

# Landis+Gyr as Smart Partner of Utilities

**THE CHANGING UTILITY LANDSCAPE OFFERS UTILITIES AN HISTORIC OPPORTUNITY TO REVOLUTIONIZE THEIR BUSINESS MODELS, AS INNOVATIVE TECHNOLOGIES ENABLE THE INTEGRATION OF NEW ENERGY RESOURCES INTO THE GRID. THE INTERNET OF THINGS (IOT) HAS ALREADY BEGUN TO ESTABLISH AN AUTOMATED NETWORK OF INTELLIGENT AND INTERCONNECTED DEVICES THAT EXCHANGE, PROCESS AND GENERATE DATA, CREATING NEW OPPORTUNITIES FOR OPERATIONAL ENHANCEMENTS AND SERVICE OFFERINGS. THE PROLIFERATION OF DEVICES AND THE DATA THEY PROVIDE ENABLES A MORE EFFICIENT AND SUSTAINABLE UTILIZATION OF GRID ASSETS, AND PROVIDES THE FOUNDATION FOR A MORE RELIABLE ENERGY SYSTEM.**

While intelligence derived from new data enlightens utilities and helps streamline processes, upgrading grid infrastructure to make the best use of the information is still needed. These improvements will enable providers to offer intelligent services, dynamically control energy demand, and create solutions tailored to the specific needs of their clients, increasing customer engagement, satisfaction, and loyalty.

There is an increasingly complex framework of intersecting regulatory, business and consumer demands in the market, including the growth of distribution system operators and more competitive markets.

The consumers of tomorrow will expect new services that go beyond the traditional supply of kilowatt-hours, and utilities will need access to the latest communication technologies and consumption information. Big Data allows providers to create new offerings, providing consumers with enhanced solutions that help control and optimize their energy consumption.

To meet these changing requirements, utilities need an innovative and trusted partner who speaks their language; a partner who can help them develop new capabilities and allows them to meet the rapidly changing requirements of their markets.

Gridstream®, Landis+Gyr's comprehensive energy management solution, provides flexible components that can be tailored to meet the unique needs of utilities. The platform grows and adapts with their business model, helping deliver a more connected and sustainable future by empowering people around the world to embrace secure and reliable energy.

Landis+Gyr's mission is to be the partner of choice for utilities, providing the technology that enables them to manage energy better and paves the way for the smart energy revolution. As a leading provider of intelligent networks and distribution solutions, we offer unparalleled expertise and experience, including measurement and communication technology, Big Data analysis, resource management as well as customized solutions and services.



# Master of Metrology and Communication Technologies

TODAY'S ENERGY INFRASTRUCTURE MUST OPERATE WITHIN A FAST-CHANGING AND DYNAMIC ENVIRONMENT. THE GROWTH OF DISTRIBUTED ENERGY RESOURCES AND THE EMERGENCE OF NEW CONSUMER BEHAVIORAL PATTERNS HAVE CONTRIBUTED TO A SHIFT FROM ONE-DIRECTIONAL GRID INFRASTRUCTURE TO BI-DIRECTIONAL FLOWS. BY COMBINING INFORMATION, COMMUNICATION AND METERING TECHNOLOGY, SMART GRIDS OFFER THE FLEXIBILITY TO MANAGE A FAST-CHANGING UNIVERSE, WHILE ENSURING DATA PRIVACY AND SECURITY.

## LANDIS+GYR'S CAPABILITIES AND SOLUTIONS

With more than 25 years of experience in Advanced Metering Infrastructure (AMI), Landis+Gyr is the partner of choice for utilities, providing the technology and expertise to enable them to manage energy better.

Balancing increasing demand for service quality, control, and sustainability with a decades-old grid originally designed for one-directional energy flows is a significant challenge for utilities. Faced with numerous differences between existing and new network architecture, an evolving mix of power sources, and varied consumer preferences, providers continue to look for new network solutions at every voltage level.

Gridstream®, Landis+Gyr's proven, state-of-the-art, comprehensive Advanced Metering and Customer Intelligence solution, is designed to modernize the entire grid infrastructure. The Gridstream® suite ensures reliable energy management and full interoperability among network systems, meters, and communication technologies.

Compatible with all standard industry protocols, including G3 PLC, RF Mesh, IPv6 and cellular technologies, it can be used in networks in which numerous technologies are integrated and works effectively across deployments of all sizes, from a few thousand to more than 30 million. Gridstream® provides utilities with a flexible and efficient solution and unprecedented data granularity.

## Case

**netz**  
**BURGENLAND**

As one of the first utilities to implement Smart Metering in Austria, Netz Burgenland Strom has chosen Landis+Gyr as its partner for providing and deploying Smart Meters throughout its entire supply area. This will prepare Netz Burgenland Strom for the requirements of future energy management and will help its customers save costs on energy.

### NETZ BURGENLAND STROM

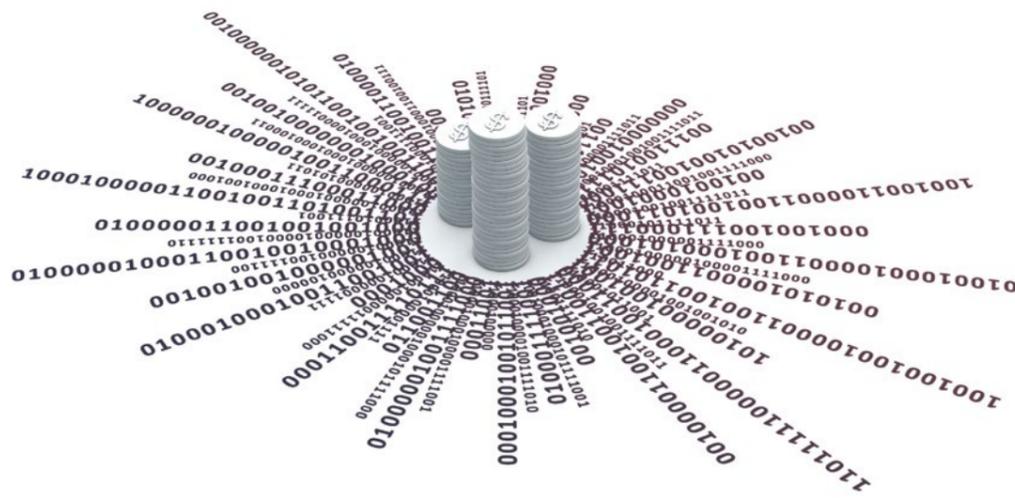
With more than 200,000 metering points in its network, Netz Burgenland Strom is among Austria's largest electricity Distribution System Operators (DSO). It is a fully owned subsidiary of Energie Burgenland AG.

### SMART METER ROLLOUT IN AUSTRIA

According to a decree of the Austrian Ministry of Economy, Family and Youth from 2012, at least 95 % of all Austrian households must be equipped with Smart Meters by the end of 2019. After a successful pilot in 2015 comprising the installation of 3,000 Smart Meters from Landis+Gyr, Netz Burgenland Strom started the mass rollout with the installation of another 17,000 devices in 2016. By the end of 2019, all 200,000 meter points will be replaced, hence allowing the DSO to fulfill the regulatory requirements in due time.

### LANDIS+GYR SOLUTION: FAST, RELIABLE, SECURE

For the Smart Meter rollout, Netz Burgenland Strom has chosen Landis+Gyr's Gridstream® solution based on G3 PLC communication technology. G3 PLC enables faster and more reliable communications in a Smart Grid infrastructure and flexible connectivity with new intelligent applications. It is highly resistant to disturbances and capable of adapting to changes in network conditions automatically. In addition to the E450 Smart Meters equipped with a consumer information interface, Landis+Gyr supplies data concentrators and a Head-End System (HES) to Netz Burgenland Strom. The solution will provide customers with access to information on their level of consumption and enable the utility to better plan energy supply, reduce surpluses and offer customers tariff packages tailored to their consumption behavior. The solution meets highest security standards for data transmission. Each device is equipped with an individual password, which ensures safe end-to-end encryption.



# Big Data Analyst

AS THE NUMBER OF SMART METERS DEPLOYED AND THE DATA THEY COLLECT CONTINUES TO GROW WORLDWIDE, UTILITIES HAVE BECOME INCREASINGLY DATA-CENTRIC COMPANIES. OVER AN INTELLIGENT NETWORK, DATA CAN BE COLLECTED, ANALYZED, AND USED BY UTILITIES TO IMPROVE GRID MANAGEMENT, ENGAGE WITH CONSUMERS, IMPROVE RELIABILITY AND SECURITY, AND CREATE NEW SERVICES AND OFFERINGS. THE GROWING UNIVERSE OF IOT WILL FURTHER BOOST THE POTENTIAL AND RELEVANCE OF DATA ANALYTICS.

## LANDIS+GYR'S CAPABILITIES AND SOLUTIONS

Data is the new currency, and Landis+Gyr's Smart Grid technologies are structured to capture it. Big Data, the IoT, and efficient analytic tools have become an integral element of future utility business models. Data-analytic solutions provide a competitive edge by supporting more efficient processes, improve infrastructure management and planning, and result in a more reliable power supply.

Landis+Gyr's Gridstream® analytics solution enables utilities to leverage existing Smart Grid investments and more efficiently plan and operate the grid of the future. Employing a bespoke technology platform, Landis+Gyr's comprehensive Advanced Grid Analytics applications harness the power of data to effectively respond to and meet the demands of a fast-evolving grid. Visualization and insights to help integrate and manage a growing fleet of distributed energy resources are a key benefit to the market.

Employing physics-based algorithms, the analytics platform identifies and resolves potential system bottlenecks and applies scenario analyses to perform forward-looking planning studies. As a result, Landis+Gyr's Gridstream® solution offers a toolbox for converting a data-intense network into actionable insights which are more efficient for utilities and their customers.

## Case



Landis+Gyr has been selected by CenterPoint Energy, Inc.'s electric transmission and distribution subsidiary to provide an Advanced Grid Analytics enterprise solution to manage distribution transformer loading that tracks performance and delivers proactive guidance for improved transformer Load Management.

### CENTERPOINT ENERGY

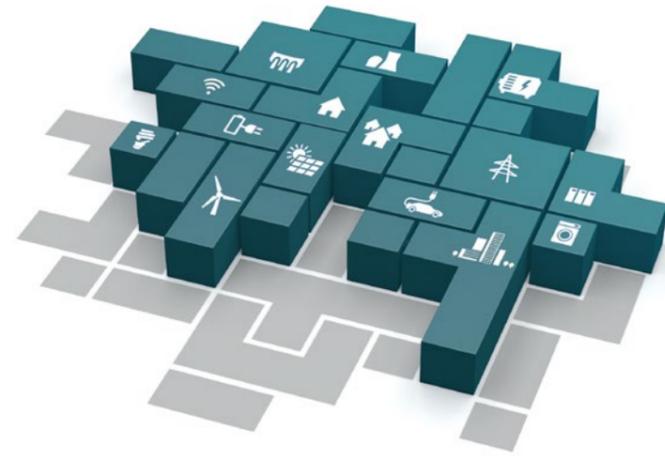
CenterPoint Energy is an electric transmission and distribution business serving a 5,000-square-mile electric service territory in the Houston, Texas, metropolitan area.

### MORE EFFECTIVE AND EFFICIENT GRID MANAGEMENT

CenterPoint Energy's objective was to replace its transformer management system with a solution offering more capabilities for improved reliability, operational efficiency and cost reduction. The requirements included identification of over- and underloaded transformers, as well as identifying other assets at risk of potential failure. The ability to utilize Advanced Metering and GIS data to geospatially visualize, and proactively identify, potential transformer failures to reduce the number of unplanned outages was an important factor. Besides quickly identifying and localizing outage risks, the utility aimed to reduce costs by actively addressing stressed assets through analytics-aided planning and proactive asset maintenance strategies, thereby improving reliability, grid performance and extending the life of assets.

### LANDIS+GYR SOLUTION: MATURE, RELIABLE, RESPONSIVE

Landis+Gyr replaced CenterPoint Energy's legacy transformer management system with its latest Advanced Grid Analytics Asset Loading application. Offering system-wide visibility of asset health, loading and performance, the application provides CenterPoint Energy with insights and tools that can be utilized by various departments inside the organization. Analyses of data from CenterPoint's 2.4 million meters across the grid increase the distribution operator's efficiency and empower CenterPoint Energy to develop proactive asset management strategies to enhance service levels and better meet customer needs. The ability to conduct loss-of-life calculations enhances economics-based decision-making for replacement, proper sizing, and location of transformers. By identifying, visualizing and monitoring changes across the grid as they occur, the advanced data analytics functionalities help CenterPoint Energy optimize grid management and realize added value.



# Provider of Customized Solutions

**THE IOT UNLOCKS HUGE POTENTIAL IN THE WAY CONSUMERS EMPLOY TECHNOLOGY AND DATA, INCREASINGLY CONNECTING SMART CITIES, BUILDINGS AND DEVICES. DISTRIBUTED ENERGY RESOURCES (DER) WILL REQUIRE INNOVATIVE ADVANCEMENTS IN ENERGY MANAGEMENT AND OPTIMIZATION. CONSUMERS INCREASINGLY EXPECT PROVIDERS TO SUPPLY THEM WITH PERSONALIZED GUIDANCE ON HOW TO SAVE ENERGY WHILE OPEN MARKETS AND NEW POWER SOURCES WILL STIMULATE DEMAND FOR RESILIENCY AND MORE TAILORED SERVICES.**

## LANDIS+GYR'S CAPABILITIES AND SOLUTIONS

To meet the unique needs of its customers, Landis+Gyr has developed a suite of technologies and solutions that enable utilities to embrace the wide-ranging opportunities that will come with data analysis and communication technology, including automatized systems that create a variety of new technical and commercial strategies for DSOs.

DER supply the grid with information as well as electricity, creating new opportunities for products, efficiency gains, and cost savings, while providing utilities and their customers with greater flexibility.

Landis+Gyr's Gridstream® solution provides utilities with a wide range of flexible and scalable products: AMI solutions offer unprecedented access to energy usage data in real time; Distribution Intelligence solutions allow utilities to operate and control assets more efficiently; and Customer Intelligence solutions provide the tools for utilities to engage with their customers more effectively. Collectively, these solutions help utilities to enhance their services and better meet the specific needs of their customers.

## Case



At the end of a government solar bonus incentive scheme, New South Wales households and businesses with small-scale solar systems were facing a significant change to the benefits on offer through their solar systems. In partnership with Landis+Gyr, Acumen Metering rolled out a new Smart Meter, designed to maximize benefits for Origin Energy's customers, both before and after the scheme ended.

### ACUMEN METERING

Acumen Metering is accredited by the Australian Energy Market Operator (AEMO) as a metering services provider and is fully owned by Australia's leading energy retailer, Origin Energy. It delivers market-leading electricity and water metering services.

### SUPPORTING SOLAR PROSUMERS IN AUSTRALIA

The solar bonus incentive scheme provided a defined feed-in tariff for eligible customers with small-scale solar or wind generators connected to the grid, for a fixed period that ended in 2016. To continue generating and using solar power in the home and export excess power to the grid, customers with gross metering were usually better off switching to net metering. Origin Energy offered to upgrade its customers to Smart Meters to implement this change.

### LANDIS+GYR SOLUTION: FIRST OF ITS KIND

Landis+Gyr developed a tailored Smart Metering solution for Acumen Metering that enabled a seamless automatic transition from gross to net metering and still allows the solar system generation to be separately measured. Unlike other options in the market, where two meters were required, Landis+Gyr's solution consists of a single, innovative Smart Meter that measures both gross and net household energy use, including hot-water energy consumption and solar generation.

In addition to protecting its customers' solar investment, the solution provides Origin Energy with the tools to increase consumer engagement, by offering timely and granular insights to customers on their energy usage and generation.



# Transformation Enabler

**AN INCREASINGLY DYNAMIC AND DECENTRALIZED ENERGY SYSTEM WILL REQUIRE UTILITIES TO EVOLVE EXISTING WAYS OF DOING BUSINESS AND PROVIDES OPPORTUNITIES FOR NEW OFFERINGS. SYSTEM OPERATORS PLANNING TO UNDERTAKE STRATEGIC INVESTMENTS IN NEW TECHNOLOGIES AND ASSETS WILL NEED TO SELECT PARTNERS WITH A CLEAR VISION OF HOW THE FAST-CHANGING TECHNOLOGY LANDSCAPE WILL DEVELOP.**

## LANDIS+GYR'S CAPABILITIES AND SOLUTIONS

Landis+Gyr's comprehensive portfolio of scalable Smart Grid products and services helps utilities transform their business models and prepare for a more decentralized and connected future. Covering a wide range of hardware and software solutions, Landis+Gyr provides utilities with measurement, network communications, grid monitoring, resource management and analytics tools, as well as products to meet customers' tailored requirements.

Landis+Gyr's Gridstream® solution harnesses the power of data to effectively respond to current and future challenges, delivering the tools for users to leverage their investments more effectively. Thanks to its flexibility, advanced grid infrastructure, analytics, and software solutions can be gradually integrated within a utility's existing infrastructure or hosted within the cloud and delivered as a stand-alone service.

Gridstream®'s versatile, scalable, and interoperable features offer customer-tailored solutions for Smart Grid operations. These include a modular, intuitive, web-based interface, allowing utilities to optimize grid performance and asset management, while improving customer service and integration. Landis+Gyr's smart solutions also enable utilities to manage DER and battery storage assets more effectively, two developing trends which will be particularly important in the future.



## Case



Salt River Project (SRP) partnered with Landis+Gyr to deploy a communication platform that supports Advanced Metering, adds two-way communication to its legacy prepayment system, implements prepayment functionality at each AMI meter over the air, and supports other Smart Grid applications. Today, more than 150,000 SRP customers in Arizona use the meter-driven prepayment system from Landis+Gyr to monitor, manage, and pay for electricity.

### SALT RIVER PROJECT

SRP is the third-largest public power utility in the US, serving more than 1 million customers in the greater Phoenix metropolitan area.

### PREPAYMENT PIONEER

In the 1990s, SRP launched a highly successful prepayment program to help its customers save both money and energy. The award-winning program quickly grew into the country's largest prepayment program. In order to keep pace with changes in the industry, such as increasing distributed resources and the integration of renewables, and to provide customers new services and more options for energy management, SRP was seeking a solution for modernizing its prepayment infrastructure.

### LANDIS+GYR SOLUTION: FOCUS ON CUSTOMER EXPERIENCE

Landis+Gyr's smart prepayment solution utilizes the Advanced Metering, two-way communication platform as the backbone. Smart Meters that contain edge computing capability and applications provide the logic and communication needed to support the prepayment program. An in-home display terminal offers real-time access to usage, source and cost of power as well as account balance.

Thanks to the multi-purpose connected communication platform, SRP can provide its customers with a growing list of services, such as outage and restoration e-notifications, and flexible billing options that help retail customers save money and match household budget, lifestyle and energy use needs. In addition, SRP is offering a load control program that includes programmable communicating thermostats and load control switches. Some program participants are also using a demand manager application developed by Landis+Gyr that can automate Load Management actions for customers on demand rates. SRP continues to lead with innovative energy management options for its consumers.

OUTLOOK



# Paving the Way for a Smart Society

LANDIS+GYR'S BEST-IN-CLASS TECHNOLOGY PORTFOLIO, EXTENSIVE EXPERTISE AND LONG-RUNNING RELATIONSHIP WITH UTILITIES AROUND THE WORLD, POSITION THE COMPANY IDEALLY TO HELP UTILITIES MEET THE CHALLENGES OF A RAPIDLY EVOLVING ENVIRONMENT. THROUGH ITS EXTENSIVE RESEARCH AND DEVELOPMENT ACTIVITY, LANDIS+GYR IS BRINGING TO MARKET THE TECHNICAL INNOVATIONS THAT WILL BECOME THE FOUNDATION OF NEXT-GENERATION ENERGY SOLUTIONS.

**LANDIS+GYR**

As the global leader in Advanced Metering and Smart Grid services, Landis+Gyr plays a key role in creating a better quality of life for all people by contributing to a thriving, healthy society that manages energy more efficiently while also protecting our environment.

The Company has the technology and intelligence to measure, analyze, manage, and optimize energy supply and demand, enabling the integration of renewables and battery storage solutions, which will play a crucial role in our future energy systems.

For more than a century, Landis+Gyr has helped the world manage energy better, providing utilities with the technology to create the grid of the future. Smart Devices, Smart Buildings, and Smart Cities will create a wealth of new business opportunities across the value chain, while the IoT, real-time data management, and predictive analysis will improve grid reliability and efficiency by including diverse sources of information. An increasingly virtual grid architecture, bi-directional communication, and open standards that enable programmatic marketplaces will be the key elements to meet the changing expectations and evolving needs of consumers in the twenty-first century.

## Case



In the largest Intelligent Grid project worldwide, TEPCO is deploying Landis+Gyr's Gridstream® solution, building the world's largest IoT utility network. The open-standards approach chosen meets the highest requirements with regard to interoperability, scalability, and security.

**TOKYO ELECTRIC POWER COMPANY (TEPCO)**

TEPCO is the largest electric utility in Japan and the fourth-largest in the world. The utility brings electricity to over 27 million service locations in the greater Tokyo area, serving more than 45 million people.

**CONNECTING THE MODEL MEGACITY**

One of TEPCO's top priorities is to deliver services that promote efficient energy use by its customers, while transforming itself into a future-oriented infrastructure company that contributes to a safe and comfortable Smart Community. In pursuing this vision, TEPCO aims to establish a new electricity business model in response to Japan's efforts to reform its electricity system. For example, deregulation of the Japanese electricity market requires all meter reads for customers utilizing an alternative retailer to be pushed to a common portal every 30 minutes, allowing the energy retailers near-real-time access to customer data.

**LANDIS+GYR SOLUTION: 1.3 BILLION INTERVAL METER READS PER DAY**

Landis+Gyr's communication network and grid management technology supports multiple Smart Grid and Smart City initiatives at TEPCO. Key functionalities include the ability to operate 6.5 million demand response requests per hour to address such issues as surplus electricity countermeasures, night-time demand creation, demand shift, solar energy output control, battery storage as well as incentivized demand response. Driving this connected platform is Landis+Gyr's IPv6 multi-technology network, which connects utility and consumer devices using RF Mesh, G3 PLC and cellular communications, providing Wi-SUN-compliant connectivity to each installation. In April 2017, the milestone project surpassed 10 million advanced meters and devices installed. Upon completion expected for 2020, or even earlier, the TEPCO deployment will include more than 27 million devices transmitting 1.3 billion interval data packages daily, all processed by Landis+Gyr's Head-End System (HES) and Meter Data Management Solution (MDMS).

