# What's the Impact on Coal-to-Gas Switching From PJM New Build?

Historical PJM switching versus our forecast.

**Morningstar Commodities Research**
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**Data Sources for this Publication**

- Argus
- EOX Live
- SNL

To discover more about the data sources used Click Here

## Coal-to-Gas Switching in PJM

Prospects for coal-to-gas switching have been talked up by the power market ever since booming Northeast supply from the Marcellus and Utica shales caused U.S. natural gas prices to fall below $3 per million Btu. Coal-to-gas switching in PJM takes two forms. In the short run, it is the displacement of coal-fired generation capacity by existing gas-fired plants, as PJM chooses to dispatch gas over coal in merit or out of merit. In the longer run through 2020, coal-to-gas switching involves growing gas generation market share resulting from a combination of new-build of more efficient combined-cycle gas plants coming on line and older coal and nuclear plant retirements. Short-run switching is mostly driven by variable costs, while long-run switching is influenced by both fixed and variable costs. We account for this in our fuel switching model.

Gas and coal generators (as well as every other generator) submit fixed-price offer curves daily to PJM as well as plant parameters (minimum run time, maximum run time, ramp rate, startup costs, and so on). There's a lot going on behind the scenes that is proprietary to either PJM or the plant operator, which makes accurate modeling of coal-to-gas switching exceedingly difficult. Having said that, there are some key points to understand when thinking about coal-to-gas switching.

- There is no one switching gas price at which coal-to-gas switching occurs. ISOs dispatch at the nodal level, solving thousands of constraints daily and even every five minutes. A gas plant could be dispatched one day buying $4 gas, then not dispatched the next paying $3 for gas.

- Coal plants purchase their coal in long-term contracts, typically 5, 10, and even 15 years in length. Their costs are usually proprietary and very hard to gauge at the plant level, so looking at spot coal doesn't always explain the picture.

- Coal and gas plants participate in a version of game theory daily. Their goal is to offer the highest price possible while competing with other plants in order to get dispatched. Their offer curve can change even when the fuel price does not, based on their view of competing offers in the market.

- As wind and solar capacity ramps up, it is much more likely that coal-to-gas switching will occur more often, but this is less a function of price ratio than it is increasing out-of-merit ISO dispatch.

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