Start with Smart

Presentation at EVS32 Conference, Lyon

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EV grid benefits

• Decarbonises transport and power
• Flexibility
• Renewables
• Reduced cost
Strategies for smart EV integration

Smart pricing

Smart technology

Smart infrastructure
Smart Pricing
“Dumb” charging can increase peaks

Source: own compilation based on Westnetz, peak day 2017; red/green curves illustrative
Time-varying electricity prices

- Direct charging to “cheaper” hours
- Use existing assets, avoid unnecessary investments
- Deliver wider benefits for all electricity users
Simple time-of-use tariffs

Iberdrola EV-dedicated tariff

Night tariff

Day tariff

Source: Based on Iberdrola. Electric vehicle plan.
More dynamic tariffs

Electric vehicle owners’ charging habits change on time-of-use tariff

Tinted areas show the range of variation of usage.

TOU-based network tariffs

Source: Based on Radius. *Tariffer og netabonnement* [Tariffs and network subscriptions].

Source: Denmark (Radius), TOU network tariff for households (winter season)
2 Smart Technology
Average peak reduction under time-varying tariff pilot programmes

… maximises benefits of smart pricing

- Control and optimise energy consumption
- Simple or automatic
- Load management
3. Smart infrastructure
Workplace & multi-unit dwellings
Use existing infrastructure

Photo credit: Ubitricity
Demand-driven planning
Battery-based fast-charging
Implications for EU policy

- Time-varying electricity tariffs needed for both, energy and network
- Smart functionalities required for EV charging
- Differentiated roll-out targets and integrated planning practices for EV charging infrastructure
1. Integrating EVs into the grid is an opportunity to decarbonise, to reduce cost, and to modernise the power and transport sectors in parallel.

2. These opportunities can be addressed jointly in the next EU legislative agenda.

3. Start with smart tariffs, smart technology, and smart infrastructure.
About RAP

The Regulatory Assistance Project (RAP)® is an independent, non-partisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future.

Learn more about our work at raponline.org

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Resources

- Start with Smart. Promising practices for integrating EVs into the grid
- Beneficial electrification of transportation
- Treasure Hiding in Plain Sight. Launching electric transport with the grid we already have