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BPA Enters Futures Market

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In the spring of 1996, the electric power industry on the West Coast changed forever. No one's lights so much as flickered. No new utility or regulation was formed. The action took place not in the West at all, but at the World Trade Center in New York City.

With the ring of a buzzer, West Coast electricity became the newest commodity traded in a futures market. Some of the offers to trade came from the Bonneville Power Administration.

Futures are the stuff of Wall Street legends, bad and good. The average individual is warned to stay away from them. So what is the federal Bonneville Power Administration doing on this high-rolling edge of the New York investment world?

Hedging its bets. Literally. Reducing the risks inherent in the power system for ratepayers and the U.S. Treasury.

Futures help corral revenues

In the last decade, BPA's revenues have swung by as much as half-a-billion dollars in a single year. Any one of several factors can change revenues by \$200 million in a year. Drought, low aluminum prices and falling natural gas prices have been the biggest variables in the last decade.

BPA must pay all its costs with the revenues it gets by selling power, transmission and related services. And it must set its rates as low as possible within prudent business practice, both by law and to compete with other power suppliers. One of the major costs BPA has had to cover in its rates was potential revenue shortfalls.

Until now, all the tools to deal with swings in BPA's revenues placed the risk either on its customers, the U.S. Treasury, or both.

In the regulated utility environment, BPA could include such costs in its rates, especially when BPA's rates were far lower than most other sources. Today, BPA's customers can find good deals from other suppliers. BPA must reduce its rates to compete. And missing a Treasury payment is simply not fair to taxpayers. The agency is meeting the market with dramatic reorganization and cost cutting.

The futures market and related financial tools also can help. Futures contracts lock in power sale prices or purchase power costs well in advance. Financial professionals absorb some of the risks of unexpected price swings. This enables BPA to project its revenues and costs more accurately, reduce the volatility in its net revenues and bulwark its financial stability. This in turn can help BPA stay competitive, and increase confidence in its ability to meet its financial obligations to the region and the Treasury.

How futures got started

The first futures trades occurred in Japan in the 1600s, where contracts to deliver rice became accepted as currency. In America, futures also started in agriculture. Farmers who wanted to reduce the risks of price swings in their crops sold those crops before they were even planted. Flour mills and livestock yards which wanted to line up the raw materials and know the cost in advance bought those unplanted crops.

What futures are and how they work

Soybeans. Pork bellies. Gold. Natural gas. Coffee. There are futures markets in all these and many other commodities. A futures contract is an agreement to:

- deliver or receive;
- a large, pre-set amount of a commodity;
- at a specific price;
- starting on a given day in the future.

In a futures market, buyers and sellers trade standard-sized contracts for future delivery of a specific commodity, for example, 5,000 bushels of wheat delivered next September. Any uniform product that suffers dramatic price swings, can be delivered at pre-set times and places, and is bought and sold often by many buyers can be the subject of a futures market.

There are now more than 60 futures exchanges in 20 countries trading in 400 different products.

A futures exchange is a non-profit corporation. Each U.S. exchange sets up one or more standardized contracts for each commodity it handles, and submits the contracts to the federal Commodities Futures Trading Commission for regulatory approval. The exchange sells seats to corporations such as Smith Barney and Merrill Lynch and to individuals. These brokers and traders buy and sell the contracts for themselves or on behalf of clients.

The exchange provides the forum for purchases and sales, tracks all the deals, and makes sure everyone follows the rules. The results are printed daily in the Wall Street Journal or other financial publications, and are shown moment-to-moment on computers.

The New York Mercantile Exchange, or NYMEX, is the exchange which has started a market in West Coast electricity futures. It set up two futures contracts for electricity on the West Coast, one for power delivered to the California-Oregon border (COB), and the other for delivery to Palo Verde, Ariz. A futures contract for delivery at COB calls for:

- 736 megawatt-hours of electricity (just over one megawatt-month);
- delivered to the California-Oregon border on the AC leg of the Pacific Northwest-Pacific

Southwest Intertie;

- at a rate of 2 megawatts during 16 heavy load hours for 23 days, with weekends included only as needed to complete delivery;
- starting on the first business day of the month.

Futures are sold for future delivery by month. A trader who buys one COB electricity futures contract for June is buying 736 megawatt-hours for delivery at the California-Oregon border starting the first business day in June.

On the opening day of the NYMEX electricity futures market, traders and brokers bought 978 contracts for COB June delivery, with smaller numbers of contracts traded for each month through the rest of the year. Volume of trading has steadily increased.

Futures prices fluctuate frequently

The price is where it gets interesting. Price is determined by the market.

The price of a futures contract is the expected price of the commodity on the date of delivery.

Futures prices generally trend up as the date of delivery gets farther out, because uncertainty increases farther into the future. But most commodities also have predictable cycles in supply and demand that tend to be reflected in futures prices. For example, in the hydro-driven West Coast electricity spot market, supplies are high and prices are low during the spring snow melt. Similarly, prices for COB electricity futures, as seen from mid-April 1996, get higher over the summer, but are lower for deliveries in May 1997.

Many factors, from the expected price of fuels such as natural gas, to the dynamics of the market itself, can affect the price of futures contracts.

Futures Delivery Points



Power sold through electricity futures is delivered at the California-Oregon border over the AC Intertie, or at the Palo Verde switchyard in Arizona

Hedgers and speculators

Most futures traders are in the market for one of two reasons, either to hedge or to speculate.

Hedgers are producers at risk if prices for their product fall, or large-scale consumers at risk if prices rise. McDonalds could hedge against higher beef prices, while the rancher who raises the beef might hedge against lower beef prices. BPA, which both buys and sells power, does both, depending on whether it expects to have surplus to sell or may need to buy power at a given future date.

Speculators aim to buy low, sell high

Speculators buy when they think the market price for a given futures contract is going to go up. They sell when they think the price will go down, and make money on the difference. Speculators in electricity futures generally have nothing to do with the utility industry.

Futures contracts attract speculators because buyers do not have to pay the full amount of the contract up front. Instead, they post a margin.

Electricity prices sometimes go from \$8 per MWh to \$24 per MWh. If a futures contract goes up that much, a speculator who had put down \$10,000 could get back \$300,000. This is leverage. This is why futures markets are so interesting for speculators.

Losses can be just as dramatic. A Singapore trader brought down England's Barings Bank in 1994 when he lost \$1 billion on stock index futures.

Speculators make futures markets work

Speculators are an essential part of futures markets. Without them, people who want to shift price risk (hedgers) would have no one to shift the risk to except their counterparts in the business. Speculators are willing to assume price risk for the opportunity to earn high profits.

Speculators also bring liquidity to the futures market. The larger the number of buyers and sellers, the more confidence speculators and hedgers have that they will be able to convert their contracts to cash if needed. Liquidity of the NYMEX electric contract at the California-Oregon border was more than \$13 million in the first two weeks of trading.

Hedgers prefer a bird in the hand

Hedgers play the opposite game. They, such as BPA and other utilities, are in the market to reduce the price and supply risks they already have in their business. They lock in prices for their product or needed supplies they can count on no matter what.

If, for example, BPA sells a futures contract in April for September delivery at \$18 per megawatt-hour, and the spot market come September is \$10, BPA will cash out its futures contract for a gain of \$8 and sell the power on the spot market at \$10. Thus, by using futures contracts, BPA has earned \$18 from

what turned out to be a \$10 market.

If, in September, the spot market is at \$20, it will cost BPA \$2 to close out its futures contract at \$20, but it can sell power on the spot market at \$20 per megawatt-hour. The net effect is that BPA reaps the \$18 it expected in the first place.

Either way, BPA nets \$18 in September. That's the sort of stability that helps reduce reserve requirements and keeps rates down.

In hedging, BPA may miss some opportunities, but it also eliminates losses. There is a fee for each transaction, but it is minor. Hedging offers opportunities to stabilize both the agency's revenues and its power supply costs.

Avoiding potential pitfalls

BPA is using the futures market very conservatively. It is limiting its use of the market to selling futures when the agency expects to be in surplus and buying futures when it expects a power deficit.

BPA bases its futures sales and purchases on what it expects to sell energy for in the specified month under its surplus power rate. The rates proposed to go into effect in October 1996 contain similar flexibility.

What BPA hedges against

The variables that drive changes in the spot market for electricity include, first and foremost, weather: prolonged drought, Arctic freezes, summer hot spells, etc.

In recent years, sinking prices for natural gas also have driven the electricity market, both short-term and long. Such market forces are becoming much more important to address effectively as the utility industry deregulates and moves into a free-market mode.

Variation on the theme: options

On April 26, 1996, the NYMEX electricity futures market began trading electricity futures options as well as futures contracts. An option on a future is like an option to buy a house. The buyer puts down money, typically 2 to 3 percent of the price of the futures contract itself, for the right to buy a futures contract later at a pre-specified price and date. Later, the options purchaser can go ahead and buy the future, or if the market price has moved against his or her expectations, just decide not to buy and let the "deposit" go.

An options market will help BPA price its own products, and hedge at less cost than might be the case with futures contracts.

Futures move electricity into the open market

The electricity futures market is the most visible piece of a radical reformation of the industry that is

occurring in a very short period of time. Electricity has become a commodity. It has moved from the exclusive purview of technical experts out into the open where everyone can see the prices and price trends, and if they want to, take actions to improve their own positions. With the futures market, the trend in the spot-market price for electricity is as close as the *Wall Street Journal*.

The futures and options markets are two new important means of marketing electricity. More are emerging fast. For example, BPA and other utilities are already testing systems for tracking power trades by computer. Where once, spot market deals were made between two people talking on the telephone, trading power just between two parties, in these new systems, as many as 130 utilities might post their prices for spot-market power at once, and all be visible to each other.

This kind of open pricing gives sellers a huge incentive to match each others' low prices. It's as if you could instantly see the price of milk at all the supermarkets in town, and push a button to buy the cheapest.

Benefits for BPA and its customers

The price transparency of the futures market keeps BPA customers and others much more aware of the market price for power. It can help BPA plan its own power sales and purchases to minimize cost variations and make the best use of its surplus power resources.

The futures market and other new market mechanisms promise to increase the value of the Northwest's federal power system. BPA is a low-cost system capable of providing many products and services, some of which are quite valuable. It is already competing with the lowest cost systems on the West Coast. The opening of a larger West Coast market gives BPA more potential buyers for products and services that are surplus to the needs of its existing customers and, where the buyer is outside the region, surplus to Northwest needs. More sales will create more revenues to pay BPA's costs and fulfill its public purposes.

With the futures and options market operating, BPA will be able to design new products for sale that can be priced based on referencing the financial markets. For example, many BPA customers and other new players in the West Coast electricity market are asking for new short-term products with prices based on daily, weekly or monthly fluctuations in the market price. If a customer will purchase such an index product for a fixed term and at fixed amounts, BPA can take that commitment and "sell it forward" on the NYMEX exchange, thus creating a new power sales product without assuming price risk. BPA is working with one utility now on a long-term contract with a price tied to the NYMEX futures index.

When the future becomes the present

A person does not have to own or have use for a commodity to trade futures in it. But each futures contract must be closed out or actually delivered by the month specified in the contract. If the buyer is a Florida businessman, he might not have a lot of use for electricity delivered to the California-Oregon border. So, if he buys a September electricity futures contract in April, he'll sell it sometime before the September contract closes and deliveries begin.

As a power marketer with ample transmission capacity to the California-Oregon border, BPA might deliver or receive the power ordered in its futures contracts. But there are restrictions on BPA power sales, and notice requirements for sales outside the Northwest. So it may be simpler to close out the

futures contracts and simply sell short-term power directly in the spot market. Delivery of power purchased through futures contracts would not be as complex.

Few futures contracts will go to delivery each month. Most that do will make use of BPA's transmission lines. BPA and Pacific Gas & Electric, which is based in San Francisco, operate the alternating-current intertie power line between the Northwest and California. They will schedule and deliver power to fulfill COB futures contracts which go to delivery. The electricity will be delivered to the California-Oregon border on the AC Intertie. This is expected to have a minimal effect on BPA transmission capacity and revenue.

Spot market sales

BPA has long sold surplus power on the spot market to other utilities on the West Coast. With deregulation, trading is now quickening and getting more complicated, to the point that blocks of energy are being traded as many as 17 times before actual scheduling takes place. The Wall Street Journal now lists daily "Dow Jones electricity price indexes" — spot market prices for nonfirm megawatt-hours sold at COB and at the Nevada-Oregon border (on the direct-current intertie to Southern California), and Palo Verde and West Wing, Ariz.

For those power brokers and others in the competitive wholesale power market who want to remain anonymous, an independent firm, Tule Hub Services Co., can track the changing titles of spot market and futures trading at COB, and will submit a daily operating report to BPA and PG&E so they can schedule deliveries. The promise of anonymity will help attract new marketers and speculators to the market, and increase its competitiveness and liquidity.

Most electricity is still sold directly to end-use consumers by the utility that generates it, or is sold between utilities on long-term contracts. As the utility industry is deregulated, the role of the spot market in the industry is expected to grow.

Moving into the future

The launch of the West Coast electricity futures market is a major step toward a truly open, competitive power market. It brings BPA and its customers and ratepayers a new tool to assure the agency's financial stability, new sources of information to improve its marketing capability, and, down the road, the likelihood of new products and services to offer.

BPA welcomes this move into the future.

For more information

For more information about BPA's participation in the electricity futures market, or any BPA activity, contact your BPA account executive, or the nearest BPA office listed below.

Boise, Idaho
(208) 334-9137

Missoula, Mont.

(406) 329-3060

Portland, Ore.
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Spokane, Wash.
(509) 358-7402

Vancouver, Wash.
(360) 418-8600

Walla Walla, Wash.
(509) 527-6225

Washington, D.C.
(202) 586-5640

You may also call BPA's Public Involvement office at 1-800-622-4519. To request additional copies of this publication call 1-800-622-4520 (recorded message).

Glossary of Traders' Terms

Arbitrage. Simultaneously buying and selling very similar assets to profit from a (usually very small) price difference between the two.

COB. The point where the AC Intertie crosses the California- Oregon border. The AC Intertie is the alternating-current arm of the Pacific Northwest-Pacific Southwest Intertie power line, one of two major power lines connecting the Northwest and California power systems.

Commodity. A raw material that is normally sold in bulk. Examples include gold, pork bellies, cocoa, cotton, crude oil, lumber, natural gas, and now, electricity.

Commodity Futures Trading Commission. The federal regulatory agency for futures trading.

Dow Jones. A publishing firm that specializes in financial news. It publishes the *Wall Street Journal* and compiles and publishes various price averages and indexes, including the Dow Jones Electricity Price Indexes.

Futures. Contracts in which the price is set now for goods to be delivered in the future.

Futures contract. Standard unit of sale for a given commodity. **Futures exchanges.** Non-profit firms which set up markets in which to trade specific commodities.

Hedge/Hedger. Person or firm who buys and sells futures to lock in a price or supply today for a commodity to be delivered later. Hedgers produce and/or use the commodities they trade as futures. Their profit or loss is the net of what they make in the spot market for actual sales of the commodity,

plus or minus what they make or lose in the futures market for the same commodity. Or they may deliver or take delivery of the commodity ordered in the futures contract.

Leverage. Futures markets generally require traders to put down a deposit on the futures contracts they buy, anywhere from 2 percent to 10 percent. This means traders can leverage a small amount of capital into a potentially large profit (or loss).

Liquidity. The volume of trades in an exchange. A highly liquid exchange, where hundreds or thousands of trades are made every day, is seen as safer and more desirable by speculators.

NYMEX. The New York Mercantile Exchange, one of several commodity exchanges. NYMEX conducts futures and options markets primarily in energy and metals.

Offsetting Contracts. As the time of delivery approaches, traders who have bought contracts sell them and vice versa, offsetting or canceling out their delivery obligations.

Option. A contract that gives the owner the right to buy or sell a futures contract at a prescribed price for a prescribed month at any time until the expiration date. A low-initial-outlay way to hedge or speculate.

Palo Verde. An Arizona switch-yard where a number of public and private utilities own transmission or take delivery of their shares of energy from the Palo Verde nuclear power plant. Operated by the Salt River Project. The second point-of-delivery for NYMEX electricity futures.

Pork bellies. A classic commodity. Used to make bacon.

Speculate/Speculator. Person or firm who buys and sells futures to profit as the price of a commodity fluctuates. Speculators do not produce or use the commodities they trade as futures. Their profit or loss consists solely of what they win or lose in the futures market.

Spot market/cash market. The market where commodities are actually bought, sold and delivered.

Tule. Tule Hub Services Co., a private firm that tracks title transfers and acts as the primary interface between independent power marketers and scheduling power system operators such as BPA and Pacific Gas & Electric.

This *keeping Current* was created by BPA Communications.
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