
Powercor
AUSTRALIA

# INFORMATION AND COMMUNICATIONS TECHNOLOGY

## MARKET SYSTEMS

**PAL BUS 7.06 – PUBLIC**
**2026–31 REGULATORY PROPOSAL**

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# 1. Overview

Our market systems platform provides centralised storage and validation of interval meter data and manage market-compliant communications and customer requests both internally and with external participants of the National Electricity Market (NEM). Our market systems platform is essential for ensuring compliance with our regulatory obligations under the Australia Energy Market Operator (AEMO) procedures, National Electricity Rules (the Rules) and Distribution Code.

Ensuring technical currency of our market systems by remaining on a vendor supported product version is essential to ensure continued support of the critical software and compatibility with integrated software. By ensuring currency, the software vendor will provide fixes to software issues, minimising the risk of a critical process failure and non-compliance with regulatory obligations.

We considered three options related to maintaining our market systems:

1. **do not maintain currency** – under this option we would not apply any updates to our systems over the 2026-31 regulatory period
2. **maintain currency** – under this option we would implement every second vendor update (N-1) to ensure we remain within vendor support
3. **maintain currency with more frequent upgrades** – under this option we would perform all upgrades as recommended and released by the vendor.

Option two is recommended as it ensures the continuity of critical business and market processes, maintains compliance and provides the best value to customers.

The following table provides a summary of our options analysis for the 2026-2031 regulatory period.

**TABLE 1 OPTIONS ANALYSIS SUMMARY ($M, 2026)**

| OPTION | | CAPEX | OPEX | NPV |
|---|---|---|---|---|
| 1 | Do not maintain currency | - | 4.3 | - |
| 2 | Maintain currency | 21.5 | - | 14.1 |
| 3 | Maintain currency with more frequent upgrades | 22.2 | - | 11.0 |

Note: this includes costs and benefits associated with CitiPower and Powercor

# 2. Background

We utilise integrated and scalable meter data management, market transaction and network billing systems to meet strict licencing and market compliance requirements. We refer to these as our market systems.

Our market systems provide centralised storage and validation of meter reading data. They also manage communications, customer requests and data exchanges internally and with external market participants including retailers and AEMO in line with our compliance obligations.

Our market systems platform is comprised of:

1. The market systems which manage meter data, market transactions, billing and master data
2. The supporting integration layer software

We address each of these components below.

## 2.1 Market systems

We utilise integrated and scalable meter data management, market transaction and network billing systems to meet strict licencing and market compliance requirements.

Our market systems provide centralised storage and validation of meter reading data. They also manage communications, customer requests and data exchanges internally and with external market participants including retailers and AEMO in line with our compliance obligations.

Our market systems are essential for a number of major functions:

- providing market settlement data to AEMO and meter data to retailers so they can bill for usage. During 2023/24, Powercor market systems validated and delivered over 15.6 billion sets of interval meter readings to the NEM.
- performing network billing and associated revenue collection from retailers. During 2023/24 our market systems enabled Powercor to issue 11.6 million invoices to retailers in relation to network billing.
- management of customer, site and meter details
- resolving customer requests and issues in the contact centre.
- actioning market transaction requests between NEM participants. Market transactions between participants such as retailers and distributors support consumer connection point transfers, management of standing data, the provision of customer details, life support notifications and meter data requests. Powercor receives around 78,000 market transactions[1] per business day which are managed via automated processes built within our market systems and supported by the integration layer.
- managing new connection requests and actioning energisations and de-energisations (both remote and physical). In addition to market transactions mentioned above, we also receive customer or retailer requests in the form of a business-to-business (B2B) service order. These are also supported by automated processes within our market systems. The main requests relate to

[1] Examples of these transactions include a change of retailer, change to market role responsibilities, creation of a NMI and maintenance of NMI data. Volumes are based on an average daily during June 2024.

the re-energisation or de-energisation of a site when a customer moves house[2]. On average, Powercor receives and actions over 1,000 B2B service order requests per business day.

- ensuring up to date customer data from Retailers[3] is received by our market systems and subsequently used for planned and unplanned outage notifications. As an example, it is vital that outage notifications are sent to the address nominated by a customer. A physical address to be used for written correspondence may vary from the property supply address or an email address may have been updated.[4]

An overview of the current market system platform landscape is provided in Figure 1 below. The table below shows the function of each system.

**FIGURE 1 MARKET SYSTEMS & INTEGRATION LAYER DIAGRAM**

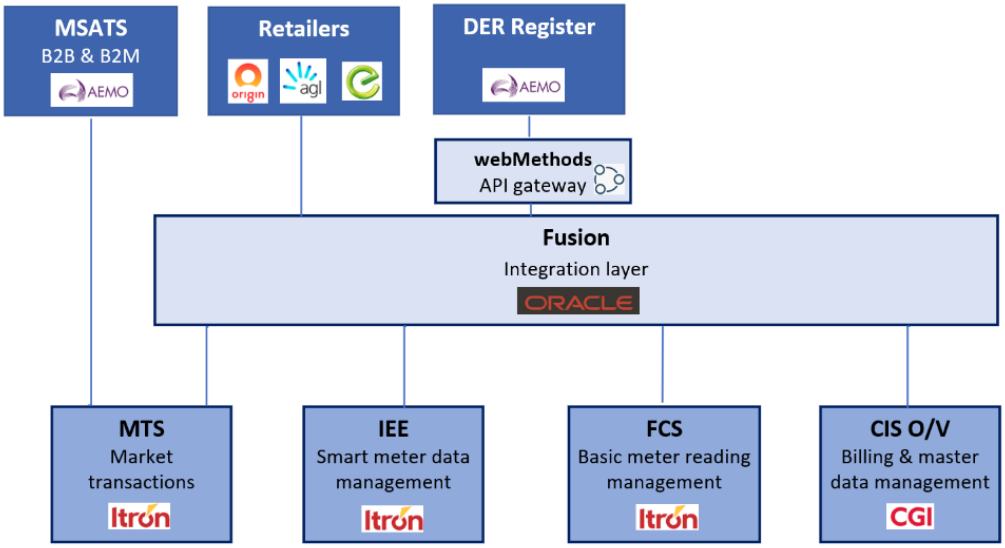


**TABLE 2 MARKET SYSTEMS APPLICATIONS**

| APPLICATIONS | FUNCTION | DESCRIPTION |
|---|---|---|
| Market Transaction Suite (MTS) | Market transaction exchange with AEMO, Retailers and other market participants. | Ensures industry compliance on market transaction functions, including the delivery of meter data, network billing and market transactions via B2B and CATS transaction mechanisms. Underpins communications and data exchanges between the organisation and external market participants, including retailers, meter data providers, metering providers and AEMO. |

2 Other requests relate to requests for a special reading, meter exchange, supply abolishment, change of tariff or advice of a new life support customer.

3 Customer data is provided via a NEM supported transaction known as a Customer Details Notification.

4 Where a customer had advised their retailer of a separate physical address to be used or their email address is updated, it is vital that we record this update in our systems so that communications can be correctly directed.

| | | |
|---|---|---|
| Itron Enterprise Edition (IEE) | Interval meter data collection, storage, management and processing. | Flexible off-the-shelf platform that receives and processes interval meter data from the AMI meter fleet. Validated reads are sent to market to fulfil regulatory obligations and also passed to internal systems for network billing and collections. |
| Customer Information System (CIS-OV)[5] | Customer information and relationship management, account management, billing and collection. | Specialised industry solution to support:<br>• customer and retailer information management<br>• creation of National Metering Identifiers (NMIs)<br>• billing and payments<br>• meter management<br>• management of remote re-energisation/de-energisation<br>• accumulation (basic) meter data maintenance. |
| Field Collection System (**FCS**) | Scheduling and management of manually read meters. | Mobile meter data collection software to collect and automate the transfer of data to and from devices supporting the manually read meter fleet. Meter data is sent either to the billing system or to IEE. |
| Oracle Fusion | Integration layer (middleware). | Facilitates and controls routing of messages and transactions exchanged between IT applications within Market Systems and between Market Systems and organisational systems (e.g., SAP, Salesforce Field Services). |
| webMethods API gateway | Provides a connectivity interface so that software from within our organisation can communicate with software used by external applications/NEM participants[6]. | Facilitates and secures API-based communications between the enterprise and external applications/NEM participants. It is utilised by Market Systems applications to support API based interactions with NEM participants[7]. In addition, the API gateway supports external integrations across all domains, including Salesforce customer portals, SuccessFactors and field mobility. |

5 Under the S4/Billing non recurrent business case, it is proposed the CIS O/V application is decommissioned during 2027/28.

6 NEM participants – AEMO & retailers

7 While this is currently limited to AEMO DER Register, it is expected to expand as AEMO looks at more API based interactions.

## 2.2 Integration layer

The systems integration layer provides a continuous and effective flow of data between market systems within in our organisation as well as with external participants in the NEM.

The Oracle Fusion Middleware platform – Enterprise Service Bus (ESB) supports many of CitiPower and Powercor's key market processes and other processes across the IT landscape.

The ESB platform is a vital system on which critical applications and business processes depend to transact. It manages the key interactions between our systems. Functions include but are not limited to:

- Market Gateway – the transmission and receipt of service orders, site details, meter data and meter reads.
- Business to Business (B2B) and Customer Administration Transfer System (CATS) transactions.
- The interface between Salesforce customer portals, the SAP enterprise resource platform and the VPN field services management software.
- Faults interfaces between the outage management system and the field service management software.
- Workforce management – the transmission of field work orders to construction delivery teams and relay of status updates.

## 2.3 Shared IT systems

This business case covers IT expenditure related to both CitiPower and Powercor. Due to long term common ownership of these distribution businesses over time we have brought together CitiPower's and Powercor's IT systems to enable the lowest cost delivery of our IT requirements. For example, when we are required to make changes to our business processes we are only required to make these changes once, rather than having to make similar changes across two separate IT systems.

# 3. Identified need

We have a need to ensure our market systems are maintained to allow us to meet our regulatory and compliance obligations.

Our market system platform ensures we manage and deliver data to market in accordance with AEMO's market procedures and the Rules[8]. Regular audits of our data, processes and systems are performed by AEMO to ensure compliance with market rules and procedures.

In accordance with the Distribution Licence issued to us[9] compliance with the Electricity Distribution Code of Practice (EDCOP)[10] must be maintained. EDCOP outlines requirements in regard to life support customers and the details which must be recorded in our market systems to enable compliance with these obligations. Our market systems also enable us to meet requirements in the code related to the connection or disconnection of a customer's property.

The Australian Energy Regulator (AER) is responsible for monitoring, investigating and enforcing compliance with obligations under the Rules. The statutory enforcement regime includes a number of powers that enable the AER to enforce the Rules including powers to issue infringement notices. Escalation actions initiated by the AER can include initiating court proceedings. Further, the AER has advised in its "Compliance and Enforcement–Statement of Approach" that it may report on the outcomes of its monitoring, enforcement and investigation activities (using media releases, investigation reports, compliance bulletins/reports). Press coverage of non-compliance with NEL/the Rules obligations is likely to occur and this may adversely affect the reputation of the businesses.

Our market systems also hold the master record of our life support customer data. It is a customer expectation that we will ensure a safe and continuous supply of electricity is maintained to these vulnerable customers. A breach of our notification obligations for a life support customer could pose a serious safety risk. It would also result in a breach under the Electricity Distribution Code administered by the Essential Services Commission (ESC). The ESC may issue enforcement penalties as shown in the table below.

[8] Refer to Appendix A for a table outlining linkages between AEMO procedures and the market systems which support compliance.

[9] Powercor Australia Ltd – Electricity Distribution Licence | Essential Services Commission

[10] Electricity Distribution Code of Practice (esc.vic.gov.au)

## TABLE 3 ESC ENFORCEMENT PENALTIES

| TYPE OF PENALTY | VALUE OF PENALTY |
|---|---|
| Civil penalty – energy licensees | The maximum civil penalty that can be imposed if a licensee has contravened (or is contravening) a condition of a licence and does not comply with the civil penalty notice issued by the ESC is penalty units worth $11,855,400 or 10% of the annual turnover of the energy licensee during the 12-month period leading up to the contravened requirement. |
| Civil penalty – officers of energy licensees | The maximum civil penalty that can be imposed if a person has contravened a condition of a licence and does not comply with the civil penalty notice issued by the ESC is penalty units worth $592,770. |
| Notice penalty – energy licensee | The notice penalty for a contravention of a civil penalty requirement by an energy licensee is penalty units worth $39,518 up to a maximum $296,385 |

In addition to financial penalty risks, if compliance cannot be demonstrated, we also risk loss of licence to operate as a market participant in the NEM. Avoiding financial penalties ensures we can continue to offer our customers cost effective pricing.

Further, ensuring the health and currency of our market systems platform safeguards our ability to swiftly and cost efficiently adapt to rule or procedural changes in the NEM. By maintaining systems currency, rule/procedural changes can be applied in a timely manner. Recent examples of rule or procedural changes impacting our market systems are provided in the table below. Note, delivery of these regulatory changes is funded by the recurrent IT Market Compliance business case, but these changes and associated benefits may not have been possible if market system currency wasn't maintained.

## TABLE 4 RECENT MARKET RULE AND PROCEDURAL CHANGES IMPACTING MARKET SYSTEMS

| RULE/PROCEDURE CHANGE | CHANGE DELIVERED |
|---|---|
| 5 Minute Settlement and Global Settlement rule change | Improved price signals and encourages more efficient generation and use of electricity. |
| Metering Industry Change Forum (ICF) | Implemented diverse changes to improve operation and efficiency of services to customers. |
| Customer switching enables end customers to switch retailers and access products and services they need in a shorter timeframe.<br>Business to Business (B2B) procedural changes | Improvements in processes for customer data, the provision of accurate meter data, customer service orders and market communications. |
| Market standing data review (MSRD) changes | These changes ensured we have the correct information in MSATS which enables AEMO and the market to settle. It also ensures the retailer has access to update to date site data when speaking to customers i.e., retailer meter number verification when speaking to customers. |
| ACCC Customer Data Rights (CDR) | A system change was made so that the market is advised of the last consumer change date associated with a NMI. A transaction is sent to the market which effects a change in MSATS.<br>The Consumer Data Right (CDR) reform was designed to offer Australians greater control over their data and empower consumers to choose from a range of tailored and innovative products and service which are facilitated by access to their data. |

# 4. Option analysis

Three options were considered to meet the identified need:

1. **Do not maintain currency** – Under this option we would not apply any updates to our systems over the 2026-31 regulatory period.
2. **Maintain currency** – Under this option we would implement every second vendor update (N-1) to ensure we remain within vendor support.
3. **Maintain currency with more frequent upgrades** – Under this option we would perform all upgrades as recommended and released by the vendor.

The costs and associated net present value of each of the options is presented in Table 5, and set out in further detail in our attached market systems cost and risk models.[11]

**TABLE 5 OPTIONS ANALYSIS SUMMARY ($M, 2026)**

| # | OPTION | CAPEX | OPEX | NPV |
|---|---|---|---|---|
| 1 | Do not maintain currency | - | 4.3 | - |
| 2 | Maintain currency | 21.5 | - | 14.1 |
| 3 | Maintain currency with more frequent upgrades | 22.2 | - | 11.0 |

Note: this includes costs and benefits associated with CitiPower and Powercor

## 4.1 Risk monetisation framework

To assess our investment options, we worked with EY to develop an ICT risk monetisation framework. This provides a standardised approach for identifying, classifying, and quantifying risks associated with potential IT investments.

The framework aims to support value-based decision making by translating risks into monetised values, facilitating consistent evaluation of cost-benefit analyses across potential investment scenarios.

Figure 2 sets out the steps we have taken to quantify risks associated with this business case. Further information on each of these steps is included in the risk monetisation framework attachment.

[11] PAL MOD 7.11 - Market systems - cost - Jan2025 – Public; PAL MOD 7.12 - Market systems - risk - Jan2025 - Public

**FIGURE 2 RISK MONETISATION STEPS**

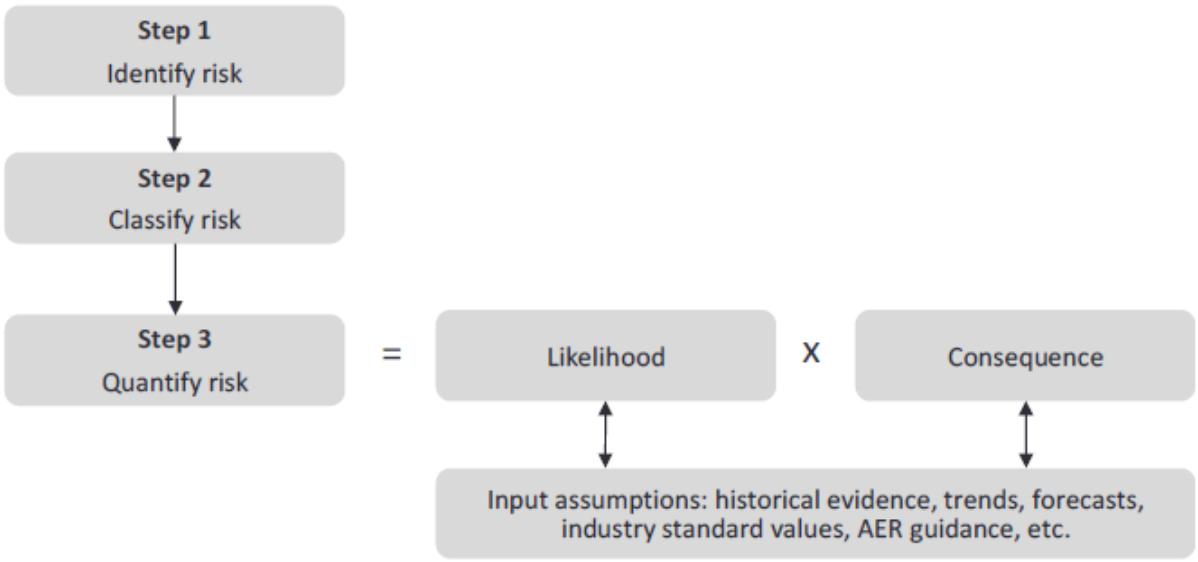


Table 6 provides a summary of each risk category included in our risk monetisation framework, which is itself attached with our regulatory proposal.[12]

**TABLE 6 RISK FRAMEWORK SUMMARY**

| CATEGORY | DESCRIPTION |
|---|---|
| Reliability | Risks related to events or failures that cause unforeseen impacts to electricity supply or export capability. For example, customer supply or solar export |
| Compliance | Risks of regulatory, legal, or financial penalties due to failure in meeting compliance obligations, such as delays in publishing key market data or unauthorised access to sensitive data |
| Bushfire | Risks that outages of critical operational systems may increase bushfire likelihood by impairing visibility of the network and timely decision-making |
| Safety | Risks affecting public and staff safety, such as loss of supply impacting life-support customers or disruptions to protective systems |
| Customer experience | Risks where customer interactions are impacted, such as outages of customer-facing IT systems |
| IT outage | Risks of systems becoming unavailable due to poor infrastructure maintenance or resource constraints, resulting in prolonged downtimes or outages |

[12] PAL ATT 7.02 - EY - IT risk monetisation framework - Jan2025 - Public

| | |
|---|---|
| IT suitability and sustainability | Risks arising from legacy systems that are prone to failures, inefficiencies, and incompatibilities. These systems may lead to increased maintenance costs, failures, and cyber vulnerabilities if not updated |

For each risk identified in the table above we have developed a list of sub-category risks. Each of these sub-category risks is set out in our framework alongside methodologies explaining how each of these risks are quantified.

For this business case key quantified risks relate to compliance and IT outages.

## 4.2 Option one – do not maintain currency

Under this option, software currency updates provided by the software vendor would not be applied. The current software versions would not be maintained for our market systems and the integration layer. They would become of out of date and consequently fall out of vendor support.

Under this option we would not maintain the health and currency of our market systems. Vendor support of the critical software may not be provided. Therefore, we could not guarantee compliance with AEMO procedures of the Rules. There is also a high risk of critical process failures which carry significant risks to other market participants who depend on the provision of services or delivery of accurate data to the market. Such failures would bear significant customer impacts.

Trying to support technology which has become old and out of vendor support leads to increased costs, which very quickly exceed the cost to invest in an upgraded system. Increased costs include:

- higher fixed vendor charges. For example, Itron who are vendors of the IEE software, have advised we will be charged an additional fee of $158,000 per annum if we do not keep IEE upgraded.
- higher labour costs to develop work arounds and develop fixes.
- higher vendor charges for emergency support for rectification and to restore our systems to a supported version.

### 4.2.1 Impact if we do not upgrade our market systems

If we do not upgrade our market systems platform to newer software versions to ensure currency, we may fall out of vendor support and not be covered under the vendor warranty. This would increase the risk of system disruptions with consequential impacts on the NEM and our ability to meet our regulatory obligations. For example, the automated provision of meter data and market transactions to the NEM to meet compliance requirements would be at risk. The cost of making non-recurrent changes on out of support software versions is higher than making changes on current supported versions. In some instances, the change would need to be done twice.

Should a failure occur in one of our market systems, this would put our business into a disaster recovery situation, where automated business processes could malfunction, and data updates could be lost. The cost of disruption caused by unstable systems and software can very quickly outweigh the investment required to maintain a supported system.

Table 7 below provides details on the key business activities supported by our market systems and the potential impact on customers and the NEM if business activity was compromised.

**TABLE 7 MARKET SYSTEMS BUSINESS ACTIVITY IMPACT**

| BUSINESS ACTIVITY | IMPACT |
|---|---|
| Market transaction exchange with AEMO, Retailers and other market participants. | Retailer requests would not be automatically received and actioned requiring reversion to manual processes. Only priority 1 requests could be actioned. Compliance timeframes require same day action in relation to re-energisation requests.<br><br>Customer requests for connection or changes to supply at premises are not received or actioned. Customer and Retailer information requests are not received or actioned.<br><br>Retailers would not receive network billing and therefore would be unable to issues bills to their customers.<br><br>High risk that life support customer information would be unknown resulting in a health and safety risk. |
| Collection, storage, processing and provision of interval meter data | Meter data could not be collected, stored or provided to retailers or the AEMO in contravention of data delivery timeframes we are required to comply with as a Meter Data Provider (MDP).<br><br>Customers are no longer able access their meter data and take control of their energy usage.<br><br>Retailer network billing and payments are delayed or not calculated or processed. |

### 4.2.2 Impact if we do not upgrade the integration layer

The Oracle integration layer enables market transaction exchange with AEMO, Retailers and other market participants. Due to the high volume of transactions between participants in the NEM, requests and data exchanges must be managed automatically. The requests and associated data must be seamlessly passed to relevant systems without manual intervention.

If currency is not maintained, software faults and bugs would not be rectified by the vendor resulting in increased disruption to our business operations and the risk of failure. Should a failure occur in the integration layer, this would have a significant impact on the delivery of end-to-end processes within the organisation. This includes the delivery of data to NEM participants, services to customers and internal processes. Due to the sheer volume, most updates received from the market could not be automatically processed. We would also be unable to seamlessly receive and send updated information to the market in regard to life support customers. As a result, there would be an unacceptable risk that life support customer information would be unknown resulting in a health and safety threat.

The following automated business to business service order requests could not be supported:

- supply Service Works (allocate NMI, tariff change, supply alteration/abolishment etc).
- re-energisation
- de-energisation
- special reads

- Metering Service Works (change/install/remove/reconfigure/investigate/test meter etc).

Retailer requests for re-energisation or de-energisation would not be automatically received and actioned requiring reversion to manual processes. Only priority 1 requests could be actioned using a manual process. Compliance timeframes require same day action in relation to re-energisation requests. Under a manual process, it would not be possible to action requests within this timeframe.

NEM participants utilise change requests to submit or update standing data associated with a customer's connection point in MSATS. Due to the high volume of transactions, automated processes have been established to support the receipt and provision of this data. If the ESB services to support this automation were not available, this would prevent market participants having current data in relation to:

- the current market participant providing a connection point service to a customer.
- the technical details associated with the customers metering installation.
- the specific information assisting Retailers to provide competitive offers to customers.
- change of retailer process.

The follow automated market notifications would not be supported:

- proposed changes to the network tariff associated with a site.
- meter fault advice.
- notice of metering works.

In addition, other services outside of market systems, which are also supported by the integration layer, would be impacted if currency was not maintained. This includes services from solar installation/commissioning to customer portal services, building access security to load shedding events and management of HSE[13] events. Appendix B provides a listing of other business services related to our integration layer.

Option one therefore prioritises the avoidance of capital expenditure over the risks associated with non-compliance, product currency and customer experience and higher operating costs. This option carries a high risk of the market systems suite developing issues that cannot be rectified (or rectified in a timely way). These may occur by way of breakages in the existing software codebase or regulatory environment changes moving ahead of the current version's capabilities, requiring additional expenditure to resolve.

The table below summaries an assessment of option one against our key risk criteria. While this option does not have any capital expenditure associated, it introduces a high degree of risk to regulatory compliance and system outages.

[13] Health, safety and environment

## TABLE 8 OPTION ONE RISK SUMMARY

| # | RISK | DESCRIPTION |
|---|---|---|
| 1 | Reliability | This risk is not applicable to market systems |
| 2 | Compliance | Non-compliance with regulatory requirements around meter data, market participant requests, data exchanges and B2B transactions with subsequent impacts to NEM participants.<br><br>For example, where meter data cannot be collected, stored or provided to retailers/AEMO by 6am the following day this would be in contravention of data delivery obligations in our role as the Meter Data Provider.<br><br>Retailers would also not receive network billing and therefore would be unable to issues bills to their customers.<br><br>A failure to pass customer data updates between market participants via MTS would have an adverse impact on customer notifications, including updates on power outages. Changes to property or metering details could not be shared with market participants. As a result, premise standing data in the market would become outdated and no longer reflect the physical arrangement on site. This includes being unable to update AEMO of newly installed DER[14].<br><br>Further still, if the integration layer was unstable this would prevent the issue of both planned and unplanned notifications to all customers.<br><br>In addition to financial penalty risks, if compliance cannot be demonstrated, we also risk loss of licence to operate as a market participant in the NEM. |
| 3 | Bushfire | This risk is not applicable to market systems |
| 4 | Safety | If updates to life support customer details are not accurately maintained in Market Systems, this would create an unacceptable safety risk. |
| 5 | Customer experience risk | The risk of a negative customer experience will increase with increased system outages. For example, the loss of automated business processes to support customer and retailer requests would likely mean only the highest priority connection requests could be actioned manually.<br><br>Customers may also not be able to access their meter data and failure of the integration layer may delay rooftop solar installation and commissioning processes. |
| 6 | IT system outage | Increased system instability or disruption, falling out of vendor support and not being covered under warranty. |

[14] Distributed energy resources such as solar and battery.

| | | |
|---|---|---|
| | | Software faults and bugs may not be rectified by the vendor resulting in increased disruption to our business operations and the risk of failure.<br><br>Due to the integration and dependencies between our Market Systems, a single failure could cause automated end to end business process to malfunction with significant consequences to key functions in the NEM.<br><br>Owing to the sheer volume of automated transactions and workflow, reversion to manual processes would only be possible for the highest priority requests.<br><br>Cascading impacts to key business functions including:<br>• to the functionality available within our on-line customer gateway services.<br>• installers of rooftop solar being unable to commission and activate new connections to our network.<br>• being unable to remotely confirm supply connectivity to a customer's premise.<br><br>Impact to internal productivity as employees who utilise Market Systems are unable to effectively undertake their responsibilities. |
| 7 | IT suitability and system sustainability | Unable to adapt to rule or procedural changes in the NEM in a timely and cost-effective manner.<br><br>Risk of increased cost and time to rectify in the event of a system failure. The remediation cost is likely to be high assuming a lack of minimal vendor support with longer timeframes to analyse and deploy a fix. |

The table below sets out the expenditure associated with option one.

**TABLE 9 OPTION ONE EXPENDITURE FORECAST ($M, 2026)**

| OPTION ONE | FY27 | FY28 | FY29 | FY30 | FY31 | TOTAL |
|---|---|---|---|---|---|---|
| CitiPower | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 1.3 |
| Powercor | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 3.0 |
| **Total** | **0.9** | **0.9** | **0.9** | **0.9** | **0.9** | **4.3** |

*Rounding may lead to discrepancies between individual network costs and total costs

## 4.4 Option two – maintain currency

Maintaining prudent currency of our market systems and the integration layer software will deliver a fully supported platform which will provide an operational environment of greater security, performance and stability. Under this option, we would remain within vendor support by adopting every second software version release (N-1) to ensure we remain within vendor support. This option reflects our current business as usual approach to managing our market systems.

This option maintains currency on all core market systems applications, applying upgrades when deemed necessary, whilst delaying upgrades wherever possible, taking into account:

- the number and nature of software defects resolved with the new release
- the end-of-life status of the current software version
- hardware compatibility with the newer software version
  (i.e., if a new release requires additional expenditure to ensure a compatible database)
- the degree to which all of the above relate to regulatory compliance.

Compared with vendors of other systems, our market systems vendors release software versions less frequently and fewer features are provided in the upgrade. Our market systems vendors also continue to provide support and maintenance for the previous version (N-1). Therefore, we are able to effectively support our market systems software versions for longer without taking on significant risk.

Vendors release upgrades approximately every two years. Under option two we will undertake every second upgrade, with an upgrade approximately every four years. This means that the software version held by the organisation stays only one upgrade behind what is recommended and remains under vendor support (N-1). This approach ensures the systems keep pace with defect fixes and compliance features, albeit with a delay. For example, we may choose to not apply a vendor released software version where we deem the features delivered do not materially decrease risk or compromise compliance. We may also choose not to roll out vendor software patches where it contains fixes which are not relevant to our business.

### 4.4.1 Benefits to maintaining currency

It is essential to ensure our market systems remain within vendor support to safeguard the delivery of data to the market in accordance with AEMO's market procedures and the Rules.

The functionality supported by our market systems applications and integration layer are outlined in Table 2, If currency of these systems is not maintained, this generates a risk to both the security and functions provided by these systems. The application of vendor upgrades to ensure currency provides both functional and technical improvements to the software product. These are not changes we have requested but rather improvements delivered by the vendor as part of a new software version which can provide benefit to end users and our customers.

#### Functional improvements

The application of software upgrades provided by the vendor can deliver new and improved functionality while also addressing existing issues. These changes to the core software are provided as part of the standard software purchase and are distinct from market driven enhancements requested to meet non-recurrent requirements. Examples of new functionality delivered by the vendor during recent upgrades to the core software are provided in Appendix C.

In addition to new or improved functionality, defect fixes may be included by the software vendor as part of the upgrade package.

### Technical improvements

Within a software upgrade package, the vendor may also provide technical improvements. Some examples of technical improvements are provided below.

**TABLE 10 TECHNICAL IMPROVEMENTS**

| IMPROVEMENT TYPE | DESCRIPTION |
|---|---|
| Performance | An upgrade can result in an improvement to the background processing of a transaction resulting in reduced wait time for the end user. |
| Security | Security patches are generally provided with a software upgrade to reduce vulnerabilities and minimise the risk of a data breach. |
| Traceability | Increased traceability of transactions to assist with audit processes, prevent fraud and minimise risk. |

Specific examples of technical improvements delivered to Market System applications over the past few years are provided in appendix D.

The table below summaries an assessment of option two against our key risk criteria. While the risk of a system issue arising is not eliminated, when compared to option one, there is a reduced risk of system issues arising and therefore of impacting our key services.

**TABLE 11 OPTION TWO RISK SUMMARY**

| # | SYSTEM | DESCRIPTION |
|---|---|---|
| 1 | Reliability | Same was option one |
| 2 | Compliance | Lower risk of non-compliance with regulatory obligations around meter data, market participant requests, data exchanges and B2B transactions due to system stability.<br>Lower risk of impact to NEM participants.<br>Lower risk of financial penalties or loss of licence to operate as a market participant in the NEM. |
| 3 | Bushfire | Same as option one |
| 4 | Safety | Same as option one |
| 5 | Customer experience risk | Customer experience risk will be lower compared to option one. Less outages will mean that customer facing applications and customer interactions will be less impacted. |
| 6 | IT system outage | Low risk of system instability or disruption due to software currency and the availability of vendor support. |

| | | |
|---|---|---|
| | | Performing prudent software upgrades reduces the risk of a cyber security incident as vendors address system vulnerabilities in upgrade packages. |
| 7 | IT suitability and system sustainability | Maintaining system currency of our market systems means that when new requirements are defined, we can identify the system changes needed and request these from the software vendor in a timely and cost-effective manner. |

The table below sets out the expenditure associated with option two.

**TABLE 12 OPTION TWO EXPENDITURE FORECAST ($M, 2026)**

| OPTION TWO | FY27 | FY28 | FY29 | FY30 | FY31 | TOTAL |
|---|---|---|---|---|---|---|
| CitiPower | 3.4 | 0.2 | 0.0 | 0.0 | 2.8 | 6.4 |
| Powercor | 7.9 | 0.5 | 0.0 | 0.0 | 6.7 | 15.1 |
| **Total** | **11.3** | **0.7** | **0.0** | **0.0** | **9.5** | **21.5** |

*Rounding may lead to discrepancies between individual network costs and total costs

## 4.5 Option three – maintain currency with more frequent upgrades

The intent of this option is to maintain currency on all core market systems applications by performing system upgrades as released and recommended by vendors. This option also maintains pace with the newest available versions, security, functionality and industry trends. This approach would result in system upgrades occurring approximately every two years for IEE, FCS and CIS OV and annually for MTS.

Applying software upgrades as released by the software vendors would deliver a fully supported platform which will provide an operational environment of greater security, performance and stability. A high level of system currency and compliance would be maintained. However, the full value of each upgrade may not be realised, and the resourcing load is high.

Applying the latest software version will provide earlier access to defect fixes, performance improvements and new functionality. However, when applying the latest upgrades there is also a greater likelihood of encountering unknown bugs or issues.

Similar to option two, ensuring software currency makes it easier to request and apply changes to adapt to the emerging requirements. Vendors are reticent to make code changes to previous software versions meaning client requested changes may only be available on the latest code base. Being on an older software version may require upgrades prior to installation of the requested change.

Performing vendor recommended software upgrades ensures we are on the latest product and security vulnerabilities are minimised.

Option three provides a small reduction of risk together with increased expenditure associated with more frequent application of upgrades, patching and maintenance. It also carries the following disadvantages:

- cutting edge/untried software may introduce new technical defects.
- the pace of upgrades creates a high resource load and reduces the ability to complete targeted changes/improvements during the program of work.

Our expenditure forecast for option three reflects the cost of refreshing our market systems with the latest upgrades.

The risk reductions associated with option two are also applicable to option three. However, the application of more frequent upgrades also reduces the risk associated with system instability or a cybersecurity attack due to being on the latest release of the software. Further information on the risks associated with option three are provided in the table below.

**TABLE 13 OPTION THREE RISK SUMMARY**

| # | SYSTEM | DESCRIPTION |
|---|---|---|
| 1 | Reliability | Same as option two |
| 2 | Compliance | Being on the latest software version provided by the vendor reduces the risk of non-compliance with new requirements as the vendor will support the provision of code changes. Requests to the vendor to meet new compliance requirements are able to be developed and deployed straight away without the need to first upgrade to the latest software version. However, by deploying the latest upgrades there is |

| | | |
|---|---|---|
| | | a possibility that upgrades are not sufficiently debugged and will likely have a slightly higher risk of not meeting compliance obligations compared to option two. |
| 3 | Bushfire | Same as option two |
| 4 | Safety | Same as option two |
| 5 | Customer experience risk | Same as option two |
| 6 | IT system Outage | The risk of a system outage is reduced further through more frequent application of vendor provided upgrades. As new security threats are identified, vendors will incorporate suitable barriers to cyber-attack within the latest software version. However, implementing vendor upgrades as they are released can result in additional outages as these upgrades have not been sufficiently debugged. This likely means limited additional risk reduction benefits compared to option two. |
| 7 | IT system Suitability and system sustainability | Being on the latest software version provided by the vendor reduces the risk of non-compliance with new requirements as the vendor will support the provision of code changes. Requests to the vendor to meet new compliance requirements can be developed and deployed straight away without the need to first upgrade to the latest software version. This is unlikely to provide further risk reductions compared to option two. |

The table below sets out the expenditure associated with option three.

**TABLE 14 OPTION THREE EXPENDITURE FORECAST ($M, 2026)**

| OPTION THREE | FY27 | FY28 | FY29 | FY30 | FY31 | TOTAL |
|---|---|---|---|---|---|---|
| CitiPower | 3.4 | 0.2 | 1.0 | 0.1 | 2.6 | 6.5 |
| Powercor | 6.5 | 0.4 | 2.4 | 0.2 | 6.0 | 15.5 |
| **Total** | **9.3** | **0.6** | **3.5** | **0.3** | **8.5** | **22.2** |

*Rounding may lead to discrepancies between individual network costs and total costs

# 5. Recommendation

Based on the outcome of the comparison, we recommend progressing option two – maintain currency, which delivers the best value for our customers, maintains the health and currency of our market systems, and enables continued compliance with our market obligations.

Our recommendation also considered a number of general factors (e.g. project concurrency, resource availability, etc.) to ensure that the option selected, and upgrade timing was pragmatic, actionable, and would have the highest probability of delivering a successful outcome.

Our proposed expenditure profile is provided in table 15.

**TABLE 15 RECOMMENDED OPTION EXPENDITURE FORECAST ($M, 2026)**

| OPTION TWO | FY27 | FY28 | FY29 | FY30 | FY31 | TOTAL |
|---|---|---|---|---|---|---|
| CitiPower | 3.4 | 0.2 | 0 | 0 | 2.8 | 6.4 |
| Powercor | 7.9 | 0.5 | 0 | 0 | 6.7 | 15.1 |
| **Total** | **11.3** | **0.7** | **0** | **0** | **9.5** | **21.5** |

# A Delivering on regulatory requirements

Table 16 shows how our market systems enable us to deliver against the AEMO regulatory procedures.

The Metering Procedures referenced in table 16 are prepared by the AEMO. The effective date of these procedures is 1 December 2017 unless stated otherwise. The corresponding market system/s which enable delivery against the AEMO regulatory procedures are provided.

**TABLE 16 AEMO RETAIL AND METERING PROCEDURES**

| RETAIL AND METERING PROCEDURE | PROCEDURE CATEGORY | PROCEDURE | MARKET SYSTEMS |
|---|---|---|---|
| Market Settlements and Transfer Solutions (MSATS) | MSATS Procedures | CATS Procedure Principles and Obligations<br>Procedure for the Management of WIGS NMIs<br>NEM Retailer of Last Resort (RoLR) Processes Part A and Part B<br>Standing Data for MSATS<br>MDM Procedures | MTS<br>IEE<br>ESB<br>CIS OV |
| Metering Procedures, guidelines and processes | Service Level Procedures | Meter Data Provider Services<br>Metering Provider Services | MTS<br>IEE<br>ESB<br>CIS OV<br>FCS |
| | Meter Data Provision Procedure | AEMO Meter Data Provision Procedure<br>Effective 1 March 2016 | |

| | | | |
|---|---|---|---|
| | Meter Data File Format | MDM File Format and Load Process<br>Meter Data File Format Specifications NEM12 & NEM13 | |
| | National Metering Identifier Procedure | MSATS National Metering Identifier | |
| Business to Business Procedures | B2B | Customer and Site Details Notification Process<br>Service Order Process<br>Meter Data Process<br>One Way Notification Process<br>B2B Procedure Technical Delivery Specification | MTS<br>IEE<br>ESB<br>CIS OV |
| Metrology Procedures | NEM Metrology | Metrology Procedure Part A<br>Metrology Procedure Part B | MTS<br>IEE<br>ESB<br>CIS OV |

# B Other service impacts if integration layer is not maintained

The table below shows the impact to business and customer services is the integration layer is not maintained.

TABLE 17 OTHER SERVICES IMPACTED

| APPLICATION | SERVICE | IMPACT |
|---|---|---|
| Meter data | Aggregation | Unable perform network billing to retailers as the aggregation of interval data into defined periods is essential to this function. While reversion to manual processes is possible in theory, the volume of data to be aggregated prevents this. |
| | Basic data | Unable to provide basic meter consumption data to market and performing network billing. |
| | 5-minute conversion | This service is utilised when there is an alternation request associated with one meter from a multi metered site. The remaining meters would require manual conversion if the ESB service was not available. |
| | Type 5 skip/reason codes | When meter data is not available, a reason code is the trigger for the automated generation of substitute/estimated data. If a reason code was applicable and the integration layer was not available, the meter data could not be generated and provided to market participants. |
| Distributed energy resources | LV Distributed Energy Resources Management System | The solar installation and commissioning process would break.<br>As an REC, my newly installed solar installation could not be commissioned and connected to the network so that solar generation can be exported.<br>As a customer, not being able to export/record my solar generation means that I am not receiving solar export credits on my electricity bill.<br>From a business perspective, manual work arounds to modify all solar installation and commissioning processes would be required if the complex integration was not available.<br>• Volumes: around 150 solar installations per day (across CP, PAL and UE). |

| | | |
|---|---|---|
| | | • An additional 20 FTEs would be required in order to perform daily manual processing. Therefore, additional expenditure associated with these additional resources.<br><br>These resources would be onboarded in an emergency scenario to help address the urgent need for manual processing and minimise the impact to RECs and customers. The resources are unlikely to have knowledge of the processes and may be new to the electricity industry.<br><br>Rapid training in process and systems would be required to address the learning curve. Therefore, there is likely to be an impact to the delivery of timely services during this mobilisation period. |
| | Distributed Energy Resource Register | Would not be able to deliver updates to AEMO in regard to newly installed DER.<br><br>The online process utilised by a registered electrical contractor to record details of the work completed would not be able to perform data validation of solar installers and DER assets. This would have a negative impact on data quality. |
| Customer portal services | myEnergy meter data | The portal would be unable to verify that the requestor has access rights.<br><br>Customers and their authorised representatives would be unable to view or download their consumption data. Customers would be unable to connect in home display devices to the meter and view real time consumption. |
| | myEnergy push communications | This would prevent the issue of planned and unplanned outage notifications to customers (email and SMS). |
| | myEnergy connections/alterations | Applications for new connections, alterations to existing metering, abolishments and solar pre-approvals could not be actioned, and the progress of existing applications could not be monitored by customers/RECs[15]. |
| | myEnergy network augmentation | Functionality associated with customer/developer-initiated network augmentation requests would be impacted. The following actions would be available:<br>• Creation of projects<br>• Creation of customers |

[15] Registered Electrical Contractors

| | | |
|---|---|---|
| | | • Invoice creation<br>• Invoice payment confirmations<br>• Publishing of contracts |
| | myEnergy general | Customers would be unable to:<br>• Submit or track a claim for compensation.<br>• Provide feedback.<br>• Log a street light fault. This would have a negative impact on restoration times and could cause a health and safety issue. |
| Metering operations | Meter Asset Management System (MAMS) | Unable to issue work to the Metering Operations Group to:<br>• Perform field testing and maintenance of our metering fleet to ensure accuracy.<br>• Investigate meter communication issues or reprogram meters in the field.<br>Also, metering updates performed in the field such as test results and asset failure information would not be automatically reflected in downstream systems. |
| | Meter Outage Notification | We would not be able to remotely connect to a customer's meter (PING & POLL) to check connectivity or receive last gasp advice from a meter when power is lost. |
| Customer demand management & load shedding event data feeds and coordination | Selective Load Management (SLM) | This service supports load shedding for individual metered sites as opposed to traditional load shedding where a shutdown is targeted for an entire feeder. SLM is an alternative approach using AMI meters which minimises the impact to the community. If the integration layer was not available, reversion to the traditional approach of feeder load shedding must be undertaken. |
| | Smart Meter Voltage Management System (SMVMS) | SMVMS provides a way to reduce demand without taking customers off supply. If not available, then this would have a negative impact on the number of customers impacted during a load shedding event. The contingent position would be to revert to manual processes such as shutting down a feeder, which may result in more customers off supply than necessary |
| Outage Management | Field Services Fault | Salesforce Field Services (**SFS**) is used to schedule and dispatch work orders to the field and manage/close those work orders, as well as reporting data updates. |

| | | |
|---|---|---|
| | Management (SFS[16]-ADMS[17]) | • Unplanned outage rectification jobs could not be assigned to field crews and updates from the field could not be seen in the outage management system.<br>• Dispatchers would need to revert to manual mode in order to dispatch work to field crews, resulting in supply restoration delays. This could be catastrophic in an extreme weather event.<br>The following services would not be available during an outage:<br>• Jobs cannot be sent to SFS from SAP[18] or eConnect[19].<br>• Field updates cannot be sent upstream for close out.<br>Field personal who are using the Fiori time sheet application to complete timesheets will not see proposed times from SFS during the outage window. |
| | One Run | One Run is used by RECs[20] to advise via SMS when they are about to pull a fuse to prevent the meter outage notification being registered as a fault. If this service was not available, then an REC would need to revert to a manual notification process. If the REC failed to notify, there is a risk a fault would be incorrectly recorded, and a field officer issued unnecessarily. |
| | AMI meter outage notifications in OMS | When a meter loses power, this service enables a last gasp notification to be passed to the ADMS. Planned outages or requested disconnections are filtered out. For a single meter outage, following confirmation a fault will be raised and proactively dispatched to a field crew. The IVR[21] is also updated to reflect the known outage.<br>Failure of this service would result in a higher volume of customer calls to the Contact Centre and extended response times to outages with likely impact to the SAIDI[22] and SAFI[23] regulatory measurements of supply reliability. |

16 SFS – Salesforce Field Services
17 ADMS – Advanced Distribution Management System
18 SAP – enterprise-wide resource planning application
19 eConnect – customer gateway to support the receipt and processing of connection requests
20 Registered Electrical Contractors
21 IVR – interactive voice response
22 SAIDI – system average interruption duration index
23 SAFI – system average interruption frequency index

| | | |
|---|---|---|
| | SNAP/NAP[24] <-> Outage System | The analytics platform proactively analyses meter voltage data to identify potential issues. This service enables a new fault to automatically be raised so that field crews can investigate. Failure of this service would stop proactive investigation and could result in an electrical hazard or shock/fire event. |
| | Salesforce Field Services <-> Outage Management System | The Salesforce FMS[25] is used to schedule and dispatch work orders to the field and manage/close those work orders, as well as reporting on their data. Failure of this service would stop the integration between Salesforce Field Services and OMS/SAP and prevent fault jobs being scheduled/dispatched. |
| | SMS PUSH <-> Outage Management System | The portal which provides push SMS notifications to customers receives fault data for NMIs[26] from the ADMS Outage Processor via the ESB. Failure of this service would stop the integration and prevent fault communications being sent to customers. |
| | EDNAR[27] | Planned outages could not be scheduled to support maintenance and avoid unplanned outages.<br>Customer outage notifications could not be provided to customers. |
| Other | Building Access Control | This would have an impact to building access and security at head office, throughout depots and where electronic access control is utilised at substations. The access control system would be unable to automatically confirm personnel and site access changes. Where an employee has left the organisation, there is potential for unauthorised access to buildings/substations. |
| | Simplified design | The integration layer assists in communications between SAP to Vault. At the time a new job is created in SAP, it is also added in Vault together with creation of the required folders and template in Vault. If the integration layer was to fail, this could delay the design process, which would in turn delay the field work and delivery of services to customers. |

[24] SNAP/NAP – VP/UE analytics platforms
[25] FMS - Field Management Solution
[26] NMI – National metering identifier
[27] EDNAR – electrical distribution network access register

| | | |
|---|---|---|
| | Asset Inspection Service (AIS) | If the integration layer was to fail, then asset inspection requests would not be created in Click FSE[28] and the results would not be returned from the field. This would have a flow on impact to our maintenance program by preventing work from being requested and completed. |

[28] Field Service Edge

# C Functional improvements delivered by maintaining currency

Examples of functional improvements delivered to the core software as part of a recent vendor upgrade are shown below.

**TABLE 18 NEW FUNCTIONALITY**

| SYSTEM | FUNCTIONALITY DELIVERED |
|---|---|
| MTS | The upgrade provided a new GUI web view. This was a major improvement for end users as they are now able to view the file content in the same screen. Prior this this an end user would need to view two or three different screens within MTS to obtain all required information. Since the upgrade, all the required data is provided in one screen. Also, the upgrade delivered a graphical representation to reflect how we are tracking with meter data compliance on a day-to-day basis. |
| IEE | A new visual representation of a customer's usage data was provided. This assists in the timely and accurate delivery of meter data to retailers and customers. |

# D Technical improvements delivered by maintaining currency

Examples of technical improvements delivered to the core software as part of a recent vendor upgrade are shown below.

**TABLE 19 TECHNICAL IMPROVEMENTS**

| IMPROVEMENT CATEGORY | SYSTEM | IMPROVEMENT |
|---|---|---|
| Security | IEE upgrade to version 10.0 performed in August 2021 | The upgrade provided new Security enhancements, including SSL communication of Service Mode to the Application Server and removal of database connection between Service Mode and the Itron Enterprise Edition database |
| Security | CIS Upgrade to version 7.0.0.0205 performed in April 2024 | -CIS passwords for database system accounts updated to randomised values and are now 20 characters long<br>-UNIX shell scripts updated such that they will no longer output the database credentials when calling a script using sqlplus<br>-UNIX shell scripts updated to turn off debugging at the script level and will not output details of each command (unless called explicitly)<br>-CGI card files in UNIX update to turn off debugging so that no output from shell script is seen when called through ControlM |
| Performance | IEE Custom Interface Layer for IEE 10.0 (version 10.2.0.25730) performed in April 2022 | The NEM Payload Export (NPE) Adapter Remote Connection Setup was moved from the configuration file on the app server to parameters on the NPE task templates.<br><br>This required the creation of an NPE task template per Meter Data Dispatcher (MDD) set up in MTS, allowing the usage of all the MDDs speeding up meter data delivery. |
| Traceability | IEE Custom Interface Layer for IEE 10.0 (version 10.0.4.15740) performed in August 2021 | New custom code feature is NEM file management and banking reads in case of configuration mismatch.<br><br>Like IEE reading import process custom code provides means to bank the reads automatically and retry the import at later time to see if IEE configuration has changed. Files will remain banked for specified period after which they will be marked as expired and |

| | | |
|---|---|---|
| | | won't be re-tried for import again (unless manually reloaded after which entire cycle will repeat).<br>New feature consists of following components:<br>• UI for viewing the banked NEM reads<br>• Custom IEE services to handle NEM data imports, bank them and retry import at later time<br>• DB objects for NEM file inventory table maintenance and DB job script to schedule the maintenance |
| Other | IEE/MTS Oracle upgrade to 19c, IEE/MTS App Server OS version upgrade to MS Windows 2016 Server performed in August 2021 | Upgrading database and application servers to current market versions so they are supported by the vendor.<br><br>Upgrading to 19c reduces support cost and extends support lifetime while accelerating your environment towards cloud ready. |
| Performance/Traceability | MTS 3.7 HF1 to be deployed in July 2024 | ADL Dispatcher is now a separate module within the ADL Processor executable. Additional configuration variables allow for better control of the ADL updates sent to IEE/Business systems, and therefore controlling the number of CATS generated in a day.<br><br>Additional feature to turn off the ADL dispatcher module is being provided should an issue occur in the ADL recalculation process requiring debugging. |

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