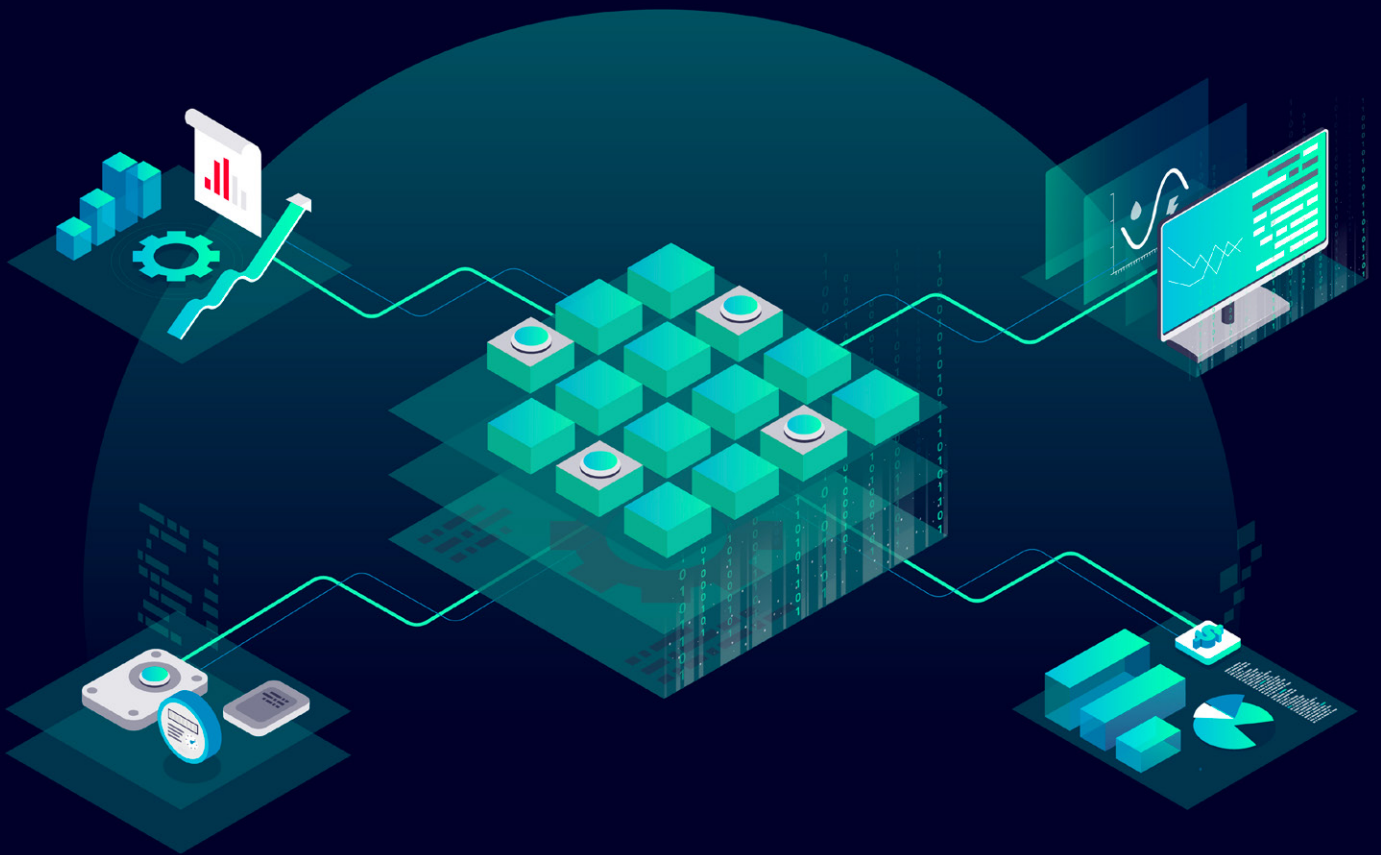




EXPERT INTERVIEW

MDMS in Action: How Con Edison Transformed Energy Management with Near Real-Time Data



Madhu Reddy is a Director at Con Edison, where he has led the IT transformation of the Advanced Metering Infrastructure program over the past decade. He has played a key role in modernizing meter data management, strengthening operational resilience, and enabling near real-time insights that support grid reliability, safety, and customer engagement. His leadership has helped position AMI as a foundational digital platform for Con Edison's evolving utility operations. Madhu shares Con Edison's AMI journey in this interview.

From data to decisions:

Accelerating AMI 2.0 goals with an MDMS

Let's start with your Advanced Metering Infrastructure, your AMI. What were your goals when you started to roll out smart meters?

Our initial goals were distinct from where we are today. When we began deploying smart meters and smart gas IMUs nearly a decade ago, our foremost objective was to enhance customer satisfaction — and we achieved that with the completion of our smart meter program. We wanted to:

- Empower customers with greater control over their energy consumption through near real-time data.
- Improve satisfaction by proactively addressing events, safety concerns, and preventing outages.
- Serve the community with operational excellence, focusing on scalable solutions to meet growing demand and evolving energy challenges.

//

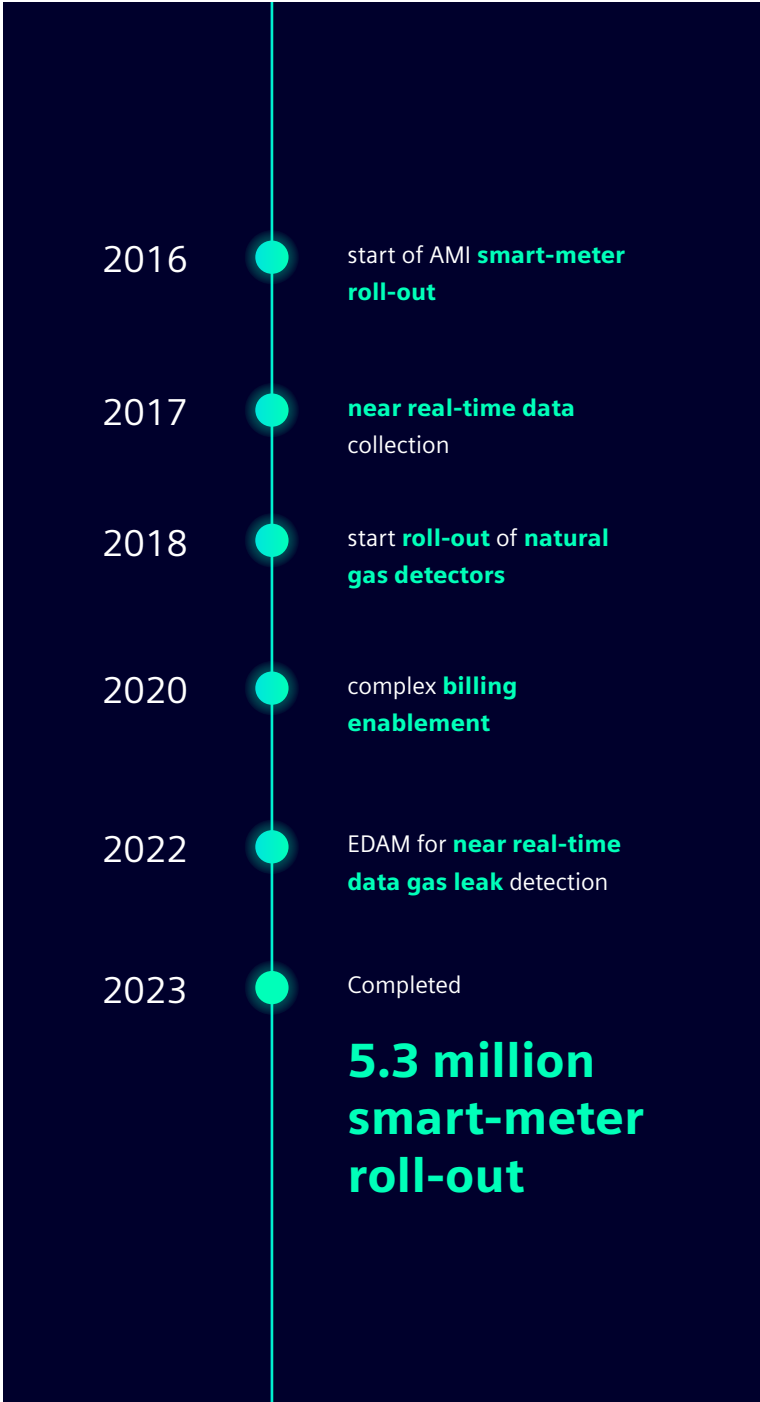
The MDMS is at the core of the mission-critical operations platform we depend on every day.

– Madhu Reddy

How does your meter data management contribute to your AMI goals?

The Meter Data Management System (MDMS) is central to achieving our AMI goals. It supports our entire meter-to-bill process — handling data from over 5.3 million meters operating 24/7 — and ensures accurate, timely billing at scale.

Our MDMS also plays a critical role in enhancing customer experience by validating and completing meter data, then presenting trusted usage information through our customer portal. This enables customers to see how they use energy in near real-time; a capability Con Edison has leveraged since 2017. In short, MDMS delivers operational reliability, scalability, and the real-time insights that drive AMI's value.



A vertical timeline on a dark blue background with a light blue line and circular markers. The timeline lists key milestones from 2016 to 2023.

2016	start of AMI smart-meter roll-out
2017	near real-time data collection
2018	start roll-out of natural gas detectors
2020	complex billing enablement
2022	EDAM for near real-time data gas leak detection
2023	Completed

5.3 million smart-meter roll-out

Energy Usage and Experience: **Empowering Customers with Near Real-Time Data**



How does near real-time data from your MDMS benefit your customers?

Con Edison stands out as one of the few utilities to offer near real-time meter readings — a capability we've provided since 2017. We read meters every 5 minutes for commercial and industrial (C&I) customers and every 15 minutes for most residential customers. This approach enhances customer insights by delivering timely, actionable information on their energy usage.

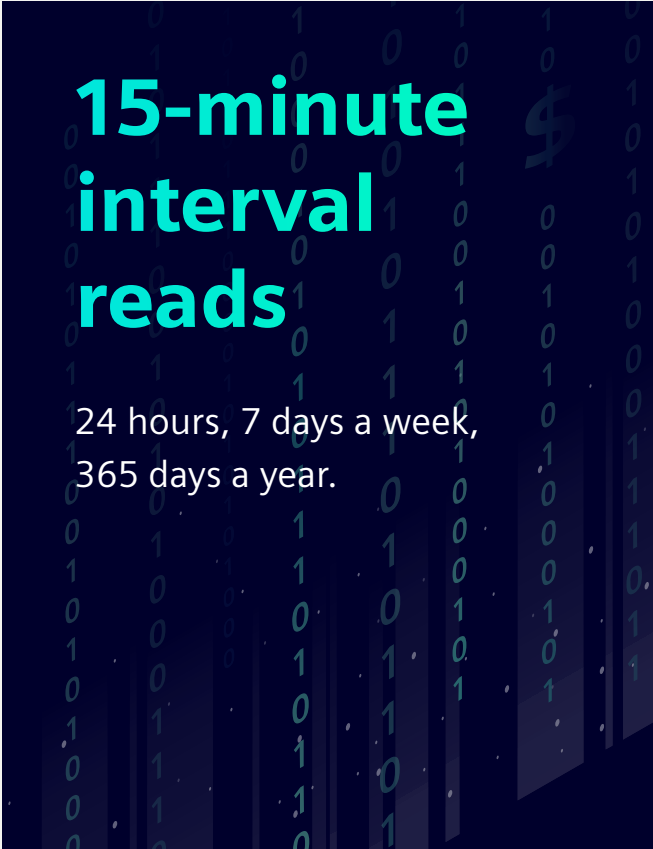
Customers can log in to our portal and view their energy usage patterns for the last hour or even the past fifteen minutes. This transparency is increasingly important as extreme weather events become more frequent and unpredictable, creating new challenges for both consumers and utilities in managing power supply and demand.

For customers facing unfamiliar cold spells or higher air-conditioning needs, near real-time data helps them understand and manage new expenses, offering greater clarity and control over their energy bills.



Our MDMS and AMI platforms are engineered for robust, reliable near-real-time processing, ensuring accuracy and performance even as data volumes grow.

Near real-time data empowers customers to monitor their usage, manage their budgets, and compare the cost impact of everyday choices — such as heating a space to 65°F/18°C versus 70°F/21°C.



**15-minute
interval
reads**

24 hours, 7 days a week,
365 days a year.

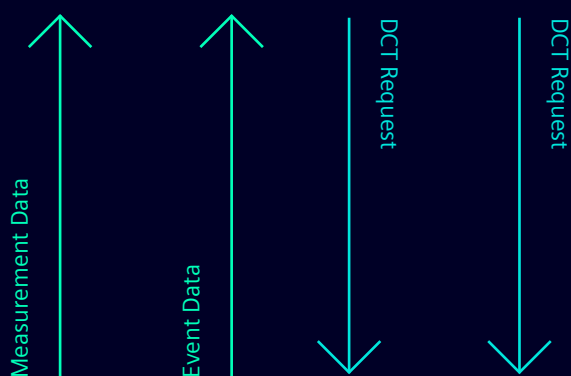
What challenges does near real-time data create?

Delivering this capability at scale presents significant challenges. Our AMI systems are the largest in the country, generating overwhelming volumes of data that must be properly managed, validated, and formatted for analytics and integration with other systems. It's not just about collecting more numbers; it's about ensuring the data is actionable and doesn't overburden operations.

We've grown our computing resources in step with meter deployment, starting small and facing early performance constraints. Through continuous enhancements, process improvements, and collaboration with Siemens, including leveraging MDMS front-end processing to minimize computational requirements, we've expanded and stabilized our infrastructure to reliably support robust near real-time processing.



MDMS



Low-Voltage Transparency



Near real-time data provides clear, actionable visibility into grid conditions, especially voltage performance, enabling us to optimize operations as events unfold.

How does the meter data management system help you balance your low-voltage grid?

Managing the growing complexity of the low-voltage grid is a significant challenge for utilities, and centralized data in our MDMS is key to addressing it. By consolidating meter data in the MDMS, we support core AMI objectives—optimizing voltage, reducing energy consumption, and lowering our carbon footprint in a structured, multi-purpose way. Today, our AMI and MDMS provide near real-time readings with minimal data gaps, enabling precise voltage optimization that saves Con Edison several million dollars annually while improving overall energy efficiency.

Before AMI, we were forced to operate the grid at consistently high voltage levels, regardless of actual demand. A critical lesson learned has been the importance of “last mile” visibility. Smart meters combined with a robust MDMS platform have been essential in identifying and resolving voltage stability issues at the grid edge.

A critical lesson learned has been the importance of “last mile” visibility. Smart meters combined with a robust MDMS platform have been essential in identifying and resolving voltage stability issues at the grid edge.

Conquer complicated: Complex Billing and Time of Use (TOU)



How do Con Edison's commercial and industrial (C&I) customers benefit from a robust MDMS?

A robust MDMS delivers significant value to our commercial and industrial customers by enabling complex billing and greater data transparency. Con Edison has a highly complex rate structure, and we use our MDMS to perform detailed rate configuration and calculations before passing a simplified result on to our customer care billing system. That's a deliberate, strategic choice that improves accuracy and efficiency at scale.

Our MDMS also gives C&I customers access to near real time usage data on a subscription basis. Customers can securely integrate this data directly into their own IT systems to automate processes and optimize internal operations. The granularity of MDMS data further allows us to resolve issues quickly, saving customers meaningful time and money while improving overall service reliability.

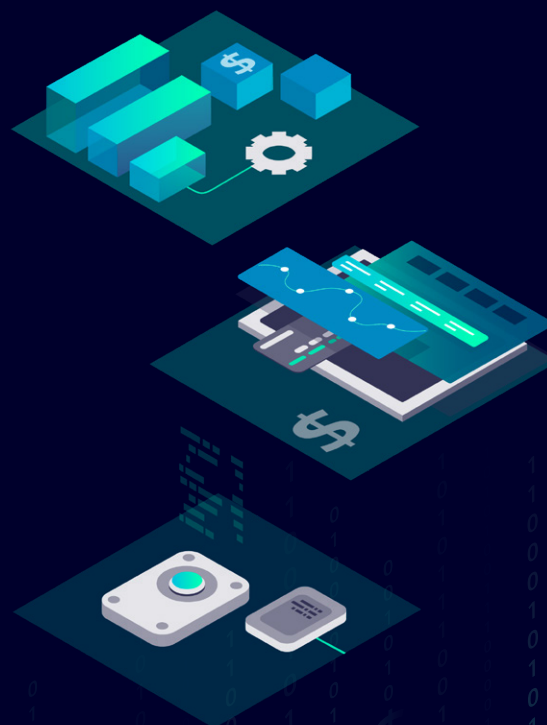
“

Con Edison manages more than 120 distinct usage-based billing buckets across rates, programs, and meter configurations — reflecting the complexity of our C&I offerings.

—

Through our C&I programs, we have

delivered more than
\$15 million in cash incentives,
driven **35,000 MWh** in energy
savings, and supported **167**
participating **contractors**.



Value of **Event and Anomaly Detection** in MDMS 2.0

IV

Could you share examples of projects you are currently working on to realize more of your MDMS' potential?

We are currently focused on taking operational excellence, customer experience, and safety to the next level by automating event processing, gas leak detection, and improving system availability. Event and alert processing is a major function within MDMS, with data flowing from the communications network and head end systems into our MDMS, where operational actions are triggered.

Historically, many of these events were handled manually. Today, we are automating this process using an MDMS capability called EDAM, short for Event and Data Action Manager. We classify events as emergency or non-emergency and configure the MDMS to determine how each event type is handled. Billing reads and non emergency events follow the standard processing path, while emergency events are routed directly into our MDMS for immediate analysis and action.

When required, the MDMS automatically generates service orders for downstream systems — such as customer service, work management, or gas emergency response. Those systems dispatch crews, the issue is resolved in the field, and the work ticket is closed, completing the loop in our MDMS. Our goal is a fully automated, end-to-end response cycle that improves safety, speed, and reliability.

“

Automated event processing and anomaly detection enable a faster, more effective operational response to meter-level events.

How do systems and departments draw on central MDMS data for gas leak detection?

Improving safety is a huge benefit of near real-time data, combined with the MDMS' ability to define specific rules — an advantage not highlighted enough. We are the first utility in the US to deploy gas leak detection. At Con Edison, our MDMS not only receives alerts from meters, but we have also deployed gas sensors.

”

Accurately identifying and filtering false positives helps keep customers safe, engaged, and satisfied.

How do systems and departments draw on central MDMS data for gas leak detection?

As soon as a gas sensor triggers an alert, the MDMS notifies our emergency gas response system and the fire department. Crews are dispatched within three minutes of a detected leak, enabling rapid, coordinated response across systems and departments. This level of automation and speed is why maintaining MDMS availability 24/7 is critical to customer safety. —



Future-Proof MDMS 2.0: AI, Machine Learning, and Outage Management



What does the future of MDMS look like to you?

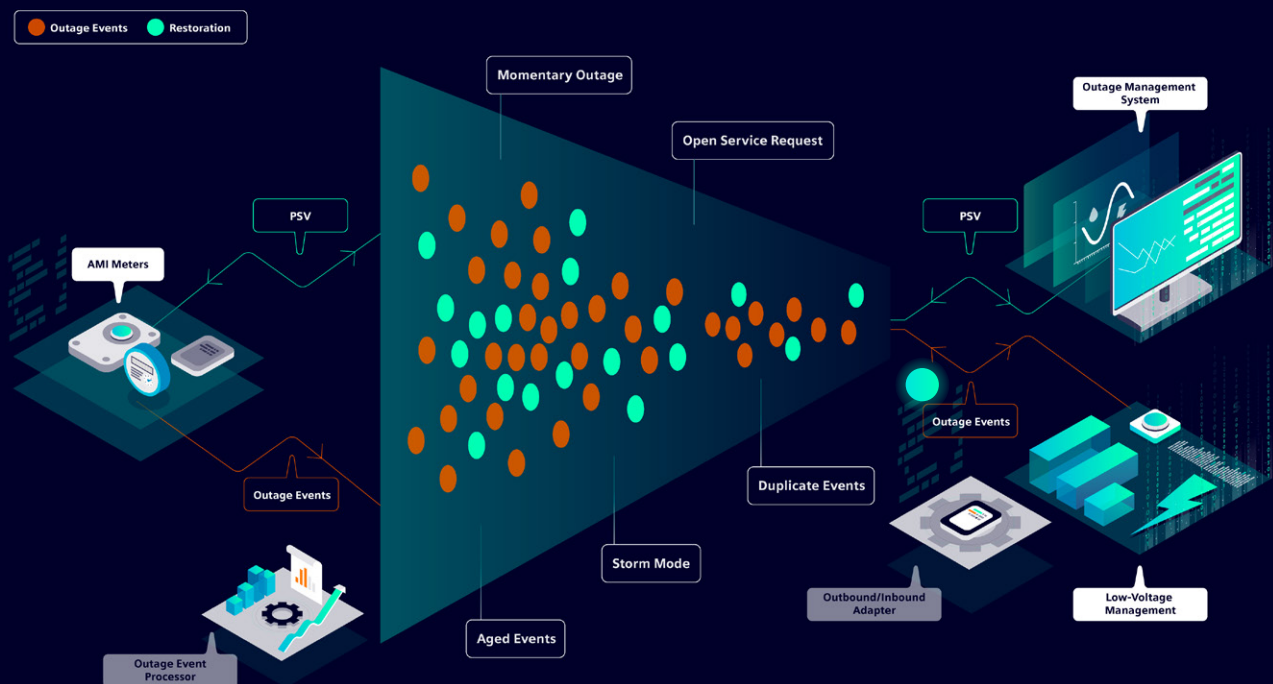
We are just beginning to explore the role of AI and machine learning in MDMS, and the opportunity is significant. We see strong potential across key areas, including meter setup, billing, and event management, particularly in improving automation and operational efficiency.

A critical foundation for any AI use case is synchronized, high quality data across systems. Our platform must operate end to end — from meter deployment and commissioning to meter reading and downstream usage — and that requires meters, systems, and data to remain continuously aligned. In reality, assets and accounts can fall out of sync for many reasons, sometimes daily, creating exceptions that still require manual intervention.

Looking ahead, we are exploring how AI can identify and resolve these exceptions in near real-time. Our goal is to use AI agents to automatically detect issues, correct inconsistencies, and keep meters and accounts in sync — reducing manual effort while improving accuracy, reliability, and speed across the AMI ecosystem.

“

Accurate, synchronized data in the MDMS is essential for both enabling AI use cases and supporting day-to-day operations.



Do you see areas beyond safety and billing where near real-time data and AI would be beneficial?

Yes — near real-time data and AI deliver value well beyond safety and billing. Today, we are already applying near real-time data and machine learning to key operational use cases, including voltage optimization, theft detection, and the identification of irregular usage patterns.

From a demand response perspective, near real-time insights are especially valuable during peak conditions, such as extreme summer heat. Customers who enroll in our demand response programs receive financial incentives and agree to temporary load reductions when needed. Near real-time data, including voltage information, allows us to precisely determine when to trigger these programs, balancing grid reliability while minimizing customer impact.

How are you increasing use cases for the MDMS as the center of data truth and usage?

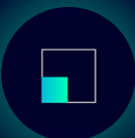
We are expanding MDMS' role by strengthening high availability and using near real-time data to support grid operations and customer experience. Because the MDMS is critical to both operations and customer safety, we are working with Siemens to implement automated failover capabilities that protect against both planned and unplanned outages.

Near real-time data allows us to manage the grid proactively and see when we are approaching system limits. During recent extreme heat events, for example, the grid operated at peak-voltage levels, requiring controlled load shedding to maintain reliability. Our MDMS provided the real-time visibility needed to manage those conditions safely and effectively.

As weather extremes become more frequent and energy demand continues to grow, our MDMS is central to enabling demand-response programs that benefit everyone involved: customers who participate, the utility that maintains grid stability, and the broader customer base that relies on uninterrupted power.

”

Reliability is often invisible. When customers don't have to think about it, that's proof the people behind the scenes are doing their job well.

Scalability

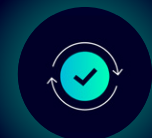
Can handle growing data volumes and more devices without major redesign.

Flexibility

Easily integrates with new technologies and standards.

Transparency

Centralized access to quality data used throughout utility.

Longevity

Designed to avoid obsolescence for as long as possible.



**For more information,
please contact our experts.**

Andy loos
Commercial Director for MDMS
E-mail: Andrew.loos@siemens.com

**Published by
Siemens AG**

Smart Infrastructure
Grid Software
Siemens Technopark
Humboldtstr. 64
90459 Nuremberg, Germany

For more information, please contact
E-mail: grid.software.si@siemens.com

© Siemens 2026

**For the U.S. published by
Siemens Industry Inc.**

Siemens Industry Inc.
3617 Parkway Lane
Peachtree Corners, GA 30092
United States



Bio Con Ed

Consolidated Edison Inc. manages data from more than 5.3 million active electric and gas meters across its service territory. The company leverages the Grid-scale X Meter Data Management System (MDMS) to process near real-time data at scale without being overwhelmed by volume.

The MDMS has become a critical enabler of Con Edison's objectives—engaging customers, supporting complex and beneficial rate programs, and meeting diverse regulatory requirements across a multi-operating company environment.

With a strong focus on power quality, customer engagement, and the integration of distributed energy resources (DERs) and electric-vehicle charging, Con Edison is an industry leader setting new standards for operational excellence.

Subject to changes and errors. The information given in this document only contains general descriptions and/or performance features which may not always specifically reflect those described, or which may undergo modification in the course of further development of the products. The requested performance features are binding only when they are expressly agreed upon in the concluded contract.