Roth: What Determines Electricity Prices?

Electricity prices generally reflect the costs to build, finance, maintain, manage, and operate power plants and the complex system of power transmission and distribution lines called the grid.

Electricity prices change constantly – literally every five minutes. A multitude of factors affect prices, some slightly, some dramatically. Some factors have a short-term effect. Others are long lasting.

Weather conditions, natural disasters, and consumer demand influence electricity prices every day. Legislation, regulatory changes, generation efficiency, and electricity grid and infrastructure costs affect prices on a long-term basis.

Major weather events like Rita and Katrina in the 2005 hurricane season produced destructive storms, causing major price volatility.

When an earthquake and tsunami hit Japan in 2011, a nuclear meltdown occurred at Fukushima Daiichi nuclear power station. This resulted in the U.S. Nuclear Regulatory Commission's review of the ability of domestic nuclear reactors to withstand natural disasters. Subsequently, several nuclear facilities were taken off-line, and some new nuclear projects were abandoned at a substantial economic loss to facility owners and local communities.

Disasters are felt on a political and governmental level, too. Democrats and Republicans often disagree about responses to disasters, such as the BP oil spill in the Gulf of Mexico. This causes delay and additional costs to consumers. A bipartisan approach is needed to implement a national energy

plan.

Trillions of dollars must be invested nationally in the next few decades to upgrade the current infrastructure to a modernized, fully interactive smart grid. As utilities are required to rebuild transmission systems to ensure reliable delivery of electricity to homes and businesses, consumers will see delivery costs rise to cover these expenditures.

Commodity investors and speculators have had a large influence on electricity pricing.

While federal stimulus funds have been issued to some utilities for upgrades, most utilities will increase delivery tariff rates to cover costs.

The environmental consequences of coal mining, gas drilling, and power plant emissions affect electricity prices. In February 2012, the Nuclear Regulatory Commission approved two new nuclear power reactors for the first time since the partial meltdown at Pennsylvania's Three Mile Island plant in 1979.

Green or renewable generation, including solar, wind, and hydro, continues to grow slowly. The U.S. Environmental Protection Agency has cracked down on air pollution, imposing strict limits on environmental emissions from coal-burning plants, which generate most of our nation's electricity.

Lower electricity prices also have slowed implementation of renewable generation. The costs of installing a green system remain high compared to traditional electricity.

The 2011-2012 winter season was exceptionally mild. Demand decreased for electricity to heat homes and businesses. Lower demand pushed prices down.

When winter weather causes an increase in heating demand, electricity prices increase. During peak summer times, the

grid system can become overwhelmed by consumer demand. This causes electricity prices to climb and be volatile.

Electricity prices are affected most by the amount of consumer usage, and the time of day and season that electrons are consumed. Electricity prices are highest during times of peak demand in the late afternoon, and lowest overnight when demand drops.

Prices vary by locality due to the availability of power plants and fuels, local fuel costs, and pricing regulation and structures. Oklahoma consumers, with production fuel sources like natural gas and wind in abundance, have benefited from those factors.