The Future of Fueling:
Mobile, Electric, Infrastructure and the
Convenience Economy

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Shared Electric Autonomous Mobility Service
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EXHIBIT 11
US Medium BEV Price Breakdown, ICE Price and Share of Battery Costs

Source: Rocky Mountain Institute
Electric

Electrified Powertrain Sales thru June

-27.2% 

+96.4% 

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Source: Ward's Intelligence
New Vehicles as Share of Fleet on the Road

Data and Assumptions
Source: U.S. EIA Annual Energy Outlook 2018
EIA LDV Fleet Size - 243.8 million in 2018
EIA LDV Sales Forecast - 16.1 million/year average

At least 9 Years for New Vehicles to Amass 50%

Electric

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Potential Growth of Battery Electric and Plug-In Hybrid Vehicles

Assumptions
- U.S. EIA Forecast LDV Fleet Size
- U.S. EIA Forecast LDV Sales
- Rate of Sales Growth BEV & PHEV = 26% 2017-2025
- Rate of Sales Growth BEV & PHEV = 20% 2026-2035

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Electric

- Difficulties w/ Home Charging
- High Upfront Costs
- Driving Range
- Time to Recharge
- Availability of Charging Locations

Source: ICF, Fuels institute
Electric

Source: ChargePoint
Consumer perception regarding the safety of self-driving vehicles has stalled in the last year...

**Percentage of consumers who agree that AVs will not be safe**

- **US**: 47% (2019), 50% (2018), 74% (2017)
- **Japan**: 57% (2019), 50% (2018), 79% (2017)
- **India**: 47% (2019), 48% (2018), 64% (2017)
- **Germany**: 45% (2019), 47% (2018), 72% (2017)
- **China**: 26% (2019), 25% (2018), 62% (2017)

Source: Deloitte Global Automotive Consumer Survey
A majority of consumers want their governments to exert a significant amount of control over the development and use of AVs.

Level of government involvement desired regarding the development and use of AVs

- Japan: 6% Don't know, 3% No oversight, 38% Some oversight, 53% Significant oversight
- US: 9% Don't know, 4% No oversight, 31% Some oversight, 56% Significant oversight
- Germany: 8% Don't know, 6% No oversight, 27% Some oversight, 59% Significant oversight
- India: 7% Don't know, 4% No oversight, 29% Some oversight, 60% Significant oversight
- Rep. of Korea: 1% Don't know, 1% No oversight, 36% Some oversight, 62% Significant oversight
- China: 2% Don't know, 1% No oversight, 20% Some oversight, 77% Significant oversight

Source: Deloitte Global Automotive Consumer Survey
Thomas Sedran, VW lead for commercial autonomous strategy:

• "The complexity of solving this problem is like a manned mission to Mars”

• "Level 5 will never happen globally. You need latest-generation mobile infrastructure everywhere, as well as high-definition digital maps that are constantly updated. And you still need near-perfect road markings.”

• "This will only be the case in very few cities. And even then, the technology will only work in ideal weather conditions. If there are large puddles on the road in heavy rain, that's already a factor forcing a driver to intervene.“

• "We need the technology cost of the sensors to come down to around 6,000 to 7,000 euros," Sedran said. "This requires quantum leaps in innovation in lidar technology, for example. “ (Currently, these sensors cost about 50,000 euros)
Mobility Service

Even though ride-hailing has been integrated into some markets, the number of people reporting regular usage has actually decreased in the last two years.

Frequency of ride-hailing usage

Source: Deloitte Global Automotive Consumer Survey
Percentage of ride-hail users that question whether they need to own a vehicle going forward

Source: 2017 and 2019 Deloitte Global Automotive Consumer Survey
Mobility Service

Percentage of consumers that use their own vehicle every day

- US: Today 59%, 3 years from now 61%
- India: Today 47%, 3 years from now 50%
- Germany: Both today and 3 years from now 47%
- China: Both today and 3 years from now 38%
- Rep. of Korea: Today 35%, 3 years from now 39%
- Japan: Today 21%, 3 years from now 20%

Source: 2017 and 2019 Deloitte Global Automotive Consumer Survey
SEAMS: Shared Electric Autonomous Mobility Service
Convenience

why do fuel positions need to be in front of the shop
Convenience

why do fuel positions need to be in front of the shop

Solar Panels
Electric Charging

Community Place

Uber & Ride
Share Car Station
Convenience Evolution

Gas

Cokes

Smokes

Live

Move

Get
Final Observations

- Electric vehicles will gain market share
- New technologies will affect transport
- Consumers will shift behavior
- Convenience will evolve
- But not tomorrow....it is going to take time for a new mobility paradigm to take over.
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