

Energy Efficiency

Saving Energy

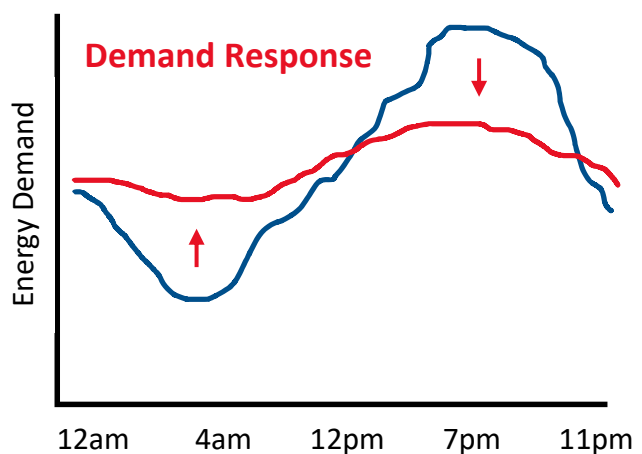
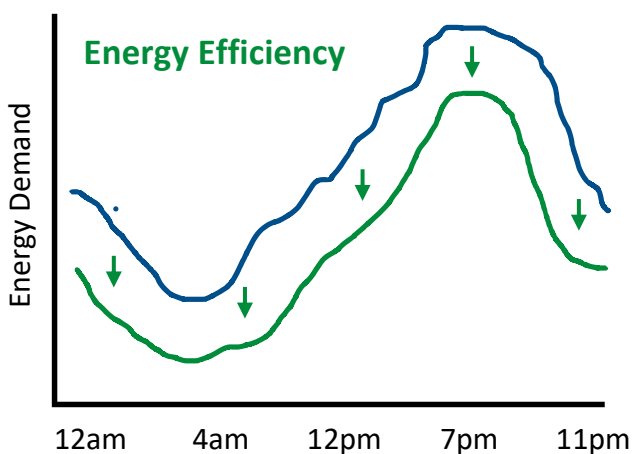
- One of the most cost-effective and impactful strategies for immediately reducing our reliance on fossil fuels is to reduce the amount of energy we use.
- The US EIA predicts that energy efficiency improvements could save consumers and businesses nearly 741,000 gigawatt hours of electricity between 2016 and 2035; which is 16% of the projected energy demand in 2035.¹

What is Demand Response?

- Given that energy demand changes throughout the day, **demand response** programs look to **strategically move some of the demand or load on the electricity grid to the periods where demand is low**. For example, customers might run their dishwashers during the day rather than right after dinner.
- Reducing peak demand is key to ensuring that older, dirtier, reserve powerplants don't need to come back online during periods of high demand.
- Additionally, reducing periods of high demand can help to reduce stress on aging grid infrastructure and prevent blackouts.²

How does demand response relate to energy efficiency?

- Energy efficiency looks to decrease overall energy use and demand response specifically targets periods of high demand.
- Both initiatives are key to reducing the carbon footprint of electricity.



What is a Smart Meter?

- Smart Meters differ from traditional electric meters in that they allow **two-way communication** between you and your utility provider.
- These meters also **collect energy usage data on an hourly basis**, allowing for more detailed energy efficiency monitoring programs.

Smart Meters and Time-of-Use Pricing:

- Time-of-Use Pricing is one type of demand response program that **allows customers to pay for the cost of the electricity at the time that they use it**, as opposed to a fixed monthly rate.
- Smart metering, when paired with time-of-use pricing, has the potential to incentivize demand response as well as save residential customers money.
- While these programs are standard practice in states like California, time of use rates have yet to become standard practice in Pennsylvania.

Demand Response in the US:

- In 2014, **9.3 million** customers were enrolled in demand response programs in the US³.
- Through demand response programming, the average residential customer saves about **100 kilowatt-hours annually** and receives **\$40** in rebates.³
- A survey of the top 52 utilities in the US by the American Council for an Energy Efficient Economy found that smart-metering data is **largely underused by utility companies**.⁴

Decoupling: Incentivizing Utility Participation in Energy Efficiency

- Traditional rate structures are based on the costs associated with each unit of energy generation and utilities are paid for each unit they sell to consumers.
- This link between energy sold and revenue provides no incentive for utilities to invest in energy efficiency and demand response programs which will ultimately decrease sales. Decoupled rates break this link and separate the amount of energy sold from profits.⁵
- Massachusetts, which leads the nation in energy efficiency, currently uses decoupled rates. The PA PUC has also recently passed regulations which allow for similar rates.

(1) US EIA, [Energy Efficiency Opportunities and Benefits](#), 2017

(2) PJM, [Demand Response](#), 2017

(3) US EIA, [Demand response saves energy during times of high demand](#), 2016

(4) ACEEE, [Survey of AMI in 52-Utilities](#), 2020

(5) NREL, [Decoupling Policies: Options to Encourage Energy Efficiency Policies for Utilities](#), 2009