



Five minute settlement rule change

**PAL BUS 7.09 - 5 minute settlement - Jan2020 -
Public**

Regulatory proposal 2021–2026

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1 Overview

Business	CitiPower and Powercor Australia
Title	Five minute settlement rule change
Project ID	PAL BUS 7.09 - 5 minute settlement - Jan2020 - Public
Category	IT capital expenditure - non-recurrent Network communications capital expenditure Operating expenditure step change
Identified need	To comply with the five minute settlement rule change and AEMO procedures, during the next regulatory period, we will need to: <ul style="list-style-type: none"> • upgrade our IT systems to support retrieval, processing, storage and delivery to market of five minute interval meter data • install additional communication devices to transport the increased volume of data from meters into our IT systems • increase our WAN capacity and data processing capacity to manage the increased volume of data • manage an increased volume of manual validations for meter data exceptions.
Recommended option	Option 1 – implement functional system changes in 2021/22 followed by data performance changes in 2022/23
Proposed start date	2021/22
Proposed commission date	2025/26
Supporting documents	<ol style="list-style-type: none"> 1. PAL MOD 7.14 - 5 minute settlement - Jan2020 - Public 2. PAL MOD 6.03 - AMI comms - Jan2020 - Public 3. PAL MOD 9.01 - Step changes - Jan2020 - Public 4. PAL MOD 12.02 - Quoted services labour rate - Jan2020 - Public 5. PAL ATT220 - AEMC - Five minute settlement - Nov2017 - Public

On 28 November 2017, the Australian Energy Market Commission (**AEMC**) amended the National Electricity Rules (**Rules**) to change the financial settlement period for the electricity wholesale market from 30 minutes to five minutes to align with the operational dispatch of electricity. This is known as the five minute settlement rule change.¹ As a result of the rule change we are required to capture, store, process and share meter data in five minute intervals for any meters installed from 1 December 2018, rather than the current 30 minute intervals.

The compliance date for provision of five minute data to market is staggered by meter type between July 2021 and December 2022.²

To ensure we comply with the rule change, the following is required during the 2021–2026 regulatory period:

- capital expenditure to upgrade our IT systems to support retrieval of 5 minute interval meter data from smart meters, together with the subsequent validation, storage and distribution of 5 minute data to market participants including retailers, the Australian Energy Market Operator (**AEMO**) and customers
- capital expenditure to install additional communication devices in high-growth and densely populated areas to transport the increased volume of data from smart meters installed from 1 December 2018 into our IT systems
- additional operating expenditure for increased wide area network (**WAN**) capacity to transport increased volume of meter data between IT systems
- additional operating expenditure to manage the increase in manual validations of meter data exceptions.

We will commence works during 2020 to ensure we conform with the July 2021 compliance date. Costs associated with works forecast to occur before July 2021 are not included in this business case.

We considered three options for implementing the five minute settlement rule change, as shown in the table 1.

Table 1 Options analysis summary, capital expenditure and incremental operating expenditure 2021–2026, \$m 2021

Description	IT Capex	Comms capex	Incremental opex	
0 Do nothing - do not make functional system and data performance changes necessary to comply with the five minute settlement rule change.		0.0	0.0	0.0
1 Implement on time - implement functional system changes in 2021/22 and data performance changes in 2022/23.	17.8	14.1		6.9
2 Implement early - implement both functional system changes and data performance changes in 2021/22.	23.6	14.1		6.9

Source: Powercor

Note Above costs include CitiPower and Powercor due to shared IT systems and service provision arrangements.

We recommend option 1 to implement functional system changes in 2021/22 and data performance changes in 2022/23 (by December 2022). This option is the lower cost and lower risk option which ensures compliance with

¹ PAL ATT220: AEMC, Rule determination, National Electricity Amendment (Five Minute Settlement) Rule 2017.

² PAL ATT220: AEMC, Rule determination, National Electricity Amendment (Five Minute Settlement) Rule 2017, page 121.

the rule change. Our customers expect us to maintain compliance with the Rules to ensure they receive a safe, dependable, flexible and affordable supply of electricity.

Our expenditure forecasts for our recommended option 1 are set out in table 2.

Table 2 Recommended option: Expenditure forecast, \$m 2021

Expenditure category	CitiPower	Powercor
IT capital expenditure	8.9	8.9
Network communications capital expenditure	1.1	13.0
Incremental operating expenditure	1.9	4.9

Source: Powercor

2 Background

2.1 AEMC rule change

In 2017, the AEMC made a rule change to reduce the time interval for wholesale market financial settlement from 30 minutes to five minutes to align with the time period for physical dispatch of energy.³

To enable five minute settlement the AEMC required:

- all new and replacement meters installed from 1 December 2018 be capable of five minute data capture
- market participants ensure they can process and deliver five minute data to market.

The AEMC considered that aligning dispatch and settlement at five minute intervals would have the following significant enduring, benefits:

- improved price signals for more efficient generation and use of electricity
- improved price signals for more efficient investment in capacity and demand response technologies to balance supply and demand
- improved bidding incentives.⁴

The AEMC considered this would deliver benefits to customers through:

- lower wholesale electricity costs
- rewards for demand management
- a more reliable power system.

2.2 Compliance with the Rules

As a participant in the National Electricity Market (**NEM**) we are required to ensure compliance with the Rules. Further, our customers expect us to continue to provide safe, dependable, flexible and affordable electricity supply while meeting our regulatory obligations.

Non-compliance with the five minute settlement rule change could result in:

- financial penalties, loss of our license to operate in the market and reputational damage
- material adverse impacts on wholesale market settlement process
- loss of the customer benefits sought by AEMC through the rule change

Regular audits of our data, processes and systems are performed by AEMO to ensure compliance with market rules and procedures. The penalties associated with non-compliance have been classified as civil penalty provisions in order to encourage compliance by the relevant parties.

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

³ PAL ATT220: AEMC, Rule determination, National Electricity Amendment (Five Minute Settlement) Rule 2017, page 8.

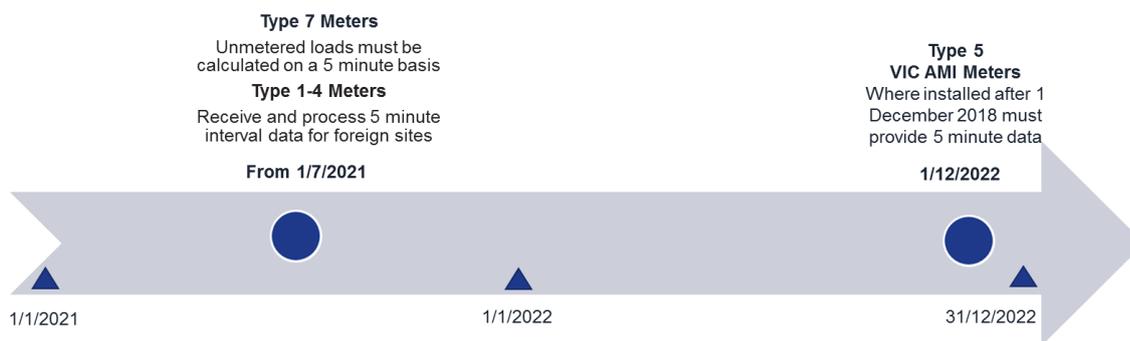
⁴ PAL ATT220: AEMC, Rule determination, National Electricity Amendment (Five Minute Settlement) Rule 2017, page ii.

can include initiating court proceedings and revoking our electricity distribution licence. The associated financial penalties, passed onto customers in the form of higher prices, could be \$1 million or greater.

2.3 Work to be completed before July 2021

The compliance date for provision of five minute data to market is staggered by meter type between July 2021 and December 2022 as shown in figure 1.

Figure 1 AEMC compliance timeline by meter type



Source: Derived from AEMC Rule determination, National Electricity Amendment (Five Minute Settlement) Rule 2017, page 121.

Our proposed expenditure for the 2021–2026 regulatory period does not include costs we expect to incur prior to 1 July 2021.

To ensure we meet the July 2021 compliance date for meter types 1-4 and 7, we will commence works in the current regulatory control period to:

- prepare our systems to calculate five minute interval data for type 7 unmetered supplies
- receive and process five minute data from type 1-4 contestable meters where we are not the meter data provider
- additionally, in accordance with the rules, since December 2018 we have ensured all new and replacement type 5 AMI meters installed are capable of five minute data capture. However, we are not required to retrieve, process or deliver this data to market until 1 December 2022.

3 Identified need

3.1 Current state

Under the Rules, we are responsible for the capture, storage, processing and sharing of interval meter data to facilitate the financial settlement process. We:

- capture meter data through our fleet of meters, including smart meters (VIC type 5 AMI), manually read meters (type 5 and 6 meters) and unmetered supplies
- transport meter data over our communications network
- receive and process meter data from third parties (type 1-4 meters)
- store, process and manage meter data through our IT systems
- share meter data with authorised market participants, including AEMO.

Currently, we undertake the above functions for meter data received in 30 minute intervals. This is equivalent to 48 intervals reads of 30 minutes, per meter per day.

3.2 Future state

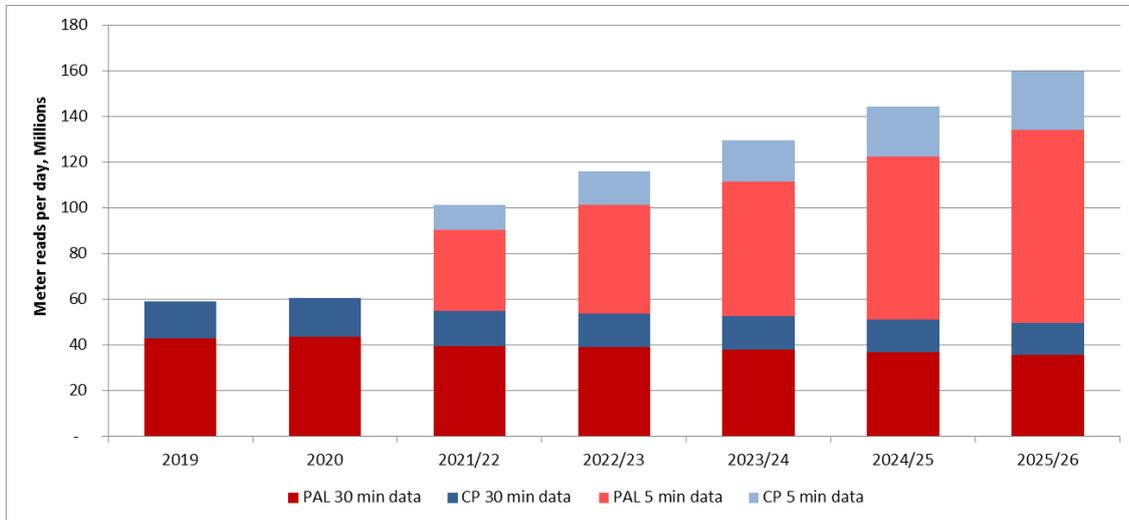
Under the five minute settlement rule change we will be required to undertake the same functions of capturing, storing, processing and delivering meter data to the market. However, we will need to undertake these functions for a much greater volume of meter data.

Under the five minute settlement rule change, new and replacement meters installed after 1 December 2018 must provide five minute data from 1 December 2022.⁵ For these meters we will manage 288 interval reads per meter per day - a six-fold increase in meter data. We forecast approximately 30% of our smart meter fleet will provide five minute data by 2025.

Consequently, by 2025/26 we will need to capture, transport, process, store and deliver to market around 2.5 times the volume of meter data we do today, as shown in figure 2 number of meter reads per day

⁵ PAL ATT220: AEMC Rule determination, National Electricity Amendment (Five Minute Settlement) Rule 2017, page 121.

Figure 2 Number of meter reads per day



Source: PAL MOD 9.01 - Step changes - Jan2020 - Public

3.3 Key initiatives

To manage the increased volume of data we are responsible for under the five minute settlement rule change, during the 2021–2026 regulatory period, we will need to:

- upgrade our IT systems to support retrieval of five minute interval meter data from smart meters, together with the subsequent validation, storage and distribution of five minute data to market participants including retailers, the Australian Energy Market Operator (**AEMO**) and customers
- install additional communication devices to transport the increased volume of data from smart meters installed from 1 December 2018 into our IT systems
- increase our wide area network (**WAN**) and data processing capacity to transport and process increased volume of meter data
- manage an increase in the volume of manual validations of meter data exceptions.

Each of these impacts is discussed in more detail below.

IT system impacts

The AEMC acknowledged that IT systems and processes need to be updated across the electricity supply chain to enable the retrieval, processing and distribution of five minute interval meter data. AEMC noted the following types of systems would be impacted:⁶

- settlement
- billing
- reporting

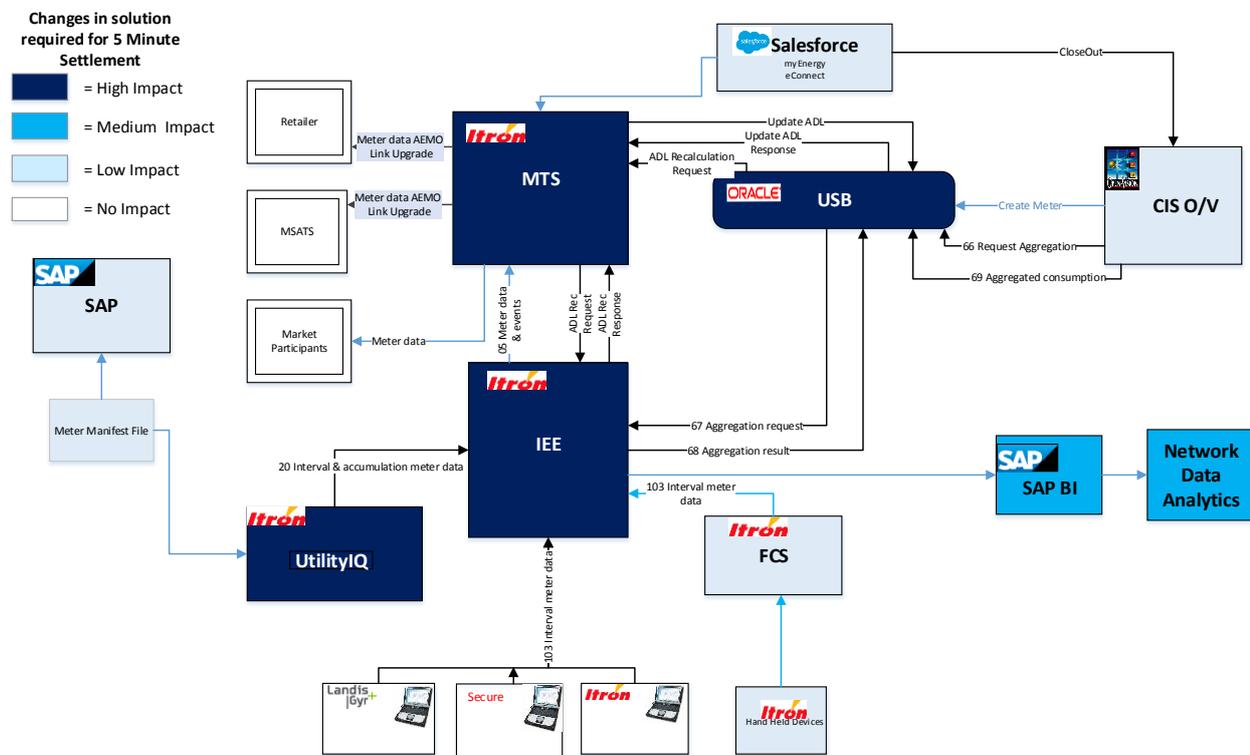
⁶ PAL ATT220: AEMC, Rule determination, National Electricity Amendment (Five Minute Settlement) Rule 2017, page 149.

- data collection and storage
- network planning system
- meter data management system
- market transaction systems.

We have analysed the IT system and process changes we require to retrieve, store, process and distribute five minute interval meter data. Figure 3 shows the flow of data through our systems and the extent of system impact resulting from the five minute settlement rule change.

Table 3 describes the impacted systems and the extent of impact. Detailed analysis of the changes required to each system is provided in attachment A.

Figure 3 IT system impacts of five minute settlement rule change



Source: Powercor

Table 3 IT system impacts of five minute settlement rule change

IT system	Function	Impact
Market Transaction Suite (MTS)	Used to manage communications with external market participants.	High
Itron Enterprise Edition (IEE)	Interval meter data collection, storage, management and processing.	High
Oracle Fusion	Facilitates and controls routing of messages and transactions exchanged between IT applications.	High
Utility IQ	Manage communications to electricity meters in the field, remotely collect interval meter consumption and metering events. Supports remote connection and disconnection of electricity meters.	High
SAP	Organisation-wide Enterprise Resource Planning (ERP) solution with supports the payroll, HR, finance and network/organisational asset management functions.	Medium
SAP BI	Data management and reporting.	Medium
myEnergy Meter Data Portal	A customer facing energy monitoring dashboard which enables our customers to take control of their energy bill.	Low
eConnect	Workflow and automated processing tool to assist with supply connection, alteration and amendment requests.	Low
CIS Open Vision	Customer information and relationship management, account management, billing and collection.	Low
FCS and hand held devices	Scheduling and management of manually read meters.	Low
Infrastructure	Meter data storage.	Medium

Source: Powercor

Communications network impacts

Our communications network transports data from meters into our IT systems. Our communications network comprises a series of communications devices, including access points, relays, modems and antenna.

To enable us to transport the increased volume of five minute interval meter data from meters into our IT systems we will need to increase the volume of communications devices.

Operating expenditure impacts

We will incur incremental on-going operating expenditure that is not accounted for in our 2019 base year as a result of the increased volume of meter data. Incremental operating expenditure is required for:

- additional WAN and data processing capacity
- increased manual data validations.

WAN capacity and data processing

To process metering data through our IT systems we use the WAN—a computer network that enables our business to interconnect over a wide geographical area. In simple terms, the WAN provides the highway between the various interconnected IT systems.

To process metering data for network management we lease 'nodes' of computer resources through Amazon Redshift.

As a result of the five minute settlement rule change, by 2025/26 we will be transporting and processing more than double the volume of data we process in 2019 (as shown in figure 2 above). As a result we will need to:

- double the bandwidth of the WAN network to cater for the increase in volume of data to be transferred between IT systems
- lease additional nodes of computer resources to continue to undertake meter data processing for network management.

Manual data validations

Manual data validation of meter read exceptions is required when there is a failure to obtain a remote meter read. This may be due to failure in communications, meter faults or other meter read issues.

At present, the rate of exceptions per meter read is approximately 0.0009%, with around 3,590 exceptions per week in 2019. We estimate the rate of exceptions will remain relatively constant to 2025/26, with no known technology that will improve the exception rate. We forecast the volume of meter read exceptions will increase linearly with the volume of meter data reads.

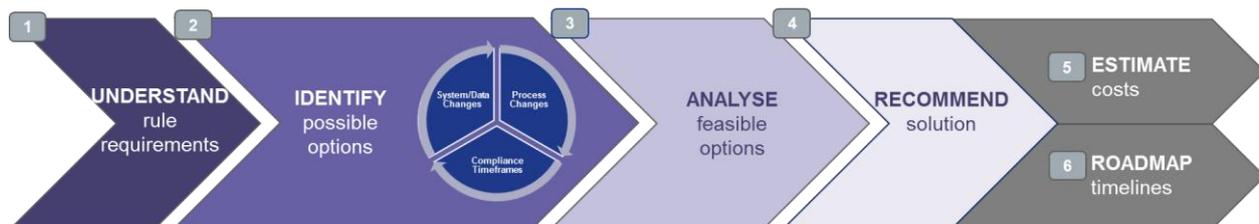
Incremental operating expenditure will therefore be required to manually validate the increased volume of meter read exceptions.

4 Options analysis

4.1 Approach

We followed a structured approach when analysing options for addressing the five minute settlement rule change, as shown in figure 4.

Figure 4 Our options analysis approach



Our approach involved:

- **Understand** - we reviewed the rule change to understand the requirements applicable to us and the compliance timeframes. We then identified the system and process changes required to achieve compliance.
- **Identify** - taking into account the system, data, and process changes required and the compliance timeframes, we identified feasible options using a minimum viable product approach. The minimum viable product is the lowest cost option which ensures compliance, minimises delivery risk, is compatible with existing systems and ensures current capabilities and system performance are maintained.

We identified three options:

- Option 0 - do nothing - do not make system and process changes necessary to comply with the five minute settlement rule change
- Option 1 - implement on time - ensure compliance by implementing functional system changes in 2021/22 and data performance changes in 2022 (by December 2022)
- Option 2 - implement early - ensure compliance by implementing functional system changes and data performance changes in 2021/22.
- **Analyse** - we compared the feasible options in terms of estimated cost, delivery risk and compliance risk.
- **Recommend** - we recommend option 1 because it is the lowest cost, lowest risk option which ensures we comply with the five minute settlement rule change. This option also meets our customers' expectations that we comply with our regulatory obligations to ensure a safe and reliable service.
- **Estimate** - the recommended option was fully costed using a bottom up approach which:
 - takes account of the forecast increase in volume of meter data reads
 - leverages information from historical projects relating to the target applications, together with information on projects of similar nature and scope, for example the metering contestability project in 2017 and the IT systems upgrade to accommodate AMI meter data during the AMI roll out
 - more information on our cost estimation approach is provided in section 6 and attached five minute settlement cost model.
- **Roadmap** - we developed a roadmap for sequencing the system and process changes required to ensure a low risk delivery model, which minimises system downtime and costs.

4.2 Summary

Table 4 provides a summary of the total capital expenditure and incremental operating expenditure over the 2021–2026 regulatory period for each of the identified options.

Table 4 Options analysis summary, capital expenditure and incremental operating expenditure 2021–2026, \$m 2021

Description	IT Capex	Comms capex	Incremental opex
0 Do nothing - do not make functional system and data performance changes necessary to comply with the five minute settlement rule change.	0.0	0.0	0.0
1 Implement on time - implement functional system changes in 2021/22 and data performance changes in 2022/23.	17.8	14.1	6.9
2 Implement early - implement both functional system changes and data performance changes in 2021/22.	23.6	14.1	6.9

Source: Powercor

Note Above costs include CitiPower and Powercor due to shared IT systems and service provision arrangements.

4.3 Option 0 – do nothing

This option involves not making the functional system and data performance changes necessary to comply with the five minute settlement rule change. The advantages and disadvantages of this option are set out in table 5.

Table 5 Advantages and disadvantages of option 0

Category	Advantages	Disadvantages
Safe & Dependable		<p>Non-compliance under the National Electricity Law</p> <p>Benefits of five minute financial settlement identified by AEMO would not be realised, including:</p> <ul style="list-style-type: none"> • lower wholesale electricity costs • rewards for demand management • a more reliable power system.
Flexible		<p>Difficulties in providing and receiving meter data files with both retailers and AEMO.</p> <p>Potential for loss of licence to participate in the NEM due to non-compliance with Rules and AEMO procedures.</p>
Affordable	No upfront capital expenditure and no incremental operating expenditure	<p>Financial penalties by way of civil penalties and infringement notices.</p> <p>Increasing administrative costs of interfacing with retailers and AEMO.</p>

Source: Powercor

4.4 Option 1 – Implement on time

This option involves implementing the functional system and data performance changes necessary to comply with the five minute settlement rule change in two stages:

- first, implement the functional system changes during 2021/22
- second, implement the data performance changes in the first half of 2022/23 (from July 2022 to December 2022).

The advantages and disadvantages of this option are set out in table 6.

Table 6 Advantages and disadvantages of option 1

Category	Advantages	Disadvantages
Safe & Dependable	<p>Ensure compliance with Rules.</p> <p>Low risk delivery model by making changes sequentially.</p> <p>Learnings from functional changes can be leveraged to implement data performance changes more quickly and effectively.</p> <p>Benefits of five minute financial settlement identified by AEMO would not be realised, including:</p> <ul style="list-style-type: none"> • lower wholesale electricity costs • rewards for demand management • a more reliable power system. 	
Flexible	<p>Standardised process for providing and receiving meter data files with AEMO and retailers.</p> <p>Continued licence to participate in the NEM.</p>	
Affordable	<p>Lowest cost option which achieves compliance.</p> <p>Avoids financial penalties for non-compliances.</p>	<p>Upfront capital expenditure and ongoing incremental operating expenditure.</p>

Source: Powercor

4.5 Option 2 – Implement early

This option involves implementing the functional system and data performance changes necessary to comply with the five minute settlement rule change within one year, 2021/22. Under this option we would be ready for the rule change six months prior to the compliance date of December 2022. The advantages and disadvantages of this option are set out in table 7.

Table 7 Advantages and disadvantages of option 2

Category	Advantages	Disadvantages
Safe & Dependable	<p>Ensure compliance with the Rules.</p> <p>Benefits of five minute financial settlement identified by AEMO would not be realised, including:</p> <ul style="list-style-type: none"> • lower wholesale electricity costs • rewards for demand management • a more reliable power system. 	<p>Higher risk delivery model by making functional system and data performance changes concurrently.</p> <p>Higher risk of errors, reworks and missed deadlines impacting deliverability.</p> <p>Learnings from functional changes cannot be leveraged when implementing performance changes.</p> <p>Increased project management complexity and higher resourcing requirements due to more activities occurring concurrently.</p>
Flexible	<p>Standardised process for providing and receiving meter data files with AEMO and retailers</p> <p>Continued licence to participate in the NEM</p>	
Affordable	<p>Avoids financial penalties for non-compliances</p>	<p>Higher upfront capital expenditure compared with options 0 and 1.</p> <p>Same level of ongoing incremental operating expenditure as option 1.</p>

Source: Powercor

5 Recommendation

We recommend option 1 to implement the five minute settlement rule change on time through a two stage approach. Under option 1 we would make functional system changes in 2021/22 followed by data performance changes by December 2022. Option 1 is the lowest cost and lowest risk delivery model which ensures compliance with the five minute settlement rule change and facilitates the realisation of customer benefits identified by the AEMC.

Option 0, Do Nothing, is not recommended as we would be non-compliant with the Rules, increasing the risk of financial penalties and a loss of our licence to operate in the NEM. Option 0 would inhibit the functioning of the NEM and prevent the realisation of customer benefits identified by AEMC.

Option 2, Implement early, is not recommended as it is a higher cost and higher risk delivery model which is not necessary to ensure compliance with the five minute settlement rule within the prescribed timeframes.

Table 8 summarises the expenditure proposal for our recommended option 1.

Table 8 Recommended option: Capital expenditure and incremental operating expenditure 2021–2026, \$m 2021

Expenditure category	CitiPower	Powercor
IT capital expenditure	8.9	8.9
Network communications capital expenditure	1.1	13.0
Incremental operating expenditure	1.9	4.9

Source: Powercor

6 Expenditure forecast method

We prepared a bottom up forecast of the capital and incremental operating expenditure required under our recommended option 1. Our detailed cost build up is provided in the supporting models.

IT system impacts

To develop our IT capital expenditure forecasts, for each system impacted, we estimated the cost to implement the required changes based on:

- labour time estimates based on our experience implementing projects of similar nature and scope, for example the metering contestability project in 2017 and the IT systems upgrade to accommodate AMI meter data during the AMI roll out
- labour rate based on a blended external IT labour rate provided by PwC.⁷

Communications network

To develop our capital expenditure forecasts for communications devices we:

- forecast the volume of additional communications devices required based on:
 - the forecast growth in meter reads. Forecast growth in meter reads was based on the actual and forecast volume of five minute capable meters installed annually from December 2018
 - the expected geographical location of five minute capable meters relative to our existing communications network capability.
- forecast unit rate of communication devices hardware and installation costs based on the current costs we incur for each type of device.

Table 9 provides our forecast volume of additional communications devices required to accommodate the growth in meter data from five minute capable meters.

Table 9 Additional communications devices required for five minute settlement

Communication devices	CitiPower	Powercor
Access points	37	365
Relays	150	1,459
Micro access points	-	137
Antennas	73	5,873

Source: CitiPower, AMI comms model, Powercor AMI comms model

Incremental operating expenditure

We forecast the incremental increase in operating expenditure for additional WAN capacity and data processing based on the growth in forecast meter data volumes times the unit rate of WAN capacity and nodes.

We forecast the incremental increase in operating expenditure for manual data exceptions processing based on:

- current rate of manual exceptions per meter read times the forecast volume of meter reads

⁷ PAL MOD 12.02 - Quoted services labour rate - Jan2020 - Public.

- current labour time required to undertake manual meter exceptions times the current labour rate.

Table 10 indicates the volume of exceptions expected during 2021–2026 compared to 2019, as a result of an increase in the volume of data collected from new 5-minute capable meters from 1 December 2022.

Table 10 Manual meter data exceptions

	2019	2020	2021/22	2022/23	2023/24	2024/25	2025/26
Manual meter data exceptions	188,466	192,500	322,546	370,055	412,886	459,362	509,384

Source: Powercor opex step change model

Note Includes CitiPower and Powercor

A Detailed IT system impacts

Table 11 Detailed analysis of IT system impacts

IT system and function	Change required	Impact
<p>Market Transaction Suite (MTS)</p> <p>Used to manage communications with external market participants.</p>	<p>New file format for the export of 5 min data, including in relation to requests to provide or verify meter data.</p> <p>Update Average Daily Load (ADL) calculator to cater for 5 minute data.</p> <p>Updates to end user interface.</p> <p>Advise the market of changed interval length for each NMI (via CR 4051)</p> <p>Linking of 5 minute interval data to CATS transactions.</p> <p>Ability to send meter data in the new file format to AEMO.</p>	High
<p>Itron Enterprise Edition (IEE)</p> <p>Interval meter data collection, storage, management and processing.</p>	<p>Generate substitute data to 5 minute intervals for Type 5 VIC AMI meters.</p> <p>Generation of meter data for unmetered supplies down to 5 minute intervals.</p> <p>Export data to our meter data portal in 5 minute intervals instead of 30*</p> <p>Updates to end user interface.</p> <p>Updates to the automated processes to cater for change over (i.e. when the firmware is updated an interval read will need to be generated).</p> <p>Update automated meter data import and validation to cater for 5 minute data.</p>	High
<p>Utility IQ</p> <p>Manage communications to electricity meters in the field, remotely collect interval meter consumption and metering events. Supports remote connection and disconnection of electricity meters.</p>	<p>Ability to remotely or manually reprogram/reconfigure devices to support 5 min data collection *.</p> <p>Collect 5 min data from meter & export to IEE.</p> <p>Create new meter models.</p>	High
<p>Oracle Fusion</p> <p>Facilitates and controls routing of messages and transactions exchanged between IT applications.</p>	<p>Automate the system processing when meters change from 30 minute to 5 minute (i.e. remove and install). This applies to both franchise and contestable sites.</p> <p>All changes marked * also require a corresponding change in Oracle Fusion.</p>	High
<p>SAP</p> <p>Organisation-wide Enterprise Resource Planning (ERP) solution with supports the payroll, HR, finance and network/organisational asset management functions.</p>	<p>Creation of new meter models and meter types.</p>	Medium

SAP BI Data management and reporting	Update existing compliance reports to manage meter data exceptions.	Medium
myEnergy Meter Data Portal A customer facing energy monitoring dashboard which enables our customers to take control of their energy bill.	Display data at 5 minute intervals *. Provide meter data download files for customers at 5 minute intervals *.	Low
eConnect Workflow and automated processing tool to assist with supply connection, alteration and amendment requests. A customer or registered electrical contractor can track and monitor the progress of their requests.	The automated completion of connection requests to install 5 minute interval meters *. The automated reconfiguration requests to default to 5 minute *.	Low
CIS Open Vision Customer information and relationship management, account management, billing and collection.	Update the reading interval length for each NMI *.	Low
FCS and hand held devices Scheduling and management of manually read meters.	Ability to manually collect & and store 5 minute meter data for meters which cannot be remotely read.	Low
Infrastructure Meter data storage	Increased volume of meter data to be stored plus 7 years history. i.e. IEE and UIQ. More frequent archiving.	Medium

Source: Powercor

B Differences between Victoria and interstate distributors

Table 12 Difference between Victoria and interstate distributors

Victorian distributors	Interstate distributors	Impact
The vast majority of our meter fleet are AMI smart meters read every 30 or 5 minutes. Only a small percentage of the meter fleet are basic accumulation meters.	The majority of the meter fleet are basic accumulation meters read every three months. These meters are not required to become 5 minute compliant.	The Victorian distributors face increased data processing, validation and storage associated with AMI smart meters.
<p>We are responsible for the Meter Provider (MP), Meter Coordinator (MC) and Meter Data Provider (MDP) roles. For meter installations and replacements after 1 December 2018 it is our responsibility to both perform the physical installation of a 5 minute capable meter and to ensure both their operational and IT systems can cope with the increased meter data from December 2022.</p> <p>In addition, for around 15,000 contestable sites, our >160MWH customers, we must amend our data storage and billing systems to receive and store meter data from an external party in order to continue network billing. Around 20% of our meter fleet will be 5M compliant by 2025/26.</p>	<p>Interstate distributors do not perform the roles of MDP, MP or MC for smart meters.</p> <p>Any meter installations or replacements after 1 December 2018 become the responsibility of external parties to perform the meter installation.</p> <p>The meter data for newly installed 5 minute capable smart meters is retrieved, validated and provided to the distributor by an external MDP. The distributor only needs to receive and store the meter data and utilise for network billing.</p>	Victorian distributors have additional roles and responsibilities in the NEM which require us to make more significant system and process changes.
AEMO AMI MDP and MP accreditation & procedural compliance is required.	Interstate distributors do not perform the role of MDP or MP for smart meters and hence do not require accreditation or procedural compliance.	Victorian distributors encounter the associated accreditation, system and manual processing costs.
The distributor must provide 5 minute data for unmetered supplies from 1 July 2021.	The distributors must provide 5 minute data for unmetered supplies from 1 July 2021.	Same requirement on both Victorian and interstate distributors.

Source: Powercor