EDTA®
Electric Drive Transportation Association

The Current State of Electric Vehicles

Electric Vehicle Utility Industry Nexus: Charging Forward
6.27.19

Promoting Clean, Sustainable Transportation Technologies

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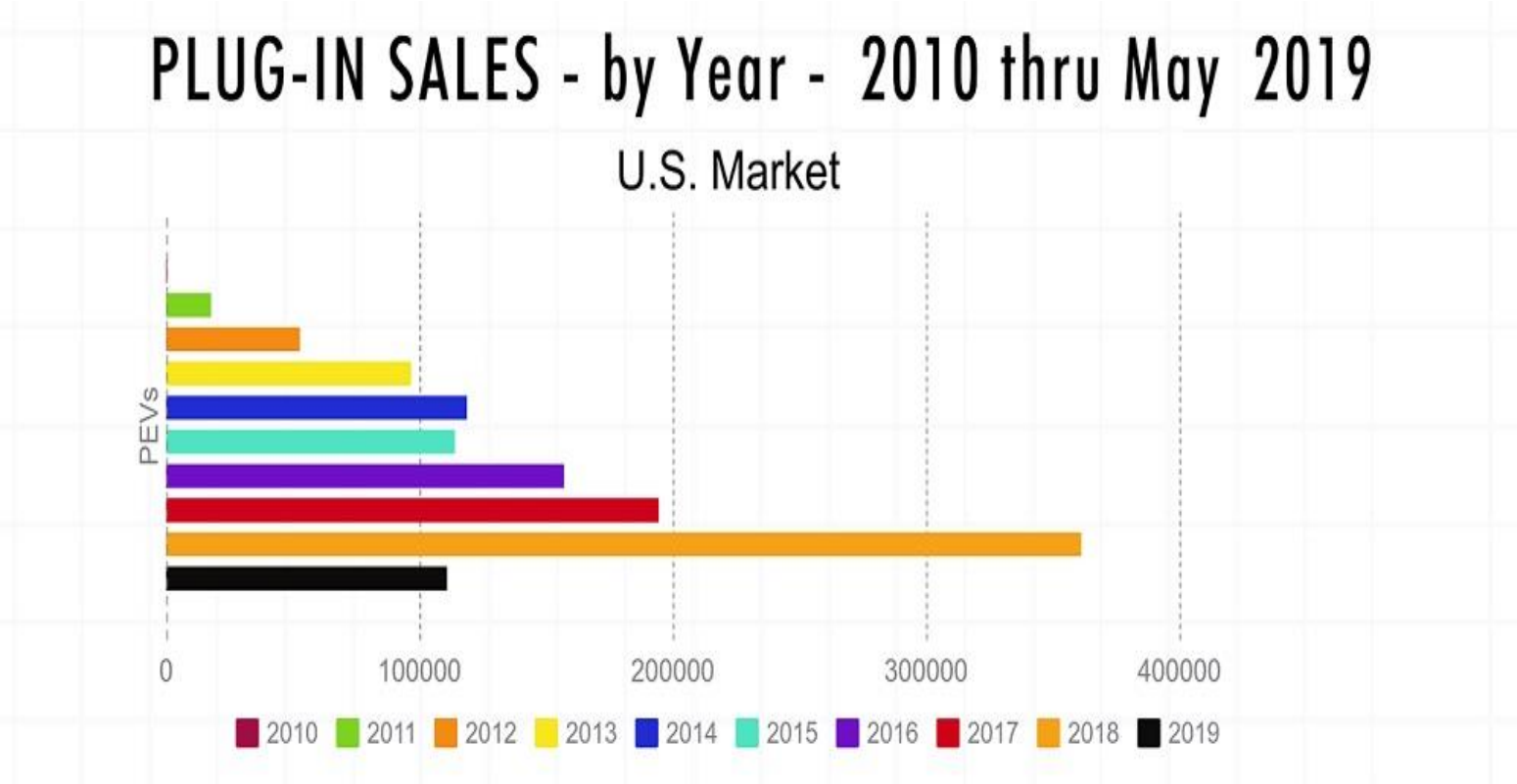
US Vehicle Market



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U.S. Electric Drive Market Trends

- Scaling volumes in sales: > 1 million cumulative sales at end of 2018
- Cost reductions in batteries: From ~$1k/kWh in 2010 to closer ~ $200/kWh in 2019
- Increasing model/price options: > 4 dozen LD plug-in electric drive models on the market (plus 3 FCEV)
- Global Market Imperatives
- Corporate Commitments: OEMs, Fleets

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Global Market Projections

- 2 million inn global sales will scale to 56 million by 2040.
- “Globally, more than half of all new car sales will be electric by 2040, but that figure varies by region.
  - China and Europe: closer to 70 percent;
  - U.S.: just under 60 percent

» Bloomberg New Energy Finance 2019 Report

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New Mobility Models

Technology advances are changing how we move people and goods

- Automation
- Connectivity
- Ride-Sharing

Electric Drive is the optimal platform for these technologies

Moving to Full Scale E Mobility

- Infrastructure
- Vehicle Market
  - Cost
  - Product Diversity:
- Education

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Utility Role in E Mobility

- The power sector is integral to the expansion of e-mobility (and vice versa)
- Utilities have a role in each
  - Infrastructure
  - Market
  - Education

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Utility Role in Infrastructure

- Private and Public Access
- Manage Mobile Load
- Ensure that serving the transportation sector enhances capacity utilization, reliability

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Utility Role in EV Market

- Vehicle Market
  - Drive scale with fleet Purchases
  - Increase Product Diversity; support non-light duty markets

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Utility Role in Education

- Utilities have unique continuous relationship with their customers -

- Education about vehicles and infrastructure

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Unique Considerations

- Service/Access – Duty to Customers
- Grid Security/Reliability- Duty to Community
- Asset/Demand Management – Duty to Stakeholders/Investors

Service/Access - Infrastructure AND Vehicles

- Low income and disadvantaged communities have less access to transportation and greater exposure to pollution
  - EVSE – deploy infrastructure in underserved areas (urban, MUD, rural)
  - Greater Access to Public Charging
  - Electric Transit – clean buses
  - Shared Mobility – access to electric vehicles outside the ownership model
  - Purchase /Rate Support

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State of EV Market : Dynamic

- Poised to Hockey Stick
- E Mobility Needs Systems Approach that Requires Integrated Transportation and Power Planning and Investment
- Integration is necessary for
  - Scaling the market
  - Ensuring the transformation serves people, grid, the environment and the market

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