



gridx®

The Digital Transformation of Utility Ratemaking

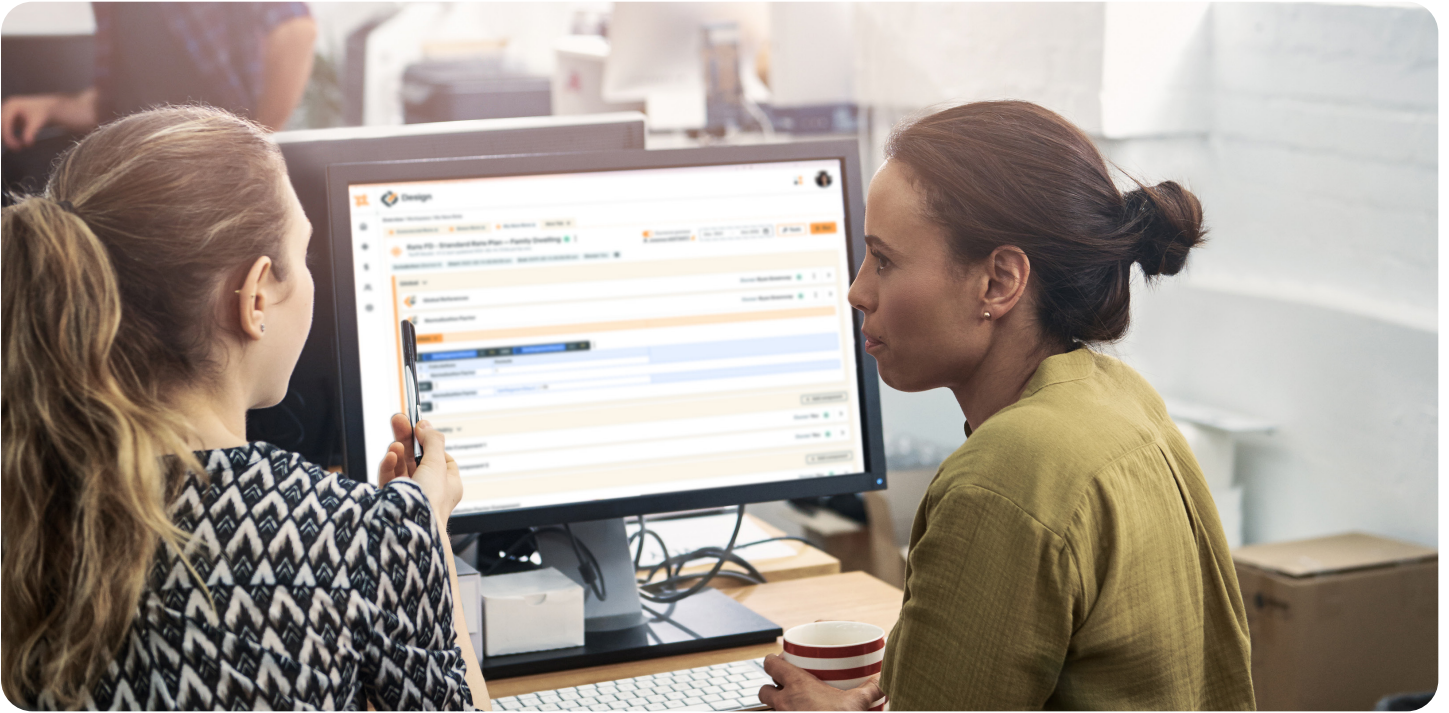


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What is a Digitized Rate?

Why is it Important?



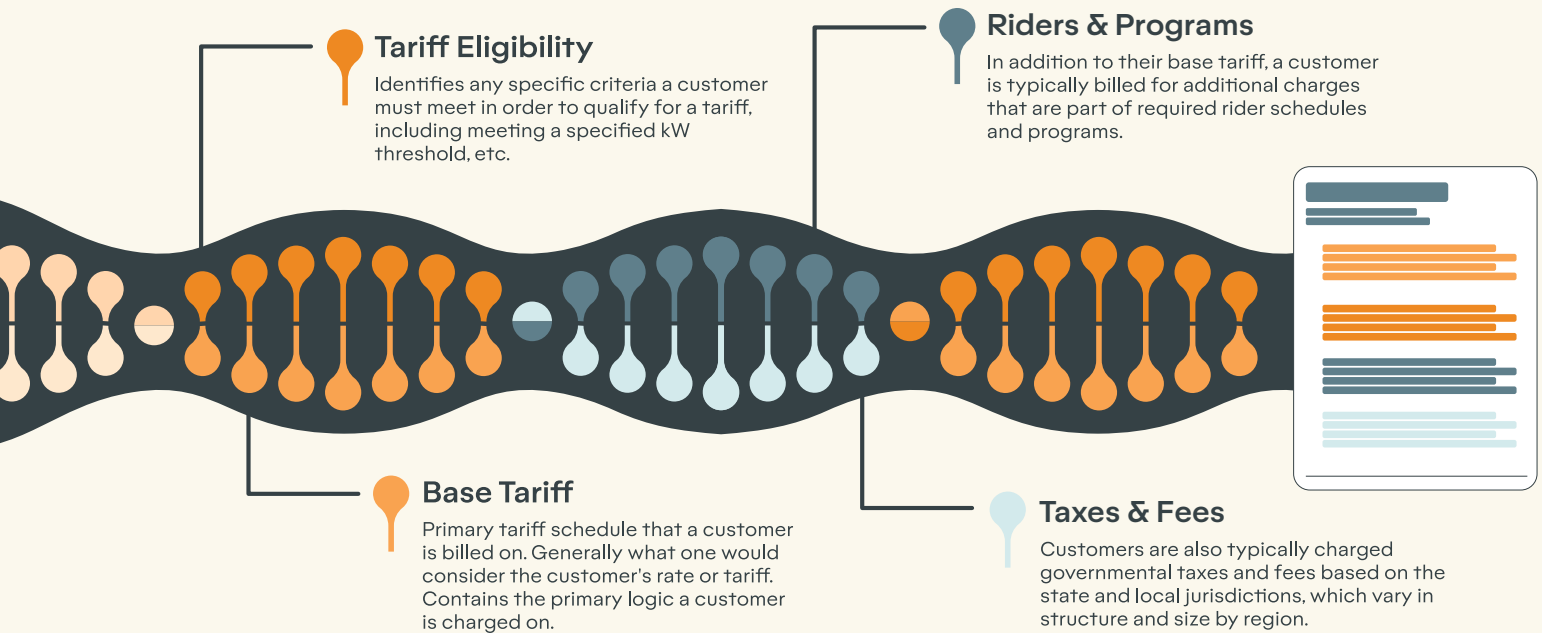
The complexity of the electric grid is quickly increasing. By 2027, [ninety-three percent](#) of US households are projected to have smart meters and electric vehicles will represent [23% of new passenger vehicle sales](#). Utilities are acting now to keep up with the impact of increased electrification and complex rates are playing a critical role.

But the way rates are designed, implemented, and billed today relies on bottlenecked processes and antiquated tools. A new approach is needed...one that is focused on digitization.

Digitizing the core components of a rate - tariff eligibility, base tariff, riders & programs, taxes & fees - allows the DNA of a rate to be componentized, shareable and reusable. Only then can rate design, customer and billing teams effectively partner to deliver optimal rates that benefit the customer and the utility.

DNA of a digital rate or tariff

With a digitized rate, tariff components can be reused and repurposed. This reduces the liability for errors and significantly decreases the amount of time it takes to create a rate.

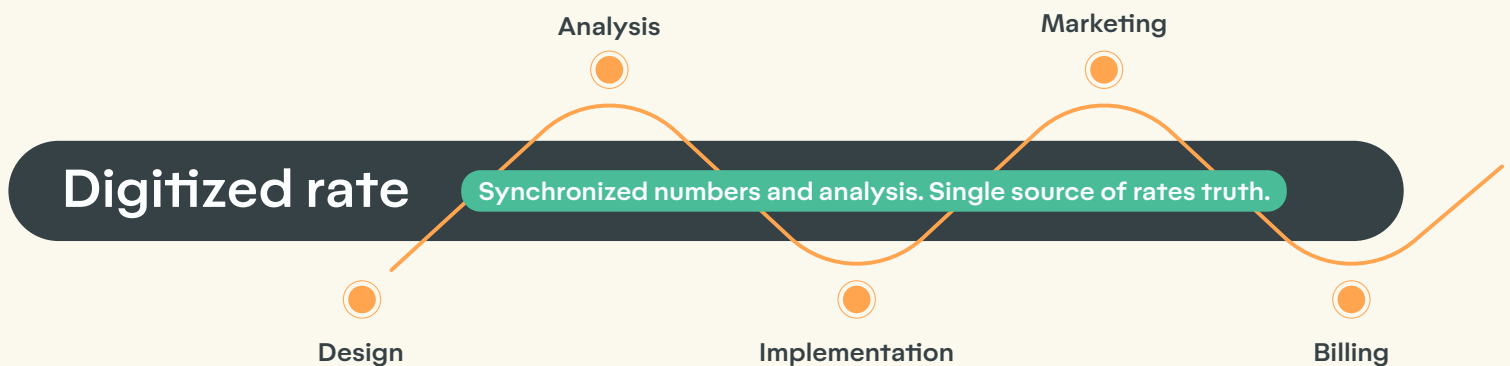


A digital rate operationalized within a [Rate Engine](#) Platform allows several departments, which usually operate in silos, to collaborate to design rates, analyze them against the whole customer population then ultimately implement and bill customers on those rates. For instance, PSEG Long Island leveraged GridX's platform and capabilities in its rate-modernization initiative, which has involved unprecedented collaboration with as many as 17 departments across the utility.

A digitized approach is proven to ensure the long-term scalability and resiliency of rates as technologies shift, the adoption of distributed energy resources (DERs) increases, and the complexity of rates grows. When rates and their end-to-end processes are digitized and done right, we can accelerate our clean energy future.

Why Operationalize Digital Rates

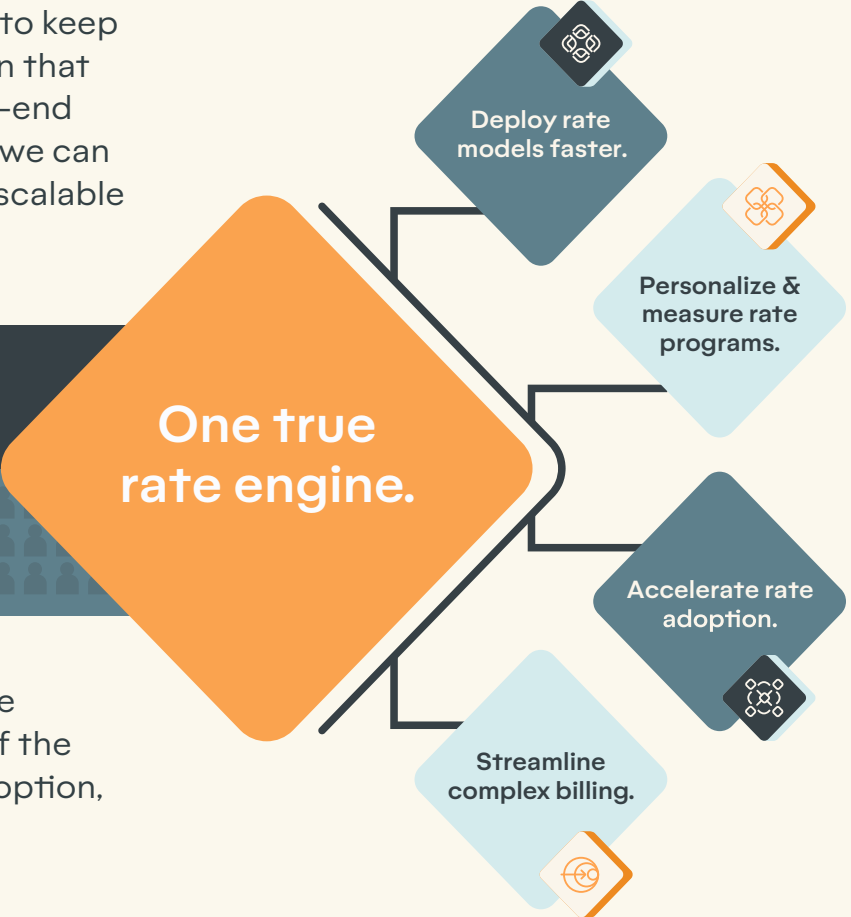
Rate designers, analysts, customer, and billing teams all have a significant role in the complex rates and programs journey. Each department may have completely different methodologies and systems to handle their portion of the rates lifecycle. This creates disjointed information and lack of assurance that all departments are using the same numbers, analysis, and results in their process. With a digitized rate, utilities can break down departmental and organizational silos, creating a single source of rate truth within an [Enterprise Rate Engine](#). These digitized rates can then be shared across the many phases of the utility rate lifecycle.



On the other hand, a rate or program rollout that is rooted in partial data sets can create missed segments of the population and unfairly and unknowingly charge that population (ex: the [Tax on God effect](#)). The way analysis is done today - if done at all - largely depends on manual processes, which take an immense amount of time. For instance, it took one large Investor-Owned Utility over a year and a half and \$8M to implement a single low-income rate via home-grown spreadsheets and methodologies.

Rates done right, now.

Electric Utilities need to be acting now to keep up with the complexity of electrification that is upon us. When rates and their end-to-end processes are done right and digitized, we can accelerate our clean energy future in a scalable and reliable manner.



The diagram features a central orange diamond labeled "One true rate engine." Five lines radiate from its right side to five smaller diamonds, each representing a capability. The diamonds are arranged in a circular pattern around the center. The top-left diamond is dark blue and labeled "Deploy rate models faster." with a dark blue icon. The top-right diamond is light blue and labeled "Personalize & measure rate programs." with a light blue icon. The bottom-right diamond is dark blue and labeled "Accelerate rate adoption." with a dark blue icon. The bottom diamond is light blue and labeled "Streamline complex billing." with a light blue icon. The top-right diamond is light blue and labeled "Personalize & measure rate programs." with a light blue icon. The top-left diamond is dark blue and labeled "Deploy rate models faster." with a dark blue icon.

One true rate engine.

Deploy rate models faster.

Personalize & measure rate programs.

Accelerate rate adoption.

Streamline complex billing.

Utilities that leverage an Enterprise Rate Engine are able to meet the demands of the modern grid, drive program and rate adoption, and accurately serve their customers.

Let's dive deeper into what needs to happen to intelligently deploy models, personalize and measure rates, accelerate the adoption of these rates and programs, and streamline complex billing practices.

Rate Design, Reimagined

Intelligently Deploy Models

Creating modern rate structures is an increasingly complex task, with growing implications for customer experience, utility operations and revenue generation.

In addition to fairly distributing costs to customers, rates and programs are now also expected to support diverse goals such as shifting load and maximizing distributed energy resources, all while avoiding customer rate shock. Sanem Sergici of The Brattle Group expressed, “As the share of variable renewables’ deployment increases, retail electricity pricing will need to become more dynamic to reflect system needs in real-time.”

Getting this right in a smart-meter enabled environment requires analyzing massive amounts of data and maintaining the accuracy and transparency required for rate filings. It’s a tall order when using outdated methodologies, cumbersome spreadsheets, slow data warehouses and disconnected data. As the grid becomes more complex and additional clean energy technologies are adopted, tariff design and digital rate processes need to be repeatable and flexible in a way that enables utilities to make changes or construct new rates and quickly operationalize those rates.





Rate designers and analysts have a big job. They need to model existing rates and tariffs as well as design proposed complex rate structures to increase adoption of clean energy technologies, practices, and programs. Utility personnel also need to expedite commission approval, by accurately modeling proposed rate changes based on changing scenarios and support the entire rate lifecycle with revenue-grade bill impact analysis. By creating a digitized rate within an [Enterprise Rate Engine](#), utilities can develop and analyze pricing strategies based off true customer usage and cost data to inform regulatory decisions and deploy marketing strategies to incentivize customer behavior changes like DER adoption or shifting load in real-time.

Using an Enterprise Rate Engine that creates digitized rates during the design process enables users to leverage the full power of their customer and smart meter data in a single source of rates truth to:

- ▶ easily create robust rate and tariff structures,
- ▶ quickly model proposed tariff structures that integrate customer analysis,
- ▶ allow instant re-calculation of pricing and customer impacts of any changes,
- ▶ determine proposed pricing based on user-input cost of service and price calculation rules and
- ▶ design rates that incentivize consumer behavior change.

Harness the Power of Big Data

Personalize and Measure Rates and Programs through Analysis

Accurate and personalized analytics enable utilities to drive customers to enroll in and succeed on new rates and create grid benefits from desired load shifts (among other outcomes). However, no systems were built or equipped to process the massive volumes of interval meter data, let alone generate the analytics required to produce the accurate insights necessary to influence consumer action.

[GridX Analyze](#) allows utilities to rapidly determine the financial effects of a proposed rate with billing-quality analytics by running hypothetical “what-if” scenarios in a sandbox environment. A new iteration of a rate can then be shared from Rate Designers with Program Managers and Strategists to evaluate customer bill impacts before the process of commission approval. The digitized rate allows for cross-departmental collaboration with the same source data throughout each organizations’ process.

Utility companies need to also [market and provide](#) customers with highly accurate and personalized information to motivate them to change energy use behaviors and make the best clean energy choices. Educating customers about their rate options with highly accurate cost data accelerates the adoption of modern rate plans, like Time-Of-Use (TOU), electric vehicle, real-time-pricing, and other advanced rate structures. GridX’s cloud-native big data platform ensures that utilities make use of full population interval data to evaluate and [successfully market](#) and bill modern complex rates.



For example, utilities can conduct a full-population or customer segment analysis to measure the impact of new rates and programs, [preventing negative bill impacts](#) and improving customer satisfaction by integrating the highly accurate cost data into self-service tools on their MyAccount pages, mobile apps and more.

With digitized rates, Key Account Managers and Customer Service Representatives can better serve and educate their customers because the same customer usage and cost information used in other applications crosses organizational silos and allows them to accurately answer complex bill and cost questions in real-time.



Future-Ready, Validated Rates

Streamline Complex Billing

According to [Energy and Environmental Economics, Inc.](#) to align with grid needs and environmental goals, rates for customers with flexible loads and DERs must become more complex and dynamic. This means as DERs, Virtual Power Plants (VPPs) and clean energy technologies continue to evolve, the rates and personalization of those rates will also need to evolve, making the task of billing complex and dynamic rate structures very difficult. While the customer information system (CIS) will continue to play a critical role in utility operations, it isn't agile enough to manage the complex calculations required for billing today's modern rate structures and programs and certainly won't handle the future state of rate structures.

To keep up with the complexity of these rates, leveraging the add-on billing capabilities of an Enterprise Rate Engine enables utilities to quickly operationalize complex rates. In order to bring stability to the shifting [complex billing landscape](#), utilities need to look beyond their current CIS and processes in order to avoid costly multi-year implementations, or upgrades that require significant amounts of budget and resources. A sustainable and highly flexible billing solution like [GridX Calculate](#), enhances the existing CIS with an add-on cloud billing technology. It enables utilities to quickly operationalize and bill customers with complex rates structures, programs, and business models, including all versions of Net Energy Metering (NEM), community solar, real-time pricing, sub-metered EV (Electric Vehicles) programs, and more.

Although utility companies use many approaches to complex billing, the agile and scalable nature of this digitized solution can help utilities not only accurately bill complex rates but cut down the number of exceptions and errors by dramatically reducing the manual processes needed and the cost of that undertaking.

To generate even greater synergies, those utilities that use the Enterprise Rate Engine to digitize the rate during the rate design process can pass that rate to the add-on billing engine so that it is immediately ready to be operationalized and offered to customers after receiving regulatory approval for the rate.

Comparison of capabilities among different complex billing approaches

| | Complex Billing Engine | Customer Information System (CIS) | Spreadsheets |
|------------------------------|---|---|--|
| General | Cloud-based, add-on billing engine enabling the implementation of complex rates | Monolithic meter-to-cash billing system | Manual Excel spreadsheets customized to create bill calculations or billing determinants |
| Complex Billing | Built on a highly flexible and agile rules engine to enable support for all levels of complexity. | Likely to require customization for very complex rates, programs, and business models. | Flexible, but difficult to maintain and/or update. |
| Time to Deploy | Six-to-nine-month implementation | Multiple years to replace an existing CIS | Requires many hours of manual work with limited to no integrations. |
| Scalability | Leveraging big data technology to use interval meter data directly from meter data management system (MDMS) for maximum scalability. | Limited, with the need for MDMS to pre-aggregate interval meter data into billing determinants based on tariff definitions. | Manual process limits scalability to availability of human resources. |
| Cost | SaaS business model requires utility to only pay for what is needed with a limited subscription period. Total cost of ownership is lower due to limited IT footprint as SaaS model requires vendor to be responsible for software maintenance and no hardware requirements. | Average CIS replacement costs for utilities*: 80,000 customers: Approx. \$10 million 281,000 customers: Approx. \$30 million 1,000,000 customers: \$70 million *-Source: 2022 TMG State of CIS Report | Manual processes require expensive human resources for operations and maintenance. |
| Auditability | Must be SOC1, SOC2 audited, SOX compliant. Versioning and logging of all models and activity, respectively. | Highly mature and compliant. | Very difficult to audit. Inefficient manual controls to review and approve invoices. |
| Support beyond meter-to-cash | Integrated billing analytics engine enables business users to leverage production rate & tariff models for important business processes , including rate design, rate marketing, rate education & engagement, CSR & Key Account management tools . | Limited to meter-to-cash. | Limited to output of spreadsheet calculations. |

An Enterprise Rate Engine is the cost effective, cloud-based billing solution that allows utilities to design, analyze, implement, and market emerging rate structures in a scalable and reliable manner that is needed for the future.

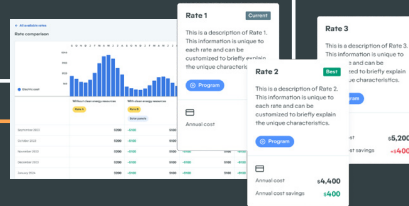
Example Customer Journey

Brianna buys a stylish new EV

She logs into her utility bill pay site and is presented with an alert that a change in usage has been detected.

We've detected a change in your usage. It looks like you've been using more energy. This could mean you might have a better rate option available. To explore those options click the link below.
[See More](#)

She confirms and is presented with the 3 easy-to-understand, best rate scenarios.



The GridX Enterprise Rate Engine integrates with utility customer portals natively or through partners to give an optimal customer experience.

She weighs her options and picks the rate she thinks will work best for her household.

Brianna gets an email congratulating her on her new EV and rate selection immediately following enrollment.

Dear EnergyX Customer,
You are now enrolled in the rate Time-of-Use Rate 2 plan.
Your electricity costs are projected to decrease.
You are projected to save money on this rate.
Estimated 12-month cost decrease: \$400

GridX enables utility companies to personalize their rate marketing efforts and provide a unique customer experiences that drive higher customer satisfaction.

Brianna receives an updated bill based on her new rate plan and program options.

GridX allows the utility to quickly calculate and accurately bill for complex rate plan changes within the billing cycle.

GridX is across the entire customer journey

Utilities work with GridX to be able to identify and quickly design new rates and adjust to changes in their territories (EVs, solar, storage, microgrids, etc).

With GridX rate analytics, customers are matched with the best rate options with penny-level accuracy. Due to the speed and accuracy of the GridX Enterprise Rate Engine, customers can easily explore multiple "what-if" rate scenarios and make the choice that is right for their personal needs.

Rates Done Right, Now

A digitized rate within an Enterprise Rate Engine solves multiple utility pain points in the implementation of dynamic pricing structures and emerging customer programs. Utility companies can ensure the expected financial outcome of proposed rates, understand and communicate hypothetical customer behavior changes and promote the adoption of clean energy technologies through program and rate incentives. Following this approach allows utilities to speed up the time-to-delivery and value recognition of the programs we need to decarbonize, all while ensuring an optimal customer experience.

"It's very easy to throw up our hands and just say we're going to live with five rate engines. We'd like to have just one rate engine for online, email or direct mail, modeling ALL of our rates. GridX got us there."

- Anh Dong, Former Senior Manager, Pricing Product, PG&E

Additional Resources



How Digitized Rates P

[Digitized Rate Playbook](#)

Discover how digital rates are helping utilities achieve their goals.



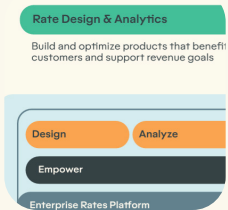
[Modern Rate Structures Playbook](#)

How modern rates structures achieve utility strategic objectives



[Complex Billing White Paper](#)

How a utility company can adapt to today's complex billing landscape



[One True Rates Platform](#)

Learn more about the GridX one true rates platform.



[The Digital Transformation of Utility Rate Making](#)

Read more about the benefits and challenges of digital rate making.