

Distributed Generation

On-site, customer-owned electric generation installations, such as solar and wind, continue to increase in Iowa. Many of these facilities are connected to the electric grid, which requires involvement with the local utility provider. The Iowa Utilities Board (IUB) has regulatory authority over the investor-owned utilities but has limited authority over the municipal utilities and rural electric cooperative utilities (REC's) in Iowa. Below is the most current information from the IUB related to Iowa's electrical providers and electrical generation.

Iowa Utility Electric Profile (2017)

Utility Type	# of Utilities	# of Customers	% Customers	MWh Sales¹	% Sales
Investor-Owned (Mid Am & Alliant)	2	1,169,630	72.27%	36,758,946	75.20%
Municipalities	136	217,606	13.44%	5,230,246	10.70%
REC's	43	231,288	14.29%	6,894,654	14.10%
Total	181	1,618,524	100.00%	48,883,846	100.00%

Notes: (1) IOU, Muni and REC totals exclude sales for resale. REC totals exclude sales to Generation & Transmission (G&T). (2) In 2017, Hawkeye REC and Tri-County Electric Cooperative merged to form MiEnergy Cooperative; therefore, the number of REC utilities decreased by one in 2017.

Follow this link for a detailed map of Iowa's electrical service territory boundaries:

<https://iowadot.gov/maps/msp/Electrical/StatewideElectricalBoundaryMap.pdf>

Iowa's electricity is generated by several sources. According to the most recent IUB data, approximately 44% of Iowa's electric generation is from coal and 37% is from wind. Other sources of electric generation include 9 % from nuclear, 7.9% from natural gas, 1.8 % from hydro, and .25 % from petroleum. Approximately .14% of Iowa's electricity production comes from solar, including private distributed generation from individuals and businesses.

Utility Rates and Incentives for Distributed Generation Installations

Most costs from producing and providing electricity to customers served by Alliant and Mid-American energy companies are collected by the utility from customers being billed for *energy usage*. The customer's bill varies each month, based on the amount of energy they need from the utility, but also must include an amount for fixed grid costs. Energy usage rates are based on both variable costs and fixed costs. The rates a utility charges must cover variable costs tied directly to usage of electricity like coal, natural gas, or other fuel for generating the electricity. Fixed costs must also be accounted for, and include base generation supporting peak load requirements, transmission costs, maintenance costs, and power lines to the customer's locations. While variable costs are directly related to usage, fixed costs remain in the system even when customers use less electricity. Because utilities currently combine variable and fixed costs into their usage rate, they are primarily collecting their fixed costs from customers who receive all of their electricity from the grid.

When some customers use less electricity or generate their own power from solar, wind, or other distributed generation installations, the total revenue being collected by the utility may not be adequate to cover the fixed costs built into current rates. If that happens, the utility will eventually adjust the rates they are allowed to charge, and customers who receive all of their electricity from the grid will pay more of the fixed costs in the system. The charges being paid by those using electricity from the grid may also support costs related to others, who are not consistently purchasing electricity but are connected to the system. This is true because usage is the basis for most revenue. The connection to the system allows the customer to purchase additional electricity during peak demand and to put energy onto the grid during the customer's low demand times.

If a customer produces electricity at their location, the utility will bill the customer for electricity consumed from the grid, less the quantity produced. For example, if a customer matches their total production to their total consumption of electricity, they will only pay a flat “customer charge” to the utility that month. The utility will not bill the user for the customer’s calculated demand charges, or other fixed costs related to generation, transmission, and distribution.

Discussions have begun to consider changes in the current billing system that bundles variable and fixed costs to determine rates. Proponents suggest that cost shifting between customers within the current system could be avoided if they could collect fixed costs from everyone connected to the grid, separately from usage charges that would cover variable costs.

Those who prefer the current system have stated that energy producers add value to the utility system, and that alternative energy production should be encouraged. They would like to maintain the current billing system because changes will result in less favorable financial incentives creating a longer payback for new systems installed by individuals and businesses.

Discussion Questions

1. Should everyone connected to the grid equally share the costs required to create, operate, and maintain the grid?
2. Is cost shifting between customers within a utility service area a concern?
3. Should renewable energy installations be encouraged?
4. How should these incentives be provided? From energy rates within the utility’s trade area, from a state funded program, or from tax incentives?