

ICC Smart Cities Policy Session

The Role of the Utilities in Building Smart Cities: Competition and Consumer Choice

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Illinois Commerce Commission

Susan L. Satter
Public Utilities Counsel to
Illinois Attorney General Lisa Madigan

Will Tomorrow Be Different from Today?

- No
 - Electricity is an essential service that must be affordable for everyone
 - Electricity distributed by a single monopoly provider
 - Retail choice for supply
- Yes
 - More rate options to promote efficiency
 - More customer choice for on-site supply
 - Expanded technology for improved reliability

Utilities Can Encourage Energy Efficiency By Offering More Rate Options

- Advanced Meter Infrastructure, or “smart meters” enable expanded distribution and supply rate options that can promote affordability and consumer control.
- Rate options can encourage or discourage adoption of energy efficiency measures.
- New rate options to encourage energy efficiency include:
 - Time of use rates
 - Peak time rebates
 - Demand response, e.g., AC cycling, interruptible rates
 - Access to wholesale markets to encourage price response through real time pricing
- Note that rates that are not based on usage make energy efficiency less economic, less attractive to consumers.
- **Creative utility and supply pricing promote energy efficiency.**

Utility Practices Can Encourage or Discourage Distributed Generation

- Smart Cities encourage distributed generation (DG) to reduce costs for owners and for the grid, reduce pollution, improve reliability and storm preparedness, and empower consumers.
- Utility net metering rules are key to DG growth.
- Net metering should be easy to understand and recognize DG's value to the grid.
- Fewer than 500 net metering customers in Illinois.
- Cities with multi-unit housing require community solar options to enable growth.

Role of the Utility Distributed Generation

- Restructured utilities serve more than 95% of Illinois electricity customers.
- Key Issues are:
 - Do utilities' interests conflict with distributed generation?
 - How does reduced kWh usage due to distributed generation or energy efficiency affect the utility's approach to DG and EE?
 - Do DG and EE threaten utility revenues to the extent that utility's are at risk?
 - Are utilities willing to reduce costs in response to decreased grid use as a result of DG and EE?
- **Who decides?**

Role of the Utility

Reliability

- Utilities control the reliability of the distribution system
- Reliability improving due to “smart technology.”
- At the same time, customer reliability needs changing.
 - Microgrids: A group of interconnected loads and distributed energy resources (DER) with clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid [and can] connect and disconnect from the grid to enable it to operate in both grid-connected or island mode. U.S. Dept of Energy
 - Back up power: generators, solar, redundancies
 - Electric Vehicles as electricity storage
- Not all customers have the same reliability needs.
- **Who decides?**

Microgrids

- Microgrids in Smart Cities provide specialized functionality, heightened reliability, and storm preparedness.
- Customers include:
 - Research institutions
 - Medical institutions
 - Public institutions
 - Water infrastructure
- **Up to customers to decide, manage, and fund.**

Microgrids -- Who Pays?

- Today microgrids are funded by private parties, sometimes with state assistance.
- **Utility role should be to facilitate microgrids, but not to own or develop them.**
- Competitive bids from cities, schools and other institutions resulted in the following microgrid expenditures:
 - Connecticut awarded \$18M for 9 projects (2013) and \$15M for 5 projects (2014)
 - Massachusetts awarded ~\$18M to 13 projects (2014)
 - New York Prize. New York State Energy Research and Development Authority provides \$40 million for grants of up to \$100,000 for 83 Phase I feasibility projects for microgrids in New York state. Hundreds of “partners” included in proposals.
 - See <http://www.nyserda.ny.gov/All-Programs/Programs/NY-Prize/Opportunity-Zones-Map>

Utilities and Electric Vehicles

- EVs can reduce city pollution
- EVs can be a source of stored electricity
- In urban areas EV charging stations more economical due to density.
- Today EV charging stations are installed by private actors
- Private installations give 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 downstate, many garages and parking lots, high-rises, Nissan sales lots.
- Many EV maps and apps: See, e.g., plugshare.com; carstations.com; afdc.energy.gov/fuels/electricity_locations.html (by zipcode)
- **Utility role should be to facilitate EV charging stations, but not to own or develop them.**

Conclusion

- **Smart Cities require utility cooperation.**
- **Under Illinois law, utilities must:**
 - provide reliable energy services at the least possible cost,
 - at rates that are affordable to all consumers in the state and fair to both consumers and investors, while
 - adapting to regulation that allows for orderly transition periods to accommodate changes in public utility service markets.
- **But utility interests present risks that utility may:**
 - Charge monopoly consumers high costs for services and supply provided by private, competitive companies at lower cost.
 - Frustrate consumer options.
 - Compete with private actors using monopoly ratepayer funds.

Thank you

Susan L. Satter
Public Utilities Counsel
Office of Attorney General Lisa Madigan
100 West Randolph Street
Chicago, Illinois 60601