Itron Analytics
Maximize the Full Value of Your Smart Grid
The ultimate goal of the smart grid is to ensure safe and reliable delivery of energy. Building your smart grid infrastructure is just the first step in improving the way you manage and deliver energy. Operational analytics are key to achieving that goal, but do you have an analytics strategy and a plan for reaching the full potential of your smart grid investment?

Market forces and new technologies are driving utilities to transform their operations and business capabilities. An increasingly interactive grid, rising public expectations and utility accountability, a retiring workforce and faster outage restoration are just some of these factors. To adapt, utilities must embrace new technologies and strategies that will improve grid intelligence and employee productivity for a diverse set of objectives.

Itron’s solution, built on a complete data lifecycle infrastructure, provides data essential to understanding your distribution grid and optimizing your investments and quality of service. We extend our proven hardware and software platform with an analytics solution that is robust enough to meet your current analytic needs, but flexible enough to evolve with your business.

Using Itron’s decades of experience in metering, utility operations, distribution systems, data management, technology partnerships and innovation, we are proud to deliver Itron Analytics, a suite of analytic software applications. In conjunction with Itron consulting services, utilities now have an end-to-end toolset that enables efficiency and optimization.

Your utility may be closer to operating in the smart grid than you realize.

Utilities are implementing systems with the potential to collect more information than ever before. Until recently, a significant volume of critical systems information was collected via SCADA systems and related to sections of the system above the transformer level. Data below the transformer was usually limited to lower resolution metering data, for a very limited number of data types and for billing purposes.

SCADA systems are only one of many data sources that a utility can leverage for analytic purposes. Customer Information Systems (CIS) may already contain large amounts of information that go way beyond basic billing, such as customer demographics and premise construction details. GIS systems have long played a key part in utility business processes, and meter data management systems can provide billing quality data where such validated and estimated data is beneficial. Over time, the majority of utilities have accumulated a significant history of these different data types, and these can all be extremely useful types of data when using Itron Analytics.

The technology now exists for utilities to collect highly detailed information right down to the point of delivery. This was not previously possible due to technology constraints and limited business drivers to justify investments and data collection. Using new data from smart meter systems, and combining it with the data that utilities likely already have, means that utilities can see the benefits of analytics in their systems much sooner than they may realize.
RISING TO THE CHALLENGE: ITRON ANALYTICS

Itron Analytics supports the complete data intelligence lifecycle and helps utilities reach a state where predictive analytics enable more proactive management strategies and optimization. Through a combination of both software and services such as Energy Diversion Detection, Forecasting, Power Quality, Transformer Load Management, Energy Efficiency and Demand Response, Financial Analytics and Data Analysis, utilities are given the tools to gain valuable insight into their operations.

Energy Diversion Detection

With the advent of smart meter deployments, utility operations staff loses a vital resource: the meter reader’s eyes and ears on the street. Itron’s Energy Diversion Detection module includes algorithms, data filters and pattern detection capabilities to identify meter tampering and service bypass conditions all in the back-office.

This module also includes capabilities to route investigations to the field and track and report on the results of such investigations so that operators can continually learn and refine their filters and algorithms over time to improve success rates.

- Identify energy and revenue losses across distribution grid, from feeder to meter
- Utilize AMI data and data from other sources to pinpoint theft
- Decipher and prioritize tamper messages and patterns
Smart Grid Forecasting
A variety of emerging technologies and utility programs are creating a more dynamic load environment at the distribution feeder level. Optimization of grid operations increasingly calls for predictive analytics that account for these changes as well as weather and other factors that impact customer loads. Itron’s Smart Grid Forecasting module generates forecasts of all the important elements. Built on our industry-leading transmission zone forecasting platform, the system is automated to continuously incorporate the most recent information.

- Forecast total customer usage at the feeder or substation level
- Forecast net usage reduced for distributed generation, such as roof-top solar
- Estimate demand response available at the facility level
- Forecast usage for new technologies, like plug-in electric vehicles

These forecasts can be routed to Distribution Management Systems and Demand Response Management Systems to support grid optimization. You can rely on Itron predictive analytics to replace reactive processes with proactive management as each day evolves.

Voltage Monitoring
Power quality is becoming an increasingly critical factor for the utility industry. Customers’ needs are changing, distributed energy generation is more and more prevalent and utility-owned alternative energy sources are growing more diverse in nature and geographic location. These are just some of the factors pushing the utilities toward a more proactive approach to guarantee quality power.

Itron Analytics continually monitors voltage at every delivery point in the distribution network, allowing analysts to evaluate and understand the impacts of this changing landscape. Trends can be monitored and system improvements developed with a holistic approach using measured data, rather than reacting to individual customer complaints or relying solely on system models.

The Itron Analytics Power Quality module enables utilities to:

- Proactively monitor delivery voltage throughout the network
- Understand the impacts of DER for planning and operations
- Further improve energy delivery quality
- Assess cost-effective solutions to problems
- Maximize system operational efficiency
Conservation Voltage Reduction

Conservation voltage reduction (CVR) has existed for many years, and new equipment and technologies have made the benefits of CVR more attainable than ever. However, CVR programs often require equipment investment and significant planning for optimal placement and calibration. Itron Analytics plays a critical role in ensuring that this investment is targeted to deliver the highest return on investment and operated at optimal levels.

The Itron Analytics Power Quality module assists utilities in both executing and monitoring CVR program performance. Analysts are provided the tools to identify the most cost-effective CVR candidates and provide insight into potential solution alternatives. Once implemented, delivery voltages are continually monitored and equipment calibrated to ensure optimal voltage is delivered to every endpoint on the feeder. The solution enables utilities to obtain significant energy and peak demand savings while ensuring customers are provided the high quality of service they demand.

Outage Monitoring and Performance Reporting

» With more frequent and powerful storms, utilities have a renewed focus on improving power reliability and being as efficient as possible with restoration efforts. Using Itron Analytics, operators can monitor and report the exact times of service interruption at each system endpoint and use results to measure improvement in restoration time from automated distribution processes. Operators can also track and report on key performance indicators according to feeder, substation and service territory.

- Receive advanced notification about line voltage drop due to high usage
- Monitor outages through discovery of loose connections and maintenance needs
- Resolve outages faster
- Improve response to customer inquiries
- Gain remote access to granular, near real-time information about the overall operation of the distribution system
- Create reports of industry-standard performance indicators such as SAIFI and CAIDI

Transformer Load Management

Changing weather patterns, aging infrastructure and increased adoption of electric vehicles and other new technologies are creating new challenges for utilities to sustain power reliability and effectively manage distribution assets. The Itron Analytics Transformer Load Management module utilizes smart meter data and actual weather models to continuously monitor and analyze distribution transformer loading levels and report on asset health at a scale never before possible. Loss-of-life calculations are performed to assist planners in effectively allocating capital for proactive transformer replacement where necessary. Transformer Load Management also includes what-if-scenario analysis capability so that operators can accurately predict the impact that new loads, such as electric vehicles, will have on transformers.

- Provide up-to-date load detail
- Identify unanticipated load increases
- Evaluate transformer sizing using loading history and peak seasonal loads
- Identify over-utilized, under-utilized and at-risk transformers

Energy Efficiency and Demand Response

Energy efficiency and demand response analytics-related software and services help utilities identify those customers that are the best candidates for energy efficiency and demand response programs. By combining smart meter usage and demand data with weather, third-party customer and facility information, it is possible to identify those customers that will benefit the most from implementing energy efficiency and demand response measures. Utilities therefore have the ability to monitor and report on the performance of such programs. In addition to improved customer satisfaction, utilities can also realize substantial capital cost benefits by targeting areas in their network that are capacity constrained.

» Identify and target customers to participate in energy efficiency and demand response programs
» Reduce capacity constraints on your network
» Improve customer satisfaction
Financial Analytics

Smart metering data provide the foundation for a variety of improved financial analytics. Currently, utility financial analysis is clouded by the irregularities of billing cycles, off cycle reads and billing adjustments. This translates into lack of clarity about where the business stands and what the numbers should be at the close of each month and quarter. With Itron Financial Analytics solutions, you can eliminate this source of uncertainty by replacing complex estimates with direct measurements.

» Calculate hourly, daily and calendar month sales for each customer class
» Calculate unbilled sales and revenue for each class
» Implement daily tracking of measured outcomes against budget forecasts
» Calculate technical and other system losses
» Calculate supplier obligations in competitive markets

By using smart metering data and Itron’s Financial Analytics solutions you gain improved clarity, allowing utility executives to report results with greater confidence and certainty.

Data Analysis and Consulting Services

Itron includes both technical and consulting services to ensure our utility customers realize the full value of their analytic solutions. Itron’s skilled technical consultants help setup the system by completing data mapping and integration services, system testing and go-live support. After the system is operational, utilities can use Itron’s consultants’ expertise to:

• Build forecasting models
• Fine tune analytic filters
• Build custom queries, reports and alerts
• Train your organization to transfer these skillsets and knowledge internally
• Design programs to respond to reliability issues
• Assess energy efficiency measures across the customer portfolio
• Measure and verify program impacts
• Determine whether energy and demand savings goals have been achieved
FAST DEPLOYMENT AND TIME TO VALUE
Itron Analytics for smart grid is offered as a Software as a Service (SaaS) solution and can optionally be delivered within your utility IT environment. Itron’s SaaS-based approach helps utilities realize value quickly and at the same time supports scaling deployments at a pace that is comfortable.

END-TO-END SMART GRID SOLUTION
Itron Analytics is pre-integrated with Itron’s market leading smart grid solutions to reduce risk, lower implementation costs and provide faster time to value. With this integration, Itron provides utilities with a complete smart grid solution including meters, networking, data collection, data management and services. To further intelligence and insight, Itron Analytics includes analytics tailored to leverage the unique voltage sensing and alarming capabilities included in Itron’s smart metering solutions.

Itron Analytics for smart grid also includes data integration adapters which integrate to third-party systems such as GIS, workforce management, SCADA, OIS systems and third-party AMI and MDM systems.

MAKE THE SMART MOVE TO ITRON ANALYTICS
Utilities are now faced with more rapid change and increased expectations than almost any other time. The grid is becoming more participatory (two-way), there are ongoing increases in the reliability, service and engagement level that customers expect, and regulators are awaiting results from smart grid investments.

Itron’s years of industry insight and experience, combined with our Itron Analytics solution and consulting services, will provide you with the cutting-edge analytic capabilities of today and prepare you for the emerging priorities of tomorrow.
Itron is a global technology company. We build solutions that help utilities measure, manage and analyze energy and water. Our broad product portfolio includes electricity, gas, water and thermal energy measurement and control technology; communications systems; software; and professional services. With thousands of employees supporting nearly 8,000 utilities in more than 100 countries, Itron empowers utilities to responsibly and efficiently manage energy and water resources.

Join us in creating a more resourceful world; start here: www.itron.com