U.S. Energy Markets - Volume V: Financial

An Online Continuing Education Course for Engineers

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U.S. Energy Markets – Volume V: Financial Energy

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Introduction

The primary energy markets in the United States are Natural gas, electricity, and crude oil. These products are regulated by the Federal Energy Regulatory Commission (FERC) pursuant to its authority under the Natural Gas Act, the Federal Power Act, and the Interstate Commerce Act. This series of courses explores the workings of the wholesale markets for these forms of energy, as well as energy-related financial markets.

Energy markets consist of both physical and financial elements. The physical markets contain the natural resources, infrastructure, institutions, and market participants involved in producing energy and delivering it to consumers. The financial markets include the buying and selling of financial instruments that derive value from the price of the physical commodity. These financial markets have their own set of market structures and institutions, market participants, and traded products which have their own drivers of supply and demand. In general, physical and financial markets can be distinguished by the products and by the intentions of the market participants involved.

Much of the wholesale natural gas and electric power industry in the United States trade competitively, while some markets are *rate regulated* where their prices are established through administrative processes based on the cost of providing service. In competitive markets, prices are largely driven by the economic concepts of supply and demand. Underlying the supply and demand for energy are physical fundamentals - the physical realities of how markets produce and deliver energy to consumers and how they form prices.

Market participants buy and sell energy-based *financial contracts* for several reasons. Physical market participants, such as producers and large consumers, usually use financial contracts to manage price risk and to protect against price volatility. That is, financial contracts can serve as a tool for managing risk akin to insurance. Other market participants use the energy markets to speculate or to assume a market risk in the hope of profiting from market fluctuations. Additionally, companies turn to the capital markets if they need to raise or invest money.

The following text box describes the entire series.

U.S. Energy Markets

Volume I explores the fundamentals of the wholesale natural gas markets.

Volume II describes the fundamentals of the wholesale electricity markets.

Volume III explains the fundamentals of the U.S. crude oil and petroleum products markets.

Volume IV describes the U.S. Coal Market.

Volume V explores the market participants, products, market mechanisms and trading at work for natural gas and electricity in the financial markets as well as examples of market manipulation that may occur.

Chapter 1

Trading and Capital Markets

Restructuring of the energy markets and changes in the industry during the 1980s and 1990s resulted in the expansion of the commodity markets associated with natural gas and electricity. It resulted in the growth of financial products that derive their value from the underlying energy products. Expansion in physical and financial market trading for natural gas and electricity has tightened the traditional relationship between the markets and made it more bidirectional. As a result, activities in the physical markets affect the value of financial markets. Likewise, activities in the financial markets can also affect value in the physical markets as well.

This chapter explores the trading of physical and financial contracts for natural gas and electricity. It also provides an overview of capital markets and their importance to investments in industry infrastructure.

Trading Physical and Financial Natural Gas and Electricity

Natural gas and electricity are often bought and sold using standardized contracts that contain terms and conditions that make them appealing to a wide variety of market participants. However, contracts can also be customized to meet the needs of individual buyers and sellers through a vast array of different pricing and delivery mechanisms, as well as customized terms and conditions. Contracts in these markets are also referred to as *instruments* or *securities*.

In general, when a contract provides an obligation to physically deliver natural gas or electricity in exchange for payment, the contract is referred to as a *physical contract*. As discussed in volumes I and II of this series, producers and consumers of natural gas and electricity sell and buy energy products to service a variety of their enterprise operations that include production, marketing, meeting customer demand, and managing risk.

When a contract does not require the delivery o tural gas or electricity but instead provides a right to a financial payout in exchange for a d to as a *financial contract*. The payment commodity or financial pr value of the financial co also called *derivatives*, v some other physical or fi

Market particip ons. Physical market participa racts to manage price risk n serve as a tool for managing markets to speculate or to ass ns.

Contract Characte

Every contract, whether physical or financial, is identified by several characteristics, such as the

- Product conveyed,
- Location, timeframe,
- Size or quantity, and
- Price or mechanism for determining the settlement.