

*Abstract*

**THE ROLE OF ENERGY TRANSPORTATION IN THE  
INDUSTRIAL ORGANIZATION OF ENERGY SYSTEMS**

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An energy system comprises chains of facilities that transform and transport energy carriers from primary energy resources to the delivery of energy services. Associated with the chain of facility services and energy carrier flows is a chain of businesses that form, fund, and operate facilities and that trade in facility services and energy carriers. Any investment in a chain segment must attend to the integrity of performance and credit of the chain as whole. The industrial organization of the chain—its business, commercial and governance structures – is formed jointly with the physical chain of facilities.

The transportation connections define the feasible transaction set between facilities’ stages-of-processing. Early, when these connections are sparse, assure performance and suppress “post-commitment opportunism” between parties. Commercial restrictions limit opportunities for “holdup” or defection by limiting opportunistic trading. As the transportation connections grow in scope and multi-connectness, the cost of counter-party opportunism lessens and the value of trading optionality grows. Thus the evolution of any transportation link changes the tension between these two forces and drives the evolution of the industrial organization. How this evolution proceeds is contingent – on the structure of supply and demand, on societal values regarding security and equity, and on vested interests in the rent-capture opportunities embedded in the current structure.

This paper:

- Identifies the distinguishing characteristics of energy activities that condition their industrial organization (IO).
- Identifies, with examples, the key driver of evolution in energy IO as the changing tension between investment security and trading optionality.
- Identifies the key dimensions along which unbundling and competitization evolves with the transactional opportunities offered by the maturation of transportation systems: vertical, lateral, functional, and financial.