

Conference Summary

SAE Govt. Industry Meeting 2024

Jan 16 – 18, 2024 Washington D.C.

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Summary of views expressed on electrification and fuels

(This is a partial summary of the conference simply due to the inability to attend all parallel sessions. To respect the rules of such conferences, we avoid attributing notes to specific speakers)

Conference website: <https://www.sae.org/attend/government-industry>

Light-Duty

Charging infrastructure

- Need resilient charging infrastructure, which translates to ability to charge anywhere, everywhere and at any time necessary. To do so, standardization and reliability is of higher importance now. Efficiency can come later with scale.
- Infrastructure issues can mean that we could fail. It is not about vehicle models, those are good, but not being able to charge is a concern as share of EVs increase.
- Demand for high power charging is accelerating, now moving up to 350 kW levels.
- There are still issues with unsuccessful charging sessions – in one review of charging data, ~ 60 – 70% of sessions were found to be successful.

Grid

- Currently there is a mismatch between added transportation loads and what the utilities can do quickly.
- Grids need to change rapidly to meet EV growth. However, some grids – e.g. along east coast - are very old and constrained, and there is not a lot of room to add substations.

Consumer

- Most buyers do not think in TCO terms – the average consumer thinks of the monthly payment
- The average American does not buy the average priced car. The biggest market is lower (than average) priced, and second hand cars: as the average price of cars goes up due to electrification, it could have the effect of keeping in circulation older, unsafe and high-emitting cars, and with environmental justice implications.

Heavy-duty electrification / hydrogen

- Government is spending \$7B for hydrogen infrastructure, but priority is clearly batteries and H2 hubs are being developed considering that electric trucks can cover 500 miles per charge.

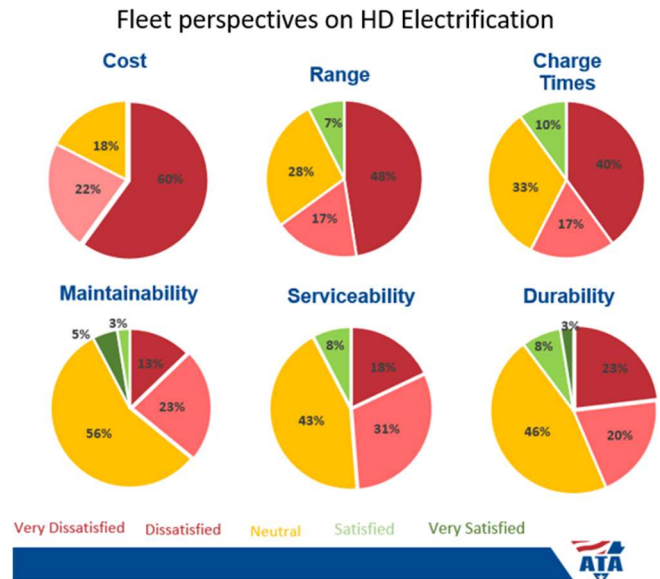
Vocational

- For transition to electric trucks for vocational applications, the biggest consideration for customers is the duty cycle.

- Total cost of ownership (TCO) is important and is difficult to calculate since repairs / maintenance are not well known.
- Repairs are more expensive but maintenance is lower.
- Vocational trucks tend to be in service for a long time – need to understand cost over long life
- Infrastructure is critically important and difficult to build soon – start talking to utilities “yesterday”

Long-haul

- There are various considerations for fleet electrification: Strategy & planning (duty cycle, dwell / charging time, etc.), Infrastructure, Operational factors, Data analytics, Energy management, TCO
- Biggest hurdle is infrastructure and can take time to build: anywhere from a few months to a year for Class 2B/Level 2 to 2 – 4 years for Class 8 DCFC and MW charging
 - Portable chargers are being considered for ramping up electrification in absence of infrastructure.
 - Fleets are not relying on public charging, it will be mostly done at depot / distribution centers.
 - Battery storage is one option.
- Charging costs can be tricky – demand charges (when charging is not done at off-peak hours) can quickly add up to be significantly higher (as much as 3X) than for overnight charging.
 - Charging at night is ok, but ultimately fleets should be able to charge anytime just like they refuel today.
- Cost and weight reductions are needed to improve TCO : electric fleets are not scalable at current costs today.
 - Government incentives are insufficient
 - The challenge is especially significant for small fleets (1 – 10 trucks driving > 500 miles per day), who are capital constrained for upfront capital investment
 - One TCO study discussed which shows HD ZEVs reach TCO parity by 2035 but can be accelerated to this decade by incentives
- Range of long-haul electric trucks in cold temperatures is a concern, as is the loss of payload and increased dwell time (charging) and impact on operating cost.
- Grid capacity expansion is needed and is not trivial – needs planning.
- There is a recognition when discussing sustainability that zero tailpipe emissions is not equal to zero emissions.



Fuels

- One view: Use conventional fuels for air travel considering safety and that it bears a much smaller fraction of the GHG emissions. Use of biofuels is best for marine / rail given that these modes carry the essentials for society.
- Renewable natural gas is being used for meeting GHG reduction goals. Carbon intensity of RNG in California LCFS is negative (- 28 gCO₂/MJ)

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