RETAIL ENERGY CODE

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RECCO UPDATE ON EES PERFORMANCE ISSUES – DURING AND AFTER MHHS RELEASE

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FOR INFORMATION 	Performance Assurance requested an update on the EES performance issues experienced during the MHHS transition period in September and in October, including confirmation of when a more detailed update—covering the associated SLA impacts from the October period—can be provided.

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SEPTEMBER 2025 EES PERFORMANCE ISSUES

Two main issues were recorded:

- Online portal access difficulties – Some users were unable to log in to the EES online portal during the afternoon of 22/09.
- Planned outage and period of 'read only' access during the MHHS Cutover Weekend (19 - 21/09)

What Caused Them:

- **Portal access issue:** Caused due to a configuration issue introduced during the M10 cutover activities. The emergency fix suggests a temporary fault in authentication or portal handling.
- **Cut Over Activities:** These were pre-approved as part of the M10 cutover plan. The CSS Change Board sanctioned a change acknowledging that essential work would overlap with the usual maintenance restriction period (16:00–01:00). Therefore, this was a controlled, planned outage, not an unplanned service failure.

What the Impact Was:

- **Portal issue impact:** Some users could not log into the service and therefore could not submit or record their search queries or access ancillary services such as SDEP. Although the EES system technically met SLA response times for all received messages, user queries during login failure were not captured, leading to incomplete monitoring data.
- **Cutover impact:** The API and Portal were unavailable for the agreed cutover period, with the API also unavailable for a short period (1 hour) longer than scheduled. CSS messages were not loaded after gate closure on Friday 19/09. As they were technically received this didn't impact SLAs, although it delayed data update into the system. In addition, user audit information was not able to be recorded during the 'read only' period, this has impacted the reporting of a number of SLAs.

Resolution Status:

- **Portal stability issue:** Resolved. An emergency fix was deployed promptly to restore access and improve stability.
- **Cutover-related outages:** No further action required; these were planned and executed as agreed. Post-cutover performance returned to normal.

Steps to Prevent Reoccurrence:

- Enhanced portal resilience measures — the stability issue prompted an immediate fix, and ongoing monitoring has likely been reinforced.
- Enhanced user support protocols — quicker escalation and contingency messaging for any login-related issues during major programme activities.
- Data capture improvements — to ensure that even failed login attempts or service interruptions are logged for transparency in future reporting.

Misreporting to the Code Manager:

C&C acknowledged that, although the reporting submitted to the Code Manager correctly indicated no SLA failures, it lacked contextual explanation to clarify the reasons behind this. C&C will therefore reissue the

Code Manager report with the necessary context included and will ensure that, for any future reporting cycles, such explanatory detail is consistently provided to support clearer understanding and interpretation of SLA performance.

OCTOBER 2025 EES PERFORMANCE ISSUES

1. BACKGROUND

Between 1 and 10 October 2025, the Electricity Enquiry Service (EES) experienced a period of performance degradation that affected both the EES Portal and API, causing slow responses, timeouts, and intermittent logouts for users.

The incident stemmed from unexpected database performance issues following recent infrastructure and software changes.

2. CONTRIBUTING CONTEXT

To support the increased processing demands associated with Market-wide Half-Hourly Settlement (MHHS), EES had recently been migrated to a cloud-based environment on Microsoft Azure.

This migration introduced virtual machine-hosted Microsoft SQL Servers, which automatically manage query execution ("query plans") used to retrieve information from large datasets.

Two key background factors contributed to the October degradation:

1. **MHHS M10 Migration (20–22 September 2025):**
   The migration introduced database structure changes and new workloads.
2. **Security Patch and Server Reboot (29 September 2025):**
   Following standard patching, SQL Server recalculated its query execution plans, unintentionally selecting less efficient methods for retrieving data. These new "plans" were sub-optimal, resulting in excessive CPU consumption during common operations.

3. WHAT HAPPENED

When users or external systems queried EES (for example, to search for an MPAN, look up technical details, or retrieve related addresses), the database translated these requests into internal steps to fetch the right records.

After the 29 September reboot, SQL Server changed how it carried out these steps — it began doing more work than necessary for each request.

This was not caused by high traffic or new features, but by inefficient internal query logic.

As a result:

- The database CPUs started spiking above safe levels (near 100% at times).
- Users experienced slow responses, timeouts, and logouts on both the API and the online portal.
- The performance dipped and recovered in cycles ("peak-and-trough" pattern).

4. TIMELINE OF EVENTS

Date	Event	Details
20–22 Sep	MHHS M10 Migration	Databases migrated to Azure environment; initial stability achieved.
29 Sep	Scheduled Server Reboot	Security patching triggered SQL Server to rebuild query execution plans.
1 Oct	Performance Degradation Begins	Users report slow portal and API responses; incident monitoring detects abnormal CPU activity.
3 Oct	Incident Raised (P2)	EES Incident CCSP0881091 formally opened; monitoring confirms widespread degradation.
4–5 Oct (Weekend)	Extended Response Team Engaged	Technical and operations staff work continuously; stability gradually improves.
5 Oct (Evening)	Peak CPU Events Subside	Following early re-engineering efforts, system stabilises; no new user issues reported.
6–9 Oct	Root Cause Analysis and Fix Implementation	SQL stored procedures rewritten to bypass inefficient query planning; close monitoring confirms steady improvement.
10 Oct	Incident Closed	CPU utilisation stabilised below 45%; all user complaints resolved; system confirmed stable.

5. TECHNICAL CAUSE EXPLAINED SIMPLY

SQL Server normally decides *how* to fetch information (the “execution plan”). After the reboot:

- The system guessed wrong about which method was fastest.
- The chosen plans caused the database to perform redundant data scans.
- As more of these inefficient queries ran simultaneously, performance dropped.

The fix was to rewrite key stored procedures so they explicitly tell the database the correct way to get the data. This stopped SQL Server from making poor assumptions, effectively “locking in” efficient behaviour.

6. IMPACT ON USERS

- **Who was affected:** 21 known customers, including GB Group, E.ON Next, Scottish Power, and several others.
- **Nature of impact:**
    - Slow or failed portal searches.

  - API timeouts or errors.
  - Temporary inability for consumers to switch suppliers through third-party platforms.
- **Switching and settlement:** The Central Switching Service (CSS) and Data Integration Platform (DIP) were unaffected.
- **Complaints:** None were formally raised **after** communication and updates were issued (Please see Timeline of Events).

7. ACTIONS TAKEN

Immediate Response

- Raised as a P2 incident (high severity).
- Daily updates shared between RECCo and C&C Group.
- Continuous monitoring established for CPU, API response times, and query behaviour.

Technical Fixes

- Re-engineered stored procedures for problematic database queries.
- Manual query optimisation removed dependency on SQL Server's automatic plan generation.
- Real-time monitoring dashboards updated to flag slow API methods early.

Operational Improvements

- Enhanced incident management coordination between RECCo, C&C Group, and affected users.
- Improved communications and escalation pathways.

8. ASSURANCE AND PREVENTION

To confirm resolution:

- CPU utilisation remained stable below 45% for seven consecutive days.
- No further API or portal degradations observed post-fix.
- All customer tickets closed and monitored metrics within thresholds.

To prevent recurrence:

- A REC Change (raised by Andres Alvarez) will disallow "query chaining" in future system use — removing a known performance risk.
- Additional performance testing will simulate historic peak loads to validate system resilience.
- Monitoring refinements to detect inefficient query plans earlier.
- Clearer comms processes to govern future incident updates.

9. LESSONS LEARNED

Technical

- SQL Server's automatic optimisation can occasionally select inefficient plans after updates or reboots.
- Database tuning should include plan stability checks post-maintenance.
- Cloud environments amplify the impact of such inefficiencies due to resource elasticity limits.

Operational

- Continuous executive oversight during incidents proved critical for rapid recovery and consistent communication.
- Joint RECCo/C&C workshop identified the need for documented communications protocols for major incidents.
- Collaboration between technical and business teams maintained customer trust and avoided escalation.

10. CONCLUSION

The October 2025 EES performance degradation was the result of unexpected database inefficiencies triggered after a routine security update, compounded by recent system migrations. The root cause has been addressed through code-level optimisation, and further safeguards are being introduced to prevent recurrence.

The coordinated response by RECCo and C&C Group, coupled with transparent communication to users, ensured the incident was resolved with minimal disruption to market operations and no permanent impact on consumer switching.

We can look to provide a follow-up update on this PAB Paper, including the monthly reporting that details the SLA impacts, at the December PAB meeting — or ideally at the January session to ensure inclusion of the most complete data.