



MAVEN

ccecon Catalysts of the Climate Economy

Alex Keros

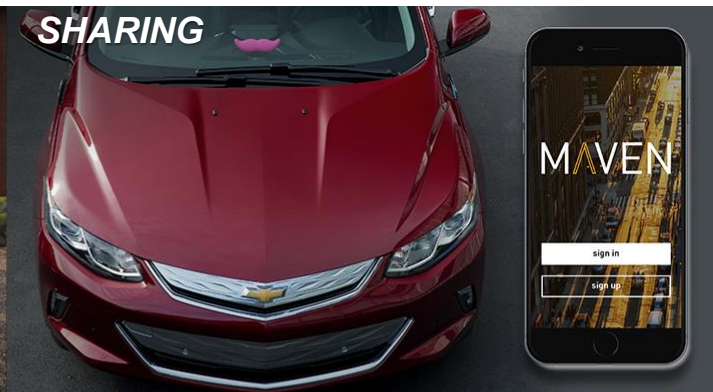
Manager, Advanced Vehicle & Technology Policy

MOBILITY IS CHANGING...AND CHANGING QUICKLY

ELECTRIFIED PROPULSION



SHARING



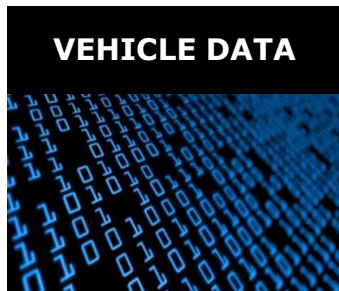
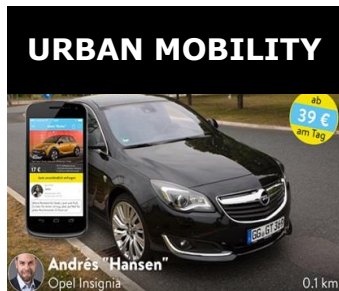
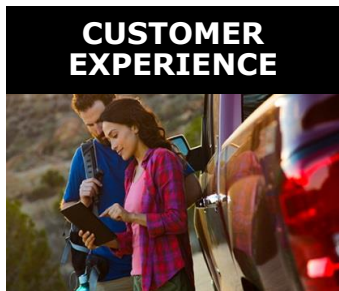
CONNECTIVITY



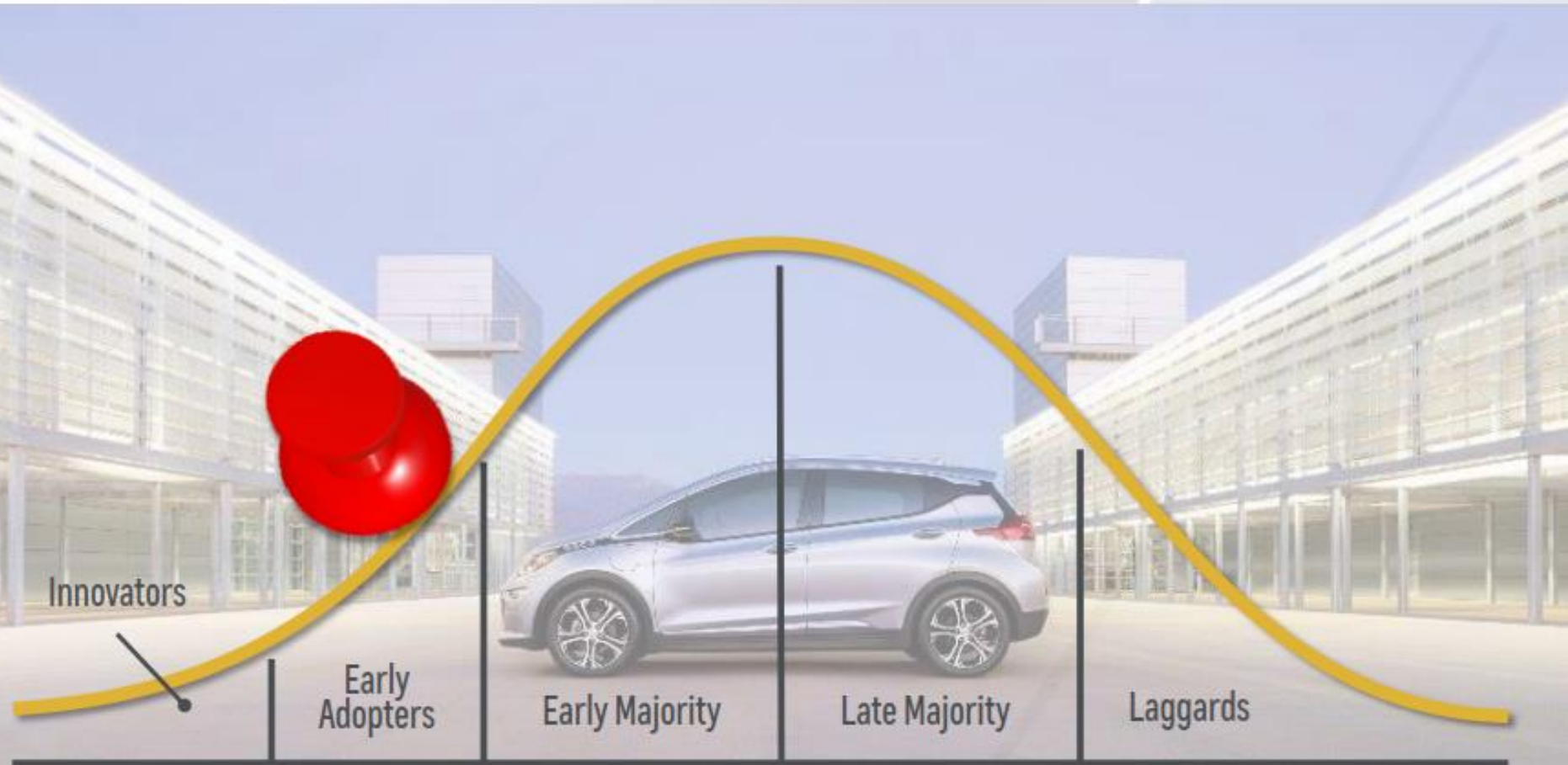
AUTONOMOUS TECHNOLOGIES



Connectivity Is a Foundational for Many GM Initiatives



EV ADOPTION IS HERE TO STAY



Chevrolet Volt



Chevrolet Malibu Hybrid



Cadillac CT6 Plug-In Hybrid

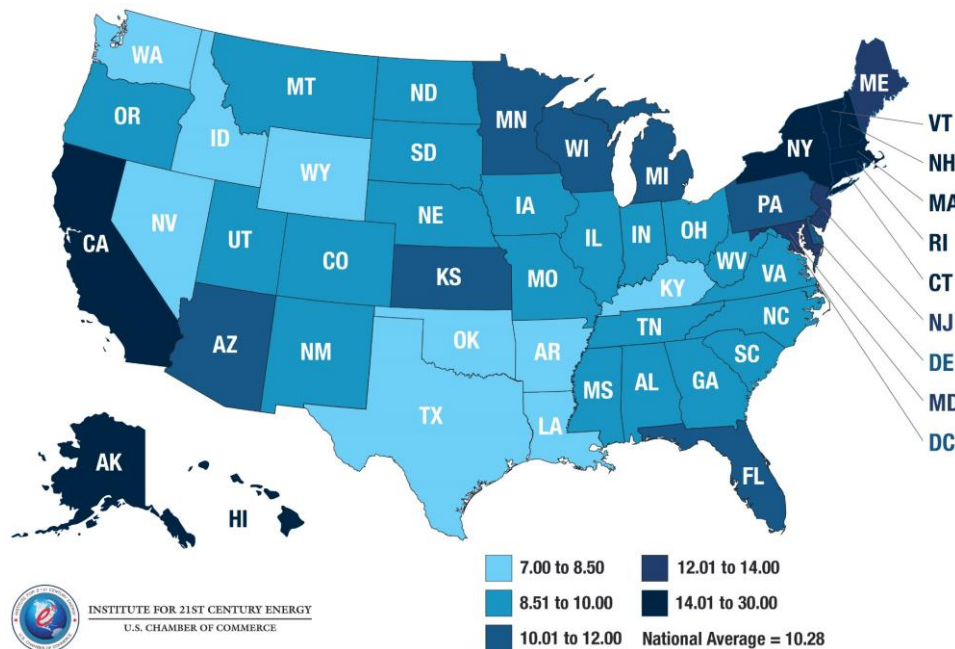


Chevrolet Bolt EV



2016 U.S. Average Electricity Retail Prices

(cents per kilowatt hour)



Utilities need to be active participants in growing the PEV market

- This is a “learning” transition requiring hands-on experience to shape next steps
- The PEV market will not escape “niche” unless utilities (and regulators) get involved
- Utility / Grid Benefits that range from flexible load growth that places downward pressure on rates for all ratepayers.

Electrifying Shared & Personal Mobility



- Electrifying shared-use offers unique consumer experiences and advances multiple energy and environmental goals. Maven Gig allows drivers to seamlessly use EVs for commercial and personal purposes.

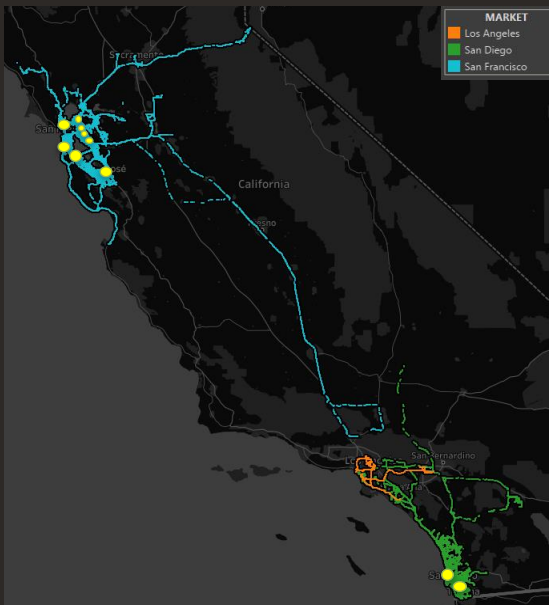
GIG / BOLT EV MILEAGE

Total Miles Driven	Average Miles Per Day, Per Car
1,700,000+	>125

GIG / BOLT EV CHARGING

Total DCFC Events	>17,000
Total kWh	>550,000

~ 150 Bolt EVs - Early Feb 2017 to Aug 2017



- Program designed, in part, to help new drivers and riders get exposure to EVs.
- Ride-sharing drivers typically do not have charging at home, so they must leverage public charging.
- Building confidence through the infrastructure network (among other things) is critical for long-term success.

Maven's role in TaaS Ecosystem



Service brand for shared access by different demand pools



Member services

Real-world ridesharing ops and learning with Bolt toward EV robotaxis



Fleet Management:
Registration, repairs, transport, maintenance, lifecycle & residual management, financing, insurance

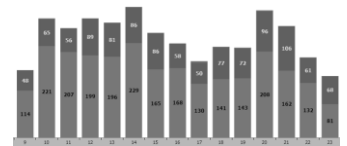
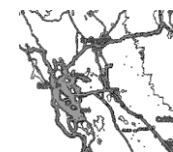
Physical infrastructure



Public sector:
Tax, regulatory, utilities, municipalities



Telemetry, Data Science



General Motors/ Maven Establishing Innovative Collaborations Around Bolt EV

Charging:

Maven working with Infrastructure Service Providers to support the business model for public charging. Early indications show positive influence on network health and on the business case.

Example:



Utilities:

Maven working closely with a number of electric utilities to propose and demonstrate new shared-use models, such as grid-integrated DC Fast Chargers, rate-design considerations, and education/outreach efforts.



Cities:

Maven in routine discussions with a variety of innovative, public-private partnerships to consider sustainable transportation solutions. Opportunities range from transit-oriented, multi-modal hubs to infrastructure deployment to fleet services.



Summary

- Current EV technologies, from extended-range Chevrolet Volt to long-range Chevrolet Bolt EV, are available in all 50-states. These vehicles have the capability of meeting a variety of consumer needs in all communities.
- The Role of Utilities in transportation electrification will (a) enable the EV market while (b) providing significant benefits to all utility customers.
- General Motors; EV Deployments, including high-mileage applications like Maven Gig, have the capability of meaningful impacts – from exposure
- Public-private co-planning and investment are essential to achieve potential:
 - Deployments that address multiple challenges, offer 1+1=3 solutions.
 - **Technical solutions are able to cut-across geographies and deployment types. Well-designed mechanisms for working together are likely the most important key enabler.**

MAVEN
#BeThere