

Security of supply

The real threat

| By Gerrit Buist

Russia is generally seen as the greatest threat to the energy security of the European Union these days. The real threat to our security of supply, however, does not come from the east, but from within our own system.

It is the old institutional design of our electricity infrastructure that is making us vulnerable. What is needed is a new, functional perspective on electricity.

On September 19 the European Commission came out with a third package of legislative proposals for the energy market. The Commission specifically identifies “third countries” from outside of the EU, i.e. Russia, to be a threat to European security of supply. But playing politics with Russia is not going to do anything to address the vulnerabilities of our energy system. Real security of supply will come when we manage to reduce our reliance on centrally-planned solutions, on political control and single sources of energy. Real progress will be made if we truly open up our markets to competition.

Until recently, security of supply was not given much thought by policymakers. They more or less assumed that electricity would be around for always for a fair price. In most countries government-owned companies had been given the task of ensuring that supply met demand. The introduction of competition changed all that. Competition was meant to give private companies the position to deal with demand and supply. National authorities were left setting standards and conditions.

This sounded good in theory, but left policymakers and the public feeling insecure. ‘The market’ was supposed to make sure that there would be enough investment in electricity generation, but what if market participants failed in this task?

The European Commission tried to address this situation by establishing legal definitions of security of supply in Electricity directive 2003/54/EC. Article 4 defines the monitoring of the security of

supply issues. The article identifies areas that the member states have to monitor: the supply/demand balance, the level of expected future demand and envisaged additional capacity, the quality and level of maintenance of the networks, as well as measures to cover peak demand and to deal with shortfalls.

These are very broad definitions that give no indication of how they are to be reached. What is lacking is insight into how the electricity market operates, specifically in the value chain that characterizes the electricity market.

Generation |

The traditional institutional description of the value chain of the electric power system encompasses generation, supply, transmission and distribution. Since electricity was first generated commercially in 1878, these functions were mostly executed by companies or organisations having a non-competitive franchise given to them by regulators in a specific geographical area. In exchange for this privilege the companies and organisations accepted the obligation to guarantee the functioning of the electricity system priced by the regulator. There was no pricing mechanism for demand and supply. Regulators simply set tariffs for the four stages in a system of central planning.

To function properly in the new setting, generators, as market participants, first of all have to have a clear insight into the balancing data. In the past, the balancing mechanism was not relevant in any financial sense. It is crucial, however, in a market where participants depend on

financial results to measure their success. Balancing data form essential market knowledge. In most EU countries the independent system operator (ISO) or the transmission system operator (TSO) has this information based on data supplied by transport and distribution companies. Independent generators do not have direct access to this information. They have to rely on their own forecasts of demand and supply. The only way they get the relevant data is ex post varying from 1.5 hours (in the UK) to 6 weeks (in Germany) to not at all (Greece). This seriously undermines their ability to operate in the market and plan investments adequately.

Market participants also of course have to have access to the grid. If they do not have grid capacity, they will not be able to operate. Currently many investments are being planned in power generation, most in sustainable forms like wind, sun or high efficiency demineralisation units. These forms of power generation would reduce dependency on traditional forms of generation with its high dependence of gas – and thus enhance security of supply. Unfortunately, however, in many countries there are now serious delays in the building of new generation capacity because generators lack access to transport and distribution networks. Organisations or companies owning the grids often determine whether or not new generation capacity can be connected. If they do not grant direct physical access to the system, construction of new generation ultimately will be limited to those companies that have interests in grid companies.

Supply |

The suppliers in the new electricity market have their own disincentives. Electricity users can shop around for a supplier. The supplier need not have a distribution network. The problem, however, is that in most of the EU member states the suppliers do not have an incentive to influence demand and supply. Relevant data are not available freely and so suppliers cannot use them to optimize loads financially. This problem is made worse because local grid companies lack the ability to make allocations and reconciliations of expected generation and consumption so that market participants

will know beforehand or within very short notice what the financial consequences will be of their load behaviour. Grid companies are central to this problem since in most jurisdictions they are given the task of allocation and reconciliation for the so-called ‘profile customers’, i.e. the small users and households whose consumption is forecasted based on data of the past. These companies have no incentive to improve their services in this field and this makes it complicated to rely on their data – if there are data in the first place.

The grid |

In an open market a grid is no longer a physical connection only. Transmission is the gate to the market, distribution is the connection to the system. The grid performs a crucial functional role in the balancing mechanism since it acts as a demand and supply data transmitter between the market and the ISO or TSO.

Based on the accounts of the ISO or TSO final pricing of transactions should be possible. The imbalance market is the first and central market for price discovery and both power exchange prices and OTC contracts are directed by it. But an imbalance market can only function properly if and when all market participants share the same knowledge of the relevant market data. This is unfortunately not the case since some of the market players are more ‘bundled’ into the grid than others.

Only the Netherlands and the UK have an independent system operator, but both these ISOs still rely on data deliveries of distribution companies, which are part of integrated energy companies and therefore have a conflict of interest. Control over power flows comes with the data; that is why the data should not be left in the sole ownership of incumbents who have their own interests at heart.

The weakest link |

The real supply threat to the European electricity system, then, is rooted in the lack of understanding the functional change this system is experiencing as a result of market reform. The infrastructure is the nexus of an open European power market to be, yet grid companies with various conflicting interests still play a decisive role and have a profound influence on how the European



Photo: Roger Dahmen.

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power market functions. Allowing the owners of the physical infrastructure to be involved in the data function of the grid is contrary to the demands of an open power market.

What we should do is make a clear distinction between the institutional traditional design of the electricity system and its functionalities. The functional setup of the system will determine whether or not there is a secure supply for customers that are free to choose. The Commission should no longer give control of the electricity system to the owners of the fixed assets of the infrastructure. The operator(s) of the system should be fully independent. There should be no formal or informal link between the operator and any other company having a financial or economic interest in the results of the power market. In this sense, the proposals made by the European Commission on 19 September fall short of what is really needed to reform the system. ■