

SESSION KEY POINTS AND QUOTES

Smart Grids: Powering the e-Mobility Future

Thursday, 3 May, 11:45-13:15

The Panel

- Melinda Crane - Moderator
- Sergio Monteiro, Secretary of State for Public Works, Transport and Communications, Portugal
- Pat O'Doherty, CEO, ESB (Electricity Supply Board), Ireland
- Patrick Oliva, Senior Vice-President, Strategic Anticipation and Sustainable Development, Michelin, France
- Henri Poupart-Lafarge, President, Alstom Transport, France
- Mitsuhiro Yamashita, Executive Vice-President, Member of the Board of Directors, Nissan Motor, Japan

Overview of Session

Electrification is a promising route to low-carbon transport. As the use of electric vehicles (EVs) grows, this new electricity load will need careful management. Electric utilities have begun to deploy "smart grid" technologies to better manage demand. The session brought together key players to shed light on the critical issues for developing making electric mobility seamless and integrating EVs into the power supply system.

Key Points:

- This decade will see a diversity of experimentation in e-Mobility systems, creating the conditions for the take-off of electric vehicles in the 2020s.
- Batteries are currently expensive. But all the other electric vehicle (EV) drive components are potentially much cheaper than their equivalent on a conventional car. The costs of EVs can therefore come down despite high battery costs, and these are expected to come down to 2 000 euros for each 100 km of autonomy in the next decade.
- Smart grid technologies that match supply and demand in real time will be needed when EVs take-off, to manage the new demand.
- Batteries in EVs offer the potential to store electricity, especially from variable, low-carbon wind and solar power, for supply to the grid or to homes at peak demand.
- Nissan already sells a version of its *Leaf* equipped to provide electricity to the home during scheduled power cuts: a feature developed in response to the electricity supply problems in Japan following the 2011 earthquake and tsunami.

- Is integrating EVs into smart grids a solution to reducing transport sector CO₂ emissions or a solution to power sector problems with the reliability of low-carbon renewable energy? They go hand in hand.
- There are two contrasting visions. One the one hand a centralised collective system standardised continent-wide, to provide seamless interoperability based on durable public support, in a model something like passenger railways today.
- Or a diversified set of systems suited to different circumstances, slow charging EVs, fast charging EVs, battery-swap systems, car-share EVs, plug in hybrids to bridge the gap to fully electric vehicles, and with competition between systems and competition to supply the grid from vehicle batteries.
- New business models need to be developed for EV systems because the benefits and costs accrue to different stakeholders over different time scales. A long-term view is needed so that the upfront investments in charging infrastructure can be made, with public support until use levels increase to commercially viable levels.
- All stakeholders have to be closely involved in setting up e-Mobility systems. You cannot just provide charging facilities and expect customers to arrive unless you work with them from the beginning.
- Subsidy cannot be relied on forever. EVs have to become a commercial proposition. New vehicle technologies usually take 10 years to halve costs. Industry can do the same to EV cost with volume production. During this time frame some public support will be needed.
- Standardisation of charging systems is essential. Multiple plug types increase costs and cause problems when cars cross borders. Agreement on standards can only be based on industry stakeholders leading the way.
- Railways are critical to e-Mobility. Passenger railways already are mostly electric. A train can produce three megawatts of electricity when braking to feed the grid. Direct current networks will be needed for high-power EV recharging points. Metro systems effectively already provide city-wide direct current micro-grids. Metro systems and rail stations can provide key EV charging facilities where they are needed.

Key Quotes:

"The game changers will be: an intergovernmental decision to halve CO₂ emissions by 2050; trade deficits from importing oil will be our next big economic concern; Mayors will find popular support from establishing zero emission cities." - Patrick Oliva.

"A joint economic and environmental perspective is needed in developing both transport and electricity; it can no longer be a question of either growth or a clean environment." - Sergio Monteiro.

"Car customers are very realistic – they don't dream – they always compare cost and value." - Mitsuhiro Yamashita.

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