



Energy Company? What Energy Company?

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What do you mean, 'energy company'? Even energy companies no longer know. But they had better find out. Their future depends upon it.

Less than three decades ago it was all so much simpler. Companies that produced coal, oil and oil products and natural gas were called fuel companies. Companies that managed regulated monopoly systems to deliver electricity and gas to users were called utilities. British Petroleum was an oil company, Gasunie a gas company, Pacific Gas & Electric a utility and so on. Governments pursued fuel policy. Then, in late 1973, the Organization of Petroleum Exporting Countries OPEC quadrupled the world price of oil. Almost overnight fuel policy became energy policy. In the course of the upheaval that ensued, fuel companies and electricity and gas utilities all became lumped together and labelled energy companies. But the companies themselves did not change much. Throughout the 1970s and 1980s the structures and business activities of individual companies remained broadly the same, as did their relations with their customers.

In the past decade, however, energy companies of every kind have been swept into a headlong tumult of transformation. The process began innocently enough, with the sale of government-owned gas and electricity systems to private investors, in Chile and the UK at the end of the 1980s. In the UK, however, an apparently trifling corollary had seismic consequences. The government under Margaret Thatcher introduced competition to systems that had been franchised monopolies, first to electricity and then belatedly to gas. Companies that had been able to rely on a guaranteed revenue stream from captive customers found that their shareholders and bankers now had to bear the risks. The private investors involved were often based not in the host country but outside its borders. In country after country, assets previously assumed without question to be essential for national security became the property of foreign owners, changing hands internationally and repeatedly. Electricity became an international activity. At the same time, a new generating technology - the gas turbine - and a new fuel to run it - natural gas - dramatically altered both the technical trajectory of



electricity systems and the financial circumstances of companies involved in electricity and gas.

The interaction of liberalization and technical innovation has opened a Pandora's box. The consequences, for companies, governments and energy users alike, are still unfolding. No one can yet foresee with confidence how far the process of transformation will run, or how fast. To the surprise of many who initiated the process, instead of settling down it is accelerating. Leading energy companies, whatever their historical origins, are racing to stay at the cutting edge, pursuing mergers and takeovers, invading new markets, redefining the ways they do business and even the business they are in.

In the 1980s, for instance, Enron was an operator of US gas pipelines; it has since expanded into independent electricity generation across the world, supply of gas, electricity and energy services to customers, and water management. Its competitors eye it nervously, wondering what it will do next. National Grid, operator of high-voltage transmission lines in England and Wales, strung fibre optic cables on its network towers and created Energis, a burgeoning market leader in telecoms. BP took over not only Amoco, a sister oil company, but also Solarex, a world leader in photovoltaics. Shell set up a whole new division, Shell Renewables, for biomass and photovoltaics. Both BP Amoco and Shell now have rapidly expanding interests in electricity generation and cogeneration. RWE, long a conservative bastion of German traditional electricity, is now advertising itself internationally not only as a 'multi-utility' but also as first and foremost a service company; and many of its competitors are doing likewise. As traditional energy companies cross into water, telecoms and other sectors, so companies with no historical energy connections move into energy; think of the two French water companies that have metamorphosed into the major international energy players Vivendi and Suez Lyonnaise. Even energy equipment suppliers are getting into the act. General Electric, long known primarily as a manufacturer of turbines and other heavy engineering, now has a financial services arm, GE Capital, that is one of its most lucrative activities.

This lively short-term turbulence fills front pages in the financial press, and keeps investment analysts and merchant bankers hopping; but it also presents problems, not only for the senior executives and staff of companies involved but also for governments, regulators and energy



users. As the roles and functions of companies evolve at a hectic pace, traditional skills and competence become obsolete; and those now needed may not be easy to acquire. Culture change within companies, and culture clashes between companies newly merged, can be disconcerting and debilitating. Companies are facing new and unfamiliar risks, and some at least are discovering that share prices can go down as well as up, precipitously.

This is especially unnerving for those used to the cosy and unexciting monopoly world of traditional electricity. At the first international symposium on cogeneration in Washington DC in early February 2000, a delegate declared from the floor that ‘There isn’t anyone over fifty in the electricity business that isn’t looking forward to early retirement’. Electricity industries around the world used to be planned and managed by engineers, many imbued with a vocation to ‘keep the lights on’ at all costs. The costs, of course, fell on captive customers and taxpayers. However, with the advent of liberalization and competition in electricity, engineers have given way to economists, accountants and lawyers; and elaborate institutional structures are being established in Europe, North America and elsewhere, to deal in electricity as though it were a commodity like coffee, orange juice or pork bellies.

Unfortunately, however, electricity is not a commodity. A commodity is something you can store and withhold from the market until you get the desired price. A fuel such as coal, oil or gas is a physical substance - a commodity. It comes out of a hole in the ground at a particular place. If you want to use it anywhere else you must transport it there. Electricity, by contrast, is not a physical substance, nor is it a fuel. Electricity cannot be stored. Electricity is a physical phenomenon happening instantaneously throughout the entire interconnected system. Electricity, in principle, you can generate and use anywhere, at a price.

This fact alone ought to make any energy company now involved with electricity pause and think. New technologies for generating electricity are rushing to commercialization - technologies with attributes very different from those of the steam and water turbines whose economies of scale underpinned traditional electricity systems all over the world. Microturbines, fuel cells and a variety of other small-scale and modular generating technologies including renewables will relentlessly undermine the traditional model of electricity system, based on large-scale remote central generators, long high-voltage



transmission lines and centralized system control. The impact of these innovative decentralized technologies on electricity will almost certainly be disruptive.

The possibility of disruption underlines the difference between electricity and other forms of energy - a difference that companies coming fresh to the electricity business ignore at their peril. Because electricity is a physical phenomenon and cannot be stored, no other energy delivery infrastructure is so vulnerable as the electricity system. A significant fault on the network can black out an entire country within seconds; and restoration of services may take days. Under traditional monopoly regimes customers bore the risk of system failure as they did all other risks. Under a liberalized regime, with generators and users all linked by contracts, who bears the liabilities of a major system failure? The impact on companies involved could be terminal.

Governments, like companies, face unfamiliar difficulties in a world of liberalized energy, especially electricity. The public, the voters and the media still expect the government to keep the lights on. But governments may no longer have either the responsibility or the competence to do so. 'Energy security' has been a catchphrase since the OPEC oil shock, a key objective of governments and the regulators they appoint. However, in an interconnected world of global companies, foreign ownership and management of energy assets, and instantaneous world-wide flows of capital, government leverage over energy in all its forms, and over companies engaged in energy business, dwindles remorselessly. The very existence of companies depends on laws laid down by governments. But energy companies, like companies in many other sectors, are evolving faster than the laws and the governments.

Electricity is leading the way. The changes it is undergoing will be more far-reaching, more fundamental and faster than those in any other energy sector, and will affect every other sector - even companies with no direct involvement in electricity except as users. Electricity and gas are already converging; the emergence of small-scale on-site generating technologies using gas will speed up the convergence. Companies now competing to sell units of electricity at a customer's meter can compete only on price; margins get precariously thin. When, moreover, customers can change supplier in a month, this form of business will be a good way to go bankrupt. The foremost companies are already seeking other ways to win



customers and retain their loyalty. One key way to do so will be to move past the meter, to provide what customers actually want - comfort, illumination, motive power, information processing, entertainment and so on: not units of electricity but energy services, in integrated packages.

On-site generation, too, may be a powerful incentive to optimize entire local systems, including buildings, lighting, motors, appliances, electronics and control systems. Business arrangements may include contracts, leasing, maintenance, upgrades, operation, and immediate on-call trouble-shooting of every kind - continuous relationships between company and customer.

The full potential of these developments has yet to dawn on most of today's energy companies, preoccupied as they are by the hair-raising tumult landing on their desks every day. Energy companies also have to assess the impact on their business of other global issues, including climate change, environment, human rights and corporate social responsibility. The explosive growth of e-commerce and teleworking will profoundly affect their organization and relations with staff, suppliers, customers, competitors and governments.

One conclusion is certain. Energy companies today already look very different from those of a decade ago. A decade from now they may be unrecognizable. Leading energy companies are already reinventing themselves. When the process has run its course, they may no longer be energy companies.