



Reliability Analysis

Itron Analytics

With more frequent and powerful storms, utilities have a renewed focus on improving grid reliability and being as efficient as possible with their restoration efforts. Using Itron Analytics, operators have access to the exact times of every service interruption at each customer location. Itron Reliability Analysis empowers operators to analyze all of the outage data, geospatially and in the context of the distribution network, to proactively improve overall reliability, outage response and customer satisfaction.

Reliability Analysis presents IEEE reliability indices and other key performance indicators by feeder, region and service territory. Tracking these indicators enables operators to target maintenance efforts and system improvements precisely in the areas that need it most, maximizing the value of investment. Post-improvement results are used to quantify and validate the effectiveness of the actions taken both statistically and with outage visualizations. Analysis of momentary interruptions in the context of the distribution network and

protective devices can be especially useful to identify and mitigate imminent problems. Using Reliability Analysis, coincident momentary outages, or blinks, can be quickly traced upstream, by phase, to the source so crews can fix the issue before a larger problem occurs.

WITH RELIABILITY ANALYSIS, UTILITIES BENEFIT BY:

- » Accessing precise interruption times for every service point in the system
- » Identifying poorly performing feeders and geographic areas to optimize maintenance spending
- » Tracing momentary interruptions to source prior to sustained failure
- » “Rolling” interruptions up the distribution hierarchy to source equipment and eliminate redundant reporting
- » Quantifying the impact of sectionalizing devices and maintenance programs
- » Reporting IEEE reliability indices by feeder, region or entire service territory for any date range
- » Accessing raw data for custom calculations and reporting

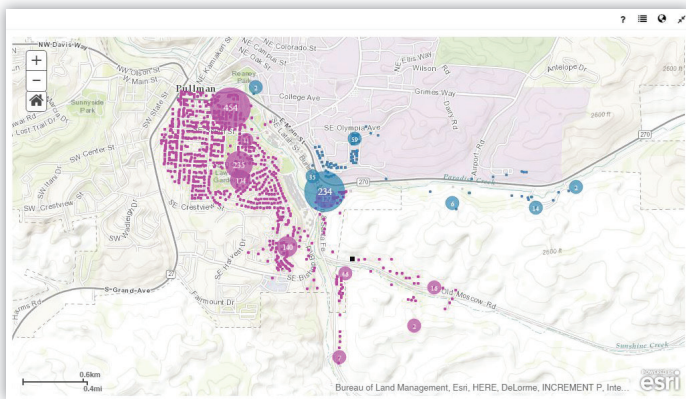
FEATURES AND BENEFITS

Itron Analytics introduces a modern and intuitive web-based user interface that helps engineers see the current and historic conditions and issues in their area.

Dashboard View

Reliability Analysis includes dashboard views that offer:

- » Quick summary information of momentary and sustained interruptions by service territory, a geographic area or individual circuit
- » IEEE reliability indices calculated for each distribution circuit for user-defined date selection
- » Geospatial mapping of momentary and sustained interruption activity on each feeder, with time-series playback
- » Summaries of interruptions rolled up to parent transformer, feeder section, feeder or substation
- » Identification of worst-performing feeders and service points
- » Interruption timeline of endpoint counts with exact time of interruption and restoration
- » List of endpoints and equipment that experienced momentary or sustained interruption events



Outage and Restoration Playback in Map View

Custom Query Tool

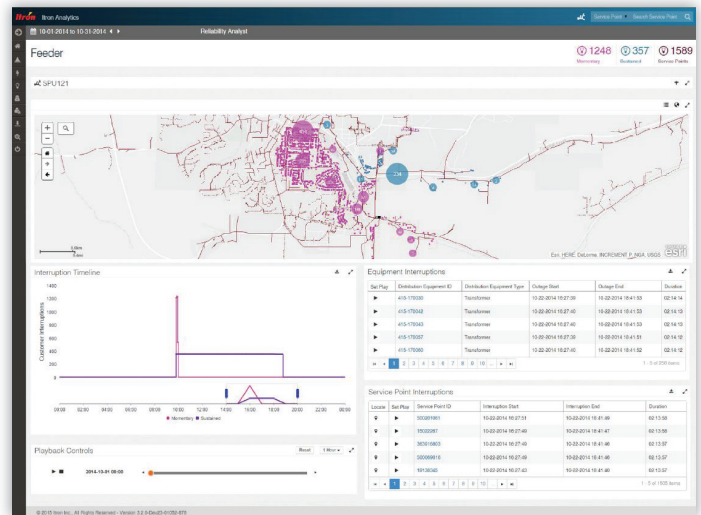
Reliability Analysis includes an intuitive and easy-to-use query tool that offers:

- » Creation of simple searches based on service point ID
- » Creation of more complex searches based on combinations of attributes, including interruption counts and durations
- » Geospatial view of search results
- » Tabular details of results displayed in a grid
- » Quick links from map or grid to a detailed view and measurements at endpoints

Service Point Detail View

Reliability Analysis includes a Service Point Detail view that offers:

- » Map view of the service point with links to others on the distribution transformer
- » Graphical views and export of load profile measurements
- » Graphical views and export of voltage measurements
- » Tabular views of meter device events and analytic business events at the location



Reliability Analysis Dashboard Displaying Details for Single Distribution Feeder

Interactive Mapping

Understanding the state of the distribution grid requires spatial awareness of issues. Itron Analytics provides integrated mapping and a number of interactive mapping features that empower operators to customize maps to the investigation needs of the moment. Using ESRI® technology, Itron Analytics incorporates mapping into every view allowing utilities to leverage existing GIS infrastructure and map layer assets. Itron Analytics mapping features include:

- » Service point, transformer and substation representation with informative data popups
- » Relationships between transformers and service points using network connectivity lines
- » A lasso selection tool to select service points and get summary load information
- » Interactive map buttons, display layers and slider controls allow operators to modify how the data is filtered and represented geospatially
- » Swappable base maps let utilities and AMI operators pick the mapping imagery that makes the most sense for them financially and operationally

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