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Jemena Powers Its Targeted Communications Strategy with Analytics on AWS

By building an analytics platform on AWS, Jemena has gained new insights into consumption patterns that enable better customer communication and make its power grid more resilient. Jemena provides essential energy services to 1.7 million customers across Australia's east coast. The company uses Amazon SageMaker to create machine learning models, Amazon Athena to ingest real-time streaming data, and Amazon EMR with Amazon S3 as a data lake.

Company

Jemena

Industry

Power & Utilities

Country

Australia

Employees

1,000

Website

jemena.com.au

About Jemena

Jemena's network of transmission and distribution assets brings energy to the lives of over 1.7 million Australians; brining gas directly to more than 1.4 million customers in New South Wales and electricity to over 360,000 customers in Victoria.

The company is on a digital transformation journey to become more data-driven and customer centric.

Benefits

- Scales data warehouse to process 25 TB of data
- Predicts electricity consumption patterns with machine learning
- Achieves market segmentation on a detailed level
- Enables marketing strategy to shift from mass to individual
- Detects solar panels and battery installations for better network planning

AWS Services Used

- [Amazon SageMaker](#)
- [Amazon Simple Storage Service](#)
- [Amazon EMR](#)
- [Amazon Athena](#)

On a Mission to Bring Energy to Life

As power-generation technology evolves, consumers are increasingly turning to solar, battery-powered, and electric vehicles. To adapt to this distributed energy future and strategically plan the power supply for the network, energy companies such as Jemena are looking to better understand their customers. Jemena is an AU\$11.5 billion (US\$8.25 billion) company that owns and manages some of Australia's most significant gas and electricity assets across the country's east coast. It supplies over a million households and businesses with essential energy services daily, with residential households accounting for 92 percent of its customer base.

Jemena is at the start of their digital transformation journey by becoming a data-driven, customer-centric organisation. Recognising the importance of creating deep relationships with its customers, Jemena aspires to leverage data and analytics to power a range of key business drivers, from optimising customer engagement to network planning, and to offer innovative services to set itself up for a distributed energy future.

Since the introduction of household smart meters in Victoria, Australia, nearly a decade ago, Jemena Electricity Network has gained an unprecedented amount of data that it stores in its on-premises data warehouse. "To date, we've collected around 50 billion data points on energy consumption and around 500 billion data points on power induction, voltage, and power factors. Accessing that amount of data to extract intelligent insights can be challenging," says Frank Tudor, Managing Director Jemena. Although it meets Jemena's reporting and regulatory requirements, the company's data warehouse lacked the flexibility and agility to enable it to respond nimbly to market forces.

Collaborating for Success

Jemena needed an analytics platform that the company could use to segment its electricity customers based on consumption patterns to enable timely, personalised "moments of truth." It aimed to implement machine learning (ML) models that leveraged previous consumption patterns to predict future scenarios—such as analysing seasonal factors against consumption patterns—to better inform customers about spikes in usage.

This transformation required deep industry expertise as well as industry-leading data, analytics, cybersecurity, risk and regulatory compliance, and organisational change management. Jemena collaborated with [Deloitte Australia](#), an [AWS Partner Network \(APN\) Premier Consulting Partner](#), on a solution that would give it the agility and flexibility to meet its objectives in a cost-effective way. Deloitte then engaged Amazon Web Services (AWS) as the cloud platform that would help to deliver success for Jemena.

"Jemena's use case-led approach to analytics required a cloud platform that was equipped with modern data science capabilities and could offer the flexibility to scale. The AWS Cloud offered that combination to set up the foundation of analytics at Jemena," says Jahanzeb Azim, a Consulting Partner at Deloitte.



Building ML Models to Yield Detailed Results

Jemena worked together with Deloitte and AWS to build the Jemena AWS (JAWS) platform. It began by establishing a data lake in [Amazon Simple Storage Service](#) (Amazon S3), using [Amazon EMR](#) to centralise 25 TB of data from smart meters, weather history, and the Australian Bureau of Statistics. ML models, built on [Amazon SageMaker](#), created three electricity consumption clusters that factored in seasonality, intraday usage, and temperature sensitivity. The company relies on [Amazon Athena](#) for the analysis layer, which collates results from ML models, spatial data, consumption metrics, and demographics.

"We knew at an aggregated level what the relationships were between the seasons and consumption. But we had no idea of the widely different patterns among consumers," says Francois Marbaud, analytics manager at Jemena. "We've achieved a level of detail where we can cross-analyse our data with demographics and geography to improve communication with our customers because we recognise their consumption patterns."

Helping Customers Avoid Bill Shock

The JAWS platform has enabled Jemena to segment its electricity customers based on real-time insights. With this capability, Jemena now provides more personalised communications to its customers. During the COVID-19 pandemic, many people have been required to work from home to preserve the health and safety of the community, but they are often unaware of the increase in their energy consumption. With JAWS, Jemena was able to proactively send an SMS to those who have a significant increase in electricity consumption to help them avoid potential

bill shock. By enriching customer segmentation, the company is also able to identify at-risk or elderly customers who may not be digitally engaged, and change its communication to direct mail to ensure everyone is informed.

"We have reached out to 11,000 of our residential electricity customers—about 4 percent of our residential customer base—and we have provided them with online resources to energy savings tips and access to their consumption data so that they can monitor their energy use. This 4 percent represents our customers who were seeing a minimum bill increase of AU\$50 [US\$36] over the same month last year," says Jesse Mills, Customer Innovation Lead at Jemena.

Jemena also sent communications to its electricity customers who had demonstrated a loss in consumption to ensure they were aware of the support programs available, such as their energy education partnerships with [Australian Energy Foundation \(AEF\)](#) and [Uniting](#). "We've had really positive feedback from our customers on how they've been able to better manage their energy use via our targeted communications strategy," says Andrew Davis, General Manager of Electricity Strategy and Commercial at Jemena.

Improving Grid Resiliency

Targeted marketing also supports Jemena's demand response campaigns. These campaigns encourage customers to scale back electricity usage during peak hours to prevent the grid from becoming overloaded. In December 2019, Jemena used the analytics platform to identify the 10 percent of residential

customers whose power usage spiked tenfold on hot days. Jemena ran a pilot campaign, sending targeted SMS messages to these households requesting their support to maintain a stable grid status over the summer 2019–2020 season. “If we send the right message to the right customers, we’ve seen that they will do what they can to reduce energy use. We know from our research that Australians have a high social conscience,” Davis says.

Building grid resilience is central to Jemena’s five-year strategic goals: prepare the grid for the future and deliver innovative network services. This entails planning to support future workload increases as well as redirection of resources away from areas with a high density of consumers producing their own energy. For example, the analytics platform detects unregistered solar and battery installations, so Jemena can better understand the scale of adoption across its network.

Asking the Right Questions

By building a strong network of skilled people, through a combination of formal classroom training and blended delivery teams with Deloitte and AWS, Jemena has further energised its digital transformation journey. Marbaud has hired Jemena’s first data scientist and his team can now prototype new ideas more quickly.

“We have the increasing maturity to ask the right questions, to understand what to look for in the data, and to engage with our business stakeholders,” says Marbaud. “Our analytics platform running on AWS gives us the tools to build relationships with our business stakeholders, so we can get closer to their pain points and understand them in greater detail. We’re seeing new questions arise all the time, and our data team can deliver solutions faster than ever before.”

Contact

Speak to us to find out how we can help you leverage data and analytics to power your business outcomes. [Find out more.](#)



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