



## Smart Charging of EV - Flexible Load and Future Potential of Balancing Power

11. February, 2016 – Graz, Austria

**Gerd Schauer**  
Member of  
EURELECTRIC's WG on Electro-Mobility



### Members – National Electricity Associations

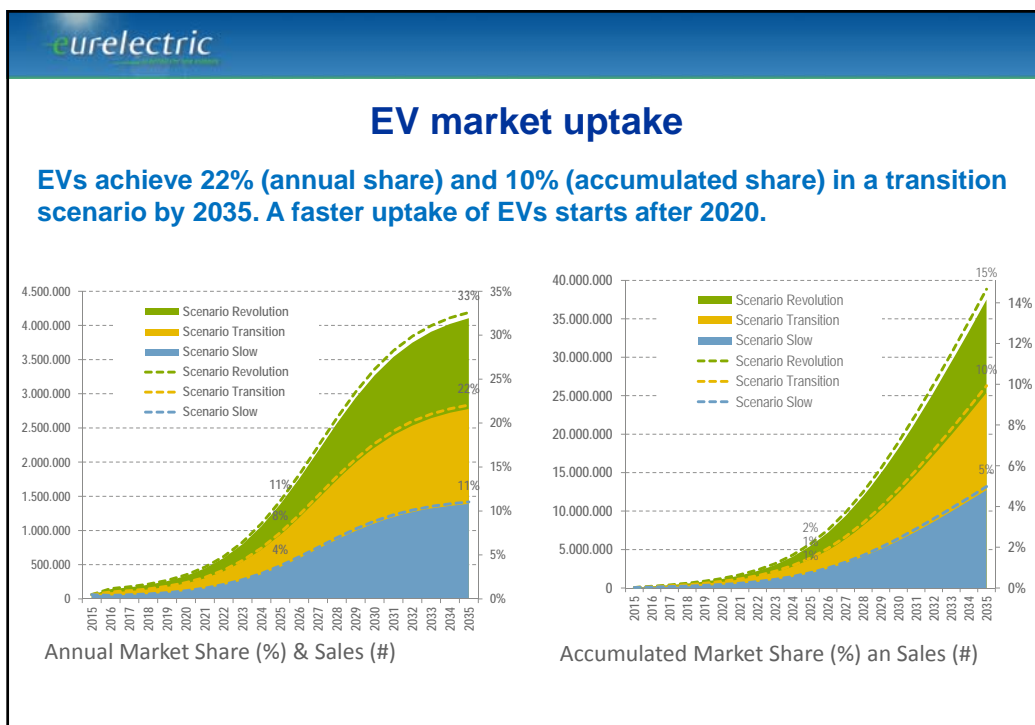


- **Full Members**
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  - Russia, Belarus, Moldova, Ukraine
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**EURELECTRIC WG Electro-Mobility: bringing together over 30 electricity stakeholders from 19 European countries**

Logos of participating stakeholders: Iberdrola, EDP, Energi, Energie-nederland, e-cars, E.ON, Electrica, Endesa, RWE, Enel, Fortum, and others.

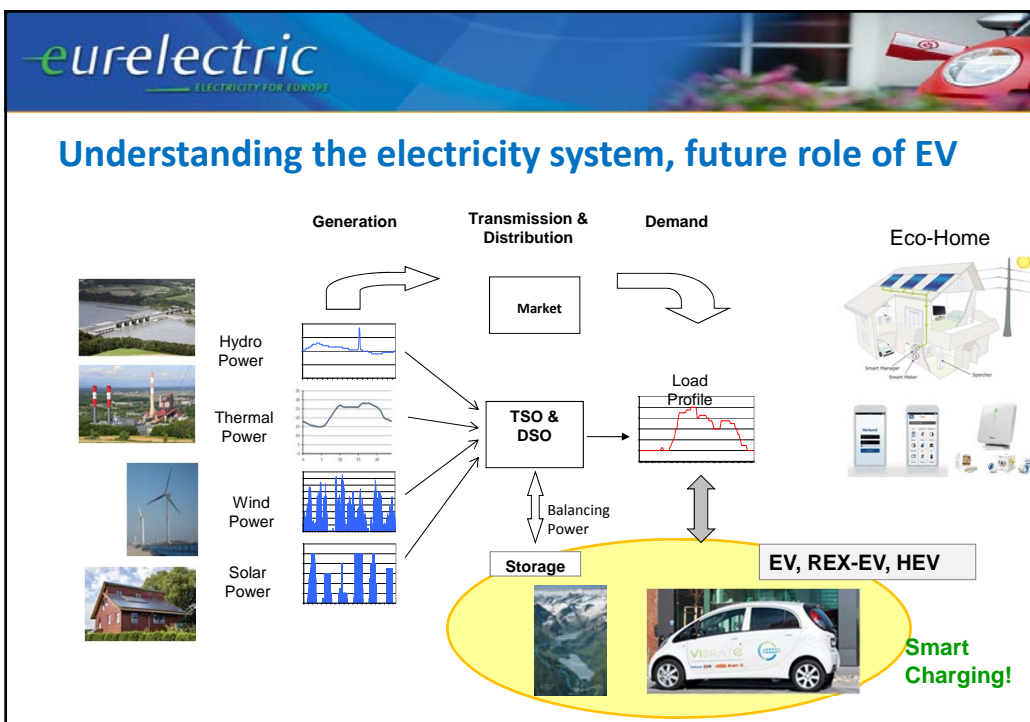
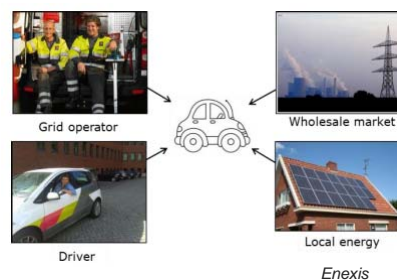


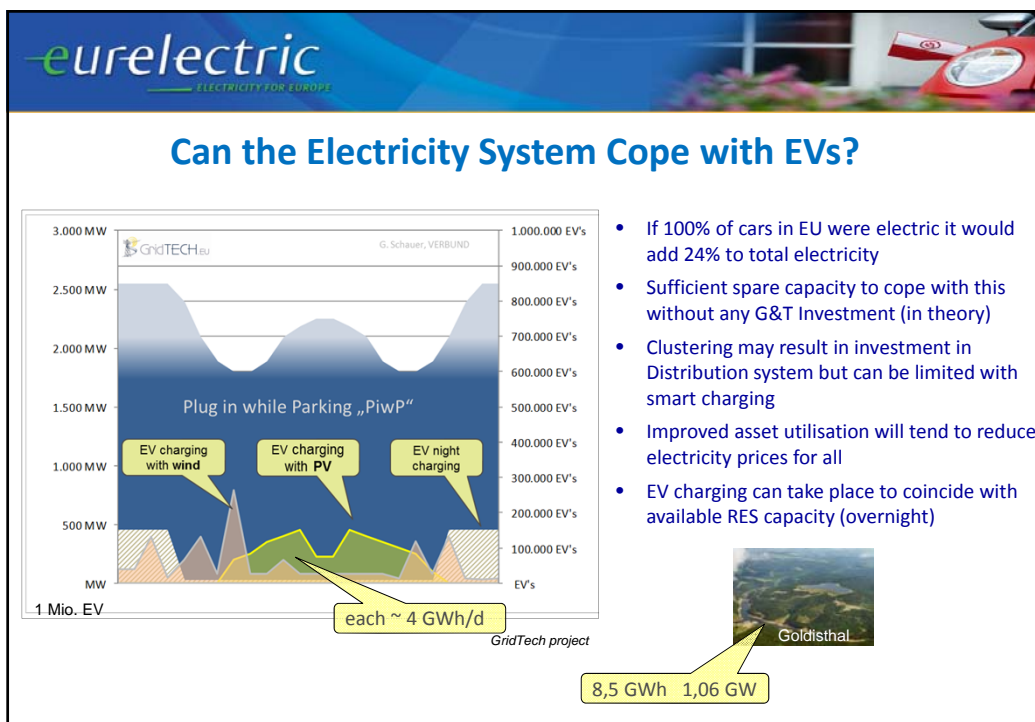
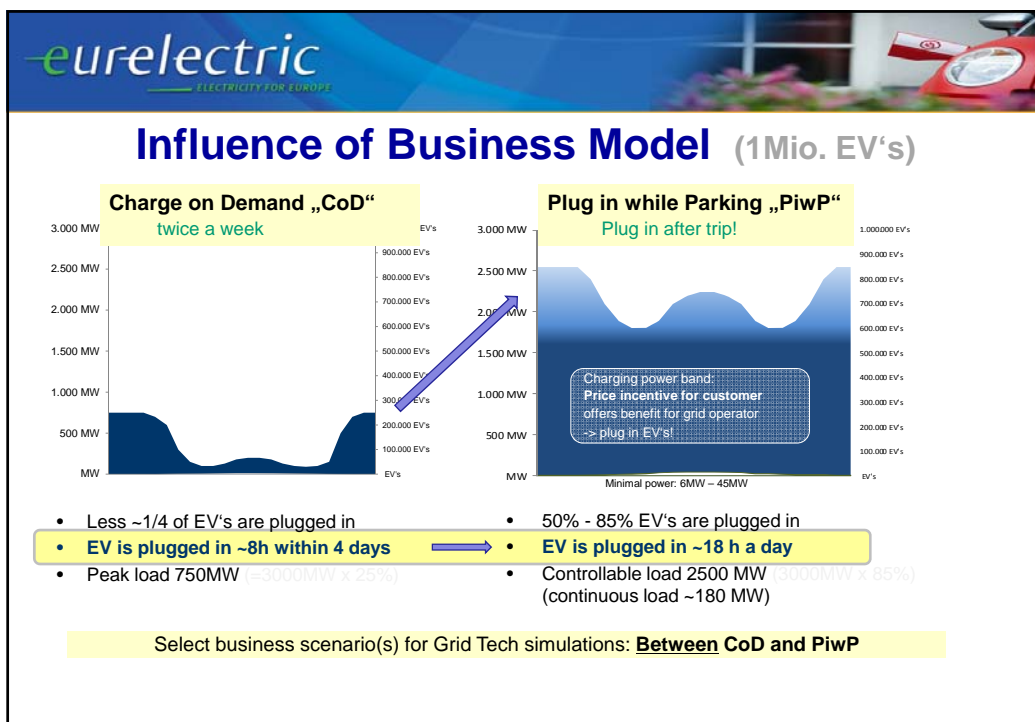
## What is smart charging?

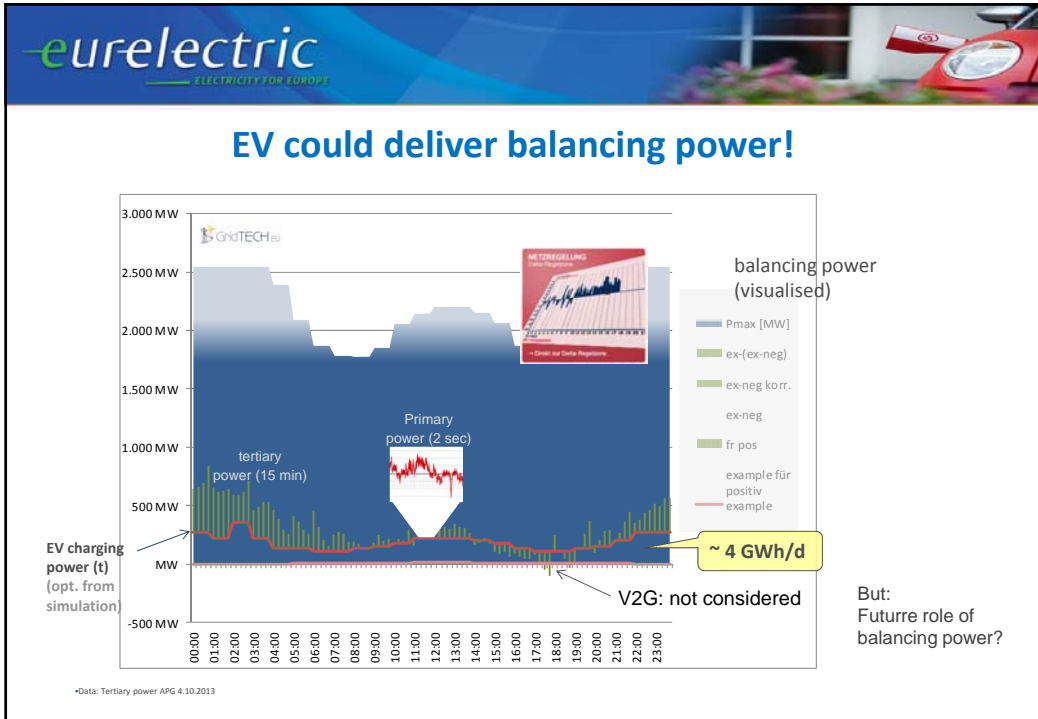
The charging process is **managed** and **controlled** in response to an external stimulus so to optimise the use of the grid and available energy in such a way that there is little, if any, impact on the customer. Smartness is enabled by both **price** and **control** signals via an ICT infrastructure.

### Actors involved:

- ... EV drivers who want to charge their cars every time
- ... Grid operators who want to avoid congestions
- ... Actors on the wholesale market that want predictability of demand
- ... Local RES owners that want to use locally produced energy







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### Smart charging benefits for:

**Customers**

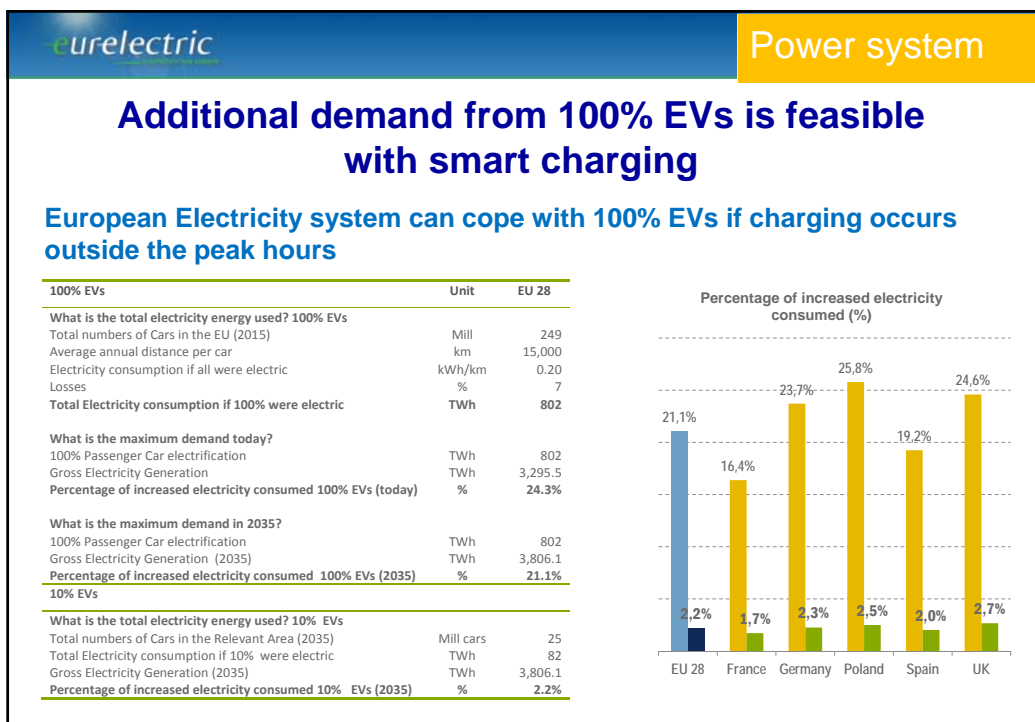
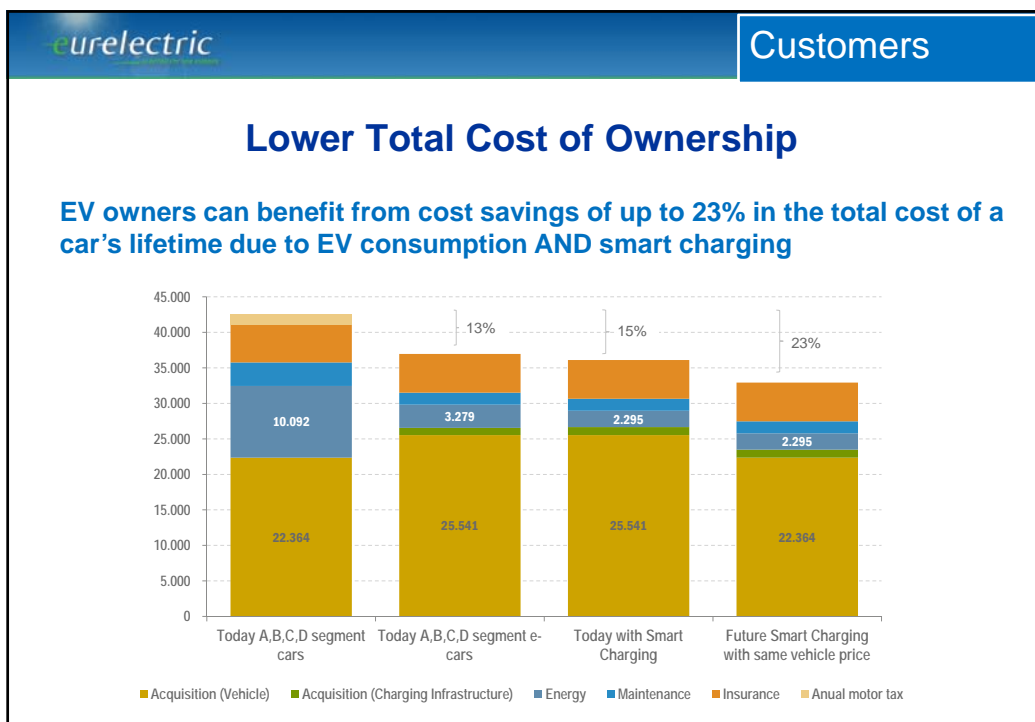
- Maximising customers convenience while reducing costs

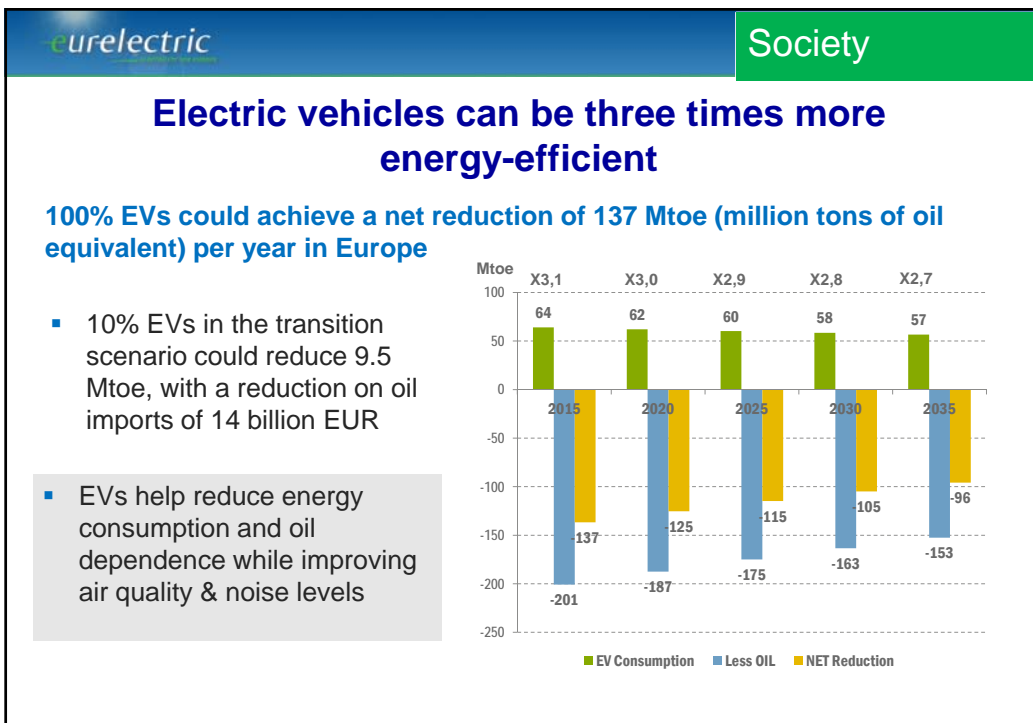
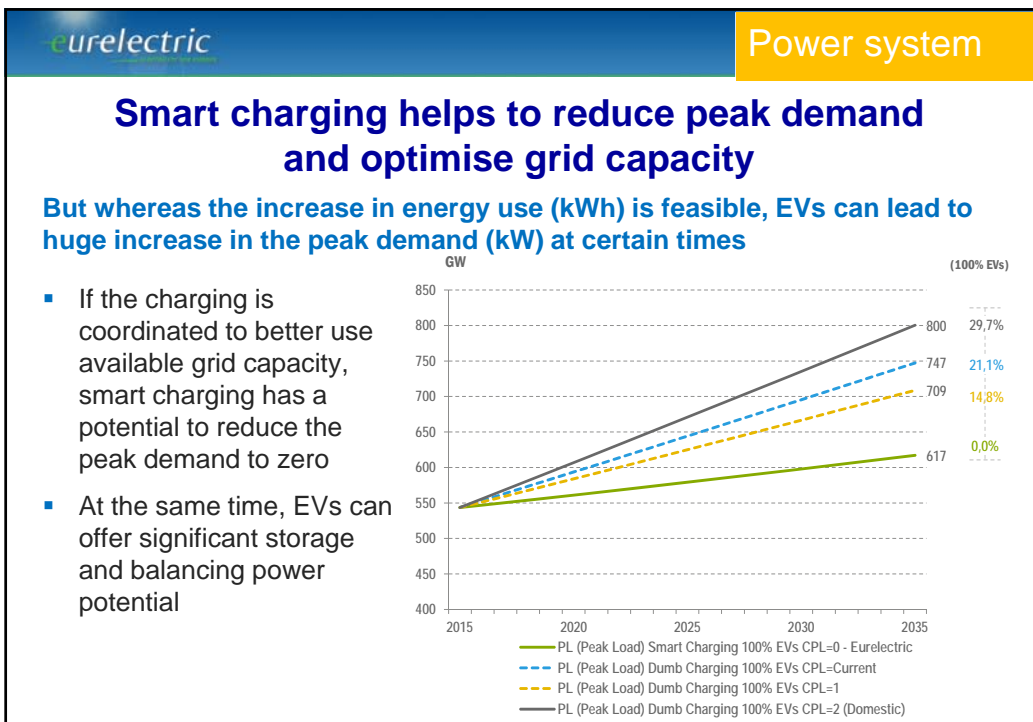
**Power system**

- Power system benefits for generation and the grids

**Society**

- Sustainability gains for society at large





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## Outlook: „Green“ Transport - not a new idea!

Ökologischer  
Schwerlast-Transit  
Forschung im Verbund  
Schiffenstraße Bund 64

- Highway Kufstein – Innsbruck – Brenner, sensitive area
- **Feasibility Study Aug. 2000**
- Content
  - Drive systems
  - Electric transport
  - Planning of electricity system (mountain)
  - Road
  - Costs, safety

**From Vision to Reality:**

## EURELECTRIC – partnering in e-mobility projects

Map of electric vehicles projects in Europe

EU Projects



Green  
eMotion

ZeEUS  
Zero Emission Urban Bus System









## Key items

- **Customers need to be incentivised** to benefit from reduced energy costs and a lower total cost of ownership
- European **Electricity system can cope with 100% EVs** with no additional Generation or Transmission capacity
- **Investments** in distribution grids **can be minimised** with smart charging
- **Smart charging supports integration of renewables** such as wind and solar
- There is significant **value of smart charging** for CO2 emissions savings and related costs


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## Thank you for your attention!

 <p><b>Declaration on standardisation</b> October 2009</p>	 <p><b>Emerging market models for public infrastructure</b> September 2010</p>
 <p><b>Charging needs for EVs</b> April 2011</p>	 <p><b>Views on Charging Infrastructure</b> March 2012</p>
 <p><b>Organising market for public charging infrastructure</b> July 2013</p>	 <p><b>Smart charging: steering the charge, driving the change –</b> March 2015</p>

<http://www.eurelectric.org/power-distribution/electrification-of-transport/>