Appendix 2.4

IT asset utilisation fee – Nomination and operational balancing gas IT business case

Prepared by Jemena for Evoenergy

Access arrangement information

ACT and Queanbeyan-Palerang gas network 2021–26

evoenergy

Jemena Asset Management Pty Ltd

Technology Plan Investment Brief: Nomination and Operational Balancing Gas System Migration and Platforming

Appendix 2.4

IT Business Case

Glossary

Current regulatory period	The period covering 1 Jul 2016 to 30 Jun 2021
Next regulatory period	The period covering 1 Jul 2021 to 30 Jun 2026
AA	Access Arrangement
COTS	Commercial Off-The Shelf (software solution)
RYxx	Regulatory year covering the 12 months to 30 June of year 20xx. For example, RY22 covers 1 July 2021 to 30 June 2022.
STTM	Short Term Trading Market
ELMS	Emergency Load Management System
JAM	Jemena Asset Management
JGN	Jemena Gas Networks (NSW)
ICT	Information and Communications Technology

1.   Nomination & Operational Balancing Gas System Migration and Platforming

Objective	The objective of this investment brief is to efficiently maintain the critical functions for managing the nomination and the gas balancing functions for the Canberra network on behalf of Evoenergy.
Background	Under the Distribution Asset Management Services (DAMS) Agreement between Jemena Asset Management (JAM) and Evoenergy, JAM provides customer management, works management and a range of related services through its IT systems.
	Prior to the current access arrangement period JAM had a single system to provide retailer billing, demand customer management, network balancing and retailer nomination services. This system is referred to as CABS, and it formed part of the GASS+ system used by JAM to manage both the Jemena Gas Networks (NSW) Ltd (**JGN**) and Evoenergy gas networks. In 2015 and 2016, JAM replaced the majority of GASS+ functionality with SAP. Some, but not all, of the CABS functionality was replaced by SAP so CABS has continued to be used.
	CABS was a bespoke system developed in 2002 by an external vendor. Due to the age of CABS there is limited knowledge of the CABS code. It is also envisaged that within five years the code used for CABS will be no longer broadly used increasing the risks associated with maintaining the system. The limited knowledge of CABS also creates the potential for changes to other systems to unknowingly negatively impact the functioning of CABS.
	As part of its 2020-2025 Access Arrangement, JGN proposed to replace the remaining CABS functionality it relies on with a new system in RY24-RY25[1]. The AER in its Draft Decision accepted this expenditure[2]. JGN's proposal did not cover that part of CABS which is solely used for the Evoenergy network sections, namely nominations and gas balancing. Evoenergy continues to rely on this functionality. Evoenergy must now decide whether or not to replace the specific functionalities still sitting within CABS. Appendix 1 shows how CABS provides information to support Evoenergy meeting its market obligations.
	Nominations and Gas Balancing Functions
	The nominations and gas balancing functions within CABS provide Market Participants (Retailers/Self Contracting Users (SCUs)) on the Canberra Network with a platform to submit and manage their gas nominations, as well as the functionality for the system to perform gas balancing, including the calculation of operational balancing gas. To meet all of Evoenergy's regulatory obligations, the nomination and gas balancing functions are required to:
	• Receive nomination forecasts from Market Participants including Retailers and SCUs
	• Validate User Nominations,
	• Receive shipper allocation for Operational Balancing Agreement (OBA) if an OBA is in operation and when there are multiple shippers
	• Notify shippers and pipeline operators of their confirmed nominations
	• Supply Canberra network data to AEMO which includes receipt points, unaccounted for gas (UAG) and Change in linepack (CLP)
	• Receive Net Section Load (NSL) data from AEMO
	• Calculate and apportion Operational Balancing Gas to Users (Retailers and SCUs) when there is no-OBA in operation
	• Supply Provisional and Revised Daily Imbalance data to AEMO when there is no-OBA in operation

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[1] Under the heading "Replace the Short Term Trading Market (STTM) System"

[2] AER, Attachment 5: Capital Expenditure | Draft decision – Jemena Gas Networks (NSW) Ltd Access Arrangement 2020 – 25, p 5-41, Table 5.23

	• Manage Users Prior Imbalance Account when an OBA is in operation.
Customer Importance	CABS is integral to Evoenergy in meeting its market obligations as the network operator for the Canberra network. The nomination process and gas balancing operations are managed by JAM on behalf of Evoenergy. Operational Balancing Gas is calculated and provided to Evoenergy so that Users can be invoiced.
Strategic Approach	The nomination process and gas balancing operations within CABS is a key responsibility and regulatory compliance requirement of Evoenergy. Maintenance of these functions are critical to the safe and efficient operation of the gas network. Without these functions, Evoenergy cannot meet many of its regulatory and compliance obligations and service level targets. CABS was a bespoke system designed and built in the early 2002. Given its age and bespoke nature, the level of support for this system is limited and well below what JAM considers necessary to manage system stability. In response to this situation, JAM is investigating options to improve the support level and reliability of this system so that Evoenergy can continue to meet its obligations.
Options	JAM has considered three options to efficiently maintain the nomination and gas balancing functions for Evoenergy: • Option 1: Continue with status quo and defer replacement until the 2026-2031 access arrangement period. • Option 2: Build a custom system with the same capabilities as the current CABS functionality offers for Evoenergy • Option 3: Purchase a Commercial-off-the-Shelf solution **Option 1: Continue to maintain the CABS system to provide the nomination and gas balancing functions and defer replacement until the 2026-31 regulatory period** **Description** This option is to continue with the status quo, presenting the lowest upfront cost of all options being considered. However, it carries a very high-cost risk if a change needs to be made to the nomination and gas balancing functions (for example, after a market rule change) or if the software fails. If CABS requires an emergency replacement, this option will become the most expensive. In addition: • Ongoing operating costs and upgrade costs in the same CABS environment will be higher due to the requirement for additional specialist staff to maintain CABS and to perform regression[3] testing when updates are made to other systems. This operational cost has been estimated at \$20,000 beginning in RY26 after JGN has completed its migration in RY25. • The capital cost for eventually addressing Evoenergy's requirements at a future date is also expected to be higher than it would be if JGN and Evoenergy were utilising a common system, as a number of activities would need to be duplicated across the two systems. The additional cost of running the two initiatives as separate projects, with significant elapsed time between them, is expected to be a 20% increase to the base cost. • The current platform is not currently well supported. The platform will need to be worked on when JGN's functionality is migrated away, and then again at some future point, when Evoenergy's requirements are finally addressed. Each of these interventions to the system carry the possibility of interruption to processing. While this risk has a very low likelihood it is, nevertheless, associated with a high consequence for the market.

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[3]   Regression testing is re-running of tests to ensure previously developed and tested software still performs as expected after a syste, change.

Direct Unescalated Costs ($2020)

$2020	RY22	RY23	RY24	RY25	RY26	RY27	RY28	RY29	RY30	RY31
Non-recurrent capex										
Rebuild									$749,771	$749,771
Opex										
Support					$20,000	$20,196	$20,394	$20,594	$20,796	$20,999

The deferred non-recurrent capital cost for replacing CABS under this option is incurred during the 2026-31 regulatory period. The deferral of five years shifts development costs to RY30 and RY31 and totals $1.25m ($2020).

Risks

The main risks with this option is related to the limited ability to recover and restore services after a catastrophic software failure with the worst case scenario requiring a total system rebuild in the event of failure. There is also a heightened risk of a software failure due to the lack of knowledge of the contents of the CABS code and the potential for changes to other systems to unknowingly negatively impact the functioning of CABS. Also, as noted above, when JGN performs its migration of the CABS functionality, in RY24-RY25, this will require changes to the current system (as part of a data migration and closing down of the processing of JGN's transactions).

Benefits

There are no benefits to selecting this option.

NPV Analysis

The net present value of this option is $-1,152,285.

Summary

This option will maintain the existing systems at low cost. However, there is a risk of an extended period of non-compliance, and failure to appropriately manage the nomination and gas balancing functions should CABS fail as JAM does not have the level of in-house capability or ready access to external capabilities to update or repair the software in the event of failure.

Option 2: Build a custom system with the same capabilities as the current CABS nomination and gas balancing functions and decommission CABS

Description

This option is to replace the remaining functions contained within CABS that Evoenergy relies on with a bespoke software package. This would be part of the larger project by JGN to replace the functionality it currently utilises within CABS. The development of the software will be managed by JAM but undertaken by a specialist software development firm. As the functionality required is unique to JGN and Evoenergy, the only feasible option to replace CABS is with customised software.

The exact design of the replacement has not yet been determined. The proposed timeline for the replacement is for the new package to be complete in RY25 with development beginning in RY24 aligned to the timing of JGN replacement.

Direct Unescalated Costs ($2020)

$2020	RY22	RY23	RY24	RY25	RY26	RY27	RY28	RY29	RY30	RY31
Non-recurrent capex										
Rebuild			$624,809	$624,809						
Recurrent capex										
Life cycle										

The non-recurrent capital cost for this option is incurred during RY24 and RY25 and totals $1.25m for the development of the nomination and gas balancing functions over and above those required by JGN. This cost was estimated using JAM's standardised estimator tool for IT projects as described in the Technology Plan under the section on Forecasting Method. The cost aligns with SME estimates for this project.

It should be noted that there is greater uncertainty with this project than with other, more conventional application replacements. The unsupported nature of the current system and the absence of recent precedent in developing such a bespoke requirement means we could be underestimating the difficulty of replacing the function.

Risks

The risks for this option are low relative to the other options that have been considered.

The new system will have significantly lower failure risk than the existing CABS, but these risks will not be zero. JAM estimates the repair time for a minor failure would be reduced to one day (seven for the existing CABS) due to having access to the developers of the system and because the system will be written in modern programming languages. The probability of a catastrophic failure requiring a complete rebuild of the system would be reduced to zero. The new system will be repairable and access to the developers will be available, ensuring a complete rebuild will not be necessary.

Benefits

$2020	RY22	RY23	RY24	RY25	RY26	RY27	RY28	RY29	RY30	RY31
Benefits										
CABS Testing Efficiencies					$20,000	$20,196	$20,394	$20,594	$20,796	$20,999

There is a reduction in testing for Evoenergy functionality within the CABS environment once it has been migrated to the new platform estimated to be $20k per annum which comes into effect starting in RY26, the year after migration has been completed.

This option also provide several benefits as it enables Evoenergy to piggyback of the changes JGN is making and therefore provides a cheaper solution than having to develop a standalone solution.

NPV Analysis

The net present value of this option is $-940,073.

Summary

This option will replace the existing systems used for Evoenergy at the same time JGN replacement is occurring. This option will address issues with the supportability of CABS and will allow JAM to upgrade the system to add new capabilities to increase productivity and improve customer outcomes. This option will mitigate the risk of an extended period of non-compliance and failure to appropriately manage the Canberra network should the system fail as JAM will have the capability and access to external capabilities to update or repair the replacement software in the event of failure, which JAM does not have for the existing system.

Option 3: Purchase a Commercial-Off-The-Shelf (COTS) solution to replace the nomination and gas balancing functions and decommission CABS

Description

This option is to use a COTS software package to provide the nomination and gas balancing functions required by Evoenergy. Ideally, a COTS solution will meet all of Evoenergy's needs and be provided by a vendor that will update the software when the market and jurisdictional rule changes require.

However, due to Evoenergy's unique circumstances, it is unlikely a COTS solution would be available, and any software package would require a high level of customisation.

The main benefit of this option is that it avoids development costs and ensures the system is well supported. As the vendor is expected to retain capabilities to lifecycle and enhance the software over time, Evoenergy will not be exposed to the risks of a bespoke software package where the original developers are difficult to retain over time.

JAM has not identified a suitable vendor for a COTS solution at this time and has no information to indicate one may emerge in the future. Therefore, this option is not currently feasible.

Costs

As no vendor has been identified that can provide a COTS solution for the nomination and gas balancing functions, no cost information can be provided.

The unique requirements of Evoenergy are also expected to result in a requirement for significant customisations to any COTS solution that may be similar in total cost to developing a bespoke software package (Option 2).

Risks

Risks are expected to be driven by the level of customisation that is required for a COTS solution to meet Evoenergy's unique circumstances. As no vendor has been identified that can provide a COTS solution for the nomination and gas balancing functions, no risk information can be provided. It is expected that a COTS solution would not provide Evoenergy specific updates to the software if rule changes require a change in the operation of the software. It is likely that over time, the product would become more customised and therefore, difficult to update.

Benefits

The benefit of this option is that the vendor will largely manage maintenance and life cycling of the system. However, this benefit depends on the level of customisation that will be required to achieve the required capabilities from the COTS software.

NPV Analysis

As a vendor has not been identified, there is not enough information available to be able to reliably calculate an NPV for this option.

Summary

This option is attractive as purchasing a COTS product would eliminate development costs. However, the option is not feasible as no vendors are offering this product in the market. Due to the unique capabilities required by JGN, it is unlikely a product would become available within the timeframes required by JGN.

Options Summary	The table below summarises the quantitative and qualitative differences between the analysed options.

	NPV $2020	Qualitative Risks	Qualitative Benefits

Option 1	-$1,152,285	High	None
Option 2	-$940,073	Low	High
Option 3	N/A	N/A	N/A

JAM will select an appropriate preferred option considering the direct differences between the options as expressed in the NPV analysis and indirect or qualitative differences in risks and benefits.

What We Are Recommending

JAM proposes to proceed with option 2. The cost savings and reduction in risk from replacing CABS, and doing so in conjunction with JGN's migration, are greater than the value obtained from deferring the replacement (option 1). Alternative options for sourcing a solution (option 3) are not feasible due to there being no providers in the market at this time that can meet Evoenergy's requirements.

Appendix 1: Market Settlement – Logical System Flow

Market Settlement – Logical System Flow (Market Obligations Only)

DATE: 2/11/2015   VERSION: 0.7

LEGENDS:
- EST: Eastern Standard Time without Daylight Saving
- Gas Day starts at 6:30AM (without Daylight Saving)
- Master Data includes: Nominations, Forecasting, User Reconciliation Adjustment Amount (URAA), Unaccounted Gas (UAG), Participant Imbalance Amount (PIA)
- Interface flow
- Internal processing flow