Feasibility analysis and development of on-road charging solutions for future electric vehicles

Disconnecting charging and range?

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The perspective of the end-users

1. What end-user?
   – Private vs professional vs public
2. What type of vehicle?
   – Light EV vs PHEV
   – Heavy EV vs PHEV vs exotic charging (system approach)
3. What type of infrastructure
   – Slow/Fast conductive vs Slow/Fast wireless
   – On-road conductive vs wireless
4. What applications?
   – Urban/short range vs long range
Of course there is technology

Conductive

- Not so much to improve other than….
  - Smart
  - Faster (mostly a battery problem)
  - On road
- Cheap, short term solution
- Need for deployment maybe overhyped in many situations, many low cost solutions already available
- Cities and suburbs with low garage availability are the main problem
- Problems even with garages if shared, simple modifications to building codes and bylaws could solve issues
- A big potential role for energy suppliers on private infrastructure
- Authorities, be it local or national, often seem not to have a clue about the real problems
Of course there is technology

Inductive

- Promising but not fully mature
- Intrinsically more costly
- Still relatively large losses, e.g. on-road
- Installation and maintenance issues for the long term
- Urban applications interesting but do not solve the range anxiety problem which is mainly extra-urban
- Massive deployment on main roads needs critical EV mass
- Chicken and egg problem with cars (urban applications could help) but also trucks
- Even if "electrosmog" can be controlled, risk of "unjustified" refusal and NIMBY Syndrome
Wider questions

- What speed for electrification?
- Does "one size fits all" for infrastructure?
- If not, can we afford multiple electric infrastructures (not to mention other energies like hydrogen, LNG and CNG)? How many?
- Which are the optimal choices for each combination of the above factors?
- Who pays upfront with high risk and low returns over many years?
- The competition of PHEV/EREV/Fast charging
- **What should public authorities do (alternative fuels infrastructure plans due by end 2016)?**
Thank you!

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