

How Energy Prices Are Set Today

Dale W. Steffes, P.E.
Planning & Forecasting Consultants

The energy industry has hired the financial industry to set energy prices. This is big business—for 1999, the United States energy bill was \$528 billion. Planning & Forecasting Consultants estimate that the U.S. energy bill will rise to \$618 for the year 2000.

Our wild guess is that the petroleum industry pays traders between \$5 and \$10 billion per year for their service.

“Energy Futures Markets” which were initially developed for hedging purposes, originated for trading WTI (West Texas Intermediate) crude oil futures at Cushing, Oklahoma. Many pipelines come together there, and tankage is available for storage of wet barrels for contract settlement. This allowed the oil producers and oil refiners to hedge their production or refinery inputs as needed. Speculative oil traders in New York kept this market active.

Energy futures increased dramatically with the deregulation of natural gas pipelines, and even more so with electricity. It is interesting to observe that as these futures markets evolved, the need for storage of the product at the settlement site became less and less. (Electricity, essentially, cannot be stored.)

Natural gas deregulation dealt with deregulation of interstate gas pipelines. The long distance pipelines now have to haul other’s natural gas, not just their own. Natural gas distribution is still regulated by the states. Most states allow for direct natural gas sales to industrial and large commercial consumers. A few states allow for direct sales of natural gas to residential customers.

Electricity deregulation applies to the **generation** of electricity. Electricity deregulation is still decided on a state by state basis. This

allows for direct sale of electricity to residential, commercial and industrial customers, The cost for transmission and distribution of electricity is still regulated, but local utilities have to transport the electricity over their electric grid.

Essentially, the main energy commodities (crude oil and petroleum products— natural gas—electricity) now are freely traded in an organized open market. The great portion of the total energy consumed in the United States is priced with influence from the energy futures market, i.e., the N.Y. Merc traders.

THE PUBLIC ENERGY FUTURES MARKET

Figure 1 depicts the Public Energy Futures Market model.

The **Upstream Sector** in our energy model accounts for 24% of the total cost. The **Midstream Sector** accounts for 45% of the total cost. The **Downstream Sector** accounts for 31% of the total cost. All participants are trying to cut their cost of doing business to increase their net profit.

Crude oil, petroleum products, natural gas, propane, coal, crack spread are traded on the New York Mercantile Exchange. Each has a settlement site. So do the six electricity “points”—COB, CINorgy, Entergy, Palo Verde, PJM, MidColumbia. These are Mere specific electricity futures markets are priced in the U.S.

The MERC speculative traders of these fuels depend heavily on the reported inventories, especially for crude oil, petroleum products and natural gas. They gather as much information as they can and then trade futures based on their own logic and market psychology.

These speculative traders are often called “day traders,” but it might be more accurate to call them “hour traders.” The public market determines a transparent futures price for specific fossil fuels and electricity at specific points.

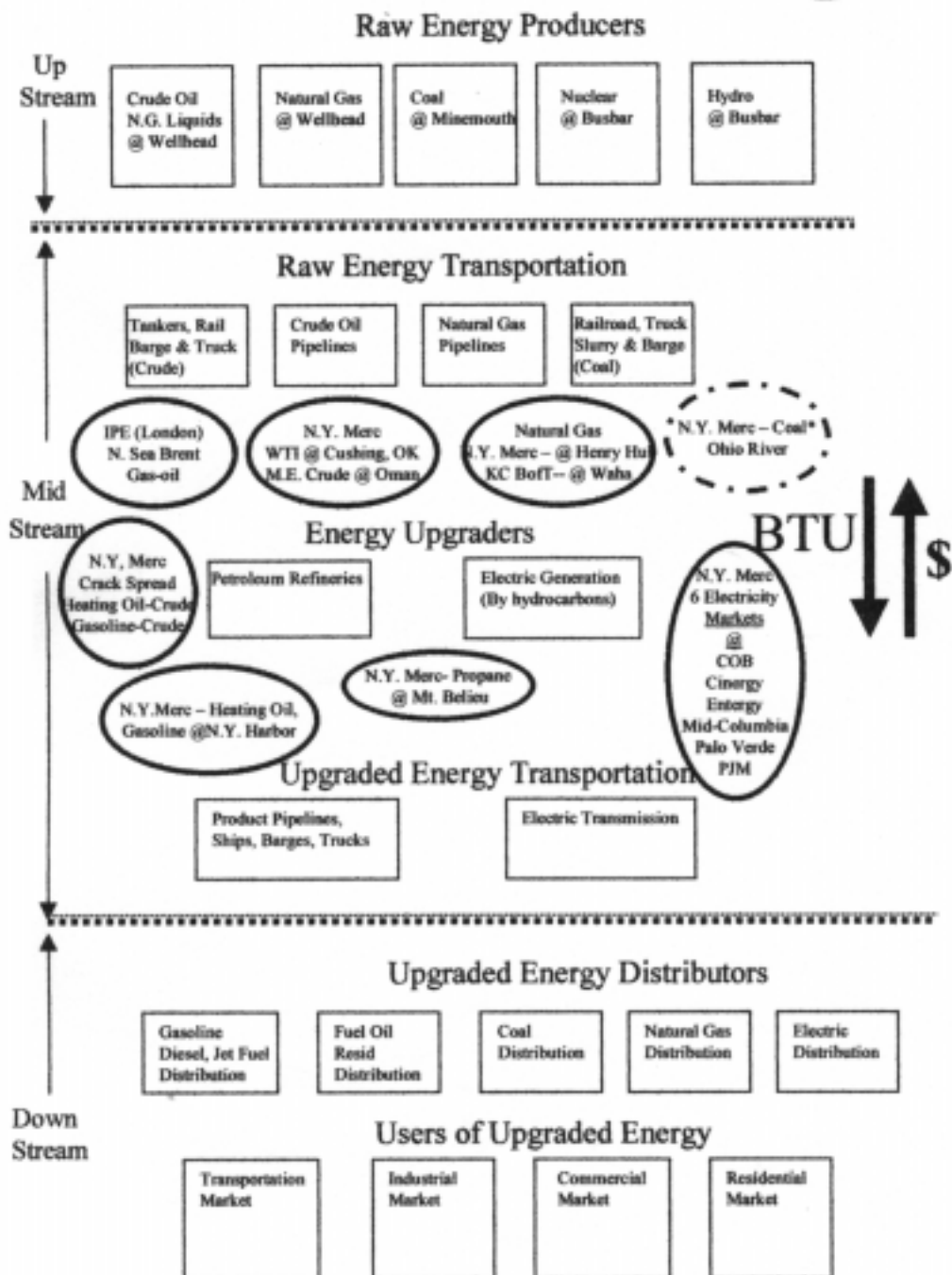
THE UNITED STATES AND HOUSTON SET WORLD ENERGY PRICES

The United States consumes one-quarter of the world’s energy. The U.S. imports more than half of its oil, therefore, the WTI futures oil price

Public Energy Futures Markets

Basic Energy Open Trading Model

Public
Markets for
Energy Futures
Pricing



* Coal Futures are scheduled to start trading in 1st Half 2001

plays a major role in setting world oil prices. A domestic oil refiner has a choice of oil supplies: WTI, or imported crude. This causes world oil prices to remain relative to oil prices in the United States. This is called arbitrage.

Arbitrageurs are financial speculators that watch for discrepancies between energy prices, taking into consideration the cost of transporting the fuel between the various valuation points.

All of the energies traded on the futures market relate to each other due to inter-fuel and inter-regional competition.

Houston is really the energy capital of the world when it comes to setting today's energy prices. With the event of natural gas de-regulation in the late 1980s, the gas pipelines set up natural gas trading companies. Eventually these same companies started trading electricity when it was deregulated. These trading companies are attempting to earn the most economic rent by selling energy directly to the final consumer.

The following lists some of the larger companies in Houston that offer to buy and sell all types of energy and energy derivatives: This is not a complete list.

- Enron
- Dynegy (recently bought Illinois Power)
- El Paso (now merging with Coastal,
previously merged with Sonat)
- Duke (merged with Panhandle Eastern)
- Reliant (Houston Lighting & Power and Entex)
- Coral, Shelf Oil's trading arm
- Koch and Entergy formed a trading group

To get a feel for the size of the energy trading market, Enron reportedly traded \$146 billion in the last ten months.

These energy trading companies all have large trading rooms, equipped with the latest computers and information. More importantly, they are staffed with a lot of savvy energy traders. These companies make a market in energy in various trade centers.

Chicago is a major natural gas market hub, although it does not have a natural gas futures market listed on an exchange.

There are other large energy trading companies based in other cities: This list is certainly not all inclusive.

Williams in Tulsa
Utilicorp in Kansas City
CINergy in Cincinnati
Southern in Atlanta
American Electric Power in Columbus
Pacific Gas & Electric in Maryland
Florida Power & Light in Florida

TRADERS ARE FORMING ALLEGIANCES TO TRADE ENERGY VIA THE INTERNET

The recent evolution of the Internet plays a major role in energy trading today.

Trade Spark, an e-trade group organized by Cantor Fitzgerald, plans to have 20 percent of the North American Energy Trade by 2002.

Williams
Coral (Shell)
TXU Corp.
Koch Ind.
Dominion Resources (Virginia E)
Dynergy (Chevron)
Entergy Corp.

Intercontinental Exchange was formed in July 2000.

Duke
El Paso
Southern

Three other unnamed gas and power trading companies.

FUTURE FUTURES MARKET

We forecast that an electricity “Spark Spread” (similar to the petroleum “Crack Spread”) will develop on a futures exchange. The “Spark Spread” will represent the cost for converting natural gas, and coal to electricity. The “Crack Spread” represents the cost of converting crude oil to gasoline, heating oil.