

# Possible Pitfalls and Solutions Along the Transport Electrification Journey

## SPEAKERS



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## SUMMARY

The rollout of electric cars and their charging infrastructure is well on its way. The next big wave is in commercial heavy transport. While with the improved ranges of electric cars that largely utilize static home charging and static opportunity charging at destination or public charging stations along the way, we seemed to have addressed the energy, power, and operational needs of private car use, the same approach might not be the best way forward for commercial heavy vehicles.

## ABSTRACT

In particular, today's commercial heavy transport electrification planning and investments may lead to largely suboptimal decision, path dependence, and unexpected bottlenecks in the scale-up phase on the transport electrification journey. In particular, while due to 1) the maturity of stationary charging technology over dynamic charging technologies, 2) the current rest stop regulations for commercial transports, and 3) the urgency to decarbonize heavy freight transports, the current transport electrification policies, pathways, and investments focus on stationary charging. This however can lead to a pathway lock-in that does not allow to utilize the arguable benefits of dynamic charging on complementary Electric Road Systems (ERS), which would allow for cheaper vehicles with smaller batteries and would allow for more flexible charging logistic solutions since there is more flexibility in where, when, and how much each vehicle should be charged, and results in more even and more easily shapable load on the grid.

Moreover, these current policy, planning, and investment actions also underestimate a bottleneck in the large-scale operations of electrified commercial heavy transports. In particular, all too often actions are taken based on existing transport patterns that arose based on the energy-use, cost, range, and cargo capacities of transports using internal combustion engine vehicles. This approach possibly misses physical and business model bottlenecks in from of unacceptably long charging queues, high load peaks in the grid, and at times and places highly underutilized charging investments, which ultimately can lead to the slowdown of the green transformation of the transport sector. The short course will discuss these challenges and possible solutions to them.



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ITEC is aimed at helping the industry in the transition from conventional vehicles to advanced electrified vehicles. The conference is focused on components, systems, standards, and grid interface technologies, related to efficient power conversion for all types of electrified transportation, including electric vehicles, hybrid electric vehicles, and plug-in hybrid electric vehicles (EVs, HEVs, and PHEVs) as well as heavy-duty, rail, and off-road vehicles and airplanes and ships.

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