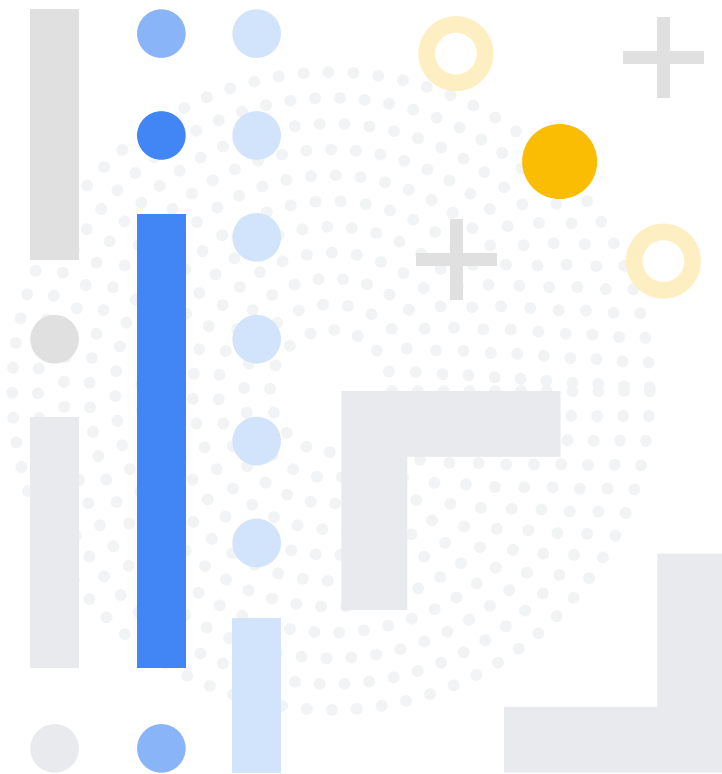


Powering Enterprise Digital Transformation at Sunrun



Every six minutes someone installs a Sunrun solar system, making Sunrun the #1 residential leader in solar power. Sunrun offers clean, reliable, affordable solar energy and battery storage solutions to help save the environment, and save their customers money. Between 2007 and 2019, Sunrun produced 7.4 B kilowatt-hours of clean energy. And during 2019 alone, Sunrun saved their typical customers 10-40% on their energy bills, resulting in \$300 M total savings.

As demand for clean, renewable energy grows, Sunrun faces the challenge of scaling operations, production, and services so they can continue to provide an exceptional customer experience while creating a more sustainable future.

Rapid growth put a strain on legacy systems

The Sunrun team needed a better way to manage their growing volumes of data across installation operations, installed systems, customer operations, and sales. As data comes in, the business units expect even more access to fresh information to quickly support real-time decision-making at every level.

Previously, Sunrun was using a legacy data stack that required IT and data team support for almost every internal data request. This direct reliance on IT and the data team drained time and resources with ad-hoc requests, changing requirements, and backlogs of reporting requests. While the entire business needed to use data to increase efficiency as they scaled, it was difficult for users to access data required to support their goals.

“Our previous stack made our data team very popular and in high demand. We had time to work with leaders, but then, we also had folks going around the tool to build their own stuff ad hoc, using Excel or RStudio. This created data silos and data brawls – where people either didn’t have access to the data they needed, or they were using conflicting metrics,” explains Stephen Maier, Staff Analyst, Strategy & Business Intelligence at Sunrun, “This kept us from building the same collective muscle together. We were all learning and optimizing in silos.”

Key Takeaways

- Since deploying Google Cloud BigQuery and Looker, Sunrun has experienced a 50% reduction in data warehouse design time, ETL, and data modeling
- Modernizing and simplifying their architecture helped Sunrun reduce their entire data development cycle by 60%+ to enable accelerated decision-making
- Sunrun leverages a hub-and-spoke analytics model to provide self-service analytics across their core business, ensuring all metrics are governed and trusted
- Regular executive huddles help Sunrun set data-driven strategies based on a single source of truth and execute strategies across departments

Designing, implementing, and maintaining the underlying data systems was also a challenge. Data pipelines and infrastructure weren't scaling to meet either data growth or increased demand for data access. The data team struggled to respond to changing data sets or new sources of data as quickly as the business demanded, and Sunrun's legacy Oracle data warehouse was not equipped to scale across growing analytics demands or unlock predictive insights with ease.

"We were stuck with legacy monolithic platforms, licenses, and support structures in place. We faced the challenge of trying to modernize our technology without disrupting the existing business," shares Harish Ramachandraiah, Director Engineering & Analytics at Sunrun.

When thinking about their options for finding a solution, the Sunrun team knew that an entire "lift and shift" of their legacy data systems to a more modern approach wouldn't work — they were growing too quickly to take risks, and the time involved in converting completely from on-premise to the Cloud would impact decision-making and result in a negative effect on growth. This was not an option.

"One of the critical things we considered for part of this journey was to work closely with the business to make sure we addressed their business and analytical needs. We wanted to quickly deploy and return what they needed," explains Ramachandraiah.

To supply data to the team in a new way — one that was efficient, unified, and provided business value — Sunrun worked with Google Cloud experts to [streamline their data warehouse migration and modernize their analytics without business disruption](#).

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Harish Ramachandraiah, Director of Engineering & Analytics, Sunrun

A phased migration to the Cloud

Sunrun needed to phase out old systems and deploy a modern analytics platform to collect, store, analyze, and deliver actionable insights for data-driven decisions at speed and scale. They wanted an analytics platform that could scale to meet their growing needs, provide more teams across the business with the data they craved, and bring everyone together around a common, trusted data language.

“It was critical that our modern infrastructure would help us support the business. We wanted to collaborate with the business users, not just build reports. We also wanted to take this opportunity to incorporate those business rules into the data platform. It was important to get everyone looking at the same KPI metrics,” shares Ramachandraiah.

In addition to these goals of helping the business, the Sunrun data team was also focused on finding a secure and cost-effective solution. “Cost was also a critical factor. We wanted it to be flexible so we weren’t locked in for the long term, but we also wanted to make sure it would be predictable,” adds Ramachandraiah.

After their evaluation process, Sunrun decided to migrate to Google Cloud’s smart analytics platform – including Looker and BigQuery – to reduce ETL complexity, run fast queries with ease, and make data accessible and trusted throughout the organization.

Rather than build complicated data pipelines with complex ETL processes, Sunrun loaded most data directly into BigQuery without transformation. Sunrun leveraged the power of BigQuery and Cloud Dataflow to transform approximately 20% of the data available in BigQuery. However, the majority of data transformation occurred at query time through a combination of Looker’s Git-versioned data modeling layer, LookML, and the BigQuery query engine. This allowed Sunrun to avoid complicated, brittle, and expensive ETL processes, and simplified the data pipeline.

“ We have consciously taken the approach to collaborate with the business to define the KPIs as a single source of truth. This helps us scale and turn around reports with much more accuracy because subject matter experts are involved in report building.”

Harish Ramachandraiah, Director of Engineering & Analytics, Sunrun

“Compared to our previous data stack, with Google Cloud we don’t need to worry about performance or scaling up the pipeline capacity for ingestion if there is a surge, or auto scaling the data queries due to user activities. Our environment is well-optimized and we can change resources and capacity with the click of a button,” shares Ramachandraiah.

Sunrun’s cloud migration was finished in only 18 months, and today they are 100% in the Cloud with improved access to trusted metrics for their executives and different required departments.

Leveraging a modern data platform

Google BigQuery and Looker together resulted in significant efficiency gains. “We’ve reduced the overall data lifecycle from ingestion to insights by 50%, if not more in other cases, to ensure we can quickly turn around what the business needs. We’ve seen 60% gains in engineering time efficiency, and infrastructure is no longer a problem for us because of the managed services,” explains Ramachandraiah.

With 100% of their data now migrated from on-premise to the Cloud, Sunrun is making data-driven decisions to best serve their customers, as well as meet their growth metrics. By leveraging LookML, Looker’s modeling layer, to unify metric definitions throughout the company, everyone at Sunrun can now be confident that they’re using the same metrics when they use data to guide strategy and decision-making. “With BI, it’s important that people believe in, and have confidence in the data source,” adds Ramachandraiah.

To power organization-wide access to this data, Sunrun uses a hub-and-spoke model for self-service analytics. At the center, they have the core BI team that creates a single source of truth, and then provides data and dashboards across every level and department of the organization via curated BigQuery tables and LookML schema. The governed hub accounts for approximately 60% of queries across Sunrun, with the remainder being satisfied with models maintained by analysts who work in functional spokes like marketing, customer operations, or project operations.

“With BI, it’s important that people have confidence in the data.”

Harish Ramachandraiah, Director of Engineering & Analytics, Sunrun

“The core value-add of Looker has been providing a pipeline of curated data, and then being able to use that to build a culture where we’re comfortable decentralizing our data access,” shares Maier, “By making the jump to Google Cloud Platform, and specifically leveraging Looker, we have been enabled to bring together the need to govern data while also giving people access to the answers they need to do their job. This helped bring the IT and business sides of our organization closer together. Being able to iterate together has been huge.”

Ramachandraiah adds, “We have consciously taken the approach to collaborate with the business to define the datasets from a modeling standpoint and ensure that that information is exposed to the different teams – from sales and marketing to operations – to make sure they take full advantage of what we have built. This helps us scale and turn around reports with much more accuracy because subject matter experts are involved in report building.”

One of the key milestones in democratizing data at Sunrun was when they started running their weekly and monthly executive huddles directly from a series of Looker dashboards, which were created to provide a real-time and consistent high-level story. “We gave people access to the numbers they needed to speak to every week. Getting leaders in a room talking about the same numbers and trends regularly has been huge, and helped us identify new and important products,” shares Maier. With these executive dashboards, all departments are on the same page with access to the same trends and insights. From there, teams have started to create cascading dashboards to help them drill in and explore, more depending on their specific needs and interests.

In addition to regular, strategic, executive alignment, departments across the organization are now able to access trusted metrics to find new opportunities and

efficiencies. One of the key ways the Sunrun team is leveraging Google Cloud is to better understand trends across their retail business, including the performance and impact of their relationship with major retail partners.

Sunrun also leverages data to optimize their construction processes by looking at the productivity of particular tasks, and the amount of people and hours required to do those tasks. This not only helps with planning but also with understanding regional comparisons and identifying areas of opportunity. “Looker has been key in helping management identify and act on these trends,” adds Maier.

Across Sunrun, data is being leveraged with the customer’s experience and business goals in mind. Ramachandraiah adds, “We can now ensure the business has self-service access to data, and have seen a lot of business value.”

A bright future

Since Sunrun’s migration from their on-premise legacy data stack to a modern cloud environment, they’ve created infrastructure and business-wide efficiencies to help them meet the growing demand for solar power.

“Sunrun leveraged Looker and BigQuery to reduce the complexity of running analytics, and we were freed from running database operations so that we could focus on unlocking insights with agility and ease. Now Sunrun makes data accessible where it’s needed in near-real-time,” concludes Ramachandraiah.

With so much accomplished, the team still knows there’s room to scale data access and opportunities to help teams optimize their workflows and identify opportunities with data.