Independent Market Operator

EXTERNAL MARKET INCIDENT REPORT - STEM SUSPENSION 2 JUNE 2007

19 June 2007

Introduction

On 1 June 2007 the STEM was suspended for trading day 2 June 2007 due to an error in calculating Market Participants' Net Contract Positions (NCP) ahead of the STEM Auction. The purpose of this report is to:

- Discuss the causes of this issue;
- Propose recommendations to minimise the probability of recurrence; and
- Propose changes to systems and processes to improve the management of STEM suspensions.

Background

As an integral component of the Wholesale Electricity Market (WEM) the Bilateral Trading Market provides the ability for Market Generators to submit bilateral trade quantities to the Independent Market Operator (IMO) covering bilaterally contracted energy. These amounts are dispatched, but are not settled in the market. The Bilateral Trading Market is opened, under the Market Rules, for a period of seven Trading Days prior to each Scheduling Day.

When the Bilateral Trading Market is opened, standing bilateral contract details are used to establish an initial bilateral trading position for Market Participants. Those Market Participants without standing data have their bilateral position defaulted to zero at this point.

At 8:20AM on the Scheduling Day, details of Market Participants' initial bilateral positions are published in confidential reports. This publishing event also sets the initial NCP based on this bilateral position. Market Participants are still able to adjust their bilateral positions, until 8:50AM when the bilateral window is closed. At this point a final bilateral position is created and reported to Market Participants in a confidential manner. This last event also updates the NCP.

Underlying Issue

The Wholesale Electricity Market Systems (WEMS) undergo constant change to resolve issues and implement improvements. These changes give rise to the need for comprehensive WEMS testing, release and change control processes. Under this process, WEMS release 1.2.9 provided to the IMO on 22 April 2007, underwent significant testing and was implemented into production on 31 May 2007.

Part of WEMS release 1.2.9 contained a fix to allow the IMO to change database passwords. This had previously been a problem as some passwords had been "hard-wired" into the application code causing problems when attempts were made to change database passwords. The fix involved

changes to some WEMS events that would force them to use the correct passwords and logon identifiers.

At 8:50AM on 1 June the event that creates the final bilateral position was run for Trading Day 2 June and completed successfully with no indication of problems. However, at 9:40AM the IMO Operations team were contacted by a Participant and were informed that:

- a bilateral submission had been made after 8:20AM; and
- The Participant's NCP had not been influenced by this submission (i.e. remained unchanged from that published at 8:20AM)

On investigation, it was discovered that the final bilateral position event had not been corrected for the password issue, and was subsequently unable to access the database to update bilateral positions based on data that had been submitted since the initial bilateral submissions.

Without knowing their correct NCP, the Participant was unable to make a valid STEM submission.

Operational Actions Taken

Once the STEM auction had been run at 10:30AM of the Scheduling Day, it became clear to IMO Operators that the NCP for some Market Participants had not been updated with the valid bilateral information. These invalid NCPs, along with the inability of Participants to make a STEM submission, meant that the results of the STEM Auction were invalid. IMO Operators consequently suspended the STEM under clause 6.10.1 of the Market Rules.

Participants were advised of the STEM suspension and were advised to contact IMO Operations if they experienced difficulties entering Resource Plans. At this point the IMO reviewed the sequence of events and investigated database activities to establish the cause of the event failure. It was discovered that the failure had been within the final bilateral position event.

The Operations team also established that some Market Participants had cleared in the STEM. Where the STEM is suspended, the IMO must ensure that the NCP of all Market Participants is set to their Net Bilateral Position. Given that the final bilateral position event had failed, Operations performed the following in order to achieve this correct final outcome:

- The 8:20AM initial bilateral position event was rerun such that the initial bilateral positions were set accounting for all bilateral submissions;

- The 8:50AM NCP event was the rerun such that the final bilateral position and NCP were set based on the correct final bilateral positions.

Having suspended the STEM and reset each participant's Net Contract Position to the correct Net Bilateral Position the remainder of the Scheduling Day was conducted without further incident.

Resolution

The IMO investigated the underlying issue from 10:00AM and was able to identify a solution within thirty minutes. The fix was applied in the User Acceptance Testing environment, tested, and then applied to the Production environment within the same Trading Day. This prevented the issue from affecting the following Trading Day.

Follow Up Actions

When the market is suspended there is no energy cleared through the STEM. All energy produced or consumed in deviation to the net bilateral position is settled through the balancing market.

Under normal processes the balancing price is determined as:

1. The STEM price if the operational load is within a tolerance band of the net contract position; otherwise

2. A price determined by reconstructing the bid offer clearing process where the operational load is outside of the tolerance band.

Given that the STEM was suspended due to invalid submissions, it was not appropriate to use the methods described above to determine the balancing price. The Market Rules indicate that, in cases such as this, the balancing price must be derived from a previous "like-day". As such, the balancing price for each interval in this day was set equal to the balancing price on the same interval for the previous non-business day (Sunday May 27).

Commercial Effects

There are generally two commercial effects associated with a STEM suspension:

1. Balancing Market – energy that would have traded in the STEM will now be exposed to the balancing market, with penalties applying. However, analysis shows that the amount of energy that would have cleared in the STEM was small (approximately 10 MWh during the off-peak hours only). Given that most (if not all) of this energy would have been provided by the balancing generator and consumed by customers without penalty, the price applied will be the same as that of the STEM and, consequently, the commercial effect will be very small.

2. Reserve Capacity Market – where the STEM is suspended, available capacity calculations do not apply to Reserve Capacity Refunds. However, given that these refunds are dictated by Forced Outages rather than available capacity for 99.6% of the time, the commercial effect on this day was zero.

Therefore, the total commercial effect of this issue is minimal.

Recommendations

The following points outline the recommendations arising from this incident:

- A step will be included in the Daily Operations Procedure to ensure that the Operator on call verifies that bilateral submissions received after 08.20 are included in the Net Bilateral Position of Market Participants.

- This issue was not detected during the relevant testing of the WEMS release. This was due to the lack of a multiple bilateral submission in this testing. Testing procedures will be altered to widen the scenarios being tested to minimise the chance of issues such as this being missed. A discussion regarding the costs and benefits of expanding on existing testing in the current environment is provided below.

- The application log gave no indication of problems with the events access to the database. This will be raised as an issue with the software vendor.

Software Testing Environment

When considering the appropriate level of testing to apply to software releases in the WEM, the following points should be considered:

- Unlike the National Electricity Market (NEM), the WEM is an ex-ante market in which market facility outputs are not directly controlled by the outcomes of the market. Consequently, a failure of the market leading to a STEM suspension has no direct impact of the reliability or security of the power system.

- A suspension of the STEM will generally not result in significant commercial effects to Market Participants. This is particularly relevant with the current small quantities of energy being traded through the STEM.

With the resources available, the IMO has established robust testing and release procedures. We are currently expanding on this to include rudimentary full regression testing in some cases. However, significant expansions to our current testing processes would be costly relative the potential benefits at this stage of market development.

The IMO therefore does not believe that significant expenditure to expand the testing environment is warranted at this point in time. We will continue to monitor this cost benefit trade-off, to optimise our testing environment in the future.