

Grid Integration of Electric Vehicles

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ComEd EV Readiness Focus Areas

Grid Impacts

- Local distribution
- System capacity



Policy

- Legislation
- Advanced rates & metering
- Public charging



Collaboration

- Policy makers
- Municipalities
- Businesses
- Consumers
- Car dealers
- EVSE providers
- Other stakeholders



Customer Experience

- In-home charging
- Workplace and public "Opportunity" charging



Market Research

- Early adopter preferences
- Local adoption rates

Keys to EV Integration with the Smart Grid

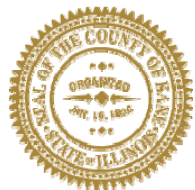
- Utility needs to be notified of Level 2 or greater EV charging before it is installed
- Time-variable rates provide significant benefits to customers and the grid
 - Can reduce annual electric costs for EV owners
 - Help avoid increasing system peak at significant EV penetration levels
 - Should be applied at the whole-house level
- EVSEs should be capable of two-way communications with the grid
- ComEd's Smart Grid will enable greater EV benefits
 - Real-time information for both consumers and ComEd
 - Improve utility load management
 - Increase customer choice and control
 - Do these things in an automated way

ComEd Distribution System Impacts Study

- Conducted with EPRI
- Studied two feeders on ComEd's system using actual system data
- Modeled various EV penetration and charging levels
- Study revealed that local distribution equipment is most vulnerable
 - Transformers, secondary conductors
 - Clustered adoption
- Ways to mitigate the impacts
 - Advance notification to utility
 - Time-variable rates
 - Two-way communication between smart grid & EVSE



Key Partnerships



- EPRI Electric Transportation Program
 - Grid impacts
 - Customer expectations
 - Utility/OEM collaboration
- IBEW
 - EVITP, apprenticeship programs
- Chicago Electric Vehicle Consortium (CEVC)
 - Readyng the market for EVs in Chicago
 - EV charging infrastructure deployment
- Illinois Commerce Commission (ICC) Initiative on Plug-In Electric Vehicles
 - Assessment of potential PEV impacts and regulatory issues needing to be addressed
- Illinois EV Advisory Council
 - Commissioned by Governor Quinn
 - Recommend strategies to promote the use of EVs in Illinois
- Kane County EV Task Force
 - Model ordinance for EVs and charging infrastructure

Thank You.

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