



Office of the Ohio Consumers' Counsel

Your Residential Utility Consumer Advocate

CONSUMERS' FACT SHEET

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SMART GRID: DYNAMIC AND TIME-OF-USE PRICING

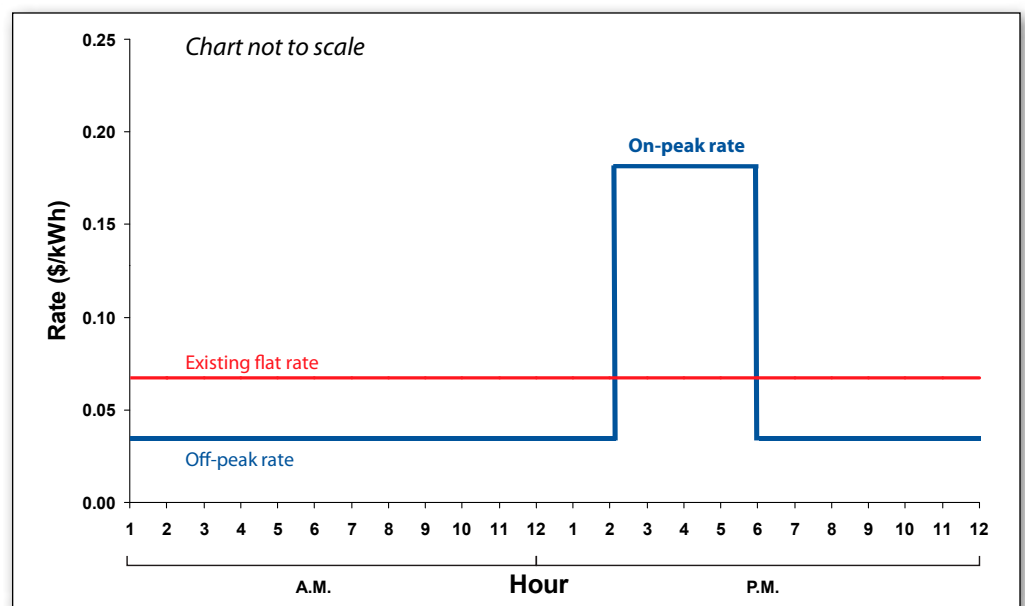
Many major electric utilities in Ohio have started to upgrade their aging infrastructures with 21st century technology. The end goal is to develop an improved electric system, or smart grid, that is more efficient, reliable and allows for more direct customer control of their energy use.

In order for customers to directly benefit from smart grid upgrades, utilities must also develop a portfolio of pricing programs. Often referred to as dynamic pricing, these programs tie the price of electricity at particular times to the actual cost. The price signals help customers moderate usage during times when usage and costs are at their highest levels. With these types of programs, customers have the opportunity to save money. To use these pricing programs, customers must have an electric meter, sometimes called an advanced or smart meter, capable of reading electricity usage during frequent intervals throughout the day.

There are five main types of pricing programs available to customers with smart meters – time-of-use pricing, critical peak pricing, direct load control, peak time rebates and real-time pricing. Critical peak pricing, direct load control, peak time rebates and real-time pricing are examples of dynamic pricing programs because the price customers pay is responsive to the price of electricity on the market. Utilities are able to create variations of these main programs to provide customers with more options. Customers who use these programs will have to change their energy-use behaviors in order to get the full benefits of the programs.

Time-of-use pricing

Electricity prices under a time-of-use model are set at different rates during different times of the day. The cheapest prices are available when electricity is used the least (off-peak) and most



Time-of-use pricing

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expensive when many customers are using electricity at the same time (average or on-peak). Utilities may even develop rates between on- and off-peak times known as shoulder rates.

Customers know in advance what costs they will pay for electricity during predetermined time periods. This allows customers to vary their usage in response to the price signals and better manage their overall energy costs by shifting their usage to a lower-cost period or by reducing overall consumption.

Critical peak pricing

A critical peak pricing program allows customers to use electricity at cheaper rates for most of the year. There will be times, typically during the summer months, that prices significantly increase when electricity is in high demand. Customers then can choose to reduce their usage or pay rates that could be, for example, five times higher than on a standard flat rate.

A utility usually predetermines the maximum number of times it can call an event (usually up to 15 times per year) and the number of hours (usually 4-6 hours) each will last. Customers in the program are given advanced notice when demand will be high and prices will increase.

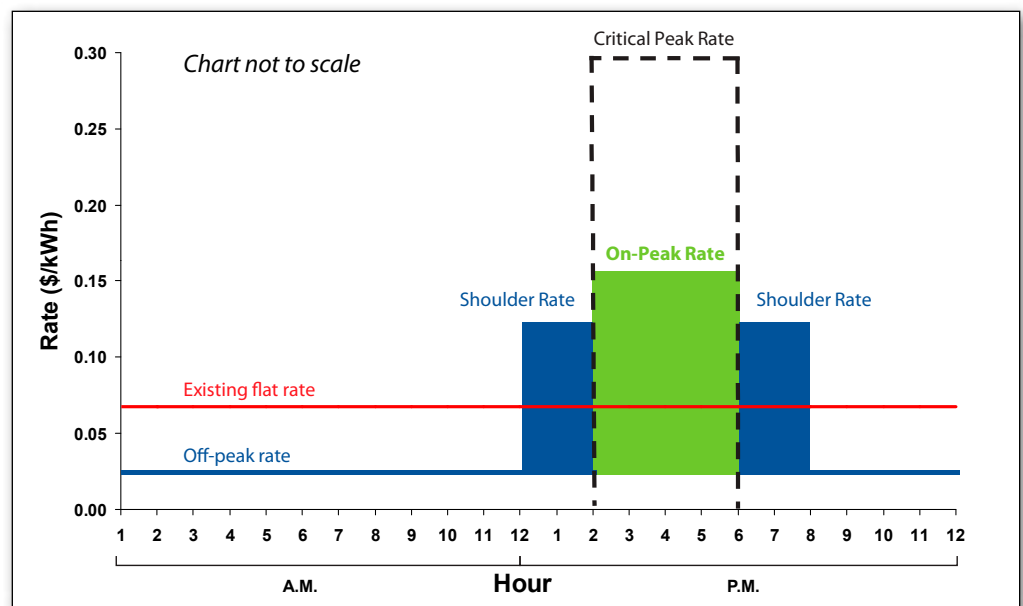
At other times electricity is priced by an off-peak price and an on-peak price. The majority of the day is spent in the off-peak price while the on-peak price can be in effect for four to eight hours during the peak time of the day.

Direct load control

This type of dynamic pricing program gives customers monthly credits or rebates during the summer months for allowing the electric utility to remotely increase the temperature of the air conditioner a few degrees when the utility's distribution systems become strained by high usage. The customer stays on a flat standard rate throughout the year. The utility has a set number of times and hours it can remotely increase the air conditioner temperature per year (usually up to 15 times). Customers who participate in direct load control programs have a communicating programmable thermostat installed. They can opt-out or override an event, but any potential credit would be reduced or eliminated for the month.

Peak time rebates

Customers on a flat standard rate who enroll in a peak time rebate program receive rebates for using less electricity when a utility calls for a peak time event. When an event is called, these customers



Critical peak pricing

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The Office of the Ohio Consumers' Counsel (OCC), the residential utility consumer advocate, represents the interests of 4.5 million households in proceedings before state and federal regulators and in the courts.

The state agency also educates consumers about electric, natural gas, telephone and water issues.

For more information, please visit the OCC website at www.occ.ohio.gov.



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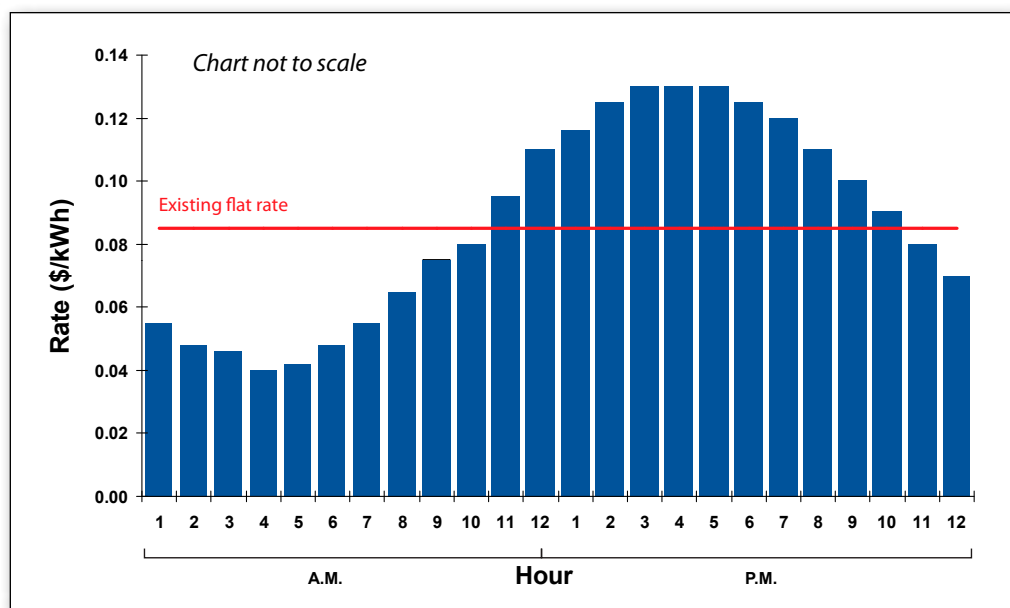
can reduce their usage and receive a utility incentive. Customers will not see their rates increase for maintaining their normal usage pattern should a utility call for a peak time event. Electric utilities do have to establish a baseline electricity usage to be able to determine if any savings are achieved by customers.

Real-time pricing

Electricity prices in a real-time pricing model can change as often as every 15 minutes. This program provides customers with cost of electricity as it

changes throughout the day. Individual savings in a real-time pricing model will likely vary month to month based on weather, market conditions and personal usage habits.

The summer months are the times when electricity in a real-time pricing model will vary the most. Electricity prices in the fall, spring and winter months are typically lower. Next day hourly price estimates, real-time price displays or other tools may be used to help customers plan better for days when electricity prices are predicted to be high.



Real-time pricing

Customers may be able to participate in multiple dynamic or time-of-use pricing programs to maximize potential savings.

For more information about the smart grid, look for other smart grid publications produced by the Office of the Ohio Consumers' Counsel: *An introduction to smart grid and Ohio's progress to the smart grid.*