

Polar Vortexes in New England: Missing Money, Missing Markets, or Missing Regulation?

Jeff D. Makholm,¹ Laura T. W. Olive²

Executive summary

1. Motivations underlying the research

The United States has more than 20 years of experience in dealing with a continent-wide, highly competitive gas market and several competitive power markets in various states. Despite such a reasonably lengthy history of energy market competition, these two competitive energy markets sometimes visibly fail to intersect successfully with one another. The periodic experience in New England with its “polar vortex” weather events (when high-pressure in the Pacific displaces a pocket of very cold air that typically circulates around the North Pole, bringing Arctic temperatures to North America) is a case in point. During the last two polar vortex events (in 2014 and 2018), power prices exhibited sustained price spikes seemingly indicative of a lack of useful and efficient infrastructure.

Is energy regulation about clearing away obstacles to efficient spot and capacity markets—finding the “right scarcity price” (a traditional neoclassical perspective)? Or is energy regulation about creating ways to harness the public’s ability to fund useful supply infrastructure that markets cannot themselves provide (an institutional perspective)? Of course, the neoclassical perspective works in some cases and the institutional perspective in others. But we have found that New England’s electricity market, under periodic “polar vortex” weather conditions, provides a case study for assessing these two economic points of view, head-to-head. Additional interstate gas pipeline infrastructure to support the region’s new-found gas-fired generating fleet would appear to easily pay for itself in lower consumer electricity prices—even in the comparatively short term. But New England’s wholesale power market evidently cannot support such capital investments. In response, the states in New England have themselves tried an institutional approach to their problem, but they have so far been unable to overcome opposition in the courts and from the power producers who look toward such cold weather-induced price surges as a source of earnings.

The clash between neoclassical and institutional perspectives on energy regulation appears throughout the world. New England, however, provides a unique case—a place with no indigenous fuels that is literally “at the end of the line” for US energy infrastructure. The region’s gas consumers benefit from competitive access to the highly competitive US gas market at commodity prices less than half of those in the world’s other major gas markets. Those gas consumers are effectively insulated from the effects of the polar vortex having provided through their respective state regulators the funds for the interstate supply infrastructure needed to deal with polar vortexes and more. But not the region’s electricity markets; which, while based on the

1 Corresponding author. National Economic Research Associates, 200 Clarendon Street, Boston, Massachusetts, USA, jeff.makholm@nera.com.

2 National Economic Research Associates, 200 Clarendon Street, Boston, Massachusetts, USA, laura.olive@nera.com.

familiar power market model (i.e., locational marginal prices attached to a transmission system administered by a regional power pool), remains exposed.

2. A short account of the research performed

As is the case when looking closely at any region's energy supply infrastructure, history matters, and we describe how both the region's gas and electricity markets reached their current state of development. That is, how the gas market reformed to support "Coasian" rivalry in interstate pipeline capacity and how the electricity market formed through the unbundling and deregulation of the generating arms of the New England's traditional vertically-integrated utilities. Further, we describe the transition from a generating sector traditionally relying substantially on oil and coal to a market where virtually all new capacity has come in the form of gas and renewables—expunging oil and coal from the normal electricity generating merit order.

We also chart the history of local spot gas and electricity prices, how they spiked during the 2014 and 2018 polar vortexes, and how those costs to consumers compare to the cost of expanding interstate pipeline capacity that would effectively alleviate such spikes.

3. Main conclusions and policy implications of the work

We conclude that the New England case study, centered around the polar vortex events, demonstrates the weakness of what we describe as an "economic folk theorem"—that in restructured gas and electricity markets, everything other than the regulation of the local distribution network facilities can be left to the market. Even in the most vigorous gas market in the world, state regulatory action reaches far upstream from the boundaries of New England's regulated local distributors to support the kind of transaction-specific, immobile and sunk-cost infrastructure that interstate pipelines represent. Because of that state regulatory action, there is no "missing money" in gas markets.

For its part, however, New England's restructured electricity market has lost the ability to support that kind of useful and efficient pipeline infrastructure through its power markets. This is, to us, not a failure to make the right market, or to find the right scarcity price. It is a failure to recognize that certain types of energy infrastructure investments—interstate gas pipelines in particular—require the institution of public interest regulation to assess need and harness the credit of the region's millions of energy consumers.