The Evolution of the Electronic Energy Industry

By Peter C. Fusaro & Jeremy Wilcox*

Introduction:

Electronic Commerce (e-Commerce) opportunities for energy are being manifested for energy trading, energy procurement, and electronic billing and metering. The energy industry is significantly conducive to the use of Internet applications because of its information intensity, and electronic commerce is transforming energy markets. The mature markets of oil and gas trading as well as the emerging markets for electric power, emissions and weather trading are ripe for trading on electronic platforms. This article is extracted from our report, Electronic Energy Trading, and explores the market drivers for the changes taking place in energy trading globally.

Energy trading began after the end of Official Selling Price (OSP) programs by the major oil companies and OPEC nations after the 1973 Oil Embargo and coincided with the development of a spot market for crude oil and petroleum products. In 1978, the changing structure nature of the physical spot market for oil presaged the development of energy futures with the successful launch of the New York Mercantile Exchange (NYMEX) heating oil futures contract which was tied to its physical delivery in New York harbor. Successive oil futures contracts and the development of an active Over-the-Counter (OTC) market for forward oil trading in the early 1980s brought significant structural changes to the international oil industry. In effect, price transparency accelerated both physical and financial trading of crude oil and petroleum products globally. In April 1990, the NYMEX launched the very successful Henry Hub natural gas futures contract, which simultaneously coincided with the development of an active OTC natural gas market.

Electricity trading began with the Nord Pool contract for the Scandinavian markets in 1993. NYMEX, the Chicago Board of Trade (CBOT) and the Minneapolis Grain Exchange (MGE) have since launched eight failing electricity futures contracts. In this case, the OTC market for electricity derivatives in the United States began in late 1993 prior to the futures contract launches which began on March 29, 1996. Clearly, something had changed. What had changed is the structure of energy futures trading. The age of electronic trading coupled with OTC market flexibility have usurped the futures exchanges and brokers. Electronic energy trading was also be integrated into a robust price risk and transaction management system so that real time trading operations can be integrated into a company’s front to back office.

The next wave of electronic energy will be in the retail markets as customer choice initiatives take hold through further deregulation. The ability to choose energy suppliers including energy measurement and bill payment through the Internet is just starting to take hold and is being offered by some utilities. The future will also integrate not only energy bills but also telecommunication and water bills into one Internet-based bill. Secure payment will be made by credit card over the Internet. Other Internet applications will be brought forward in the form of aggregators, which is key to unlocking the power of retail markets because of diffusion of buyers and sellers. Fragmented markets create inefficiencies. Robust electronic exchanges are the next step in the transformation of the energy industry toward an e-commerce base.

One of the problems in the past for electronic trading systems was that they had been dependent on costly, dedicated private networks and computer hardware, which added overheads for users making them less competitive against conventional telephone trading. Now though it is possible to harness the power of the Internet for business applications and offer global business-to-business e-commerce solutions for traders with no up front cost. All the user needs is an access to the Internet.

The variety and scale of the electronic trading platforms

*Peter C. Fusaro is President of Global Change Associates Inc. and Jeremy Wilcox is Managing Director, Global Change Associates (Europe) Ltd. This article is extracted from Electronic Energy Trading (2000), a Global Change Associates Inc. special report (www.global-change.com) and Energy E-Commerce, an occasional paper from ICEED.
would seem to indicate that there will be a large ramping up of many competitive systems, a consolidation period, and then the emergence of clear winners. Since many new and unknown competitors are in the offing, it is helpful to look at the existing systems of today and evaluate their road to success or failure. This discussion will include electronic exchanges, OTC brokers, and the development of e-trade capability by traditional floor exchanges such as NYMEX, IPE and SIMEX (Singapore International Monetary Exchange) now known as the Singapore Exchange.

However, the key financial market change was the shift of the Deutschmark from the London’s LIFFE (London International Financial Futures Exchange) to Eurex in a manner of months when Eurex went electronic in early 1999. LIFFE eventually went electronic but lost its momentum. This incident was a wake up call for the futures industry that electronic trading was real and an accelerating threat to the traditional monopoly of floor-based futures trading.

The second electronic competitive threat is proliferation of cheap electronic communication networks (ECNs) that are already threatening both financial and commodity exchanges. Unfortunately, exchange members are slow to adapt since they have an interest in maintaining the status quo and have been reluctant to move aggressively from floor-based to screen-based trading. ECNs match buyers and sellers without a need for voice confirmation. ECNs such as Island and Archipelago have already stolen volume from the New York Stock Exchange.

The question, thus, becomes how will electronic trading transform energy markets not when. Energy brokers are trying to forestall this event by pooling their gas and electricity data through ‘broker-assisted’ networks that will fall by the wayside in the wake of rapid technological change and a migration to the Internet. System openness will cause these alliances and closed systems to dissipate. Their clients are not technologically phobic and will gravitate to new trading solutions based on ease of access, cost and reliability of the emerging system platforms.

Energy markets are conservative in nature and thrive on security of supply. The avoidance of risk would seem to be a curious place to foster the electronic future, but the added impetus of energy deregulation as a global phenomena is bringing the technology solution to the industry quite rapidly as a consequence of more market risk. Liberalization is the process of introducing competition and brings with it radical changes to the structure of the industry. Traditional business practices tend to disappear, as new competitive forces are unleashed. Moreover, new competitors such as Oracle, Microsoft, AT&T, British Telecommunications and IBM already have made inroads into this industry for many years.

The E-Business model for the electric utility business is just now evolving but the core concept is the ability to allow transactions for the business either in wholesale energy trading or in retail services for customers. Utilities are starting to recognize that the technology imperative becomes a key market driver for not only reducing customer service costs, but also a means to retain and attract customers. It improves the quality of the customer service. Incidentally, Internet back office applications like billing and customer care are becoming much more central to the energy business.

Today, some of the key barriers to electronic electric and gas bills are the lack of industry standards since the market-
The Evolution of the Electronic Energy Industry  
(continued from page 11)

distribution channel for the energy industry. The change rate is accelerating as energy trading takes hold throughout the industry. It is only the beginning of this fundamental change process.

While today Internet technologies are still prone to problems regarding reliability, speed and performance, the transformation into a medium that is fast, reliable, and convenient is rapidly emerging. Already hand held wireless devices for cellular phones and notebook computers are under commercial development and will use Wireless Applications Protocol (WAP). This change will bring seamless access to the Internet. The impact on Internet energy trading will be instantaneous access in real time from anywhere in the world. The movement toward broad band technologies with text, voice, video, and graphics will widen applications even more and move past current Internet gridlock. DSL and cable modems will move more data, that is, financial transactions; thus adding the technological capability to enhance market liquidity. Moreover, speech recognition and translation technologies will be more finely developed which will further globalize Internet-based trading. These new speech recognition algorithms will improve the interface with the network creating the virtual global trading floor. Some energy market players are in fact waiting for greater technological developments before they launch their electronic trading platforms. They will use the technologically advanced edge to gain market share.

Electronic energy trading may be a double edge sword. It may lead to more trading liquidity with more individual investors, but it could lead to higher price volatility since active day traders try to exploit tiny price discrepancies in the market. This trend is already evidence in U.S. stock trading as a “volatility influence” exists. For the energy complex, which are the most volatility commodities ever created, it probably means even more volatility fueled by day traders. This phenomenon is already in evidence and influenced by NYMEX floor traders who trade for their own account on a daily basis.

As established futures markets consolidate and demutualize in response to the new technologically advanced competitors, the role of existing exchanges changes to that of listed companies and their floor operations are fighting survival in the wake of technological change and global financial integration. They must adapt or be superceded with the next generation of technology. These new electronic exchanges are thus perfectly positioned for the emerging markets of electricity, emissions, weather and bandwidth trading since they can be constructed quickly and at minimal costs. Real-time will really be in real-time in the future with 24 hour markets everyday of the year.

Report of the 2000 Annual General Membership Meeting and the Year 1999

President Peter Davies called the meeting to order on June 9 at the Hilton Hotel, Sydney, Australia and introduced Council members present.

Davies went on to report on the results of the Council and strategy meetings held earlier in the week, noting:

- Agreement to commission studies on topics of current interest and using these as the basis of a session at the Aberdeen meeting.
- Agreement on the intent to strengthen the association’s Web site by:
  1. Increasing the number of links to other organizations.
  2. Placing The Energy Journal content on the site in a manner indicated by best industry practice; the precise manner to be determined in consultation with the editors.
  3. Offering each affiliate a web page using a standard format.
  4. Becoming the center for energy knowledge and information – the site first turned to for energy information.
- Agreement to establish a two member student advisory group to the president; this to be done by the president-elect soliciting recommendations and then naming two students to advise him on student matters during his year as president. The scholarship fund was raised to $20,000 and is to be redirected to paying the expenses of these students to Council and international meetings.
- Agreement to encourage joint relationships/links with other energy groups, and to use the IAEE logo as appropriate to help implement this. The Vice President of Conferences was empowered to manage this.

- Other
  1. Council expressed its desire to have HQ handle the complete logistics of future conferences.
  2. Efforts will be made to develop a target membership-marketing program.

Discussion followed with a suggestion made to include a job market at the international meeting.

Other matters discussed included fees for academics at the meeting, the distribution of meeting content between business and academic, the desirability of having a presidential address at the meeting and the pros and cons of holding meetings at academic locations.

The meeting was adjourned at approximately 6:45 pm.

Subsequent to the meeting, the Executive Director reported the following:

1999 Statement of Income and Expense

<table>
<thead>
<tr>
<th>Income</th>
<th>Expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dues</td>
<td>Admin. &amp; Office Oprs.</td>
</tr>
<tr>
<td>Meetings</td>
<td>$146,000</td>
</tr>
<tr>
<td>Publications</td>
<td>26,000</td>
</tr>
<tr>
<td>Publications</td>
<td>99,000</td>
</tr>
<tr>
<td>Interest</td>
<td>32,000</td>
</tr>
<tr>
<td>Other</td>
<td>$28,000</td>
</tr>
<tr>
<td>Total</td>
<td>$331,000</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

December 31, 1999 Balance Sheet

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities &amp; Fund Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash &amp; Equivalents</td>
<td>$697,000</td>
</tr>
<tr>
<td>Accounts Receivable</td>
<td>15,000</td>
</tr>
<tr>
<td>Total</td>
<td>$712,000</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>