



Balancing act—new electricity rule changes cause concern

A series of operational problems have arisen following the implementation of the new electricity cash-out arrangements on 5 November, which either did or had the potential to affect imbalance prices. The problems have been serious enough for Elexon to state publicly that it has considered unwinding the changes. In the same November 2015 BSC systems release the changes to introduce new measurement classes to support half hour changes to DCUSA tariffs were implemented; this has also given rise to problems.

The changes come at a time when the industry is also being required to square up to other major process and systems developments. As well as Project Nexus, which remains a work in progress, there will shortly be new requirements to enable domestic smart meter data to be used in settlement and next-day switching.

In this *Energy perspective*, the last of 2015, we look at these recent problems and the implications for industry priorities.

Lion tamer

On 5 November the changes to electricity cash-out arrangements from Ofgem's Electricity Balancing Significant Code Review were introduced that aim to sharpen the incentives on parties to invest in more flexible generation and accurate forecasting. As well as changes to the overall pricing methodology with the introduction of a single, more marginal price, they also include a new Reserve Scarcity Pricing (RSP) function that relates the cost of using non-Balancing Mechanism Short-term Operating Reserve (STOR) to the level of scarcity on the system. A Loss of Load Probability (LoLP) curve is used to calculate the likelihood the system could be unable to meet demand and this is multiplied by the Value of Lost Load (VoLL), initially set at £3,000/MWh, to calculate the price for using reserve. If a STOR plant's utilisation is less than the RSP, the RSP will apply.

We considered subsequently, as the new rules came into effect, how the impact of these changes would be higher peak and lower trough cash-out prices with levels more volatile and complex to forecast, and that these changes would drive behavioural change (*ES497*, p2, 09/12/15). But a new dimension of uncertainty has been introduced by the operational problems that have since been experienced. The problems are particularly striking because, up until now, errors in cash-out price formulation have been very rare. Although the methodology and systems are highly complex, they have worked more or less like clockwork and the industry trusted them.

Flying (by the seat of the pants) trapeze

An issue developed right from implementation with National Grid's systems used to generate the de-rated margin (DRM) values that feed through to the calculation of LoLP and RSP. The initial problems were with data from 5-9 November where Elexon said it had been experiencing issues with the accuracy and completeness of LoLP and DRM data provided to BSC central systems by National Grid.

On this occasion analysis showed that the problems did not affect the calculation of imbalance prices. Although STOR was dispatched on 11 occasions, these actions would not have been re-priced so as to be equal to the RSP or have remained in the final "stack" of actions used to calculate any imbalance price. An upgrade to National Grid's system was implemented. However on 26 November further problems were identified: the system was forecasting "considerable shortages" that day although National Grid confirmed system margins were healthier than indicated. The next day it said National Grid would no longer send the data until the issue was resolved.

In an unprecedented move on 4 December Elexon addressed in an update to all BSC parties whether it should consider "backing out" of the cash-out changes. It said that, although it had considered the costs and benefits, at this point it did not consider there was a clear enough case. It said it understood that parties' confidence in the calculation and



reporting of data “has been knocked by recent events” and that: “In this respect backing out of the changes introduced by the November Release might allow Elexon, National Grid and parties time to fix existing issues and complete additional testing without further risking the calculation of system prices”. However, it concluded that, despite the issues National Grid was experiencing, the central systems are working correctly and existing BSC processes were being used to correct data where necessary. Seeking to reassure it said, having worked with National Grid to understand the issues it was experiencing, it was confident solutions were being progressed that would effectively resolve the issues.

Diabolo!

By 8 December National Grid said it had developed a solution that it would implement in time for the midday forecast that day. It had indicated the previous day that it would actually hold off re-starting the reporting of LoLP and DRM data if system margins appeared to be lower than usual to avoid any sudden shock to parties’ balancing behaviour or the calculation of system prices and that in such a situation it might wait until after the evening peak. In the event the values for DRM were in the order of 8-9GW for the darkness peak so they were not expected to produce material RSPs.

Elexon said it was confident that National Grid had resolved the issue and that correct data would feed into system prices, but on 10 December National Grid informed Elexon that it was experiencing a “connectivity issue” between its systems meaning that it was not producing and reporting DRM and LoLP data again. And again this meant that zero LoLP and RSP prices would feed into system prices. At time of writing this issue was still unresolved.

Meanwhile on 30 November another problem surfaced in that in two settlement periods indicative system prices of £3,000/MWh and £954.13/MWh were calculated due to the erroneous inclusion of demand control actions. This problem was subsequently found to be due to links to a test environment being inadvertently switched for a training session. The prices were then corrected in the settlement process so they did not impact prices paid/received.

Fire dancing

At the BSC Panel on 10 December Elexon said an initial “lessons learned” exercise had been carried out and some improvements had already been identified, with a full exercise now having commenced, starting with a full audit. However, it acknowledged that the design phase for the changes focused primarily on creating a system that worked rather than on potential failure modes, and this was in part driven by tight deadlines. It also conceded there were insufficient controls to ensure that generators included in the margin calculation remained aligned with generators on the system and insufficient controls on systems environments to prevent erroneous data being sent to Elexon.

Elexon also concluded that industry participants’ trust in National Grid has potentially been reduced as a result of errors in the data and recommended an “honest” approach to explaining the issues and how National Grid is solving them and potential “joint branding” of Elexon circulars.

It also recommended examining ways in which industry could input to the implementation process for significant modifications, for example by establishing a stakeholder panel.

Plate spinning

BSC operational problems do not end there. Also included in the November systems release was the implementation of P300, which introduces new measurement classes to enable aggregated billing for distribution use of system (DUoS) charges. Previously all half-hourly settled customers received site-specific bills, which acted as a barrier to the development of smart metering.

Since implementation there have been a series of problems. These included a systems issue with a half hourly data aggregator (HHDA) understating consumption values that would have resulted in a supplier receiving £12mn from non-



half hourly suppliers. Elexon spotted the issue and took corrective actions, including the use of default data and the HHDA used a manual workaround from 9 November. Elexon said it aimed to implement a permanent fix to the central software as soon as possible.

There were also missing aggregated DUoS report flows from Elexon from 5-9 November affecting three suppliers and two distribution network operators, which were the result of a formatting defect in the central software. On 10 December Elexon reported a further problem with delays to these reports, which followed additional checks it has been conducting to ensure no further issues with HHDA data flows.

Stilt walking

The accumulation of this number of problems, particularly those associated with the central price setting processes, points to a more fundamental issue than simply a few teething problems with changed software. It highlights the strain the industry is under in trying to manage immense overhauls of the way things are done in very short timescales, and the difficulties of managing processes that are labyrinthine in complexity.

The cash-out changes, we have long argued, place new risks on participants, particularly smaller and new players, to manage more extreme and volatile prices without any additional tools that might enable them to do this effectively. The last thing the industry needs is that these cash-out prices may be unreliable too—it is lucky that the cash-out prices have not been directly impacted by the data issues around the RSP. Ofgem was keen to get the changes in place in time for this winter, but the design phase for the cash-out changes began relatively recently, and even then actually ahead of the industry having the vires to develop the changes. This is not a good way to conduct important change processes.

Lessons need to be learned quickly and honestly. These lessons are likely to be pertinent very soon: in her recent speech to “reset” energy policy energy and climate change secretary Amber Rudd said she has agreed with Ofgem that by early 2017 it will remove barriers to suppliers choosing half-hourly settlement for household consumers. Separately, Ofgem has recently announced a Significant Code Review as part of its programme to achieve next-day switching that will also require wide-ranging changes to the BSC and other industry codes.

Ring master

The CMA has already identified industry governance as having an adverse effect on competition. The recent experiences illustrate different defects to those on which it based its prognosis. They highlight the problems with allowing the regulator to impose inflexible deadlines, and push through “desirable” changes in the absence of a design authority.

Where there is common ground with the CMA’s thinking is on the need to deliver better outcomes and to ensure proper checks and balances throughout the change development and delivery process. Many parties—and not just smaller, newer ones—have long been calling for a better understanding among code administrators and regulators of the problems they face in assimilating the volume of traffic flowing from industry codes. This is compounded by the deep complexity of industry rules and processes that differ significantly between codes.

The CMA’s comments on code governance did not extend to industry processes themselves. We were surprised by this as we have long contended that balancing and settlement in particular have been very complex, requiring deep expertise and knowledge of a growing body of dense documentation and unintuitive procedures. But the conclusion we reach is that it does need to think about the current experiences in formulating its final findings.

