Jemena Gas Networks (NSW) Ltd

IT Investment Brief – Cloud Capacity Growth

Operating Expenditure – Recurrent Step Change

Jemena
bringing energy to life

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Glossary

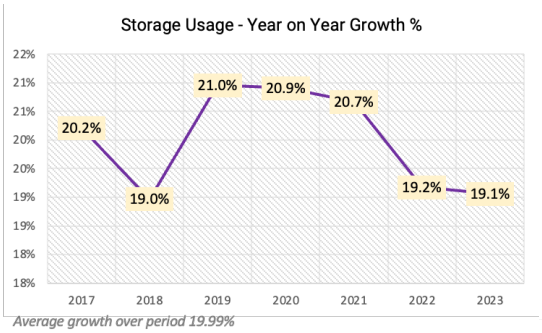
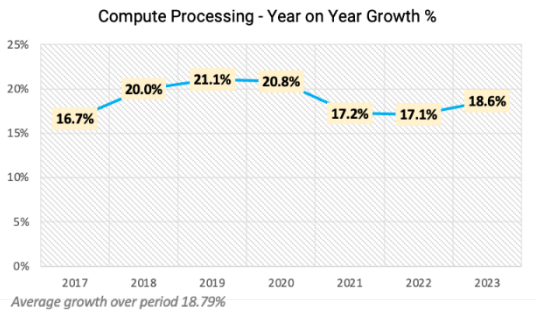
AI/ML	Artificial Intelligence (AI) and Machine Learning (ML) are technologies that enable computers to perform tasks that usually require human intelligence, with ML focusing specifically on algorithms that learn from data. E.g. Chat GPT
AWS	Amazon Web Services, the public cloud service provider used by Jemena for the provision of Cloud Computing.
capex	Capital Expenditure
Cloud Computing	The delivery of ICT services as a subscription including compute, network, database & storage via the internet.
Current regulatory period	The period covering 1 Jul 2020 to 30 Jun 2025
CYxx	Calendar year XX
ERP	Enterprise Resource Planning
ICT	Information and Communications Technology
Jemena	Refers to the parent company of Jemena Gas Network
JGN	Jemena Gas Network
Next regulatory period	The period covering 1 Jul 2025 to 30 Jun 2030
NPV	Net Present Value
opex	Operating Expenditure
R&D	Research and development
RYxx	Regulatory year covering the 12 months to 30 June of year 20xx for years in the Next Regulatory Period. For example, RY25 covers 1 July 2024 to 30 June 2025
SaaS	Software as a service
SAP	SAP accounting and Enterprise Resource Planning software
totex	Total Expenditure

Cloud Capacity Growth

Objective	The objective of the operating expenditure (opex) recurrent step change is to ensure Jemena Gas Networks (JGN), maintains the necessary Information & Communication Technology (ICT) capabilities to operate the Jemena gas network safely, securely, and efficiently. Jemena's anticipated growth in cloud computing and associated services means additional recurrent opex will be required to ensure JGN maintains reliable ICT service delivery.
Background	**On-premises has become inefficient** Historically, utility businesses including Jemena have invested heavily in on-premises ICT infrastructure, with significant recurring capital expenditure (capex) for replacement and growth. While efficient at the time, this approach posed increasing challenges due to the rising costs of the ICT infrastructure, the need for frequent upgrades, equipment lifecycling as technology progressed, and vendors shifting to subscription-based licensing models, while withdrawing physical solutions requiring capex. The momentum behind flexible, scalable, cloud-based solutions supporting 24/7 operations and rising customer expectations is driving businesses like JGN to leverage solutions such as cloud computing. This optimises long-term costs, improves ICT resource utilisation, and enables a more sustainable, innovative digital future. **This investment further facilitates Jemena's Cloud Adoption Program** The shift toward cloud computing facilitates efficient ICT capacity growth management. Recognising this potential early on, Jemena adopted cloud computing as a key enabler, executing its Cloud Adoption program in RY21. This involved migrating over 100 corporate applications, including customer-facing workloads, to Amazon Web Services' (AWS) cloud. Jemena's embrace of cloud computing aligns with industry best practices.[1] Consequently, Jemena continues expanding its use of cloud-based services including Microsoft Office 365, analytics, integration, and more. Governance processes ensure regular evaluation of alternative solutions as cloud technology progresses. Overall, this transition has positioned Jemena for greater efficiency[2], flexibility, and innovation in delivering customer and business value. Cloud computing offers Jemena the scalability and flexibility needed to adapt to changing business requirements and fluctuating workloads. By expanding its cloud capacity, Jemena can easily scale its infrastructure up or down based on demand, without the need for significant upfront investment in hardware or infrastructure expansion. **Jemena is experiencing ongoing organic growth in their cloud platform capacity** Jemena's expansion in cloud capacity reflects a strategic response to evolving business needs and technological advancements. This growth signifies an increasing reliance on cloud-based infrastructure and services to support critical business operations and meet growing data demands. • Growing Data Volumes: As Jemena's business evolves, there are higher data volumes and computational requirements. As Jemena continues to develop, we need scalable cloud infrastructure to accommodate • Digital Transformation Initiatives: Digital transformation initiatives are in place to adhere to regulatory requirements and maintain compliance, modernise our operations, enhance efficiency, and improve our customer experience. These initiatives involve the adoption of cloud-based technologies thus expanding our cloud portfolio and ongoing capacity requirements. • Data Intensive Operations: Jemena's operations are becoming increasingly data-intensive, requiring advanced analytics, machine learning, and IoT capabilities. To derive actionable insights from large datasets, Jemena needs robust cloud storage and computing resources to store, process, and analyse data effectively.

[1] Emerging Tech Impact Radar: Cloud Computing, Gartner, Inc. | G00778789

[2] As evidenced by CEG in its independent report on our benchmark efficiency in Att 3.4-Relative efficiency and forecast productivity growth of JGN

	Overall, Jemena's growth in cloud capacity reflects its commitment to leveraging cloud technology to drive innovation, improve operational efficiency, and meet the evolving needs of its business and customers. This strategic investment in the growth of cloud infrastructure enables Jemena to remain agile and competitive in today's digital landscape.
Customer Importance	Jemena's cloud platform is fundamental to our ICT capabilities. The recommended cloud capacity growth will empower Jemena to effectively meet expected increased demand across critical ICT services including computing, storage, backup, collaboration tools, and analytics (refer 'Key considerations' below). This encompasses customer-facing systems like web portals that must swiftly adapt to usage spikes. It also enables a one-time transition of Jemena's core ERP platform, addressing vendor requirements essential for ongoing metering and billing operations. By adopting the cloud, Jemena has shifted to a more opex-centric model. With intense focus on sustaining delivery of customer value, this transformation carefully balances performance enhancements against total cost of ownership across multiple regulatory periods. Overall, the increased business agility and resilience will translate into superior customer service quality and satisfaction. The shift to cloud prioritises delivering value to our retail partners and end-use customers through: • Enhanced Cost Efficiencies: optimised resources and cloud economies of scale target greater efficiencies, ultimately benefitting gas retailers and end-use customers. • Dynamic, Responsive Services: the cloud's scalability and agility empower rapid adaptations to evolving partner and market needs, enabling faster, more tailored service delivery. • Mitigated Infrastructure Risks: transitioning from traditional capex models reduces risks of outdated, inflexible infrastructure, keeping us adaptive and responsive to market changes.
Key Considerations	Jemena has adopted a strategic approach by implementing a cloud migration program rather than opting for on-premises refresh and capacity expansion. This decision highlighted our forward-thinking mindset and recognition of the numerous benefits offered by cloud computing. **Shifting from capex to opex-centric model** This transition to the cloud shifts capex investments to opex investments, due to the subscription model for these cloud services, which is detailed further in the JGN Technology Plan 2025 – 20303. Over the past six years, our analysis indicates a consistent trend of on-premises capacity increases, averaging ~20% for storage usage and compute processing annually. However, in response to evolving business needs and technological advancements, we've embraced cloud computing as a strategic solution. As a result, our projection for cloud capacity growth stands at a conservative estimate of 15% per year[4], highlighting an overall cost savings in our storage.   This shift towards cloud infrastructure shows the flexibility and agility that cloud solutions offer. Unlike traditional on-premises setups, cloud platforms allow for more dynamic and scalable resource allocation.

[3] JGN Technology Plan 2025 – 2030, Section 7.3

[4] The cloud capacity expansion forecasts utilise historical growth trends and current (CY23) cloud expenditure to project future infrastructure demands. A conservative 5% reduction has been applied to account for efficiencies of the cloud's pay-per-use model.

	While transitioning to cloud-based systems, Jemena retains selective on-premises ICT resources to satisfy specific business and compliance requirements. This hybrid approach balances agility, control, risk-mitigation, and cost-optimisation. The overall streamlined cloud footprint supplemented by essential on-premises ICT capabilities provides a flexible, high-performance technology environment to sustain JGN operations.
Options	JGN has considered two options to deliver the capability articulated above: (1) Do nothing – maintain status quo (2) Invest in Cloud Capacity Growth **Option 1: Do nothing – maintain status quo** **Description** Under this option, Jemena would rely solely on existing cloud capacity and would be unable to expand workloads (for data storage and processing) beyond current levels. Additional funding for cloud infrastructure growth would need to be sourced by diverting opex from other critical areas of the business. **Benefits** There are no benefits associated with this option. **Risks** Maintaining the status quo and refraining from increasing our cloud storage capacity may seem like a cost-saving measure in the near term, but it poses significant operational risks and could result in higher overall costs in the long run; these include: • Poor Application Performance and System Outages: Without sufficient cloud storage capacity, our ICT systems will struggle to expand and meet the increasing demands of our business operations. This can lead to degraded application performance, system outages, and downtime due to insufficient compute resources. Such disruptions not only impact productivity but also erode customer trust and satisfaction. • Business Continuity Impact: In extreme cases, if our systems are unable to cope with the workload due to limited cloud storage, we may be forced to turn off critical applications or services. This could have severe consequences for business continuity, potentially disrupting operations and impacting revenue generation. Additionally, reverting to on-premises infrastructure could incur significant costs and logistical challenges. • Regulatory Compliance: Inadequate cloud storage capacity increases the risk of failing to meet regulatory compliance standards related to data security, resilience, and privacy. Non-compliance with regulations could result in hefty fines, legal liabilities, and reputational damage to Jemena. • Delay or Prevention of Essential Initiatives: Insufficient cloud storage capacity may delay or even prevent the implementation of essential initiatives, such as the migration to SAP S/4HANA which could hinder our ability to adapt to changing business needs and meet regulatory requirements. **Summary** This option is not recommended as we do not consider it reflects good industry practice given the risks outlined above. Furthermore it does not provide the lowest sustainable cost. The risks associated with not increasing our cloud storage capacity extend beyond immediate cost considerations. They encompass operational disruptions, compliance challenges, customer service issues, and delays in strategic initiatives, all of which can have detrimental effects on our business performance, reputation, and long-term sustainability. Therefore, investing in adequate cloud storage capacity is essential to mitigate these risks and ensure the smooth functioning of our ICT systems and operations.

This option is impractical given Jemena's expanding reliance on technology. It poses severe risks to essential operations without providing economic benefits or supporting strategic imperatives.

Option 2: Invest in Cloud Capacity Growth

Description

This option involves gradual, modular increases in cloud infrastructure to accommodate expected growth in ICT workloads over the planning horizon. Expansions would match supply to demand based on regular capacity monitoring and forecasting. Enables continuation of existing services without performance degradation plus headroom to deploy expanded capabilities.

Benefits

Investing in cloud capacity expansions delivers considerable benefits compared to the past model of capital-intensive, pre-provisioned infrastructure. The proposed opex approach aligns costs to actual usage growth at optimal price points.

As well as mitigating the risks outlined in option 1, key benefits include:

- Ensures high-performing ICT systems essential for continuous operations
- Reduces outage risks and maintains compliance standards
- Enables and supports strategic projects
- By shifting to operationally scaled cloud infrastructure, this option maximises value by matching capacity growth to demand trajectories.

The pay-per-use model concentrates on spending during periods of expansion rather than over-investing based on forecasts. This approach delivers total cost optimisation while enabling the agility to meet changing needs.

Risks

Key risks include the following:

- The cloud capacity expansion forecasts utilise historical growth trends and current (CY23) cloud expenditure to project future infrastructure demands. A conservative 5% reduction has been applied to account for efficiencies of the cloud's pay-per-use model. However, there are inherent risks that actual growth rates and/or cloud pricing could exceed expectations over the planning horizon. Ongoing monitoring and periodic forecast adjustments will aim to mitigate these uncertainties.
- While the phasing of capacity upgrades aligns with CY23 consumption, the precise timing of future workloads is also based on forecasts. The rollout schedule will remain dynamic based on new data and infrastructure demands to mitigate this risk.

In summary, while founded on current usage and historical data, the growth estimates contain uncertainty. To address this, the plans incorporate flexibility to pivot based on emerging needs and trends.

This option is recommended as we consider it reflects good industry practice given the benefits and risks outlined above. Furthermore, it provides the lowest sustainable cost.

Costs

$2023	RY26	RY27	RY28	RY29	RY30
Total capex					
Non-recurrent opex					
Recurrent Step opex	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Total opex	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Totex	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

<table>
<tr><td></td><td>This is an Enterprise-wide initiative; Costs have been allocated in accordance with Jemena Group Cost Allocation Methodology.
This option will require recurrent opex step change costs of [redacted] for cloud capacity growth in the next period. The cost estimates for capacity expansions are based on a top-down forecast of growth starting from the current 2023 cloud expenditure.</td></tr>
<tr><td>Options Summary</td><td>The table below summarises the quantitative and qualitative differences between the analysed options.
<table>
<tr><th></th><th>Capex ($2023)</th><th>Project Opex ($2023)</th><th>Project Totex ($2023)</th><th>NPV</th><th>Residual Risk</th></tr>
<tr><td>Option 1</td><td>Not applicable</td><td>Not applicable</td><td>Not applicable</td><td>Not applicable</td><td>Significant</td></tr>
<tr><td>Option 2</td><td>0</td><td>[redacted]</td><td>[redacted]</td><td>Not applicable</td><td>Low</td></tr>
</table></td></tr>
<tr><td>What We Are Recommending</td><td>JGN recommends proceeding with Option 2 for JGN by investing in opex to support cloud capacity expansions. This option is recommended as we consider it reflects good industry practice given the benefits and risks outlined above. Furthermore, it provides the lowest sustainable cost.
This approach represents the lowest-risk strategy to address forecasted growth across ICT workloads. Rather than large, upfront capital projects, this option leverages operationally scaled cloud infrastructure to deliver needed capacity. It utilises a pay-per-use model that is adaptable to fluctuations in demand and changes in technology.</td></tr>
<tr><td>Dependencies on other Investment Briefs</td><td>Not applicable.</td></tr>
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