

Coming to
power:
Automated
deal and
product **structuring**

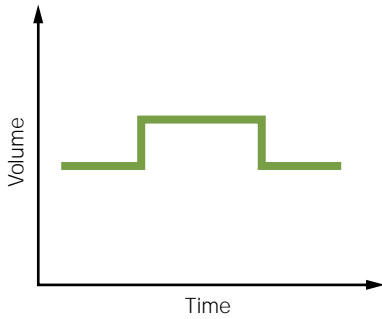
E-lecTrade's ShapedPower marketplace has some of the features of computational combinatorial markets. In that regard, it appears to be the most advanced offering in or near operational status in any electricity sector in the world. Having recently completed a beta test by electric utilities in the northeastern U.S., this on-line, anonymous, neutral marketplace promises to reduce transaction fees for structured trades by as much as 90% from current market rates

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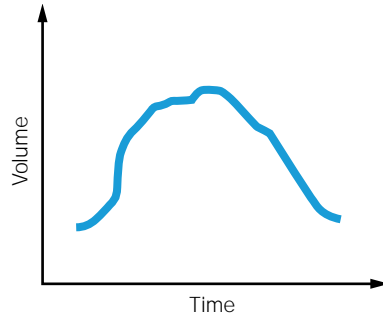
In any business, raw materials are always cheaper than the final, finished product. And custom products cost more than mass-produced, standard products. Equate raw material (beef, bread, vegetables) with hourly blocks of power. Equate standard products (the Big Mac) with standard load shapes or undifferentiated blocks of power. Equate custom products (gourmet hamburger) with structured load blocks. Then you'll understand why structured electricity products cost more, and deals to assemble them take longer to complete.

Lowering the cost of structured power
One way to combine blocks of hourly spot-market power with standard, undifferentiated blocks into a custom package is to pay a firm—like Morgan Stanley or Enron—to do it. Such structured transactions are required to manage peak loads, seasonal variations, and residuals—what's left over from spot and other markets. But a broker may charge up to 20% of the total value of the transactions for the service, if the assembly required is complex. The only alternative to using merchant structuring desks is to issue a request for proposals (RFP) for the custom product you need. In the end, though, the RFP process is usually more expensive and always takes longer.

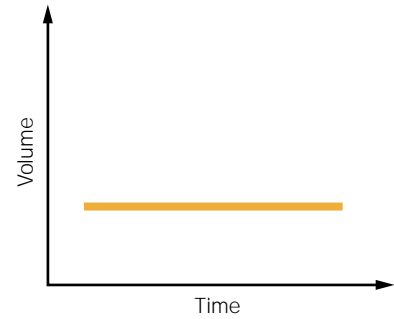
Electricity trading



1. Participants come to E-lecTrade with naturally long or short positions. Counterparty A (typically, a generator, or anyone with excess power from generating capacity or a supply contract) naturally has a long position (is long on power). Its supply profile looks like this



2. Counterparty B (typically, a load-serving entity or a large commercial concern), is short of power, and has a load profile that looks like this



3. Counterparty C (typically, a large commercial or industrial firm—such as a manufacturer, a steel mill, or any operation that runs continuously) is short, with a flat load shape. Other participants may have different load shapes and generation profiles

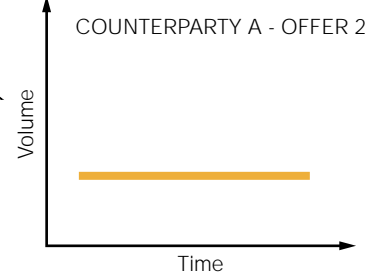
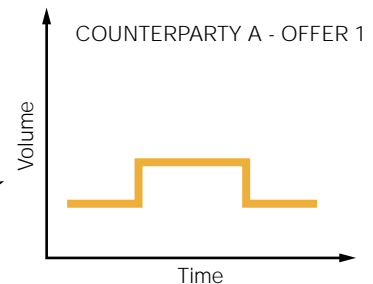
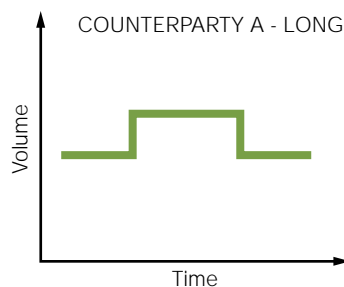
A new company called E-lecTrade, Inc., Tarrytown, N.Y. (www.e-lec-trade.com), has figured out a way to automate much of the labor-intensive—and expensive—deal structuring process and make it available on line. Using proprietary computer algorithms, E-lecTrade’s anonymous ShapedPower on-line marketplace promises to reduce both the cost of structuring custom electricity products to as little as 1% of the components’ total value, and the time to structure them to minutes.

E-lecTrade plans to charge a transaction fee of from 25 to 40¢/MWh for the most highly structured trades, and as little as 0.5¢/MWh for standard (liftable) trades. Compare the first fee to the \$2.50 going rate for \$50 structured power, and you can see why AES/New Energy, GPU Inc., Central Hudson Gas & Electric Corp., Consolidated Edison Co. of New York, Inc., PP&L Inc., and a dozen other major energy companies are planning to participate in E-lecTrade when the marketplace debuts in full this fall.

operates five days a week from 8:00 a.m. to 5:00 p.m. You can buy a flat block of power for your base load—the electricity needed to just keep the lights on at night. But to do that you need to add shorter time blocks of juice for the daytime, to power the assembly line and the building’s air-conditioning system. Ultimately, you need what is called optionality to track the rise and fall in your load.

This example underscores that electricity demand is shaped—not flat. Consequently, so is electricity supply.

4. Counterparty A formulates a strategy and elects to disaggregate its long position into two distinct offers they are willing to put into the marketplace. Counterparty A can disaggregate its own position, or give the parameters and constraints around to E-lecTrade to disaggregate. The latter choice generally leads to more flexible outcomes and more possibilities. Counterparties may deliberately choose to post several small shapes, either to disguise itself or as part of a strategy to take the most advantage of the behavior of other market participants



Why power needs to be structured

Trying to fit a square peg into a round hole is a good analogy for structuring a custom electricity product. It’s hard to achieve a perfect fit. Imagine you’re responsible for meeting the changing demand profile of your factory, which

ply. Among the steps that power marketers and generators take to shape their product temporally are purchasing spinning reserves or spot-market power, buying transmission capacity as needed, and scheduling unit shutdowns for maintenance or to balance their portfolio’s emissions profile.

Structured products serve the needs of companies on the supply side by addressing all of them within a single package. Products for power marketers can comprise any or all of the following: shaped energy plus ancillary supplies, shaped energy plus standard energy, and shaped energy plus options. Similarly, power generators can use structured products contain-

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ing shaped energy, standard energy plus options, or tolling positions to improve their marketing options. The bottom line is that such needs can be represented and linked several ways, and structured electricity products give companies more flexibility.

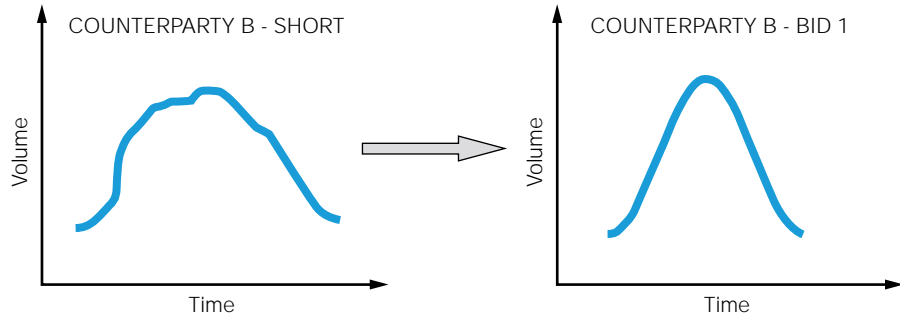
Different folks, different strokes

E-lecTrade's CEO Dr. Anil K. Suri observes that "on one side of the coin, energy services providers and all utilities—especially those that have sold off their generating plants—need to structure complex, shaped-load transactions. On the other, generators need to structure these complex shaped products to efficiently allocate their resources." These structures are necessary to prevent blackouts and brownouts caused by an imbalance between supply and demand.

The way the market behaves now reflects the changing attitude of participants. For example, generators (long position holders) are saying, "I'm willing to change the way I operate my plants because I'm not getting paid a premium for it." Meanwhile, load-serving entities (short position holders) are saying "If I'm going to get a standardized load shape, I may as well insist on getting what I really need because I'm paying a premium anyway." In other words, both groups have a reason for going to a seamstress rather than buying clothes off the rack.

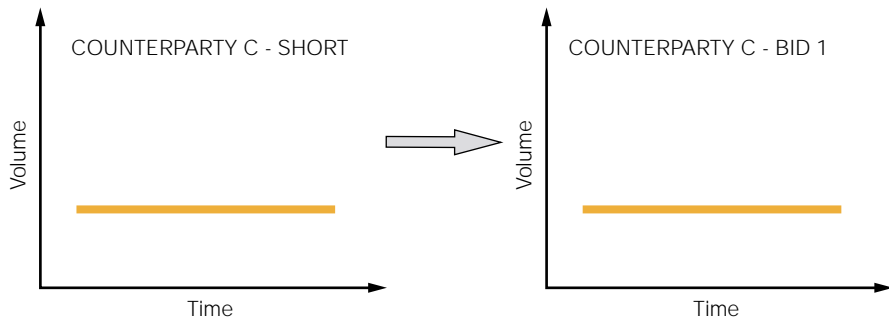
How will it work?

Participants in E-lecTrade will post their needs anonymously on the company's on-line platform. Deal and product structuring may not necessarily be 100% automated, however. Structuring agents will be available to help clients with their transaction representation and disaggregation strategies. Once participants' needs have been disaggregated into tradeable items—such as blocks of power or load shapes—the platform's underlying computer algorithms go to work. They will optimize, match, and reaggregate the items into pieces that par-

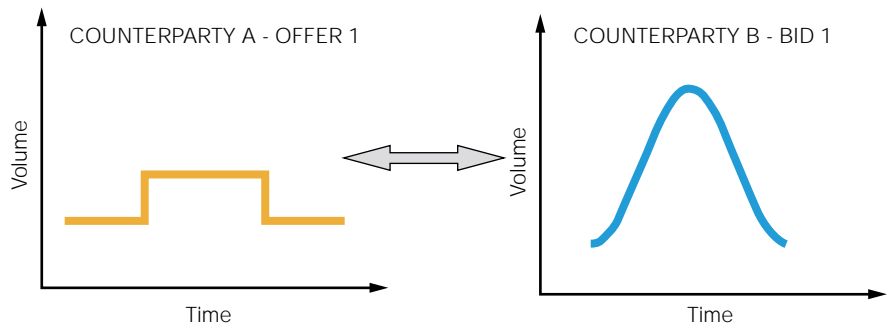


5. Counterparty B would most likely bid on peak load with a premium price because it is the hardest to satisfy. Counterparty B has three choices:

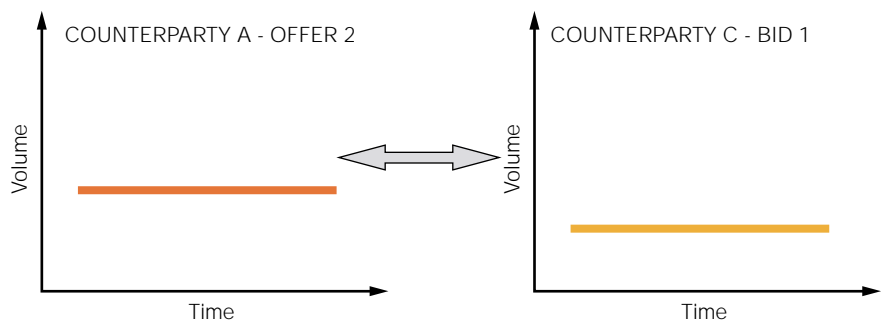
- Play the spot market in the hope of getting of a lower price. This approach, however, comes with a high risk exposure
- Try to find sellers for standard blocks of energy plus options on peak load and hope to get them cheap enough and at a low enough strike price to stay within budget
- Pay a premium price for its peaking needs in the forward market and avoid spot market exposure—something that E-lecTrade makes possible



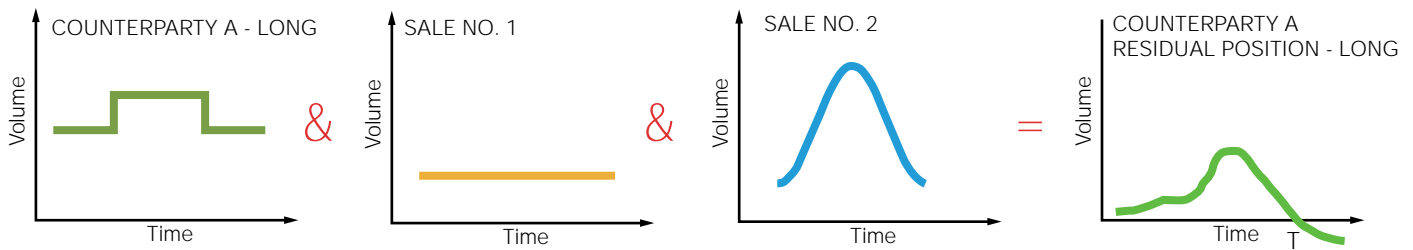
6. Counterparty C's flat load shape is put up for tender



7. E-lecTrade matches counterparty A's first offer with counterparty B's peaking load requirement



8. E-lecTrade matches counterparty A's second offer with counterparty C's flat load shape



9. Since no match is perfect, the resulting juxtaposition shows that counterparty A is long until time T , after which it is short



10. Counterparty B's load needs are generally met by its acceptance of counterparty A's first offer. This results in a smaller short position, which can be satisfied later by E-lecTrade, which puts the residuals back into the market or elsewhere



11. In this illustration, counterparty C purchases more generation than necessary, and the result is a slightly long position

ticipants can either settle on, or negotiate further (figure). The end result: One counterparty may end up buying from many sellers, while another may end up selling to many buyers.

E-lecTrade will also provide structuring tools to allow participants to evaluate the risk profile of their company's portfolio—or a subset of it—in real-time. The tools can also perform scenario analysis and residual position management. The structuring agents' participation may not be limited to providing strategic advice; they may also assist clients in the evaluation and negotiation process, or even

get involved in contractual issues.

Participants can specify what the matching objective for each desired trade should be, that is, based on volume, value, or Value at Risk. Participants can also specify the rules or constraints to the match, such as the number of participants to a transaction, the degree of flexibility in attributes, whether or not to include transmission, and financial or physical trades.

Since the market and the matching process operate continuously, the optimal match changes all the time. E-lecTrade's automated matching

agent operates at few-minute intervals, providing several choices for each participant. The choices comprise different possible trades which may expire according to what other participants choose. Support will be provided for both liftable and nonliftable trades. Liftable trades refer to those that can be executed immediately on a first-come, first-serve basis; one merely has to click to buy or sell. Nonliftable trades refer to more complex trades that require negotiation before execution. In both cases, the anonymity of the counterparties is preserved until execution. ■