



# Load Research System

## WELCOME TO THE NEW WORLD OF LOAD RESEARCH.

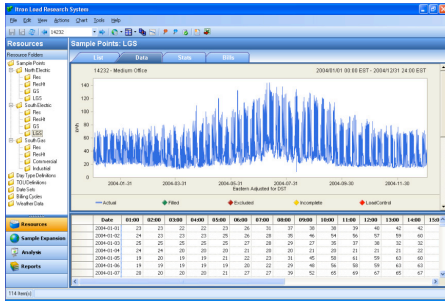
Designed from the ground up and based on Microsoft Windows®, Itron's Load Research System (LRS) puts the load research data you need at your fingertips.

Load data is a key asset in determining how and when utility customers use energy. Across today's utility, there is a growing need to improve processes, such as rate design, load forecasting, distribution system planning, customer relationship management, and energy efficiency programs. In retail markets, there is an ongoing need to develop load profiles to support market settlements processes. Load research is a key input to these processes.

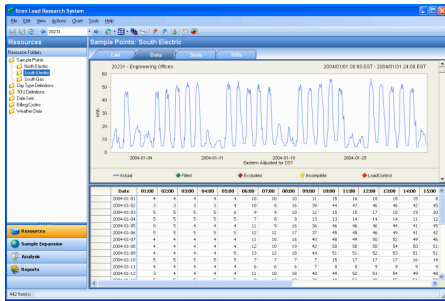
Traditional users are found in rates, marketing, customer service, and load forecasting departments, but more diverse needs for solid, actionable load research data are emerging in system planning, distribution system operations, demand side management, wholesale procurement and customer care.

Itron's Load Research System automates and streamlines the complex process of sampling and analyzing large quantities of load data. With its advanced graphical interface, users can design, track and maintain load research samples and estimate customer load profiles with exceptional accuracy and confidence.

> Examples of Data Views available in LRS



One year of hourly data



One month of hourly data

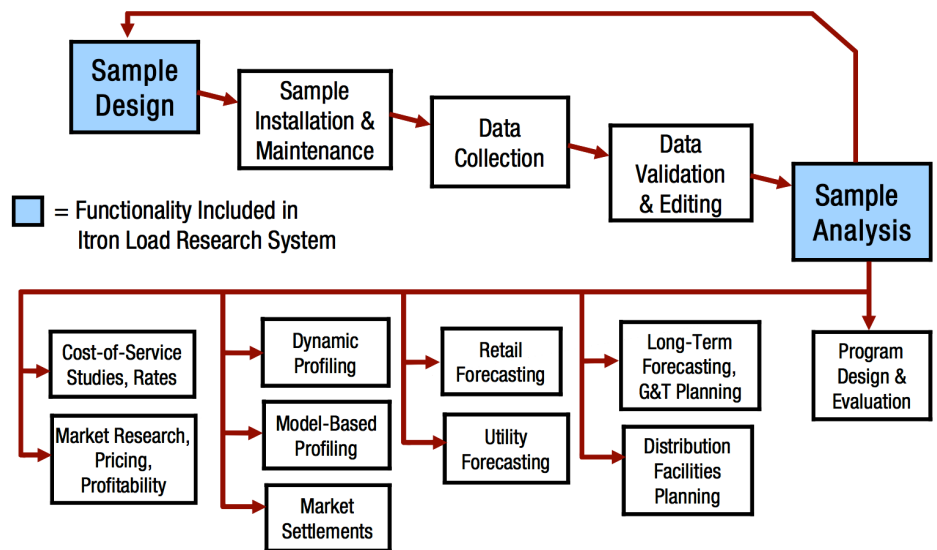
Using LRS, utilities can:

- » Understand usage patterns to meet customer needs and regulatory requirements
- » Provide accurate class profiles to strengthen forecasting and analytic processes
- » Optimize use of generation, transmission and distribution assets
- » Design programs to manage system load growth

Load research data is interval data (daily, hourly, sub-hourly) for a statistical sample of customers. Sample data are used to estimate load profiles for customer segments.

Load research information touches numerous business functions across electric and gas utilities, including:

- » Rates and pricing
- » Forecasting
- » Load management and energy efficiency
- » Distribution system planning
- » Generation and transmission system planning
- » Marketing and product development
- » Load profiling and baseline calculations
- » Competitive market settlement calculations



Itron has developed LRS to streamline and automate the load research process. LRS is a client/server system that uses Microsoft SQL Server or Oracle as the relational database. Configuration data, customer usage data, calculation settings, and results are all stored in the database. The modern user interface allows the user to organize inputs and outputs in user-defined folders and subfolders.

LRS is easy to use. The rich user interface allows analysts to quickly identify and fix data problems. A full set of automatic reports and graphics supports the analysis process. Combining all of these features, LRS allows load research analysts to generate accurate results quickly and with confidence.

## FUNCTIONALITY

LRS is a modern tool used to develop efficient statistical samples and to estimate customer load profiles with the greatest possible accuracy and confidence.

System components include:

### » Sample Data Analysis

- Visual inspection, statistics reports
- Simple validation and manual editing
- Screen data and mark intervals for exclusion

### » Sample Expansion

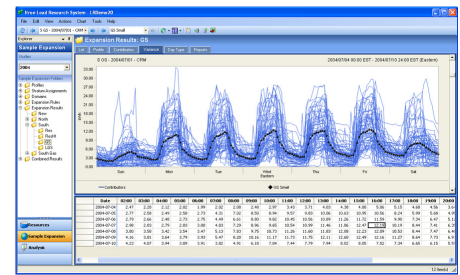
- Mean per unit and ratio methods
- Domains analysis for user-defined domains
- Estimate population averages and totals
- Flexible settings to control the method
- Quick drill downs to fix problems

### » Analysis of Expansion Results

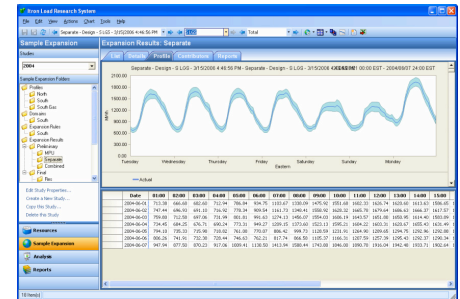
- Combine and compare sample expansion results
- Aggregate and calibrate to system totals
- Analyze load/weather relationships
- Statistical modeling of sample expansion results (in MetrixND)
- Weather normalization of sample expansion results (in MetrixND)

### » Sample Design

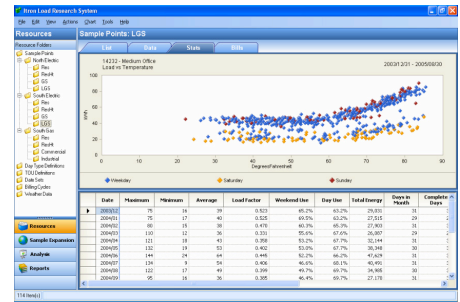
- Design Load Research samples
- Mean per unit and ratio methods
- Track and maintain samples



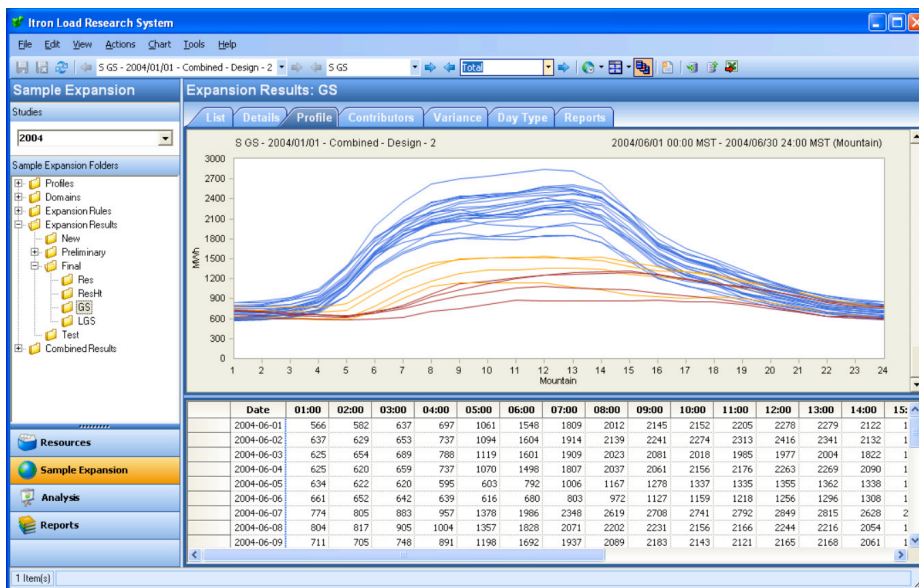
Sample loads and stratum average



Hourly profile and confidence bands



Daily usage vs average temperature



LRS User Interface

LRS graphics are amazing. They are easy to use and tell a great story! A graphic depiction of a thousand data points is worth its weight in gold.

## BENEFITS

LRS is designed to simplify load research processes, reduce data collection and analysis costs and improve analysis accuracy. The graphical user interface allows analysts to view input data and estimation results in a variety of powerful statistical views, providing improved capability to detect and resolve problems and increased confidence in the final results.

The main benefits of the system are:

- » Reduced cost through the design and implementation of efficient samples
  - Optimize sample precision or minimize cost
  - Track precision and know where to put additional points
- » Improved performance through the use of forward looking technology
  - Replace outdated legacy systems with .net technology
  - Streamline analysis and business processes
  - Supports automation of standard processes
  - Provides quick turn around for ad hoc analysis
  - Designed to reduce learning curve and minimize training time

- » Increased accuracy and confidence
  - Superior graphical interface and analysis capabilities
  - Data visibility and diagnostics provide confidence in analysis results
  - Powerful diagnostics and statistical graphics designed for analysts
  - Flexible reporting and exporting of inputs and statistical results
  - Dedicated support and commitment to ongoing enhancements
- » Integrated with other Itron products
  - Data collection systems (MV-90 xi)
  - Meter data management systems (Itron Enterprise Edition)
  - Data analysis, profiling and forecasting systems (MetrixND, MetrixIDR)

## TECHNOLOGY

LRS is a stand-alone, multi-user, client-server system. At the core of the system is an Oracle or Microsoft SQL Server database that stores multiple study designs, supporting interval data and expansion results.

- » User Interface
  - Written in C# using .NET technology
  - Explorer-style folder control for organizing study objects and results
  - Grid control for sorting, filtering and selecting from lists
  - Full set of graphics for meter data and study results
  - Flexible reporting with exports to Microsoft Excel and text files

## CONFIDENCE

Itron has a proven worldwide track record for delivering and supporting state-of-the-art software systems with decades of experience in load research, sample design and consulting. With the Itron Load Research System, you will have confidence that your data are correct and that your results make sense.

For additional information or to view a demo, visit [www.itron.com/forecasting](http://www.itron.com/forecasting), call 1-800-755-9585 or email [forecasting@itron.com](mailto:forecasting@itron.com).



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](http://www.itron.com)

## CORPORATE HEADQUARTERS

2111 N Molter Road  
Liberty Lake, WA 99019  
USA

**Phone:** 1.800.635.5461

**Fax:** 1.509.891.3355