



# Scalable Cloud Engineering to Optimize Application Performance and Improve Reliability

## ABOUT THE COMPANY

Bandera Electric Cooperative (BEC) is a member-owned utility company that provides electricity and fiber internet to members in Boerne, Texas. BEC has become a leader in providing radical transparency and education around energy usage through development of their [Apolloware](#) platform.

## BACKGROUND

The Apolloware platform was developed in response to members' requests for visibility and awareness into their energy consumption habits. By communicating with a device installed on members' meters via Amazon API Gateway and Kinesis Data Streams, Apolloware gathers real-time energy consumption data, and can even identify when certain appliances are operating, to provide members with granular, real-time insights, as well as usage forecasting. Based on Apolloware's early success, BEC is now deploying their technology to other utilities working to provide real-time data and additional energy services to their end customers.

## OPPORTUNITY

In the face of development concerns, BEC recognized the need for a right-sized partner and scale-based development to overcome Apolloware's challenges with a poor user experience, backend scalability and potential security vulnerabilities. To continue to scale the platform for future growth and entry to new markets, Apolloware needed a redesign and implementation of its cloud architecture.

## SOLUTION

27Global was initially tasked with auditing Apolloware's existing code and cloud infrastructure. Based on the results and 27Global's expertise in cloud-native software and data engineering, BEC replaced their incumbent Apolloware development partner with 27Global. 27Global quickly began remediation efforts as well as managing the ongoing development of Apolloware.

## 27Global provided:

- Immediate security fixes, including improved management of user credentialing via AWS Cognito
- Remediation of application single points of failure, optimizing application performance, and bug fixes for the application were orchestrated via AWS CodePipeline
- Design and implementation of a new, scalable architecture to support utility, commercial, and residential users
  - Leveraged Amazon S3 and Amazon Redshift for scalable storage of user data
  - Using AWS Lambda to execute on-demand queries of Apollware Energy Device devices to provide real-time feedback on energy consumption and sources
- Improvements to the user experience by:
  - Leveraging Amazon Kinesis Data services to analyze users' consumption data and present valuable insights around their energy usage trends and gamifying the education process

## RESULTS

27Global partnered with BEC to quickly enhance the Apollware application and cloud infrastructure. This collaborative effort resulted in a vastly improved user experience in the mobile application with a modern look and feel, delivering real-time estimates for customers' utility bills, real-time cost estimates by appliance, and even an updated live view of energy usage within the home or business. Leveraging Amazon SES enables Apollware to send energy tips and weekly energy reports to help provide members with the information they need to reduce their overall energy consumption.

These improvements also extend to the business, where Apollware is benefiting from an improved user experience in their mobile and web apps – allowing for reduced friction in the hardware installation process, quicker installations, and improved training for installers. Improved analytics and metrics provide Apollware with data-driven insights into the household environmental impact to identify high-value future feature development and subscription opportunities. In addition, by optimizing Apollware's cloud infrastructure, 27Global made an immediate impact in terms of Apollware's ability to scale – and do so in an economical way – to accommodate residential and commercial user growth.

Among the list of improvements, 27Global also provided value directly to Apollware by quickly acquiring domain knowledge of the energy industry and translating technical business needs into actions, bridging the gap between ideas and tangible software value.

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***“27Global exemplified a deep expertise in cloud-native application development, cloud infrastructure, and data architecture, which was very influential in our decision to partner with 27Global for future development of Apollware. 27Global's ability to be nimble and scalable means they're the right-sized partner for the job – far nimbler and more attentive than the incumbent.”***

Justin McKenzie, VP of Apollware & Energy Services, Bandera Electric Cooperative

