

Because Light Vehicles are by far the highest-volume mobility sector, this growth represents a tremendous level of integration of vehicle operations between software and hardware components.

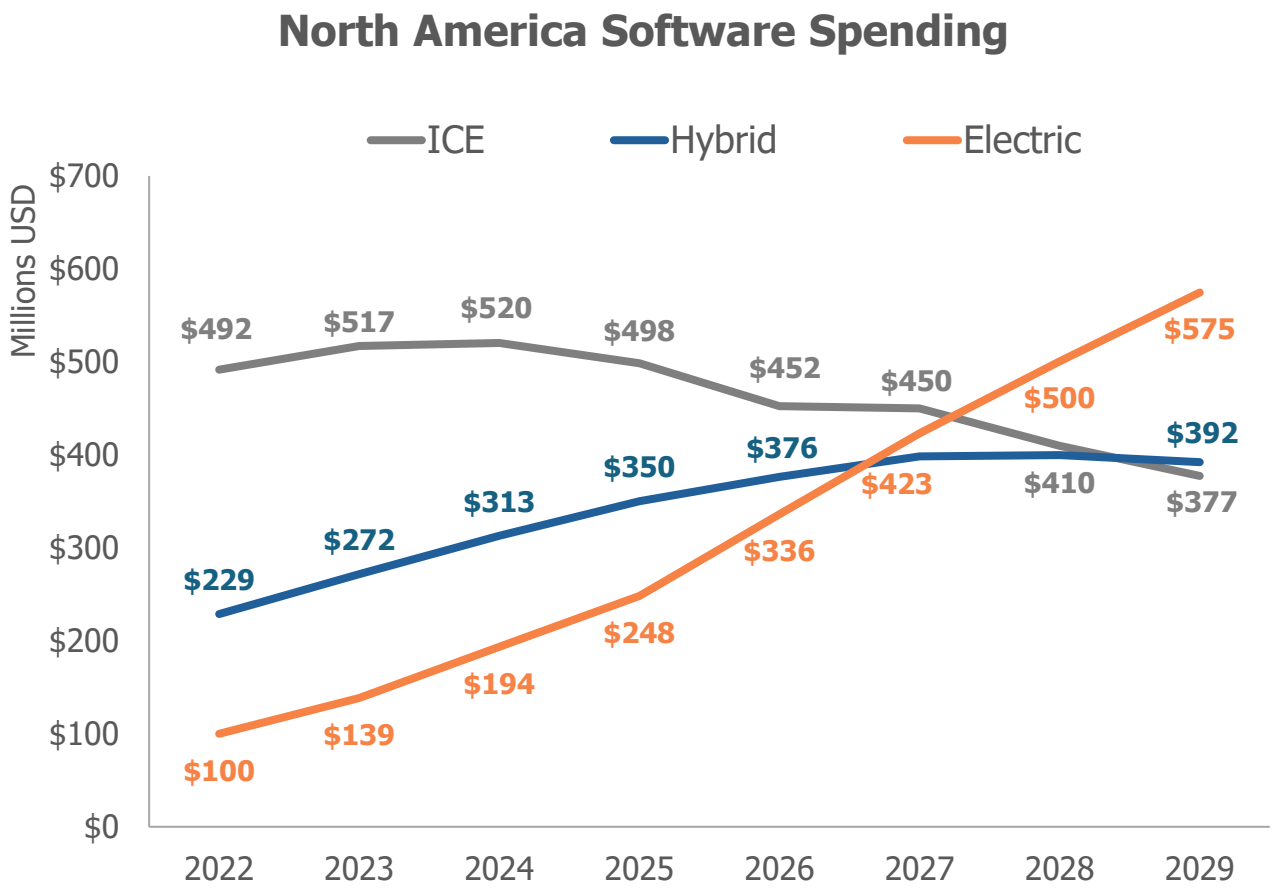
North America OTA (Over-the-Air) Penetration for LV



Source: S&P Global Software Vehicle Domain Forecast, July 2024

Mobility Sector Growth Analysis: Software

In 2024, Internal Combustion Engine (ICE) software spending was more than double that of Electric and Hybrid spending. That position is forecast to change by 2030, when Electric vehicle software spending will reach $575 million.

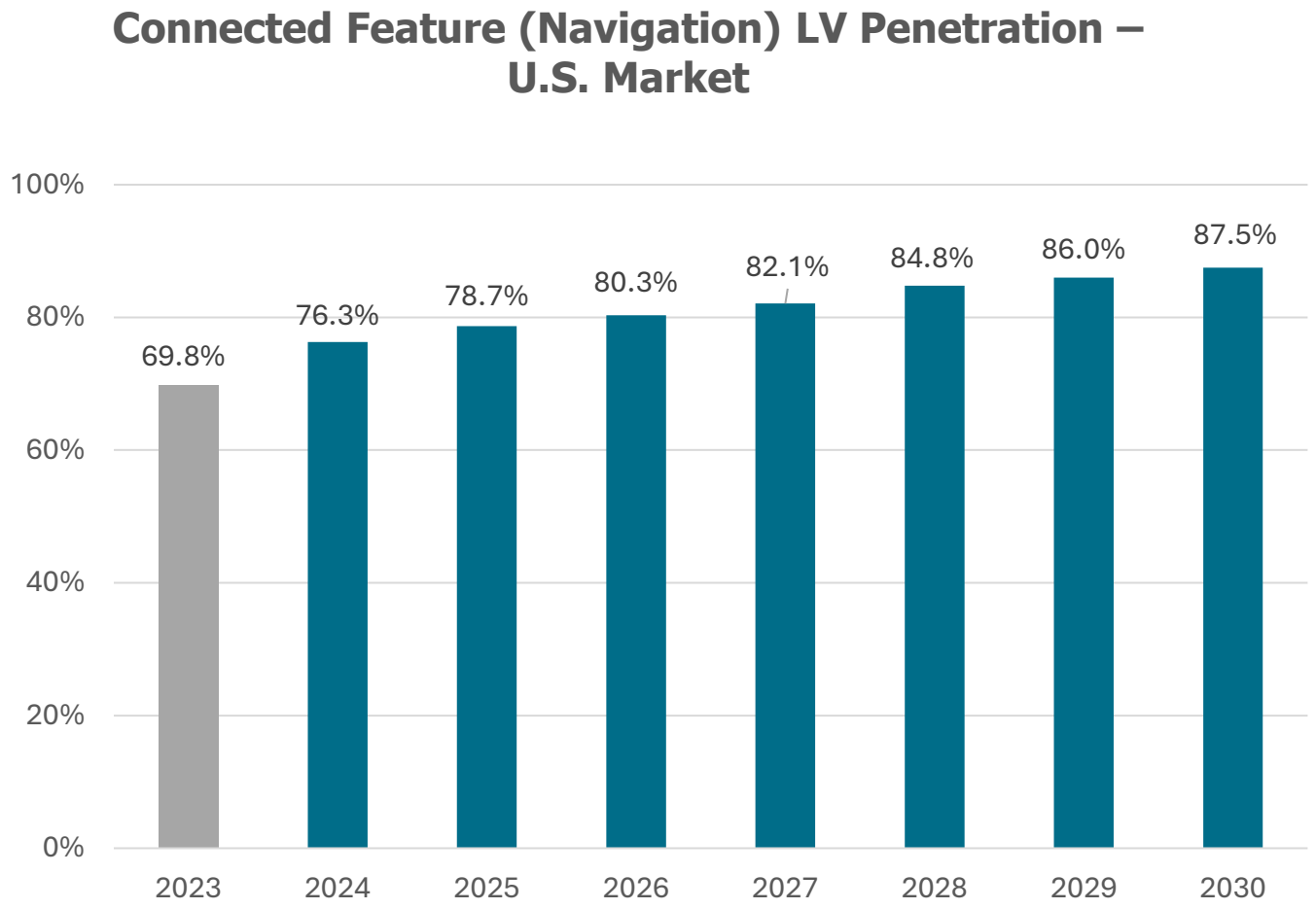


Source: S&P Global Software Vehicle Domain Forecast, July 2024

LV Navigation Penetration Rate – U.S.

Navigation systems are becoming a common connected feature in Light Vehicles. The penetration of navigation systems in Light Vehicles is rising, from just under 70% in 2023 to a forecast level of nearly 88% by 2030.

Because Light Vehicles are by far the highest-volume mobility sector, this growth represents a key example of software-dependent features already present in the most critical of mobility sectors.



Source: S&P Global Software Vehicle Domain Forecast, July 2024

Software – SDV, Cybersecurity & OTA Growth Rates

The software categories analyzed have a penetration rate of 83% in the Light Vehicle sector, resulting in a growth rate of only 1.4% between 2024 and 2030. Medium & Heavy-Duty Vehicles present the highest forecast growth rate of 35% over this time period.

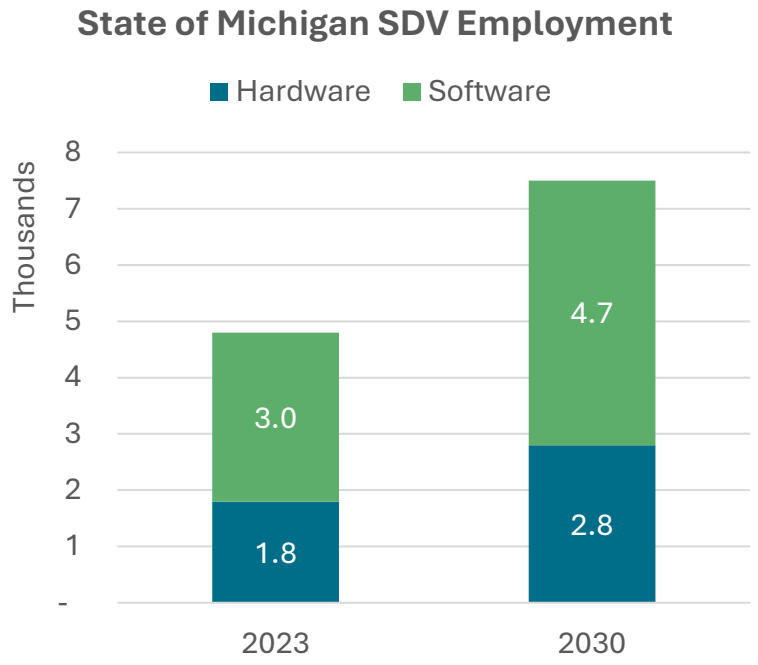
Mobility Sector	Total Addressable Market (TAM, Units) 2024	Tech. Penetration (%) 2024	Tech. Growth (CAGR) 2024-2030
Light Vehicle	NA: 15.8 Million US: 10.5 Million **MI: 1.7 Million**	US: 83%	US: 1.4%
Medium & Heavy Vehicle	NA: 0.65 Million US: 0.40 Million **MI: 0.02 Million**	US: 12%	US: 35%
Construction, Agriculture, Mining & Off-Road	US: 0.80 Million	US: 6%	US: 13%
First & Last Mile (Commercial Drones)	US: 0.05 Million	US: 100%	US: 6.7%
Maritime	US: 0.37 Million	US: 3%	US: 20%

Source: S&P Global. Note: NA is for North America, US for United State of America, and MI is for Michigan.

SOFTWARE EMPLOYMENT ANALYSIS

Software – SDV Employment Impact

Because Cybersecurity and OTA employment is distributed throughout various other functions, an employment forecast is not reliably possible. Because of the more specific nature of SDV-related functions, it is possible to estimate the related employment, as well as a 2030 forecast. In 2023, there were about 4,800 SDV-related workers in Michigan. Employment is expected to reach 7,500 in 2030, a growth of over 56%.



Source: S&P Global Mobility

This summary presentation will be updated as additional analysis continues.
New and updated federal policy changes will be monitored and updates applied as needed.