



Transformer Load Management

Itron Analytics

Managing distribution transformer utilization has been a challenge to utilities for decades. Without tools to monitor transformer load, utilities have to rely on statistical models using assumed load profiles to establish sizing guidelines. Changing weather patterns, aging infrastructure and increasing adoption of electric vehicles and distributed generation are quickly making this approach ineffective and obsolete.

Itron Analytics Transformer Load Management utilizes aggregated data from service points or distribution transformer meters to calculate loss-of-life and transformer utilization more accurately and on a scale never before possible. Near real-time measurements provide up-to-date loading details and unanticipated load increases. Historic data provide a loading history on each transformer to evaluate higher than expected loss-of-life and optimal sizing for replacement.

Transformers experiencing loading above the nameplate rating or excessive loss-of-life are detected and reported using dashboard summaries and alerts. Priority lists focus the analyst's attention on worst-case offenders by region or by feeder.

WITH TRANSFORMER LOAD MANAGEMENT, UTILITIES BENEFIT BY:

- » **Identifying at-risk transformers:** Create lists of transformers that can be used in replacement programs. Users can create the list based on many available attributes such as percent of kVA rating, loss-of-life calculations, high voltage and hot spot temperature.
- » **Maximizing usable life:** Enable full return on transformer investment by ensuring loading is in target range.
- » **Managing impact of sudden load growth:** View the impact of new unexpected loads on the transformer. Perform 'what-if' analysis to investigate strategies for managing new load.
- » **Identifying under-utilized transformers:** Determine which transformers are not being fully utilized and could be moved or have additional load added to maximize the value of the asset.
- » **Right sizing:** When new transformers are being replaced, right size new transformers to handle existing load and possible load growth.
- » **Accessing up-to-date loads:** Make informed decisions with up-to-date information during storm restoration, car-pole accidents or routine pole maintenance.

FEATURES AND BENEFITS

Itron Analytics introduces an intuitive and thoughtful user interface that helps grid engineers see the current and historic conditions and issues in their area.

Dashboard View

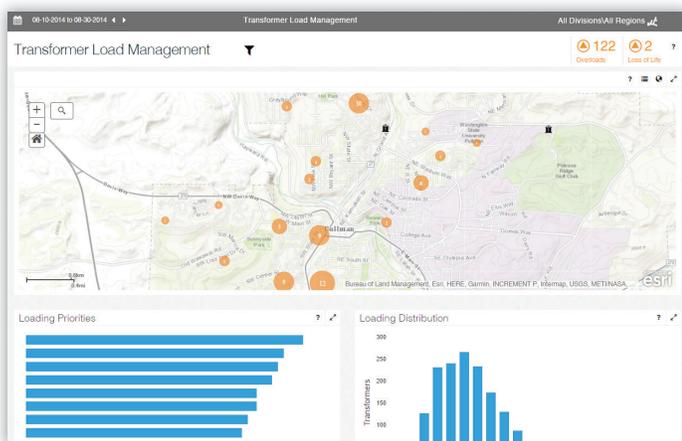
The Transformer Load Management app includes a dashboard view that offers the following:

- » Quick summary information about the service territory, an area or an individual feeder
- » Geospatial mapping of overloads, excessive loss-of-life and winding failure suspects
- » KPIs that indicate the number of transformer overloads, the number of transformers with excessive loss-of-life and the number of winding failure suspects
- » A list of top overloaded transformers with the ability to quickly ID them on the map
- » A load distribution graph that allows users to quickly go to a list of overloaded transformers

Query Tool

Transformer Load Management includes a query tool that offers the following:

- » Simple searches based on device ID
- » More complex searches based on combinations of attributes
- » Spatial view of search results
- » Grid display of results
- » Drill-downs from map or grid to a more detailed view of the transformer



Transformer Load Management Dashboard

Transformer Detail View

Transformer Load Management includes a Transformer Detail view that offers the following:

- » The ability to see each transformer located on a map
- » Graphical view of load profile data
- » Graphical view of voltage data
- » A view of various properties of the transformer



Transformer Detail Page

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 maps into every view allowing utilities to leverage existing ESRI infrastructure and map layer assets. Included in Itron Analytics mapping features are:

- » Transformer and substation representation with informative data pop-ups.
- » Relationships between transformers and service points using network connectivity lines, when provided.
- » 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. Itron Analytics support ESRI, OpenStreetMap and Google Maps with Street View.



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