Improving Financial Analysis with Smart Meter Data

Unlocking the Power and Value of Interval Data

USES OF INTERVAL DATA

Rates

Load Research

Forecasting

Weather Adjustment

Variance Analysis

Financial Closing

End-Use Analysis

Generation Planning

Technology Analysis

Market Settlements

Distribution Planning

Utility DR & EE Programs

Improve financial analysis and planning processes with accurate and timely smart meter data

THE POWER AND VALUE OF AGGREGATED PROFILE DATA

Accurate and timely smart meter data can be used to improve a variety of utility processes in the areas of financial analysis, load research, forecasting and planning. To unlock the power and value of these data, we need to know how each customer is financially connected to the utility and other important customer characteristics. Once these data are combined to generate customer segment profiles:

» Financial analysts can improve variance analysis methods and financial closing calculations

» The rates department can proceed in rate cases with accurate load shapes by rate class

» Forecasting teams can improve modeling methods and accuracy

» Demand Response program managers can see what program participants did on recent days

» Technology analysts can see loads for customers with new technologies, like rooftop solar

» System Planners can see load profiles for different types of customers and end-use technologies

» Generation Planners can understand the impact of wholesale and retail customer choice

» Retail market operators can calculate the obligations of energy suppliers

To support these outcomes, it is necessary to aggregate customer usage data into segment profiles. This is the central function of Itron's Financial Analysis application, which is designed for efficient, reliable and flexible aggregation to provide utility analysts with the data they need when they need it.

INGREDIENTS FOR INTERVAL DATA AGGREGATION

Interval Data. The first key ingredient is interval data for the population of smart meter customers. This is usually 15-minute data, which measures energy consumption four times per hour. These data can be captured directly from the data collection system, so there is no need to wait for MDM systems to import and organize the data.

Financial Connectivity. For many types of analysis, it is necessary to aggregate data based on financial relationships. Financial connectivity allows usage profiles to be calculated and analyzed by rate, revenue class, jurisdiction, utility program participation status and energy supplier.

Technology Ownership. New technologies, like rooftop solar, electric vehicles and energy storage are posing new analysis and planning challenges. Ownership indicators or special studies are used to develop segment profiles for customers who have acquired these new technologies.

Customer Characteristics. Market segments can be defined based on a variety of customer characteristics, such as building type, housing type, building vintage, end-use ownership and climate zone. Profiles for these segments are used to support utility program design, targeting and evaluation.

The Financial Analysis application provides a flexible framework for defining and maintaining customer metadata, allowing data aggregation in all the important dimensions. These results are then available to users and downstream applications.
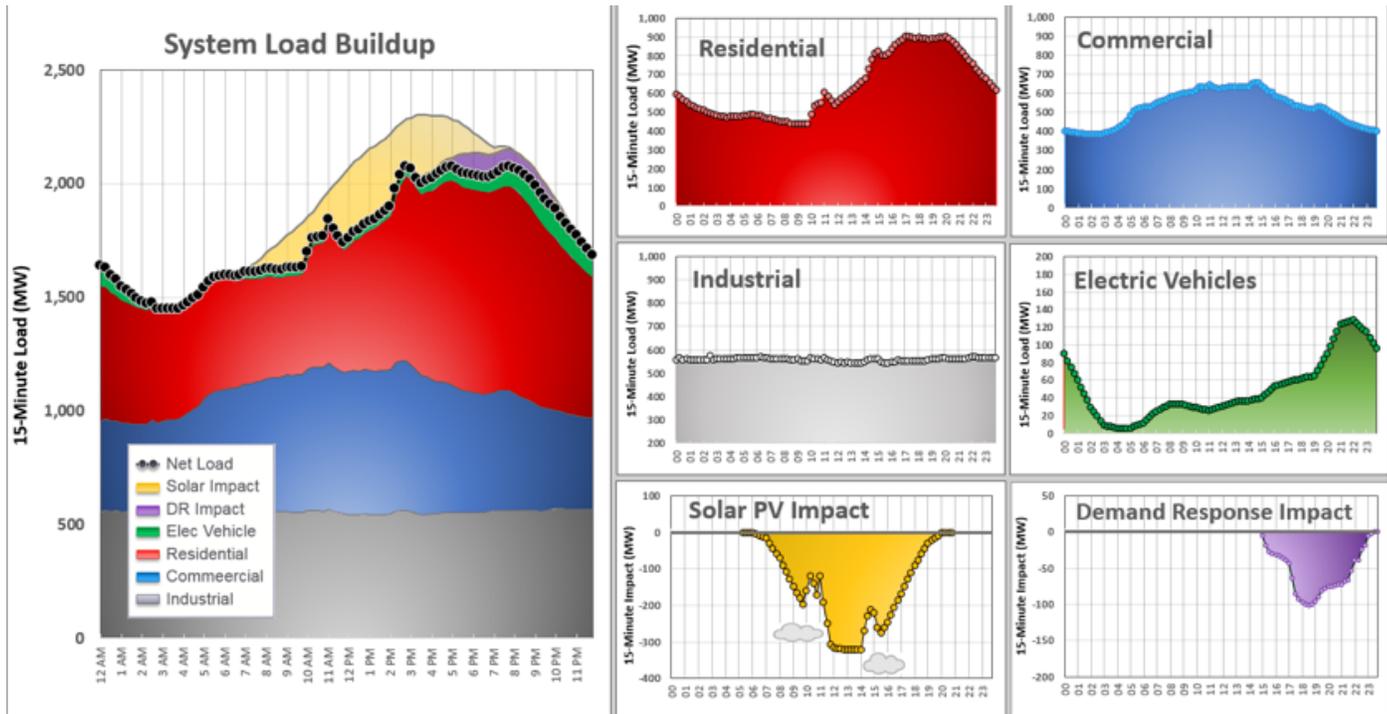
Smart meter data show how usage patterns, technologies and programs drive system loads

UNLOCKING THE POWER AND VALUE

For some applications, the power and value of segment profiles is in the profile data itself. For other applications, power and value come from improved accuracy and clarity of analysis processes. The Itron system provides a solution to support the following use cases:

Load Research and Rate Cases. Rate cases require load profiles to determine maximum demands and loads at the time of system peaks for different types of customers. In the past, these demands have been estimated based on small statistical samples. With smart meter data, these calculations are based on the actual measured demands of the customer population. This provides a highly accurate basis for cost allocation and rate calculations, which translates into increased certainty about how rates will translate into revenue.

Sales and Revenue Forecasting. Most financial forecasting processes are currently based on monthly billing data. These data are complex since they represent energy usage for a set of staggered billing cycles covering different parts of the calendar. This complexity creates fuzziness in the modeling process and therefore increased uncertainty in the forecasts. By using more granular data, daily usage can be aligned directly with daily weather, providing improved modeling power. The result is a significant increase in clarity and visibility.

Weather Adjustment. It is a common practice to adjust historical sales and peaks for deviations between actual and normal weather. Segment profiles provide a strong foundation for these calculations, supporting accurate and robust weather adjustment processes. The result is improved clarity about daily and monthly outcomes as well as year-over-year growth rates, providing a better understanding of the direction the business is headed.

Variance Analysis and Financial Reporting. Variance analysis is a standard business practice that involves a backward look at the prior month or quarter and analyzes the difference between actual results and the budget forecast. Improved models and weather adjustment methods based on segment profiles provide better definition of the sources of variation, resulting in improved clarity and accuracy for financial reporting.

Daily Budget Tracking. Budget tracking process can be implemented on a daily basis using more granular smart meter data. As each day passes, the results for the prior day can be processed and compared to daily budget values for each revenue class. Then, expected daily results to the end of the month can be forecasted for each class, providing a strong gain in visibility for the monthly financial close.

End-use Technology Analysis. New technologies (like rooftop solar, electric vehicles and energy storage) are significantly impacting system load shapes. Aggregated smart meter data at the technology or whole-house level can be used to identify or validate the impacts of these technologies. This is the first step to understanding how system loads will look in the future.

Utility Program Impact Analysis. Usage profiles for utility program participants can identify the load impacts of demand response and pricing programs. Load profile data give program managers immediate feedback on the behavior of participants and non-participants on a day-by-day basis.

System Planning. System planning must account for customer growth, changes in end-use consumption patterns and the impact of new technologies. Aggregated smart meter data help planners understand the composition of customer loads and anticipate the impacts of new technologies as they penetrate the customer population.

System Loss Factors. Aggregated customer load data provide a bottom-up measurement of customer loads at the meter. SCADA data provide a top-down measurement of net generation at the system level. The difference is losses and unmetered loads. With smart meter data, hourly loss factors can be calculated directly and can be used in place of less granular engineering estimates.

Market Settlements. In competitive markets, it is necessary to aggregate usage data by energy supplier. These calculations are required to ensure that all suppliers meet their obligations to provide or pay for the energy that their customers have used.

These are some of the uses of load profiles calculated from smart meter data. They all rely on smart meter data for individual customers and metadata on customer characteristics and financial connectivity. The Itron Financial Analysis application is specifically designed to support the required data integration and calculation processes.

ITRON GRID ANALYSIS APPLICATIONS

In addition to Financial Analysis, Itron provides a suite of applications that deliver additional grid-related outcomes, including transformer and circuit loading, voltage and reliability analyses, outage detection and revenue assurance. To learn more about these applications, visit our analytics page.

CONSULTING SUPPORT

Itron consultants and data analysts have the experience and knowledge to help you take full advantage of smart meter data flows. Aggregation of the data is a critical first step. Using the aggregated data effectively is the second step and communicating the results and benefits is the third step. We have worked through these steps with many utility companies, and we have helped them improve existing processes and implement new processes that are enabled by the data. Depend on Itron consultants and data analysts to help you get a fast start in the right direction.

THE BOTTOM LINE

A wide variety of operational and financial analysis processes benefit from aggregation of accurate and timely smart meter data. The Itron Financial Analysis application provides these data flows through a scalable and flexible platform. Use this Software as a Service platform to get the data that you need to the people who need it, when they need it. Partner with Itron to start these valuable data flows and configure downstream processes that maximize the value and power of the data.

Contact us to learn how Itron can help you get power and value from your smart meter data.

Join us in creating a more **resourceful world**.
To learn more visit **itron.com**

CORPORATE HQ

2111 North Molter Road
Liberty Lake, WA 99019 USA

Phone: 1.800.635.5461
Fax: 1.509.891.3355