Jemena Gas Networks (NSW) Ltd

Revised 2025-30 Access Arrangement Proposal

Attachment 6.1

Demand forecast

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Overview

The AER's draft decision did not accept our 2025 Plan demand forecast

Overall, in its draft decision, the Australian Energy Regulator (**AER**) concluded that:

- Whilst it agrees with JGN that usage is likely to fall over the access arrangement period for the Volume Market demand, based on advice from ACIL Allen it does not consider it reasonable that usage will fall as rapidly as JGN has put forward. The AER encouraged us to provide further information and more transparent justification for our assumptions in our Revised 2025 Plan to support our demand forecast, and to update our forecasts for the latest available data.
- It needed more information relating to our Demand Market forecasts and included our forecast as a placeholder.

Our revised demand forecast represents the best forecast possible in the circumstances

In preparing our Revised 2025 Plan, we have considered feedback from the AER (and ACIL Allen) in its draft decision, and where appropriate addressed concerns raised by the AER. We engaged CORE Energy & Resources (**CORE**) to revise our demand forecast and engaged Frontier Economics to complete an independent review of CORE's initial and revised Volume Market forecast demand, and the AER's alternative Volume Market forecast demand. We note that whilst we have been given access to the '*ACIL Allen JGN forecast adjustment*' spreadsheet which sets out its alternative forecast for our Volume Market, many of the inputs are hard coded making it difficult to analyse how ACIL Allen has determined its various adjustments to our Volume Market forecast. The adjustments also have not been adequately explained by ACIL Allen in its review report to the AER.

We consider that our revised demand forecast, developed by CORE and which includes updated data for 2023-24, reflects a more realistic rate of decline than the AER's draft decision, and represents the best forecast possible in the circumstances, as required by rule 74(2) of the National Gas Rules (**NGR**). Furthermore, as demonstrated by Frontier Economics' analysis, our revised Volume Market demand forecast is very similar to the Volume Market demand forecast prepared by ACIL Allen, and adopted by the AER in its draft decision, once adjusted to account for our 2023-24 actual demand.

A summary of our revised demand forecast (as prepared by CORE) compared with our Initial 2025 Plan and the AER's draft decision are set out in Table OV–1 showing the net movement over the 2025-30 period. We have also included for our Volume Market ACIL Allen's alternative forecast adjusted by Frontier Economics for 2023-24 actual demand (**ACIL Allen adjusted**) and the Frontier Economics alternative forecast.

Table OV–1: Comparison of JGN's demand forecasts over the 2025-30 period (% movement)

	JGN's Initial 2025 Plan	AER's draft decision	ACIL Allen adjusted[1]	Frontier Economics	JGN's Revised 2025 Plan
Volume (Tariff V) Market					
Residential connections	-1.6%	+0.4%	-0.6%[2]	-0.6%[3]	-0.6%
Residential average demand	-6.6%	- 3.7%	-3.9%	-3.2%	-3.0%
Residential demand	**- 8.2%**	**-3.3%**	**-3.6%**	**-3.0%**	**-3.6%**
Commercial connections	-2.0%	- 2.0%	-4.9%[4]	-4.9%[5]	-4.9%
Commercial average demand	-13.5%	- 5.8%	-6.0%	-3.0%	-7.5%
Commercial demand	**-15.2%**	**- 7.6%**	**-10.6%**	**-7.8%**	**-12.1%**
Demand (Tariff D) Market					
Industrial connections	- 2.8%	- 2.8%	NA	NA	-2.1%
Annual contract quantity (ACQ)	**- 8.3%**	**- 8.3%**	**NA**	**NA**	**-2.6%**
Maximum daily quantity (MDQ)	**-10.5%**	**-10.5%**	**NA**	**NA**	**-2.6%**

Notes:

- In our Initial 2025 Plan, we measured the annual movement/change over the period, whereas in its draft decision the AER measures the total change over the period. We have disclosed our demand movements over the 2025-30 period on the same basis as the AER in its draft decision throughout this attachment.
- The lower movement over the 2025-30 period of our Revised 2025 Plan demand forecast compared with our Initial 2025 Plan is driven by our lower 2023-24 actual demand which is partially offset by adjustments made by CORE.
- The slightly larger decrease over the 2025-30 period of the ACIL Allen adjusted demand forecast compared with the AER's draft decision is driven by our lower 2023-24 actual demand.

The key reasons for the differences between our Revised 2025 Plan demand forecasts and the AER's draft decision are:

1. Residential average connections – CORE has updated its forecasts for new Housing Industry Association (**HIA**) data which has lower forecast commencements.
2. Residential net disconnections and abolishments – the ACIL Allen approach to developing forecasts of disconnections does not distinguish between disconnections and abolishments, whereas CORE does. CORE has applied a new rate of increase to disconnections and abolishments, which reflects a deferment/lower near-term rate of growth of disconnections.
3. Residential demand per connection – our lower actual 2023-24 result which impacts the forecast materially.

1 ACIL method applied to new data (Model 2 with COVID years).

2 Frontier Economics assumed CORE's revised proposal forecast figures for residential connections.

3 Ibid.

4 Frontier Economics assumed CORE's revised proposal forecast figures for commercial connections.

5 Ibid.

4. Small Business/Commercial average connections and demand per connection – the variance between the AER's and our forecast disconnections and abolishments driven in part by different electrification assumptions.
5. Demand Market/Tariff D forecasts have been reduced for the termination of activity by a large, surveyed customer who had previously indicated a large annual load would be maintained through to 2030, and for our lower actual 2023-24 result. In addition, CORE revised its adjustment to the base forecast to address an expected structural change in future consumption across a range of industrial segments due to efficiency measures, energy-saving technology investment and appliance/fuel switching.

Independent review of our Market Volume forecasts concludes they are not unreasonable

We note that the independent review completed by Frontier Economics on our Volume Market demand forecast concluded that:

1. For the residential market[6]: '*Our preferred econometric model provides forecasts that are very similar to CORE's revised forecasts and our estimation of what ACIL's existing models would deliver when applied to the new data which suggests that CORE's revised forecasts are not unreasonable*.'
2. For the commercial market[7]: Frontier Economics notes that its econometric approach implicitly assumes that historical trends are a good guide to the future. CORE's and ACIL Allen's forecasts suggest that historical trends are not a good guide in forecasting commercial demand per connection and both have made adjustments to their forecasts to amend the historical trends for the future likely impact of the energy transition. However, Frontier Economics notes that due to data and time constraints, it has not considered whether adjustments (by including other variables in and/or by making post-model adjustments to its econometric model) should be made to its forecast based on historical trends.

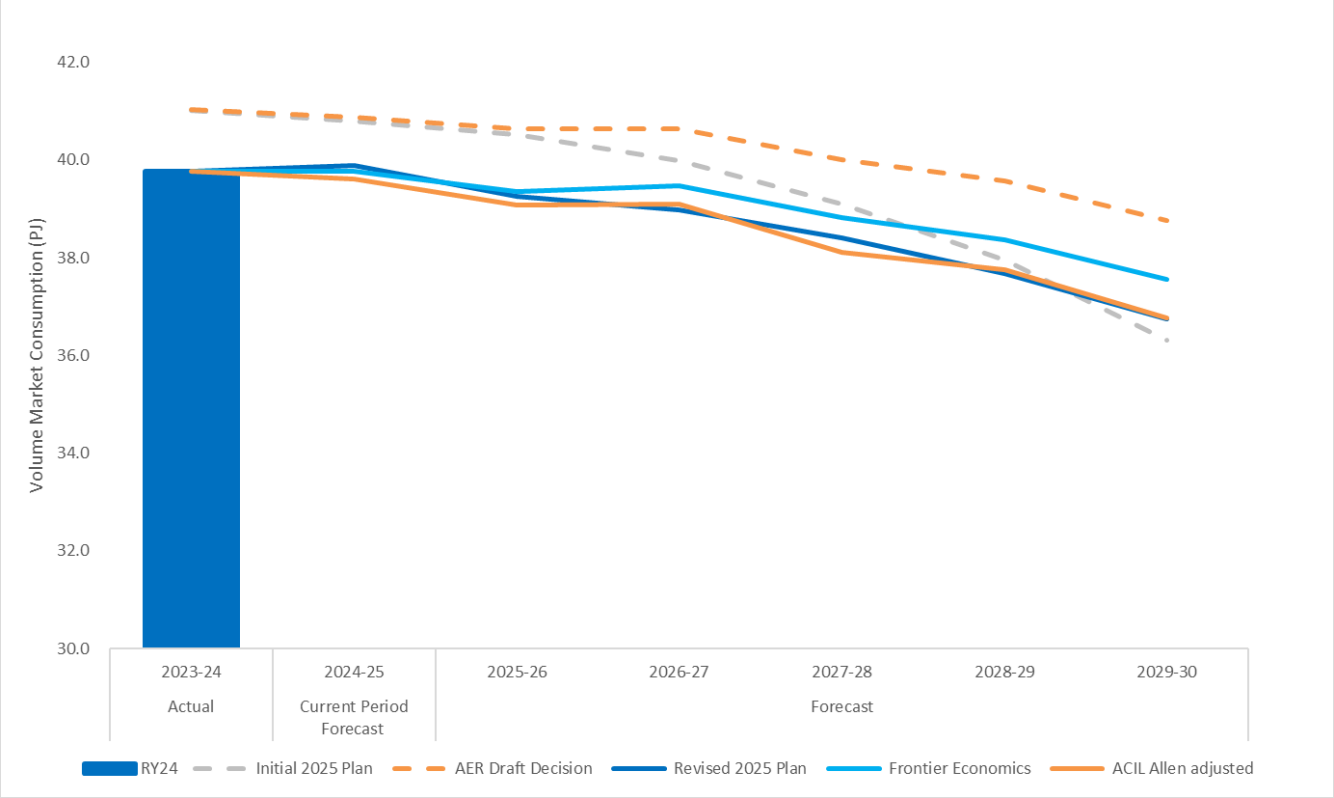
Our Volume Market forecast closely aligns with the ACIL Allen adjusted forecast

Figure OV–1 shows the comparison of our initial and revised Volume Market forecasts compared with the AER's draft decision, and the ACIL Allen adjusted forecast (the ACIL Allen forecast, adjusted by Frontier Economics to account for actual 2023-24 demand) and the Frontier Economics alternative forecast. It shows that our revised Volume Market forecast closely aligns with the ACIL Allen adjusted forecast. As noted above, it is inappropriate to directly compare the CORE and ACIL Allen forecasts for the total Volume Market to the Frontier Economics forecast given that Frontier Economics has not had the time or data to consider the need for making adjustments to the historical trends for the commercial demand to account for likely future changes, such as changes resulting from the energy market transition. Rather, the Frontier Economics alternative forecast serves to demonstrate the reasonableness of the CORE revised forecast.

6 JGN - Frontier Economics - RP - Att 6.6 - Demand technical note – 20250109, section 2.7.

7 JGN - Frontier Economics - RP - Att 6.6 - Demand technical note – 20250109, section 3.7.

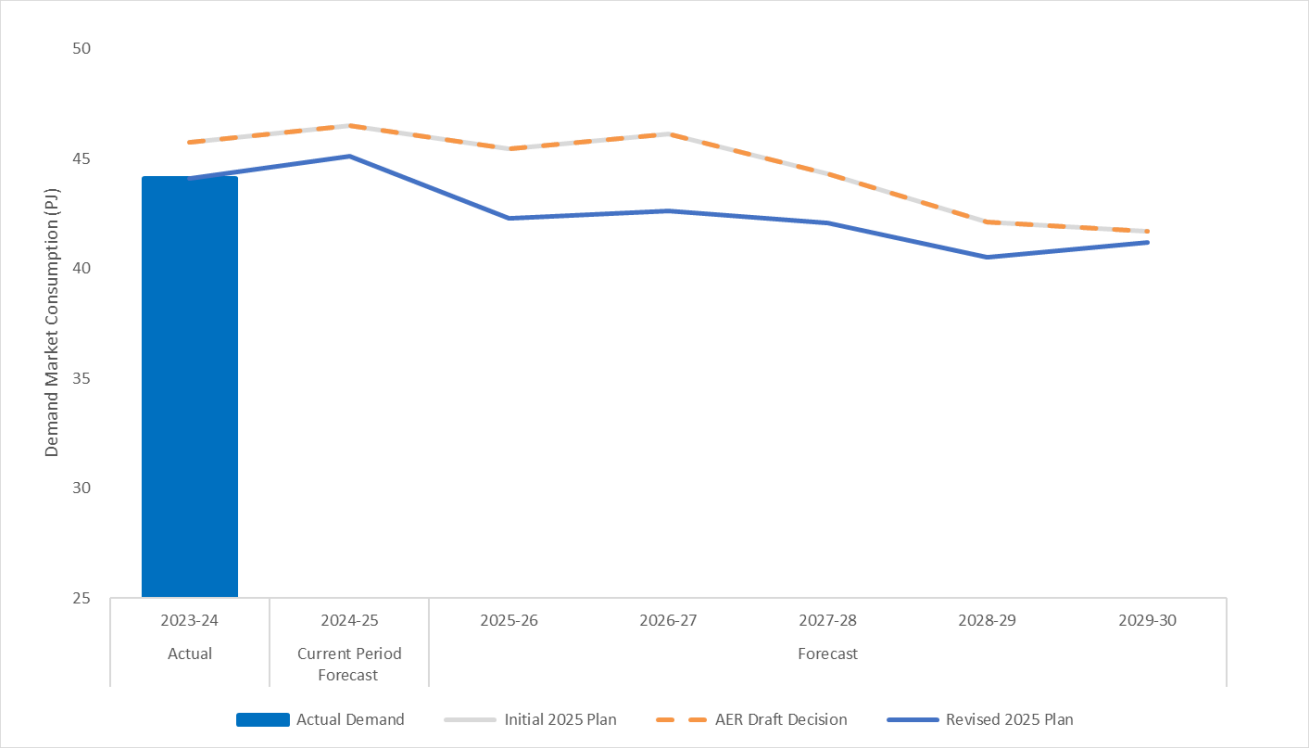
Figure OV–1: Comparison of JGN's Volume Market forecasts with the AER's and Frontier Economics alternative forecasts over the 2023-30 period



Our revised Demand Market consumption is forecast to decline at a lower rate than our Initial 2025 Plan

Figure OV–2 shows the comparison of our initial and revised Demand Market forecasts (the AER adopted our initial Demand Market forecast as a placeholder). It shows that our revised Demand Market forecast has been impacted by the lower 2023-24 demand, the impact in 2025-26 of the removal of a large customer, and structural changes. This results in our forecast reduction in ACQ and MDQ of 2.6% over the 2025-30 period, which is much lower than we had forecast in our Initial 2025 Plan. Our revised Demand Market forecast is expected to be at a similar level to what we forecast in our Initial 2025 Plan in 2029-30 (i.e. the forecasts converge in 2029-30).

Figure OV–2: JGN's revised Demand Market forecasts over the 2023-30 period



Conclusion for JGN's total revised demand forecast

Given the highly uncertain future of gas, it is in our interests that we accurately forecast our demand over the 2025-30 period and minimise variations between actual and forecast demand. We consider that our revised demand forecast reflects a more realistic rate of decline as the energy market transitions than the AER's draft decision. We also note that CORE has demonstrated that AEMO's Volume Market forecast for NSW presents a materially lower demand forecast for Tariff V than its revised forecast.

We consider that our demand forecast is arrived at on a reasonable basis, that represents the best forecast possible in the circumstances, as required by rule 74(2) of the NGR. Further, we consider that they reflect the demand forecasts that are most likely to provide us with a reasonable opportunity to recover at least the efficient costs we incur in providing reference services, as required by the revenue and pricing principles relating to scheme pipelines in clause 24(2)(a) of the National Gas Law. This is because forecast demand is:

1. a driver of our forecast opex and capex (new connections), making up a significant part of our total revenue requirement
2. an important input into the derivation of our reference tariffs. Under our hybrid price cap form of control, we bear the full risk of variations +/- 5% from our demand forecast.
3. an important consideration in assessing the magnitude for accelerated depreciation allowance.

List of demand attachments

Table OV–2: List of demand attachments

Attachment	Name	Author
Demand forecast	JGN - RP - Att 6.1 - Demand forecast - 20250115 – Public	JGN
Demand forecast	JGN - Core Energy - RP - Att 6.2 - Demand Forecast Report - 20250107	Core Energy
Demand forecast model	JGN - Core Energy - RP - Att 6.3M - NSW Demand Forecast Model - 20250107	Core Energy
EDD index model	JGN - Core Energy - RP - Att 6.4M - NSW EDD Index Model - 20250107	Core Energy
Weather normalised demand model	JGN - Core Energy - RP - Att 6.5M - Weather Normalised Demand Model - 20250107	Core Energy
Demand forecast mapping model	JGN - RP - Att 6.6M - Demand forecast mapping model - 20250115	JGN
Demand technical review	JGN - Frontier Economics - RP - Att 6.6 - Demand technical note - 20250109	Frontier Economics

1. Updated actual demand

We have considered feedback from the AER (and ACIL Allen) in its draft decision, and where appropriate addressed concerns raised including on our Demand Market forecast. A summary of our revised demand forecasts is set out in Table 1–1.

Table 1–1: JGN's revised 2025-30 demand over the 2025-30 period

	2025-26	2026-27	2027-28	2028-29	2029-30	Net movement
Volume (Tariff V) market						
Residential connections (#)	1,517,682	1,523,643	1,524,521	1,519,657	1,509,093	-0.6%
Residential average demand (GJ)	17.46	17.37	17.21	17.07	16.93	-3.0%
Residential demand (TJ)	**26,504**	**26,462**	**26,233**	**25,938**	**25,552**	**-3.6%**
Commercial connections (#)	34,268	34,141	33,837	33,288	32,575	-4.9%
Commercial average demand (GJ)	371.85	366.27	359.86	352.67	343.85	-7.5%
Commercial demand (TJ)	**12,742**	**12,505**	**12,177**	**11,739**	**11,201**	**-12.1%**
Demand (Tariff D) market						
Industrial connections (#)	379	377	375	373	371	-2.1%
Annual contract quantity (ACQ)(TJ)	**42,277**	**42,611**	**42,087**	**40,502**	**41,173**	**-2.6%**
Maximum daily quantity (MDQ)(TJ)	**222**	**223**	**221**	**212**	**216**	**-2.6%**

The main reasons for differences between our Revised 2025 Plan demand forecasts and the AER's draft decision are:

1. We have updated our demand forecasts for actual demand over 2023-24 and over the period 1 July to 31 December 2024. Our 2023-24 actual demand was much lower than what we estimated in our Initial 2025 Plan and the AER's draft decision, and actual demand over the period 1 July to 31 December 2024 indicates ongoing lower demand consumption.
2. We have considered more recent published information impacting the inputs of our demand forecasts including new HIA data which has lower forecast commencements and the termination of business of a large industrial customer.
3. We do not agree with some key assumptions or approaches made by ACIL Allen in developing its alternative forecast.

We discuss our updated Volume Market and Demand Market forecasts in chapters 2 and 3 respectively.

2. Demand forecasting approach

The AER engaged ACIL Allen to review CORE's demand forecast prepared for our Initial 2025 Plan. ACIL Allen considered that CORE has not been sufficiently transparent with how it quantified some assumptions, nor provided sufficient evidence to justify adjustments made to historical data trends. ACIL Allen considers it prudent to weigh historical trends of usage more highly, which the AER agreed with in its draft decision.

We are concerned that a high reliance on historical trends of usage when the future of gas is so uncertain is not likely to derive demand forecasts that are arrived at on a reasonable basis and represent the best forecast possible in the circumstances. This is highlighted by our actual 2023-24 demand which is significantly below what we had initially thought it would be. Our actual demand over the period 1 July to 31 December 2024 is at a similar level to our actual demand over 1 July to 31 December 2023.

In its draft decision, the AER encouraged JGN to provide further information and a more transparent justification for its assumptions in its revised proposal to support its forecast. The AER also said that we should update our demand forecasts to account for the latest available data at the time of the revised proposal.

In revising its demand forecast, CORE has considered feedback from the AER and ACIL Allen and has considered the latest available data. CORE's approach to its demand forecasts remains largely the same but it has provided more transparency over key adjustments that it has made to its forecast.

We engaged Frontier Economics to complete a technical review of CORE's and ACIL Allen's Volume Market demand forecasts. Frontier Economics noted a lack of transparency on some aspects of ACIL Allen's forecasts (including non-access to its supporting models) and raised concerns with its S-curve methodology for the residential Market Volumes, which we discuss below.

2.1 AER alternative forecast approach

We note that whilst we have been given access to the '*ACIL Allen JGN forecast adjustment*' spreadsheet which sets out its alternative forecast for our Volume Market, many of the inputs are hard coded making it difficult to analyse how ACIL Allen has determined its various adjustments to our Volume Market forecast. ACIL Allen's review report to the AER[8] also does not provide the necessary clarity on the basis of the adjustments made by ACIL Allen.

In completing its alternative demand forecast for JGN, ACIL Allen:

1. For residential customers:
    a) demand per connection, tested two separate regression models based on forecast movements in gas and electricity prices using CORE's weather-normalised historical data for the existing residential demand per connection
    b) disconnection forecasts, when developing forecasts of disconnections did not distinguish between disconnections and abolishments, whereas CORE does. ACIL Allen applied an appliance switching model based on an S-curve logistic function which is used to determine the probability of switching from gas appliances to electrical appliances. The shape of the S-curve function (that is, how the S-curve is parametrised) is one of the most important factors that determines the number of customers disconnecting from the gas distribution network in ACIL's revised demand forecasts.
2. For commercial customers:
    a) demand per connection, analysed a regression utilising data for all years post-2014 but did not adopt the trend factor in its forecasts. Instead, ACIL Allen applied a trend factor of -5 GJ per annum
    b) adopted CORE's commercial customer number forecasts.

[8] ACIL Allen, Review of Jemena Gas Network's demand forecasts, Review of JGN demand forecasts for the Australian Energy Regulator (AER), 8 November 2024.

While CORE accepts that there is some relationship between energy prices and consumption, CORE considers an approach that focuses on a single variable (price differential), in a highly complex market impacted by multiple economic and social influences, to not be sufficiently rigorous. CORE notes that if ACIL Allen's model is updated with the latest 2023-24 data and beyond, the results will be materially closer to the CORE forecast.

We consider that the approach adopted by CORE is more rigorous than the approach used by ACIL Allen, for the following reasons:

1. CORE separates disconnections and abolishments due to differences in influences on these separate customer decisions[9]
2. CORE has considered a balance of qualitative and quantitative considerations, including analysis of the high level of growth in disconnections over time as presented within CORE's report
3. A focus on NPV as a primary driver of disconnection decisions as presented by ACIL Allen is overly theoretical as JGN's customer base is diverse and a significant portion of customers are unlikely to base decisions on NPV analysis and
4. CORE's analysis takes into consideration the likely impact of increased electrification, supported by the AEMO 2024 GSOO, whereas ACIL Allen has not included this important factor.

2.2 Frontier Economic insights

We engaged Frontier Economics to review ACIL Allen's Volume Market demand forecast for JGN. Frontier Economics focused on the three points of difference that ACIL Allen identified in its review of the CORE demand forecast and:

- Reviewed and compared ACIL Allen's forecasts and methodologies against CORE's
- Provided alternative demand per connection forecasts to test CORE's forecasts
- Reviewed and commented on ACIL Allen's approach to forecasting residential disconnections.

Frontier Economics insights on ACIL Allen's approach are as follows:

Residential and commercial demand per connection

Whilst ACIL Allen's forecast and method for residential demand per connection in its model was relatively clear, Frontier Economics found that for commercial demand per connection, ACIL Allen's forecast and method were unclear.

For the commercial market, ACIL Allen analysed a regression utilising data for all years post-2014 but did not adopt the trend factor in its forecasts and instead adopted a trend factor of -5 GJ per annum. ACIL Allen also applied a post-model adjustment to account for an assumed gas price elasticity of -0.3 and a cross-price elasticity of demand of 0.1.

Frontier Economics believes that given ACIL Allen has assumed elasticities in its forecast, the regression models should also include the impact of the elasticities in its historical data as independent variables. Therefore, Frontier Economics made two improvements to the approach adopted in the ACIL Allen model for forecasting the residential and commercial demand per connection:

- Using a log-log regression model to allow the gas price and cross-price elasticity to be included in the model
- Adjusting the dependent variable to account for the implied gas and cross-price elasticities.

[9] The treatment of a disconnected customer is different from an abolished customers and therefore it is appropriate that they be separately forecast. For example, while there are circumstances such as construction where an abolishment is required for safety reasons, customers may choose a disconnection rather than an abolishment as they perceive there to be value in retaining a gas connection. Additionally, for some customers a disconnection may be the appropriate option as they intend to reconnect after a period of time.

Residential disconnections - Residential S-curve

One of the key components of ACIL Allen's alternative demand forecasts is ACIL Allen's revised residential customer disconnection forecasts. ACIL Allen has used an appliance switching model based on an S-curve logistic function to determine the probability of switching from gas appliances to electrical appliances.

ACIL Allen has not provided access to its appliance switching model utilised to produce the residential disconnection forecasts, or provided information on key assumptions regarding how the S-curve that ACIL Allen used has been parameterised. There is also a lack of transparency in the drafting of ACIL Allen's report to provide this information.

While ACIL Allen has provided information on some of the key inputs used to forecast disconnections, information on the single most important driver of disconnection forecasts – the way that the S-curve is parameterised – has not been provided. This means that Frontier Economics has been unable to observe how key inputs were utilised and to verify ACIL Allen's forecasts.

The results provided by ACIL Allen – and information provided by ACIL Allen in support of its previous forecasts of disconnections for ATCO – suggest that the S-curve is parameterised in such a way that the probability of disconnection is very high even when customers would be significantly financially worse off by disconnecting. ACIL Allen provides no real evidence to support this assumption or to explain why this would be the case.

ACIL Allen states that it calibrates the S-curve such that its estimate of current net present values provides a forecast that aligns with baseline disconnections. Frontier Economics considers that even if this calibration can be relied upon, at best it provides one point on the S-curve, which does not help when forecasting rates of disconnections once the NPV changes (as it does in ACIL Allen's forecast).

Based on recent reviews completed by Frontier Economics of other ACIL distribution gas network demand forecasts, and the associated published ACIL Allen reports and models, Frontier Economics considers that ACIL Allen's approach to forecasting disconnections *'is based on little more than judgment, without supporting evidence to suggest that the judgement is sound'*[10].

See chapter 4 of *JGN - Frontier Economics - RP - Att 6.6 - Demand technical note – 20250109* for more discussion by Frontier Economics of its concern with ACIL Allen's S-curve approach.

2.3 CORE's forecast approach

CORE has updated its 2025-30 demand forecast for the most recent data using the approach set out in chapters 2 to 4 of *JGN - Att 8.1 - Overview of JGN's demand forecast - 20240628 – Public* of JGN's Initial 2025 Plan.

CORE has considered the AER's draft decision and the ACIL Allen report and has incorporated feedback in its *JGN - Core Energy - RP - Att 6.2 - Demand Forecast Report - 20250107 – Public* as appropriate, including providing more information on the assumptions and calculations in determining the declines in per user demand and residential disconnections. A summary of the material changes are discussed below.

2.3.1 Volume Market key updates

CORE's revised forecast has considered a wide range of factors, including:

- Update of actual results – including 2023-24 and observation of draft numbers over the period 1 July to 31 December 2024
- Update of HIA residential dwelling forecasts for NSW (which have reduced)
- Greater disclosure regarding disconnections and demand per connection for Tariff V segments

[10] JGN - Frontier Economics - RP - Att 6.6 - Demand technical note – 20250109, section 4.3.

- Further publication of AEMO forecasts for NSW gas demand for Residential and Commercial (addressed together by AEMO) and Industrial customer classes. Specifically, AEMO developed forecasts for Tariff V indicating it is addressing specific distribution network customers. CORE has adjusted the AEMO demand to remove the impact of ACT demand and considered the possible impact of minor NSW gas networks.

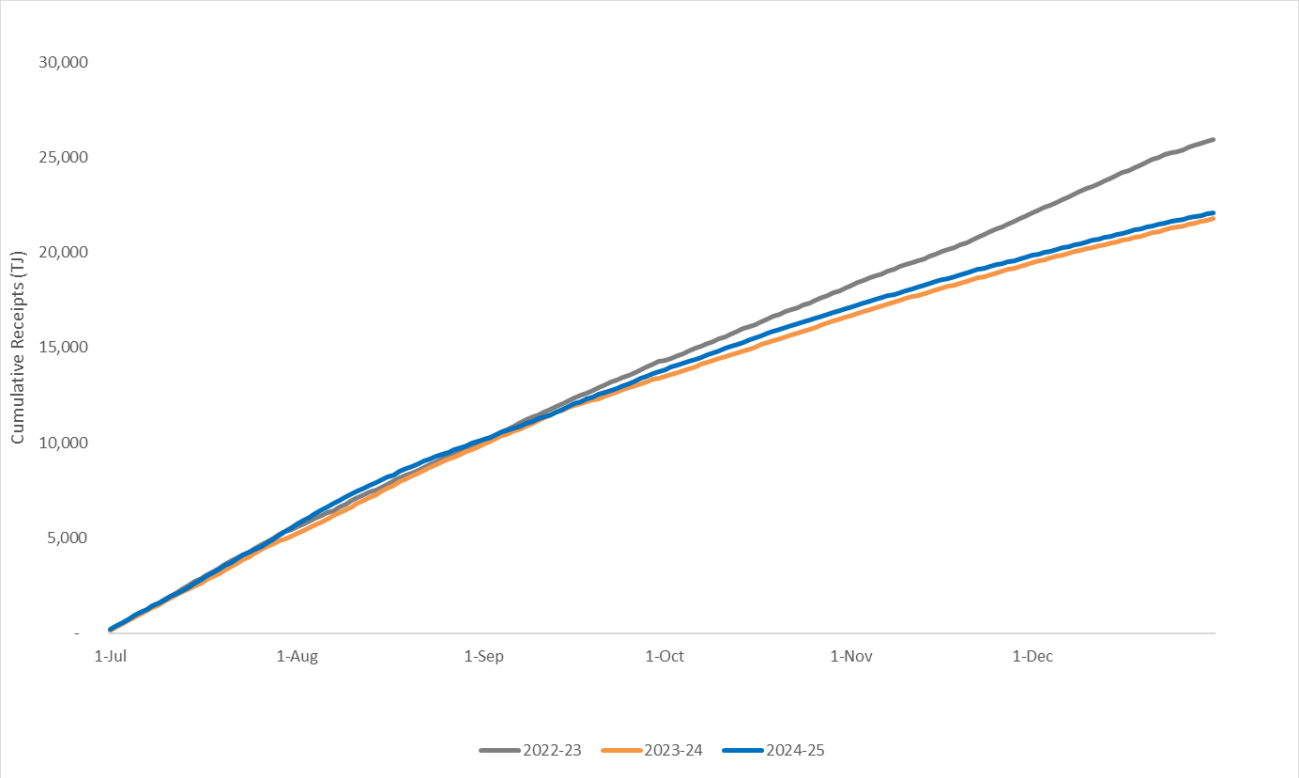
CORE applied an annual rate of decline to the demand per connection starting from the 2023-24 historical demand per connection. The 2023-24 actual results vary significantly from the CORE's forecast in the Initial 2025 Plan and as presented by ACIL Allen, as summarised in Table 2–1. This variance has consequences for ACIL Allen's subsequent year forecasts due to extrapolation or reliance on regression coefficients or other econometric modelling which is now outdated.

Table 2–1: Actual Residential 2023-24 demand compared with the ACIL Allen / AER alternative forecast

Forecast element	JGN 2024 actual, normalised	ACIL Allen 2024 forecast	Variance
Residential demand per connection (GJ)	17.95	18.78	-4.4%
Residential demand (TJ)	26,778	28,013	-4.4%

Data from 1 July to 31 December 2024 provides evidence of a continuation of this lower trend in demand per connection. Figure 2–1 shows the Volume Market plus unaccounted for gas (**UAG**) derived by deducting from total receipts the daily meter customers and change in line pack.

Figure 2–1: JGN Volume Market demand and UAG 1 July to 31 December 2024



CORE considers that there is most likely to be a material increase in the use of residential electrical appliances for water heating, room heating and cooking appliances, which will translate to an increase in disconnections

and/or abolishments (where full electrical substitution occurs) or a decrease in demand per connection (where at least one gas application remains (cooking, water heating or room heating). CORE also considers it likely that demand per connection will continue to decrease – extending the material step change observed in 2023-24.

Further details on the assumptions and adjustments made by CORE are outlined in chapters 2, 3 (residential customers) and 4 (commercial customers) of *JGN - Core Energy - RP - Att 6.2 - Demand Forecast Report*.

2.3.2 Demand Market assumptions

CORE's revised forecast has been updated for known changes in expected customer consumption and forecast structural change in customer gas consumption and for the consequential impact on ACQ and MDQ.

In particular, a large, surveyed customer who had previously indicated a large annual load would be maintained through to 2030 has since gone into liquidation and consequently has been removed from the Demand Market forecast. In addition, CORE revised its adjustment to the base forecast to address an expected structural change in future consumption across a range of industrial segments due to efficiency measures, energy-saving technology investment and appliance/fuel switching.

Further details on assumptions and adjustments made by CORE are outlined in chapters 2 and 5 of *JGN - Core Energy - RP - Att 6.2 - Demand Forecast Report*.

2.4 Validation of CORE Volume Market forecast

To validate its revised Volume Market forecast, CORE has undertaken analysis of AEMO's forecast under the Step Change scenario for NSW. Further, in reviewing ACIL Allen's Market Volume forecast for JGN compared to CORE's forecast, Frontier Economics developed its own alternative forecast.

The results of the validation by CORE and Frontier Economics are set out in section 3.3.

3. Our updated Volume Market forecast

We have considered feedback from the AER (and ACIL Allen) in its draft decision, and where appropriate addressed concerns raised on our Volume Market demand forecast. A summary of our revised Volume Market demand forecasts is set out in Table 3–1.

Table 3–1: Comparison of JGN's Volume Market demand forecast over the 2025-30 period (% movement)

	Our Initial 2025 Plan	AER's draft decision	ACIL Allen adjusted[11]	Frontier Economics	Revised 2025 Plan
Volume (Tariff V) market					
Residential connections	-1.6%	+0.4%	-0.6%[12]	-0.6%[13]	-0.6%
Residential average demand	-6.6%	- 3.7%	-3.9%	-3.2%	-3.0%
Residential demand	**- 8.2%**	**-3.3%**	**-3.6%**	**-3.0%**	**-3.6%**
Commercial connections	-2.0%	- 2.0%	-4.9%[14]	-4.9%[15]	-4.9%
Commercial average demand	-13.5%	- 5.8%	-6.0%	-3.0%	-7.5%
Commercial demand	**-15.2%**	**- 7.6%**	**-10.6%**	**-7.8%**	**-12.1%**

Key variations between our Revised 2025 Plan Volume Market forecasts and the AER's draft decision are:

1. **Residential average connections** – CORE has updated its forecasts for new HIA data which has lower forecast commencements. If the AER does not accept our revised forecast and develops an alternative forecast, the alternative forecast also needs to be updated for this revised input.
2. **Residential net disconnections and abolishments** – the ACIL Allen approach to developing forecasts of disconnections does not distinguish between disconnections and abolishments, whereas CORE does. CORE has applied a new rate of increase to disconnections and abolishments, which reflects a deferment/lower near-term rate of growth of disconnections. If the AER does not accept our revised forecast and develops an alternative forecast, the alternative forecast approach needs to distinguish between disconnections and abolishments to avoid overstatement of net disconnections and consider the appropriate rate of increase of them.
3. **Residential demand/connection** – our lower actual 2024 result which impacts the forecast materially. If the AER does not accept our revised forecast and develops an alternative forecast, the alternative forecast also needs to be updated for our actual 2024 result.
4. **Small Business/Commercial** average connections and demand/connection – the variance between the AER's and our forecast disconnections and abolishments driven in part by different electrification assumptions. If the AER does not accept our revised forecast and develops an alternative forecast, the alternative forecast should consider our different electrification assumptions.

11 ACIL method applied to new data (Model 2 with COVID years).

12 Frontier Economics assumed CORE's revised proposal forecast figures for residential connections.

13 Ibid.

14 Frontier Economics assumed CORE's revised proposal forecast figures for commercial connections.

15 Ibid.

After adjusting for 2023-24 actual demand, Frontier Economics' independent review shows that CORE's revised residential demand per customer compared with ACIL Allens' adjusted forecast and the Frontier Economics alternative forecast, are very similar. Frontier Economics concludes that CORE's revised forecasts are not unreasonable. This is demonstrated in chapter 2 of *JGN - Frontier Economics - RP - Att 6.6 - Demand technical note - 20250109*.

3.1 Residential customers

3.1.1 AER's draft decision

In its draft decision, the AER:

- Accepted our forecast residential new connections
- Agreed with ACIL Allen's advice on disconnections and that while disconnection rates are likely to increase over the next 5 years, JGN has not justified an exponential increase, particularly in the absence of subsidies or other incentives of sufficient size to support switching. The AER considered that ACIL Allen's proposed alternative forecast for disconnections is reasonable in the circumstances, and based on sound analysis and reasoning.
- Agreed with ACIL Allen that there is some validity in JGN's forecast of average consumption for the first two years of the access arrangement, but that we have not provided quantitative analysis in support of its forecast accelerating decline in consumption in the final 3 years of the access arrangement. The AER adopted ACIL Allen's alternative forecast for the final 3 years based on modelling of regression analysis of historical usage and modified for the impact of price differentials between electricity and gas.

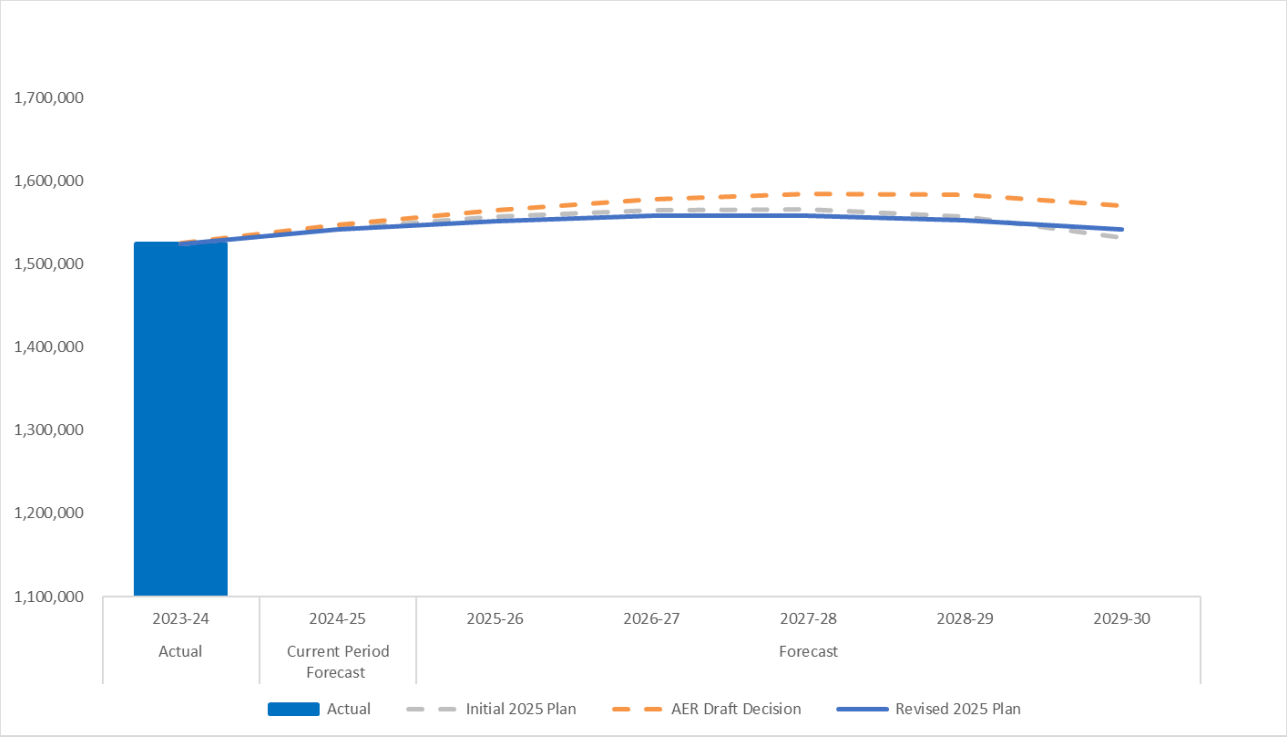
3.1.2 JGN's response

Residential customer numbers

Using the same methodology as applied in the Initial 2025 Plan, CORE has updated the residential connection forecast to include 2023-24 actuals and updated HIA data. We note that our actual 2023-24 connections were very close to our forecast included in our Initial 2025 Plan.

Figure 3–1 shows that our revised forecast customer numbers are closely aligned with our Initial 2025 Plan forecast. We consider that ACIL Allen's approach to treating all abolishments and disconnections as an abolishment, with no reconnecting customers, results in an overstatement of customer numbers, as discussed below.

Figure 3–1: Forecast Volume Market average customer numbers over the 2023-2030 period



Abolishments and disconnections

In its alternative forecast prepared by ACIL Allen, the AER treated all abolishments and disconnections as an abolishment, with no reconnecting customers. We note that reset RIN requires us to separately identify abolishments and disconnections, and hence we do so in our customer number and demand forecasts.

We also note that historical data shows that there is close alignment between the number of abolishments and subsequent new connections. This is because most of our customers who abolish their gas connections undertake home renovations and then subsequently reconnect as a new connection to our network as shown in Table 3–2.

Table 3–2: Abolishments and subsequent new connections

Year	Abolishments	New connections	Reconnection %
2017	3,109	2,173	69.9%
2018	3,108	2,106	67.8%
2019	2,725	1,818	66.7%
2020	2,967	1,860	62.7%
2021	3,158	2,167	68.6%
2022[16]	3,558	2,349	66.0%

The basis of the AER (ACIL Allen) treating all abolishments and disconnections as an abolishment with no adjustment for reconnecting customers and then comparing its forecast abolishments to ours is misleading as it overstates the customers that are choosing to permanently not use gas. This overstates the forecast operating expenditure adjustment that the AER has made to account for the socialised abolishment costs for customers who are choosing to electrify.

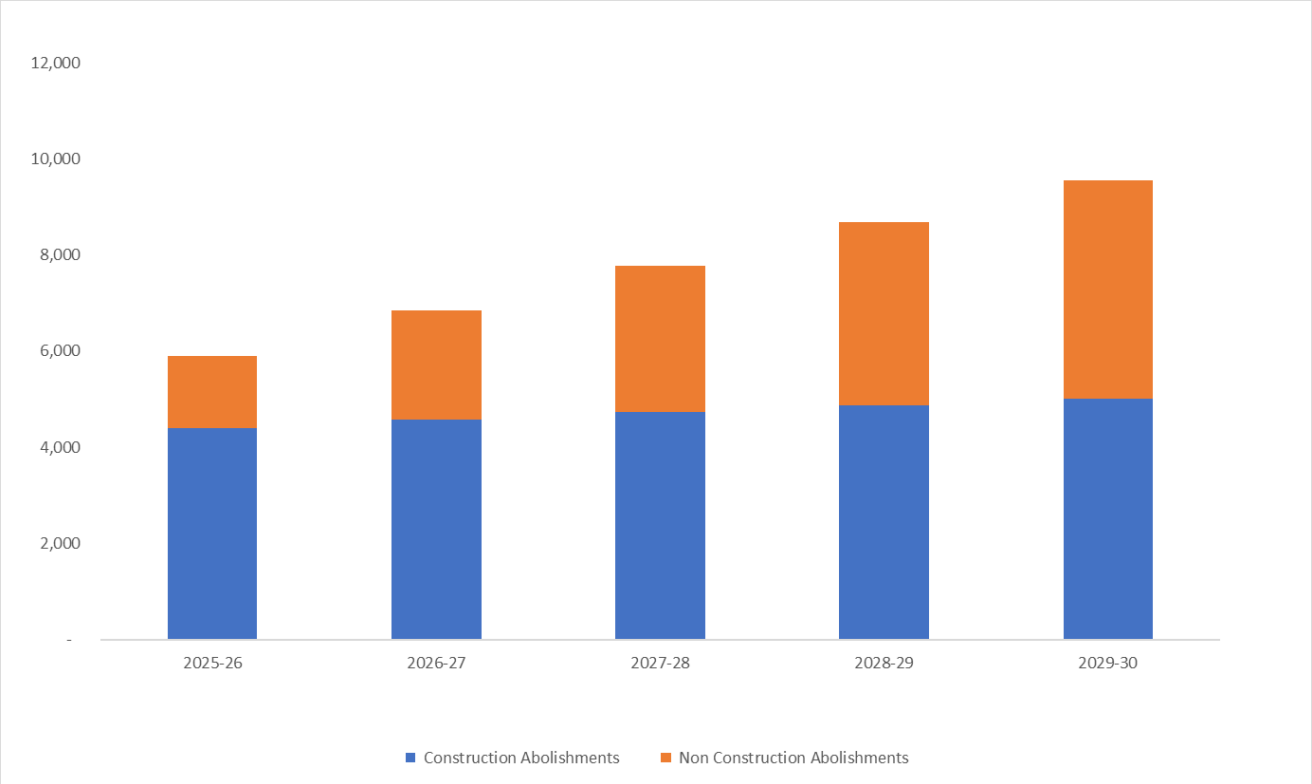
[16] There is up to a two year lag for new reconnections to occur, hence why only results to 2022 have been reported, as data from 2023 onwards will be misleading of the reconnections.

In its draft decision, the AER recognised this and left the door open for us to separate our abolishment services[17]. As noted in *JGN - RP - Att 7.1 - Abolishments - 20250115 – Public*, we are proposing to separate our current two abolishment service charges into three from 1 July 2026 as follows:

- $250 ($2025) per meter for a Standard Residential Connection where there are no current or anticipated redevelopment, renovation or other construction works. This new charge will be partially socialised for the shortfall between $1,472 ($2025) and $250 per abolishment.
- $1,472 per meter for a Standard Residential Connection where there are current or anticipated redevelopment, renovation or other construction works.
- Individually priced for all other abolishments.

Our revised forecast abolishments reflecting the above separation of our abolishment service charges are shown in Figure 3–2.

Figure 3–2: JGN forecast residential abolishments over the 2025-30 period



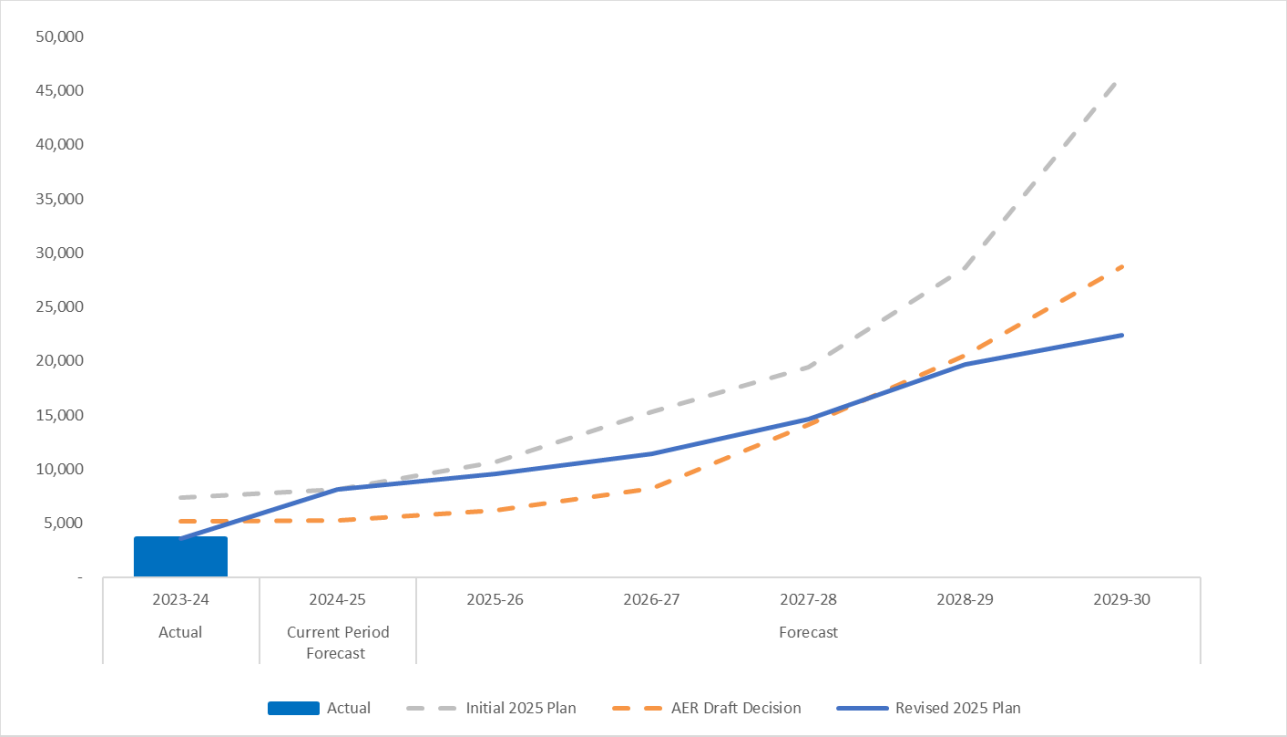
Our revised forecast net disconnections, reconnections and abolishments are shown in Figure 3–3, which has been developed based on analysis of three elements:

- Historical base % of opening connections observed to end FY2024
- Historical growth rate in disconnection % of opening connections observed over time
- Future growth rate in disconnection relating to electrification trends, including analysis of the electrification forecast developed by AEMO for the 2024 GSOO.

We are forecasting a net reduction of 0.6% in our customer numbers over the 2025-30 period, which compares with our Initial 2025 Plan of a 1.6% reduction and the AER's draft decision of an increase of 0.4% over the 2025-30 period.

[17] AER, Draft decision Jemena Gas Networks (NSW) access arrangement 2025 to 2030 (1 July 2025 to 30 June 2030), Attachment 6 Operating Expenditure, November 2024 section 6.4.4.5 pg 39.

Figure 3–3: JGN forecast net disconnections, reconnections and abolishments over the 2023-30 period



The above figure highlights a relatively modest difference between the CORE revised forecast and the AER draft decision. CORE considers that the AER forecast does not adequately incorporate the historical trend observed to date, including growth rates over time and the expected impact of future electrification trends. If these impacts are added to the AER draft decision forecast, CORE expects that the outcome will be below the CORE forecast.

Average residential demand per connection

A summary of our revised residential demand per connection forecasts over the 2025-30 period is set out in Table 3–3. Our lower actual 2023-24 result impacts our forecast average residential demand per connection materially. CORE also made adjustments resulting in our forecast net movement over the 2025-30 period closely aligning with the AER's draft decision.

Table 3–3: JGN's revised residential demand per connection over the 2025-30 period

	2025-26	2026-27	2027-28	2028-29	2029-30	Net movement
Residential average demand (GJ)						
Initial 2025 Plan	18.35	18.13	17.82	17.50	17.13	-6.6%
AER draft decision	18.34	18.28	17.99	17.86	17.66	-3.7%
Revised 2025 Plan	17.46	17.37	17.21	17.07	16.93	-3.0%

Residential forecast demand

A summary of our revised residential demand forecasts over the 2025-30 period is set out in Table 3–4. Our forecast residential demand is impacted mostly by our lower average residential demand per connection and increased net movement over the 2025-30 period. Our forecast net movement in residential demand forecast over the 2025-30 period closely aligns with the AER's draft decision.

Table 3–4: JGN's revised residential demand over the 2025-30 period

	2025-26	2026-27	2027-28	2028-29	2029-30	Net movement
Residential demand (TJ)						
Initial 2025 Plan	27,951	27,757	27,309	26,662	25,666	-8.2%
AER draft decision	28,069	28,220	27,906	27,675	27,153	-3.3%
Revised 2025 Plan	**26,504**	**26,462**	**26,233**	**25,938**	**25,552**	**-3.6%**

3.2 Commercial customers

3.2.1 AER's draft decision

In its draft decision, the AER:

- Accepted our forecast commercial customer numbers
- Agreed with ACIL Allen that there is some validity in JGN's forecast of average consumption for the first two years of the access arrangement, but that we have not provided quantitative analysis in support of its forecast accelerating decline in consumption in the final 3 years of the access arrangement. The AER adopted ACIL Allen's alternative forecast for the final 3 years based on modelling of regression analysis of historical usage and modified for the impact of price differentials between electricity and gas.

3.2.2 JGN's response

Our revised Commercial market demand forecast is materially consistent with the AER draft decision through to 2027-28, with a modest variance in the last year, as shown in Table 3–5. This is driven by different forecasts for connections and the average demand per connection discussed below.

Table 3–5: JGN's revised commercial demand over the 2025-30 period

	2025-26	2026-27	2027-28	2028-29	2029-30	Net movement
Commercial demand (TJ)						
Initial 2025 Plan	12,560	12,218	11,795	11,296	10,646	-15.2%
AER draft decision	12,564	12,414	12,102	11,893	11,608	-7.6%
Revised 2025 Plan	**12,742**	**12,505**	**12,177**	**11,739**	**11,201**	**-12.1%**

Commercial connections

A summary of our revised commercial connection forecasts over the 2025-30 period is set out in Table 3–6. The variance between the AER's draft decision and our forecast disconnections and abolishments is driven in part by different electrification assumptions. The greater forecast reduction in our Revised 2025 Plan of commercial connections compared with our Initial 2025 Plan forecasts arises from the update of actual 2023-24 data which was higher than the Initial 2025 Plan. CORE has therefore increased its forecast for the period 2028. CORE's revised forecast of Net Connections in 2029 and 2030 is marginally lower due to the impact of lower net disconnections and abolishments in 2023-24.

Table 3–6: JGN's revised commercial connections over the 2025-30 period

	2025-26	2026-27	2027-28	2028-29	2029-30	Net movement
Commercial connections (#)						
Initial 2025 Plan	33,850	33,685	33,525	33,357	33,181	-2.0%
AER draft decision	33,850	33,685	33,525	33,357	33,181	-2.0%
Revised 2025 Plan	**34,268**	**34,141**	**33,837**	**33,288**	**32,575**	**-4.9%**

Average commercial demand per connection

A summary of our revised commercial demand per connection forecasts over the 2025-30 period is set out in Table 3–7. The variance between the AER's draft decision and our forecast disconnections and abolishments is driven by different electrification assumptions. However, the gap between the AER's draft decision and our Revised 2025 Plan forecast is significantly reduced.

Table 3–7: JGN's revised commercial demand per connection over the 2025-30 period

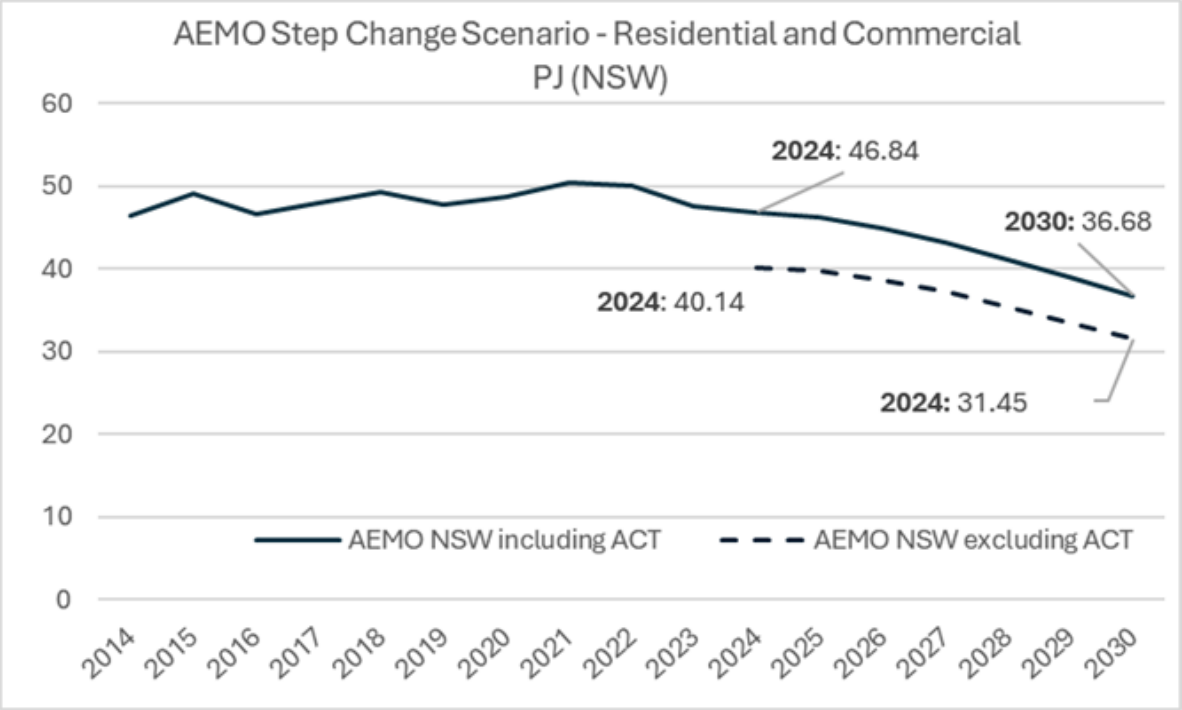
	2025-26	2026-27	2027-28	2028-29	2029-30	Net movement
Commercial average demand per connection (GJ)						
Initial 2025 Plan	371.05	362.71	351.82	338.63	320.85	-13.5%
AER draft decision	371.17	368.52	360.98	356.53	349.83	-5.7%
Revised 2025 Plan	**371.85**	**366.27**	**359.86**	**352.67**	**343.85**	**-7.5%**

3.3 CORE validation of Volume Market forecast

CORE has undertaken analysis of AEMO's forecast under the Step Change scenario for NSW as used in the GSOO and compared it with its revised Volume Market forecast. Residential and Commercial Customers are considered together as AEMO combines these segments in its analysis.

In undertaking the analysis, CORE has made a conservative adjustment to exclude ACT demand of between 5 to 7PJ per annum, as the AEMO forecast combines NSW and ACT. Figure 3–4 shows AEMO's total Volume Market forecast and an estimate of what is attributable to JGN based on AEMO's step change scenario.

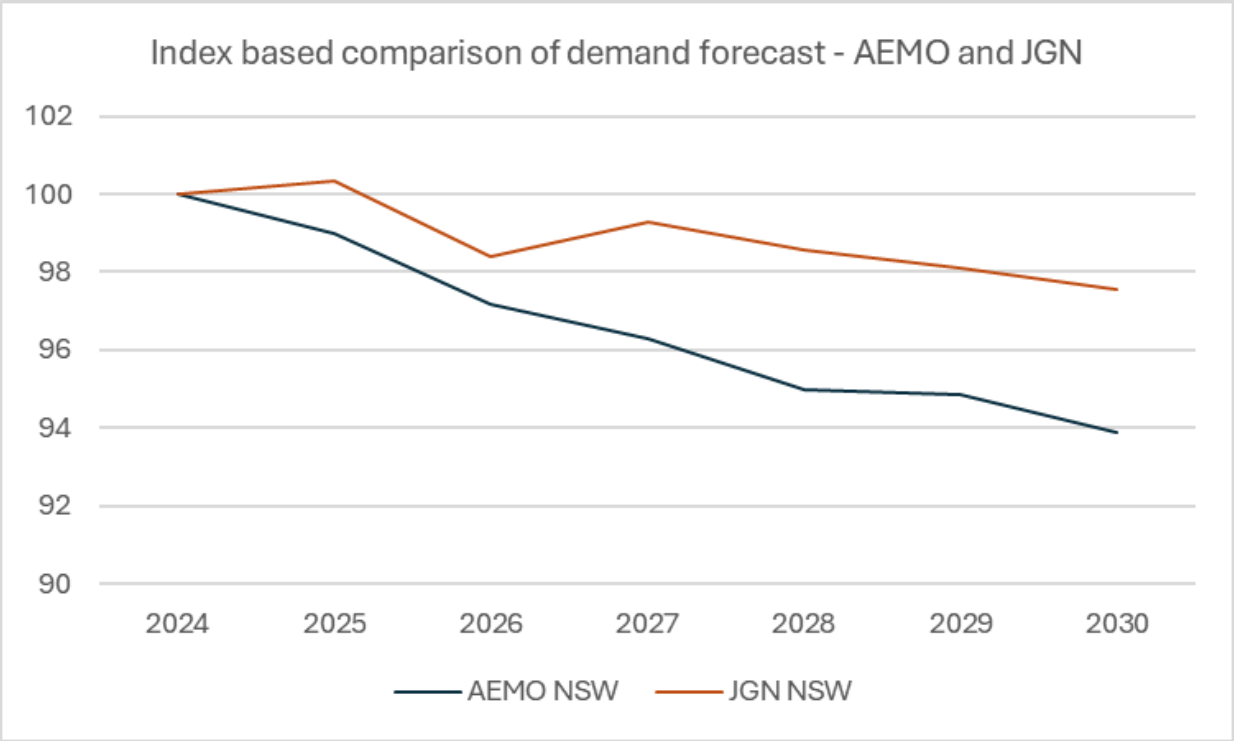
Figure 3–4: AEMO forecast of gas demand for Volume Market – Step Change Scenario – CY



Source: CORE based on AEMO GSOO data – via online gas portal

Figure 3–5 shows that AEMO's Volume Market forecast for NSW presents a materially lower demand forecast for Tariff V than CORE's revised forecast. A significant contributor to AEMO's forecast of NSW Tariff V demand is an assumed step change in electrification or gas substitution in favour of electricity – extending across gas water heating, room heating and cooking appliances. CORE considers that if the ACT (conservatively) accounts for up to 4 PJ of this reduction by 2030, the AEMO forecast indicates that up to 8 PJ of gas demand reduction could be attributable to electrification in JGN's network (and other minor NSW networks). This compares with CORE's forecast total reduction in the Volume Market demand of under 3 PJ p.a. by 2030 – under 50% of the AEMO forecast. CORE has considered the scale of such demand and considers that the CORE's forecast remains highly conservative relative to AEMO.

Figure 3–5: AEMO NSW (excluding ACT) forecast of gas demand for Market Volume on an index basis (2024=100) vs JGN/CORE – Step Change Scenario



Source: CORE based on AEMO GSOO data – via online gas portal

3.4 Independent review of CORE's and ACIL Allen's forecasts

We engaged Frontier Economics to review CORE's and ACIL Allen's Volume Market demand forecast for JGN. Frontier Economics focused on the three points of differences that ACIL Allen identified in its review of the CORE Volume Market demand forecast and:

- Reviewed and compared ACIL Allen's forecasts and methodologies against CORE's
- Provided alternative demand per connection forecasts to test CORE's forecasts
- Reviewed and commented on ACIL Allen's approach to forecasting residential disconnections.

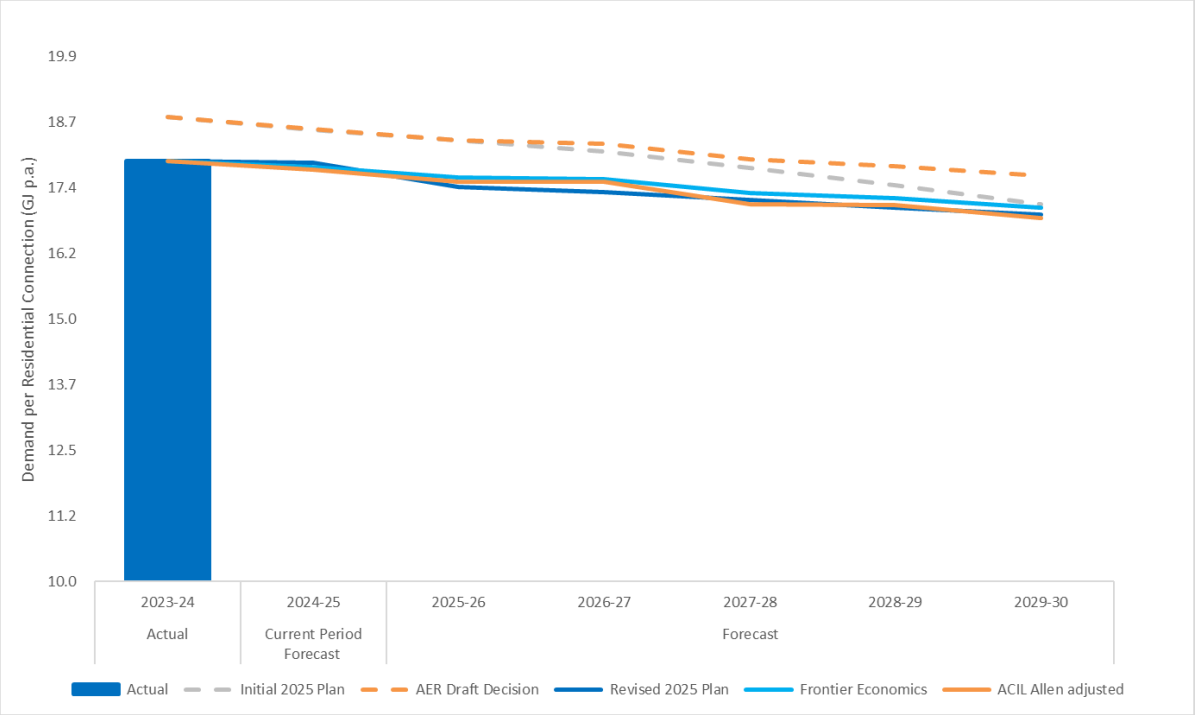
Frontier Economics assumed CORE's revised forecast figures for residential and commercial connections.

Frontier Economics concluded as follows:

Residential demand per connection

As shown in Figure 3–6, after adjusting for 2023-24 actual demand, Frontier Economics' analysis shows that CORE's revised residential demand per customer compared with the ACIL Allens adjusted regression model and the Frontier Economics alternative forecast, are closely aligned.

Figure 3–6: JGN's forecast residential demand per connection over the 2023-30 period

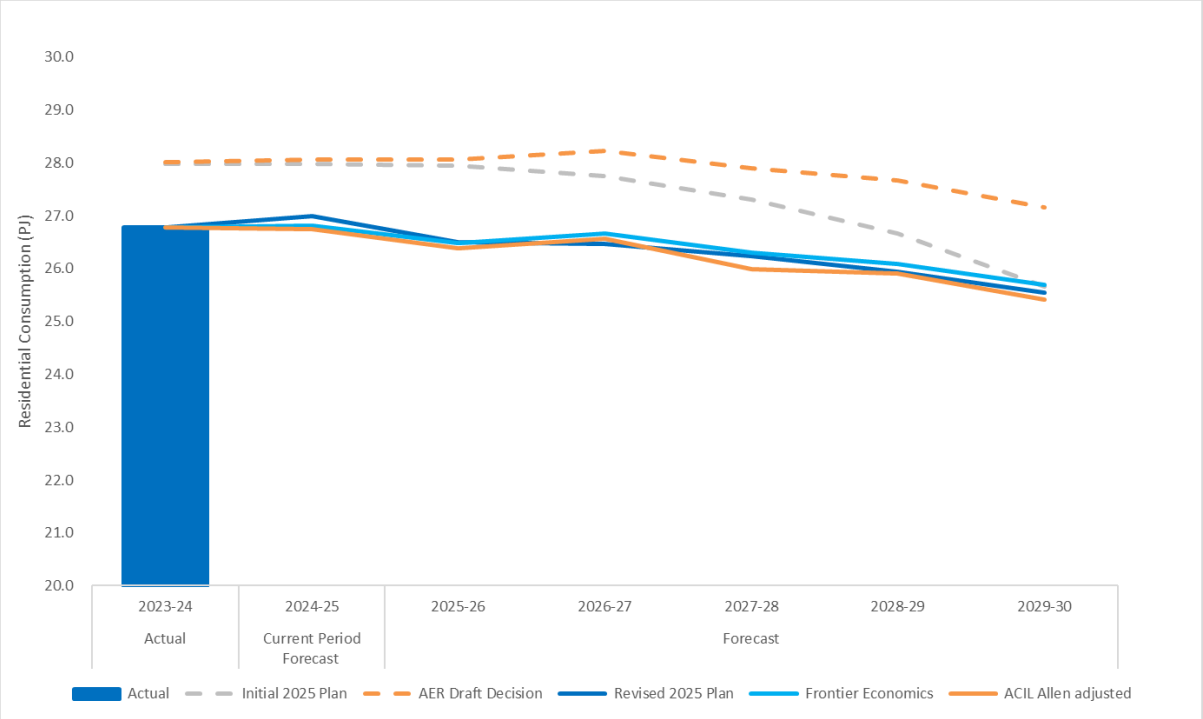


Frontier Economics forecasts the demand per existing residential connections, whereas CORE uses the weighted demand per residential connections (e.g. 94% existing connections and 6% new connections split in 2030) and hence CORE is forecasting slightly lower demand per existing residential connections as new connections have a lower demand per connection particularly in the early years.

Residential demand

As shown in Figure 3–7, after adjusting for 2023-24 actual demand, Frontier Economics' analysis shows that CORE's revised residential demand per customer compared with the ACIL Allen adjusted forecast and the Frontier Economics alternative forecast, are closely aligned.

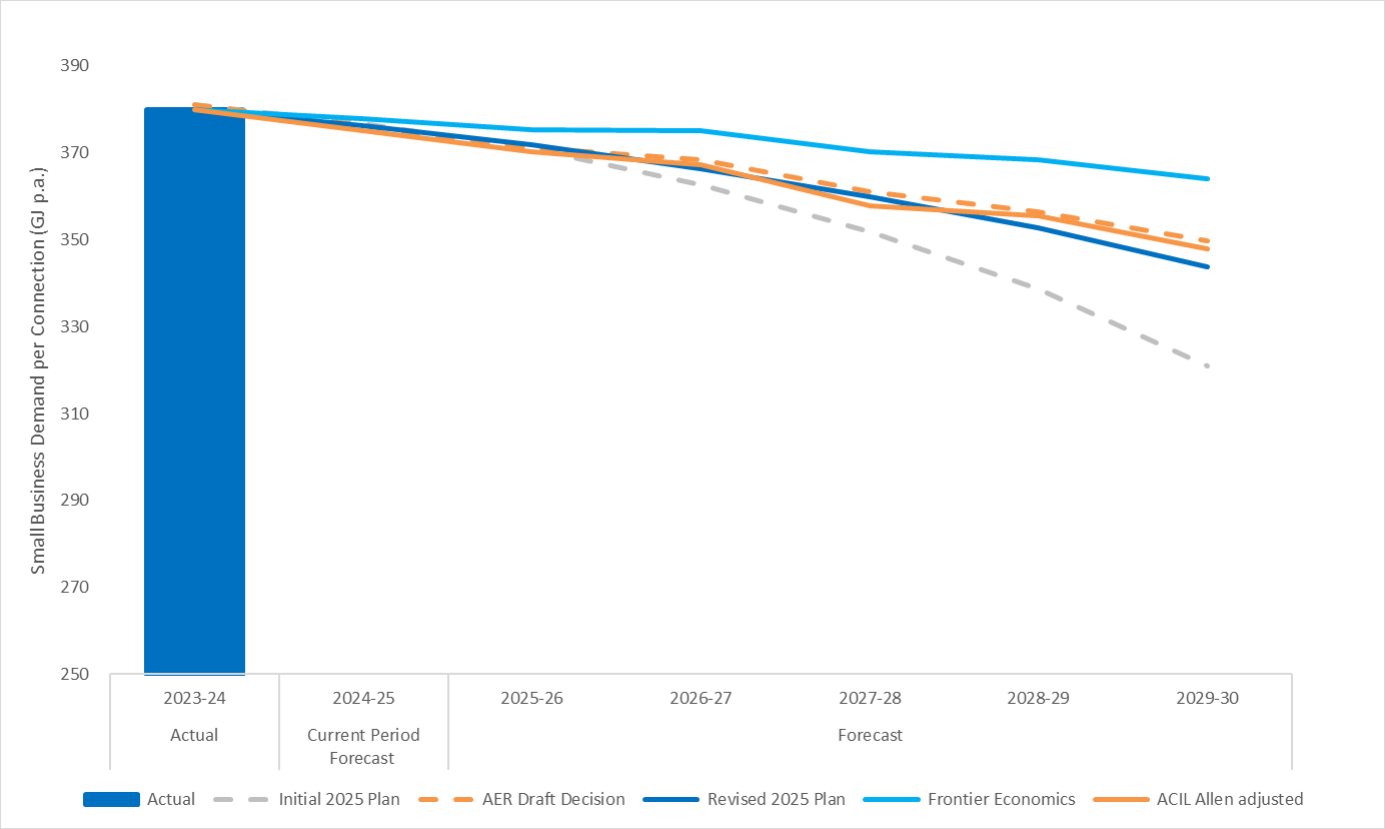
Figure 3–7: JGN's forecast residential demand over the 2023-30 period



Commercial demand per connection

As shown in Figure 3–8, CORE's revised commercial demand per customer connection aligns very closely with the AER's draft decision and the ACIL Allen adjusted forecast. Frontier Economics alternative commercial demand per customer connection gradually diverges from these forecasts over the 2025-30 period. Frontier Economics notes that its econometric approach implicitly assumes that historical trends are a good guide to the future. CORE's and ACIL Allen's forecasts suggest that historical trends are not a good guide in forecasting commercial demand per connection and both have made adjustments to their forecasts to amend the historical trends for the future likely impact of the energy transition. However, Frontier Economics notes that due to data and time constraints, it has not considered whether adjustments (by including other variables in and/or by making post-model adjustments to its econometric model) should be made to its forecast based on historical trends.

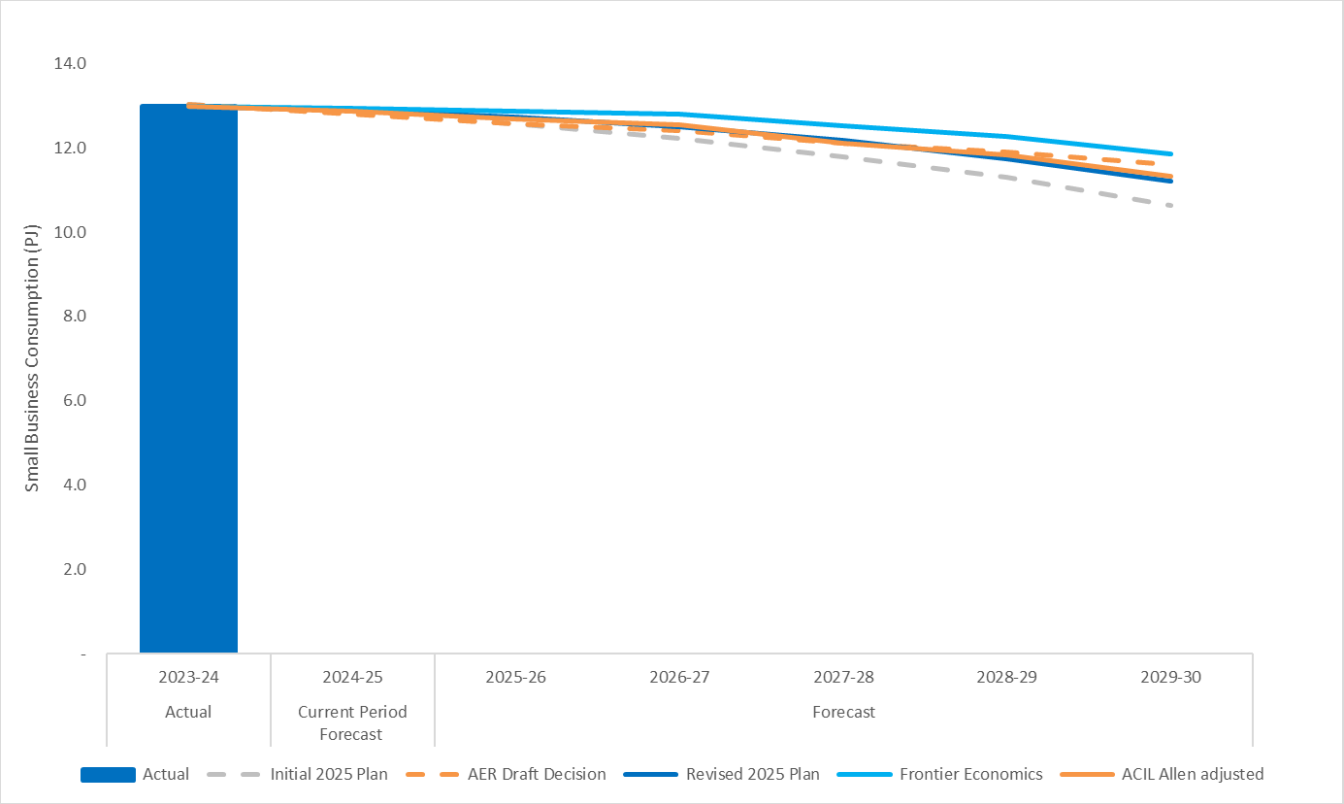
Figure 3–8: JGN's forecast commercial demand per connection over the 2023-30 period



Commercial demand

Similar to the commercial demand per customer connection, Figure 3–9 shows that CORE's revised commercial demand aligns very closely with the AER's draft decision and the ACIL Allen adjusted forecast.

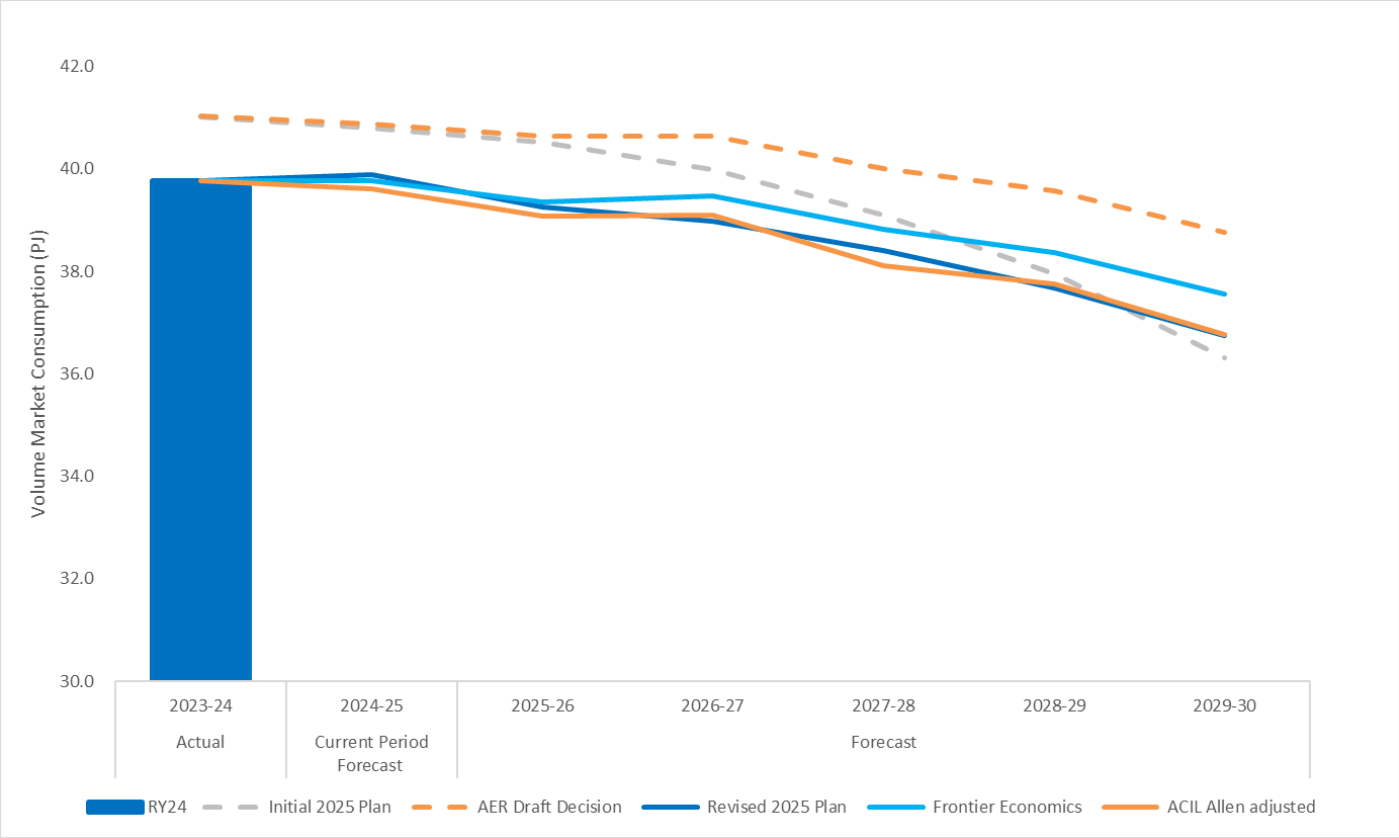
Figure 3–9: JGN's forecast commercial demand over the 2023-30 period



Total Volume Market demand

Figure 3–10 shows the comparison of JGN's, ACIL Allen adjusted and Frontier Economics total Volume Market demand forecasts which shows close alignment between our Revised 2025 Plan, Frontier Economics and the Frontier Economics adjusted ACIL model forecasts. It shows that CORE's revised Volume Market demand forecast aligns very closely with the ACIL Allens adjusted regression model. Both these forecasts gradually diverge from the Frontier Economics forecasts given that Frontier Economics made no adjustments to its commercial demand per customer to amend the historical trends for the future likely impact of the energy transition.

Figure 3–10: Comparison of JGN's, ACIL Allen's and Frontier Economics total Volume Market demand forecasts



4. Our updated Demand Market forecast

We have considered feedback from the AER (and ACIL Allen) in its draft decision and set out a summary of our revised demand forecasts in Table 4–1.

Table 4–1: Comparison of JGN's initial and revised 2025-30 demand to AER's draft decision over the 2025-30 period (% movement)

	Initial 2025 Plan	AER's draft decision	Revised 2025 Plan
Demand (Tariff D) market			
Industrial connections	- 2.8%	- 2.8%	-2.1%
Annual contract quantity (**ACQ**)	- 8.3%	- 8.3%	-2.6%
Maximum daily quantity (**MDQ**)	-10.5%	-10.5%	-2.6%

The key variation between our Revised 2025 Plan Demand Market forecasts and the AER's draft decision is the reduction we have made for the termination of activity by a large, surveyed customer who had previously indicated a large annual load would be maintained through to 2030. Also, we have adjusted for our lower actual 2023-24 result and CORE revised its adjustment to the base forecast to address an expected structural change in future consumption across a range of industrial segments due to efficiency measures, energy-saving technology investment and appliance/fuel switching.

4.1 AER's draft decision on our Demand Market forecast

In its draft decision, the AER concluded that it is not satisfied that our forecasts for Tariff D demand represent the best forecast under the circumstances. It included our forecast as a placeholder and requested further information and analysis in support of our forecast.

The further information sought from the AER was detail on how we adjusted our survey data to account for new initiatives and energy efficiency.

4.2 JGN's response

In addition to the reduction made for the termination of activity by a large surveyed customer and for our lower actual 2023-24 result, CORE adjusted for expected changes in technology within specific customer segments, and for specific customers where practical, together with expected improvements in energy efficiency and reference to trends observed historically. CORE determined a range of feasible reductions that could be achieved and selected a point within the range for each year which CORE assessed to be most likely, and sufficiently conservative[18]. The resulting structural adjustments made for each year are summarised in Table 4–2 and discussed by CORE in more detail in chapter 5 of *JGN - Core Energy - RP - Att 6.2 - Demand Forecast Report - 20250107 - Public*.

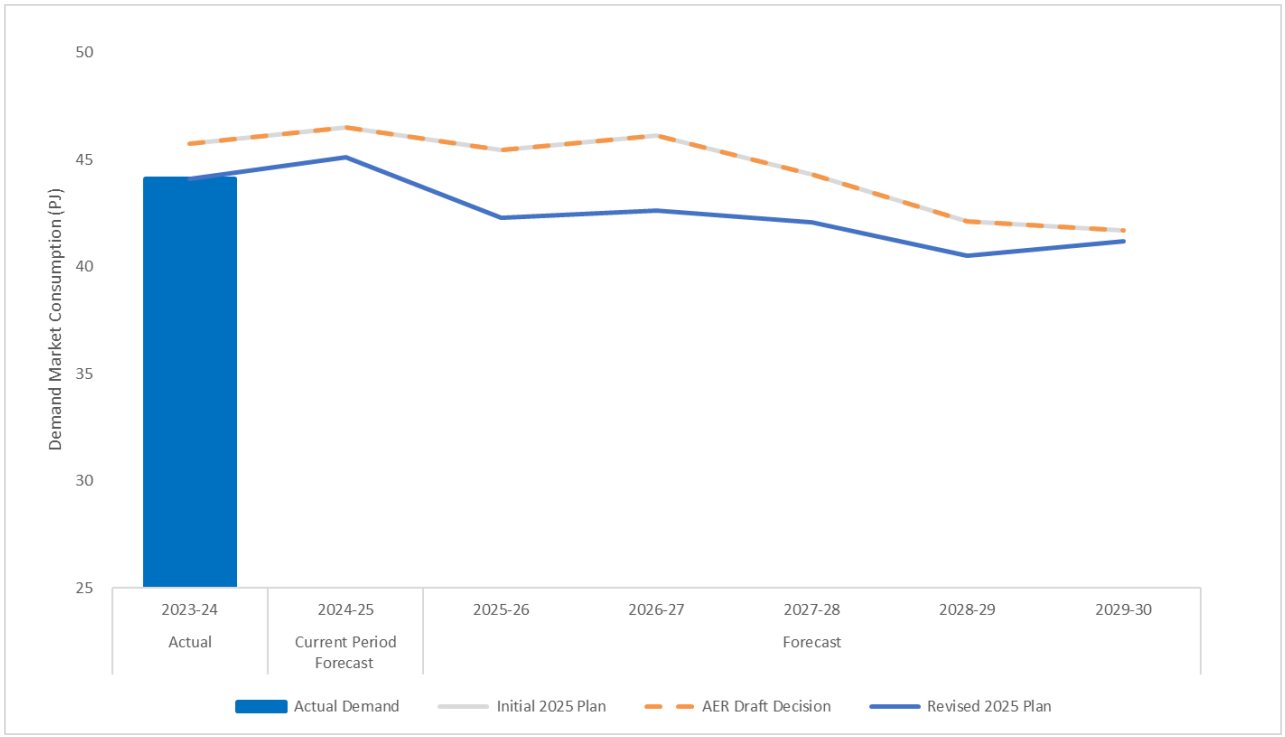
[18] Adjustments to non-surveyed customer consumption each year is applied to the 2023-24 actual.

Table 4–2: CORE assessment of impact of additional future change on Tariff D customers during the 2025-30 period[19]

	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
Base & survey forecast (TJ)	45,537.8	42,846.5	43,537.2	43,189.4	41,782.7	43,157.1
Incremental adjustment	0.95%	0.38%	0.8%	0.42%	0.51%	1.54%
Cumulative adjustment	0.95%	1.33%	2.13%	2.55%	3.06%	4.60%
Cumulative structure change (TJ)	432.6	569.9	926.5	1,102.9	1,280.4	1,983.7
ACQ forecast (TJ)	**45,105.2**	**42,276.7**	**42,610.7**	**42,086.6**	**40,502.4**	**41,173.4**

Figure 4–1 shows the comparison of our initial and revised Demand Market forecasts (the AER adopted our initial Demand Market forecast as a placeholder). It shows that our revised Demand Market forecast has been impacted by the lower 2023-24 demand, the impact in 2025-26 of the removal of a large customer and the net effect of the above structural adjustment. Our revised Demand Market forecast is expected to be at a similar level to what we forecast in our Initial 2025 Plan in 2029-30. This results in our forecast reduction in ACQ and MDQ of 2.6% over the 2025-30 period, which is much lower than we had forecast in our Initial 2025 Plan.

Figure 4–1: JGN's revised Demand Market forecasts (ACQ) over the 2023-30 period



CORE's Revised MDQ Forecast has been derived by analysing the historical relationship between Average Daily Quantity (ADQ (ACQ/365)) and actual MDQ for each customer, which are then adjusted for the structural

[19] Numbers may not add up due to rounding.

adjustments above. The result is a net forecast decline of 2.6% over the 2025-30 period as summarised in Table 4–3.

Table 4–3: JGN revised MDQ forecast over the 2025-30 period

	2025-26	2026-27	2027-28	2028-29	2029-30
Base MDQ (GJ)	224,558	228,178	226,356	218,983	226,186
Cumulative structure change (GJ)	3,010	4,894	5,826	6,764	10,480
MDQ forecast (GJ)	221,548	223,284	220,529	212,219	215,706