

**THE CONVERGENCE OF ELECTRIC POWER
AND NATURAL GAS UTILITIES IN THE UNITED STATES :
WHICH LESSONS FOR EUROPE ?**

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ABSTRACT *(about 1500 words)*

Worldwide, for the last two decades, energy network industries have undergone major changes in terms of **organization and competitiveness**. After restructuring reforms in the transportation, telecom and natural gas sectors, deregulatory initiatives have been taken in the electric power industry to eliminate traditional constraints and protectionism. An new era has begun : in some segment of the value chain, electric monopoly activities are now open to competition. There is lively debate about whether these experiments will succeed and how they should be conducted.

In several countries, the electric power sector is experiencing a fundamental transformation from a regulated market place to one exposed to the influence of market forces¹. The word '**convergence**' of **natural gas and electricity industries** is progressively used at least in North America and currently in Europe. In the United States, the deregulation process and technological changes are inducing the convergence of energy value chains. This phenomenon is obvious with the wave of mergers among electric and gas utilities and it tends to invade Europe.

In this paper, we will focus on a specific characteristic of the emerging competitive energy markets : the convergence of electric power and gas utilities. **In the first part**, we will present the main drivers of the growing link of gas and electricity industries in the United States. Then, **in the second part**, we will analyze several impacts of the convergence of electric / gas value chains on the new American energy market organization. **Finally**, we will wonder which lessons of the American experience can be useful for the European market evolution.

1/ Main drivers of gas - electricity convergence in the United States.

In the United States, the electric industry, likely the most stable structure in terms of growth forecasts and rates stability is about to experience a major upheaval. The vertically integrated monopoly suppliers of power services are quickly becoming an image of the past. A « new age of competition »². has begun : many states through their regulators are considering various initiatives of increased wholesale competition for power generation and even direct access to retail customers³.

With the liberalization reforms, the creation of more efficient markets and price transparency is inducing the meshing of both gas and electricity supply chains. Technological progresses combined with a growing demand for commercial choices are accelerating this movement. More precisely, the main drivers of this convergence have been :

- **Ongoing deregulation** of the gas and electricity markets. The process of unbundling energy utility business is facilitating the link along both value chains. Moreover, there is already a form of regulatory convergence between electric and gas at federal level. The FERC Order 889 on the electric side, for example, mirrors its earlier Order 497 on the gas side. This trend seems to continue at the state level.

- **Upstream linkage** of gas and power generation. Technological advances and regulatory factors combined to encourage the use of natural gas for power generation with the development of the CGT (combined cycle gas turbine) and gas microturbines.

- **Midstream synergies** between gas - power trading and risk management. There has been a expansion of technologies which are transforming the view of electricity as a commodity. In 1998, nine of the top-ten US based power marketers have their origins in the gas sector.

- **Downstream opportunities** to eliminate duplication costs. With the deregulation of retail function, an increasing number of utilities are combining their gas and electricity marketing activities to offer consumers a bundled energy service as one package.

2/ Impacts of the convergence on the American energy market.

In the United States, the electric and gas industries are converging along deregulated segments :

- In **power generation**, driven primarily by cost minimization considerations, the use of natural gas is leading to the emergence of a new market place where gas and electricity will be sold together and compete with another. Furthermore, the future of power generation could change considerably. The long trend of large expensive central power plants which take years to build, require miles of distribution wires and take decades to pay off (see the discussions on stranded costs) is replaced by new highly efficient distributed generation units⁴ closer to end-user.

- **Energy retailing** will continue to see increased competition with consumers having a greater choice of suppliers. The convergence of the electricity and gas value chains in the marketing / supply segments has led companies to offer both fuels (till to become home services providers). There are three basic models of energy supply retailer emerging : from the basic company supplying gas and/or electricity with few added services through a combined energy company offering a total energy package to a multi-utility service to its customers.

The much-talked-about convergence of the two industries is continuing, pushing toward an increasingly integrated energy market. The United States are moving from an electron and molecule energy system to a **BTU's one**. Companies are looking to "enhance the value of the BTU" by becoming the least costs energy supplier and enhancing the convenience of the commodity with services beyond the meter. They are looking beyond the confines of the segments(s) of the value chain in which they operate to form links with end-users via companies in others segments.

Since 1992, a **wave of large electricity and gas mergers**⁵ has arisen. To survive in this new competitive environment, power companies are seeking partners to join forces : they naturally looked for gas companies to exploit synergies⁶ (e.g. *Houston Industries / NorAm Energy, Enron / Portland General Electric, Duke / PanEnergy...*). Merger activity in the United States has involved the **regulatory agencies** : ensuring that consumers benefit from the savings derived from any

operation, that there will be an adequate supply of information for regulatory purpose post-merger and, most important, that there will be no market distortions resulting from the merger.

3/ Lessons for the European energy market.

With the move toward deregulation, electricity and gas value chains' convergence is coming to Europe **more slowly** than in the United States. Creation of a single European energy market is inevitable with European law requiring it. For January 1999, European Community⁷ member states must open up a minimum of 22% of their market. The gradual liberalization process in Europe is finally accelerated even if till now the situation is different from one another country⁸. Convergence activity will pick up : most near-term activities are likely to take place in the UK, Spain and Nordic countries whereas other markets are likely to be attractive in the medium term.

While some comparisons can be drawn with the American federal electricity market, there are more **differences** than similarities. While 250 potential players are counted in the new liberalized US market, the number of European players is restricted because of the traditional dominance of national monopolies. The reaction of the main European electric utilities to deregulation has been twofold : to protect their home markets and simultaneously to seek specialized opportunities out of their core business. Forming all manner of alliances either between themselves or with other companies, power utilities have developed links with gas companies to control the entry into their industry (*Shell Electricity Company, Iberdrola/ Repsol, ...*). Unlike North America, in Europe, the gas market is not a driving factor for more competitive electricity market because it has not yet been liberalized. American electric utilities have focused mainly on gas midstream expertise and downstream synergies. The positioning of European power firms in gas sector differ:

- Multi utilities services strategies exploding in Europe (*Vivendi, United Utilities ...*)
- Diversification with a position in upstream oil and gas or integrated gas (*RWE, Veba...*)
- Generation or supply oriented with dedicated reserves (*PowerGen, National Power...*)

These degrees of participation have been determined more by **historical factors** than by a view to the future.

In the United States, utilities supplying both energy commodities are not uncommon and this is reflected in the regulatory regimes with joint state committees. The possibility of a common European regulator is currently under discussion.

The energy utility sector is undergoing a fundamental transformation around the world as markets are liberalized and governments owning utilities are privatized. In the United States, the value chains for gas and electricity supply are becoming meshed together as a result of the **deregulation process and technology changes**. Convergence is more than simply the integration of common business processes. It involves exploiting common activities by sharing them to reduce costs by exploiting synergies and substitutability at each end of the value chain (wholesaling and retailing). And it is coming to Europe where changes are accelerated thanks to utilities strategies.

In European Community like in North America, while there has always been competition it is only now in the deregulated energy markets that gas and electricity can be traded interchangeably : the competition is becoming inter and infra energies. History repeats itself : emerging global market is coming back to the old structure **vertically integrated** (along different value chains) and **concentrated** (see the merger mania). The "energy company" is emerging. A good illustration is Enron's vision to become the "*world's leading energy company*" where the focal point is gas and electricity convergence...

Foot notes

¹ See Chevalier JM. (1997).

² The changes are designed to foster competition in the power generating segment and to reform regulation of the transmission and distribution functions, which continue to be viewed as natural monopolies.

³ See for instance Brennan T.(1996), Joskow P.(1997) and Bailey E. (1998).

⁴ See Cooksey J. (1998), Linden H. (1997), Zuckerman L. (1997)....

⁵ The merger mania in the United States is really impressive : if the hunt goes on, half of the IOUs could disappear in the next years.

⁶ Many of the distribution companies are combined gas and electricity utilities usually with overlapping gas and distribution areas (although not always completely overlapping). And in both the electricity and gas sectors there

is significant vertical integration with electricity utilities owning generating capacities and gas distribution companies owning upstream assets.

⁷ The term European Community derives from the Treaty of Rome 1957, as amended by the Treaty on European Union in 1992. The fifteen countries are members to the European Community which in turn forms part of the European Union, which was created by the 1992 Treaty.

⁸ About European discussions : Chevalier JM. (1996), Hancher L. (1997), Bouttes JP. (1998), Baudru D. & Rigamonti E; (1998), Percebois J. & Nyouki E. (1998)...

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**LA CONVERGENCE DES ENTREPRISES DE
GAZ NATUREL ET D'ELECTRICITE AUX ETATS-UNIS :
QUELLES LECONS POUR L'EUROPE ?**

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RESUME

Le terme de convergence des industries du gaz naturel et de l'électricité fait de plus en plus partie du vocabulaire, du moins en Amérique du nord et progressivement en Europe. Aux Etats-Unis, le rapprochement de ces deux chaînes de valeur est lié aux mesures de déréglementation et aux innovations technologiques. Il a des implications indéniables sur l'ensemble de l'organisation de l'industrie électrique : émergence d'un marché énergétique intégré et vague de fusion-acquisition. Dans cet article, nous nous sommes centrés sur la convergence des entreprises de gaz et d'électricité aux Etats-Unis. Nous sommes demandés quelles leçons de l'expérience américaine pourraient être utiles pour la réorganisation actuelle de l'industrie en Europe.

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ABSTRACT

The word 'convergence' of natural gas and electricity industries is progressively used at least in North America and currently in Europe. In the United States, the meshing of these two value chains has resulted of deregulation reforms and technological advances. It has obvious implications on the whole energy industry organization : emergence of an integrated market and merger wave. In this paper, we will focus on convergence of electric power and gas utilities. We will wonder which lessons of the American energy industry experience can be useful for the current European market evolution.

LA CONVERGENCIA DE LAS EMPRESAS DE GAS NATURAL Y DE ELECTRICIDAD EN LOS ESTADOS-UNIDOS : ¿ QUÉ ENSEÑANZAS PARA EUROPA ?

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RESUMEN

El término de convergencia de las industrias de gas natural y de electricidad es cada día más corriente, especialmente en América del Norte y progresivamente en Europa. En Estados Unidos, la apertura de los mercados y las innovaciones tecnológicas explican la unión de estas dos cadenas de valores. Dos consecuencias imprecindibles para la organización de la industria eléctrica en su totalidad se destacan de este movimiento : la emergencia de un mercado energético integrado y periodos de fusiones. En este artículo, hemos prestado una atención particular en la convergencia de las empresas de gas y de electricidad en Estados Unidos. Nos preguntaremos qué enseñanzas, de la experiencia americana, podrían ser útiles para la evolución actual de la industria eléctrica.