

ICC Policy Session: The Nexus
Between EVs and Grid
Stabilization

**Policy and Regulation:
Living with
an EV Today**

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EVs Registered in Illinois

- New car sales in Illinois: 674,154 (2016)
- Cars registered in Illinois: 10,460,292 (2016)
- Electric and hybrid vehicles
 - Gas 10,085,936 (96.42%)
 - Diesel 209,133 (2.0%)
 - Gas hybrid 148,067 (1.42%)
 - Electric 5,749 (0.05%)
 - Plug-in hybrid 6,080 (0.06%)
- Average vehicle age: 10.5 yrs

<https://autoalliance.org/in-your-state/IL/>



Where are EVs Charged?

- 80% of EV charging is done “at home” or in the garage.
- EV technology is available to all electricity customers through their electric outlet.
- Home charging stations include level 1, level 2.



When Away From Home Public Charging Stations

- Most public charging stations Level 2, in public or private parking lots
- Pay for charge
 - Charge Point
 - eVgo
- Free charge
 - Volta, public parking lots, employers
- Municipal or public charge



Sample Illinois Cities

EV Charging Stations within 15 Miles

	Total Charging Stations	Free Charging Stations
• Chicago	328	54
• Evanston	201	52
• Oak Park	223	45
• Peoria	29	7
• Bloomington/ Normal	61	36

Chargehub.com

Electric Vehicles and Competition

- Who owns EV charging stations?
 - Private installations give property owners supply options and control
 - EV charging locations include individual residences, multi-unit buildings, parking lots and garages, universities, commercial establishments such as Walgreens, Hy-Vee grocery stores, Whole Food, garages and parking lots, high-rises, Nissan dealers.
 - Many EV maps and apps:
 - carstations.com
 - afdc.energy.gov/fuels/electricity_locations.html (by zip code)
 - Chargepoint.com
 - eVgo.com
 - Plugshare.com (see next slide)

Sample EV Resources

The screenshot shows a web interface for finding EV charging stations. On the left, there is a search bar with 'Illinois' entered and a 'Go' button. Below the search bar, a dropdown menu is set to 'Electric'. A summary box displays '426 electric stations' and '948 charging outlets in Illinois', with a note 'Excluding private stations'. A link for 'Download spreadsheet of matching stations' is provided. At the bottom left, a disclaimer states: 'Location details are subject to change. We recommend calling the stations to verify location, hours of operation, ...'. The main area is a map of the United States with blue triangle markers representing charging stations, primarily concentrated in the Midwest. The map includes state names like MINNESOTA, ILLINOIS, INDIANA, and KANSAS. In the top right of the map area, there are 'Embed' and 'Submit New Station' options.

Find Stations **Plan a Route**

Q Illinois **Go**

Electric

[more search options](#)

426 electric stations
948 charging outlets
in Illinois

Excluding private stations

[Download spreadsheet of matching stations](#)

Location details are subject to change. We recommend calling the stations to verify location, hours of operation,

Embed Submit New Station

Sample EV Resources

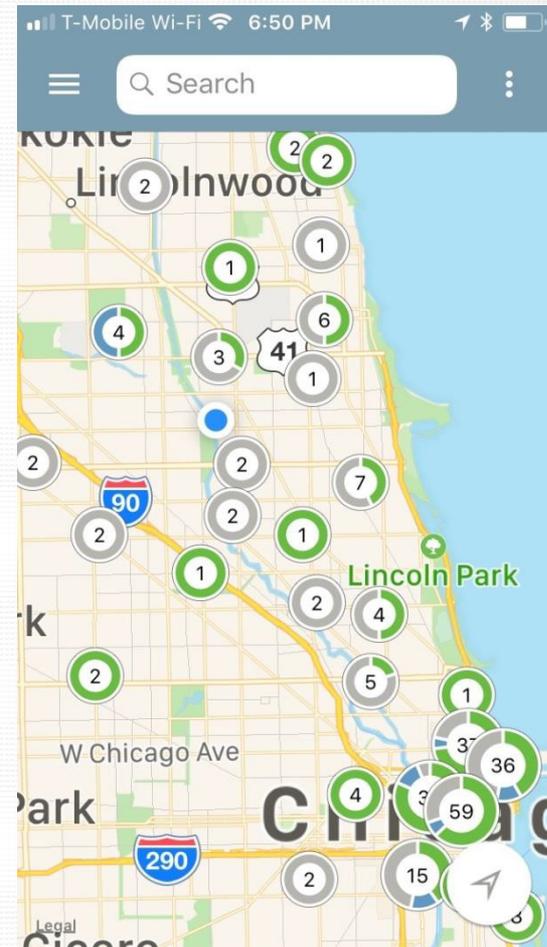
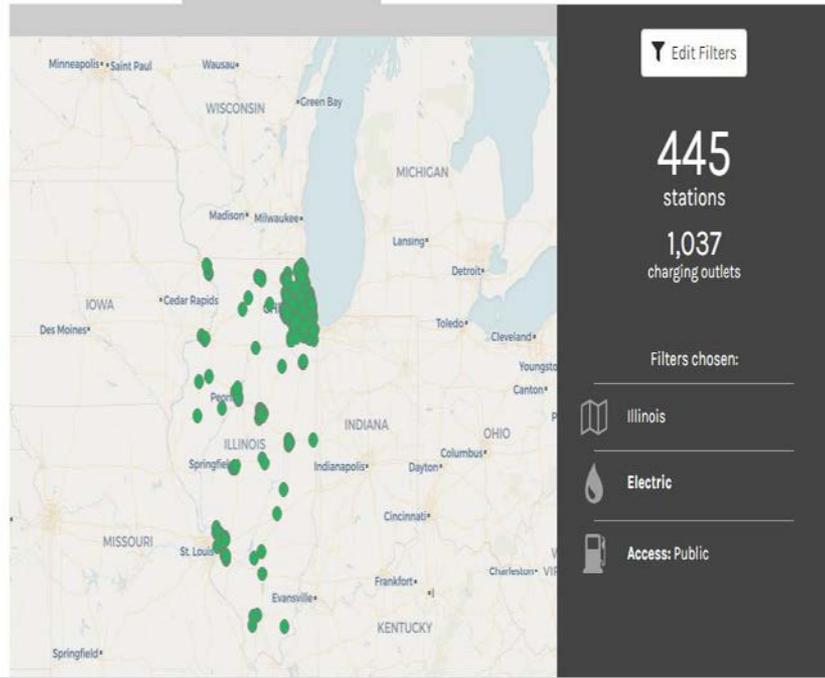
U.S. Department of Energy - Energy Efficiency and Renewable Energy
Alternative Fuels Data Center

Electric Vehicle Charging Station Locations

Find electric vehicle charging stations near an address or ZIP code or along a route in the United States.

Find Public Stations

Analyze & Download Data



Range

Electricity
optimal/normal
conditions

Gas

- Chevy Volt 30/50 miles 370 miles
- Chevy Bolt 238/180 miles
- Nissan Leaf 151/100 miles
- Tesla 400/250 miles
- Chevy Cruze Average 548 miles/13.7 gallon tank
- Toyota Camry Average 476 miles/17 gallon tank
- Honda Odyssey 462-588 miles/21 gallon tank

Factors affecting range: temperature, speed, road conditions, traffic, heat/air conditioning, amenities

EV Effect on Electric Bill

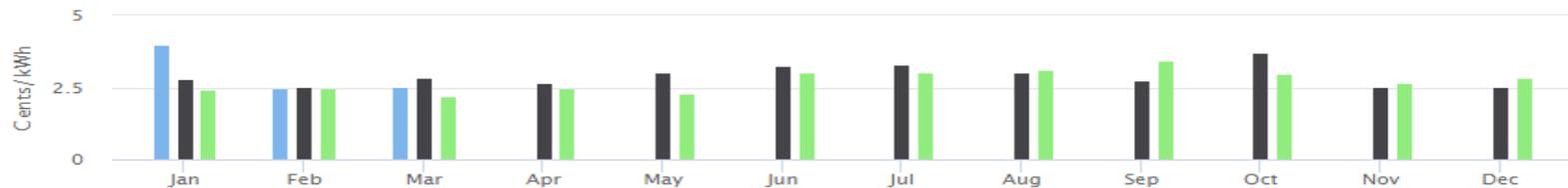
Electricity Usage



Total Monthly Electricity Charges



Average Electricity Charges



EV: Miles per kwh/gallon



Policy Implications

- 80% of charging done at home
 - delivery services rate design
 - Supply options: hourly, time-of-use, other market
- Charging station use
 - Most charging at home and work
 - Range and planning
 - Road trips
 - Cost
- Private or Utility ownership of EV charging stations



Thank you.

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