

Incentives for Vertically Integrated Firms in the Natural Gas and Electricity Markets to Manipulate Prices

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This paper examines the potential for vertically integrated firms that own assets in both the natural gas and electricity markets to manipulate natural gas and electricity prices through the withholding of natural gas pipeline capacity. An integrated firm theoretically could increase the price it receives in the electricity market by withholding pipeline capacity to the wholesale natural gas market, thereby reducing wholesale supply of natural gas and potentially increasing generation costs for electricity through higher natural gas prices.

A key criteria in assessing whether an integrated firm's allocation of pipeline capacity between the wholesale and retail markets constitutes manipulation relates to whether the allocation is profit maximizing on a stand-alone basis, i.e., the allocation maximizes the firm's profits in the natural gas market without considering its profits in the electricity market. In short, allocation that reflects profit maximization on a stand-alone basis is not evidence of manipulative behavior while allocation that does not reflect profit maximization on a stand-alone basis could be such evidence.

I develop a theoretical model that examines the incentives to allocate pipeline capacity to the wholesale natural gas market, which supplies the power generation sector, and the retail natural gas market. I find that an integrated firm may choose to allocate more pipeline capacity to the retail market than the wholesale market in order to reduce the probability of paying fines from failing to adequately meet retail demand, to increase its profits in the wholesale natural gas capacity market or to increase its profits in the electricity market. In order to prove a manipulation has occurred, it must be shown that the last case is true and the first two cases had little effect on the allocation decision. I further find that when pipeline constraints do not bind, and there is at least one firm with enough contracted capacity that its supply of pipeline capacity is required to meet demand, it is easier to detect manipulation.

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