



GLOBAL ELECTRIC MOBILITY

OUTLOOK FOR ELECTRIC VEHICLES

SEPTEMBER 20, 2017

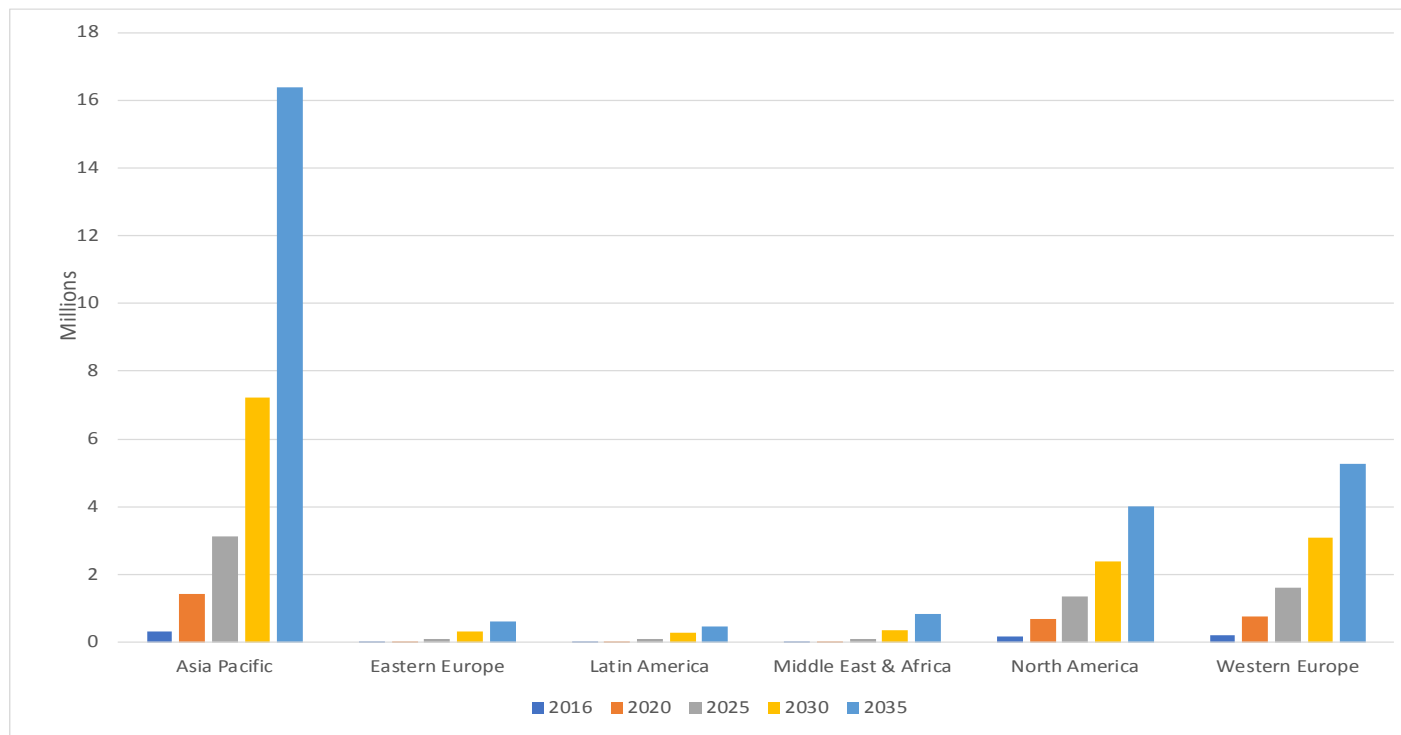
NAVIGANT

LONG TERM PEV OUTLOOK:

FEDERAL GOVERNMENTS LOOK TO BAN ICE, COST PARITY ACHIEVED

- Global PEV sales will reach 27.5 million annually by 2035

PEV Sales, Global Markets: 2016-2035

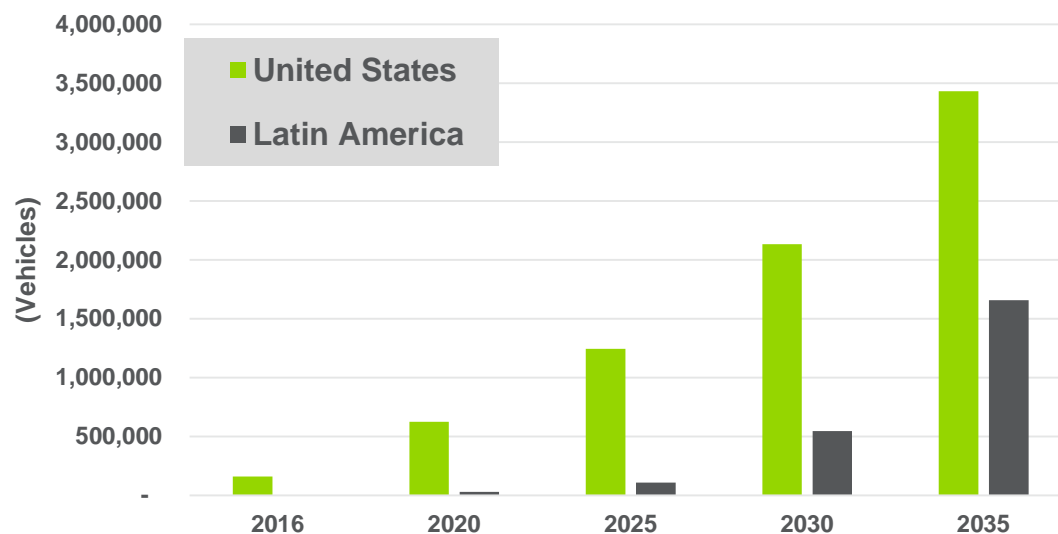


(Source: Navigant Research)

PEV SALES FORECAST: UNITED STATES & LATIN AMERICA

- Latin American EV market is expected to start taking off starting in 2030 as more models designed as global platforms become available in the market

PEV Sales, Base Scenario: 2016-2035



(Source: Navigant Research)

PEVS DIVERSIFYING INTO NEW SEGMENTS

- Automakers are slowly increasing the variety of models
 - PHEVs: 20-40 mile EV range, BEVs: 100-250 miles EV range
- Public awareness remains low, and advertising and marketing trails ICEs
- Vehicles still available only in select markets

Examples of PHEV models



OEM Press Kit: Chrysler

Plug-in Hybrid Electric Vehicles = PHEVs



OEM Press Kit: Toyota

NEW MOBILITY SERVICES DRIVE PEV GROWTH

ON-DEMAND MOBILITY

- Carsharing
- Ridesharing
- Ride-hailing
- Bike-sharing
- On-demand public transit



TRADITIONAL MODES

- Private cars
- Public transit
- Taxi service
- Walking
- Two- and three-wheel vehicles



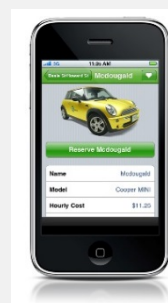
SUPPORTING INFRASTRUCTURE AND SERVICES

- Smart parking
- Integrated traffic management
- Mapping services and traveler information systems
- Integrated digital payment services
- EVs charging systems



UNDERLYING OR ENABLING TECHNOLOGIES

- Vehicle electrification
- Data analytics
- Smart phones
- Sensors and IT
- Connected vehicles and infrastructure
- Autonomous vehicle technology



(Sources: Capital Bikeshare, Zipcar, Waze, and Uber)

MARKET OVERVIEW SUMMARY

- Significant increase in PEVs entering the market, and demand is expected to rise significantly over the next 2 to 5 years
- PEV charging and infrastructure challenges must be resolved to keep up with demand and increase sales
- BEVs with larger batteries will travel further per day, consuming more energy
- Utilities and OEMs will play a pivotal role in broadening PEV market beyond early adopters





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