Oracle Utilities Analytics Warehouse Dashboards for Distribution Analytics, Outage Analytics

Metric Reference Guide

Release 2.8.0.1.0

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Preface

Welcome to the Oracle Utilities Analytics Warehouse Dashboards for Distribution Analytics, Outage Analytics Metric Reference Guide.

This document describes the Oracle Utilities Network Management Analytics components (such as metrics, dashboards, analyses, and subject areas) available in Oracle Utilities Analytics Warehouse Dashboards. These metrics are used in the pre-built analyses, and/or available for customers to use via Oracle Analytics Server Answers in building new analyses or extending existing analyses.

The preface focuses on the following:

- Audience
- Documentation Accessibility
- Related Documents
- Conventions
- Abbreviations

Audience

This guide is intended for all users of Oracle Utilities Analytics Warehouse Dashboards for Oracle Utilities Network Management System.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at http://www.oracle.com/us/corporate/accessibility/index.html.

Access to Oracle Support

Oracle customers have access to electronic support through My Oracle Support. For more information, visit: http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info or http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs if you are hearing impaired.

Related Documents

For more information, see the following documents:

- *Oracle Utilities Analytics Warehouse Release Notes*
- *Oracle Utilities Analytics Warehouse Getting Started Guide*
- *Oracle Utilities Analytics Warehouse Quick Install Guide*
- *Oracle Utilities Analytics Warehouse Installation and Configuration Guide*
- *Oracle Utilities Analytics Warehouse Developer's Guide*
- *Oracle Utilities Analytics Warehouse License Information User Manual*

See Also:

- Oracle Utilities Network Management System Documentation Library

Conventions

The following notational conventions are used in this document:

Notation	Indicates
boldface	Graphical user interface elements associated with an action, terms defined in text, or terms defines in the glossary
italic	Book titles, emphasis, or placeholder variables for which you supply particular values
`monospace`	Commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter

Abbreviations

The following terms are used in this document:

Term	Expanded Form
OUAW	Oracle Utilities Analytics Warehouse
NMS	Oracle Utilities Network Management System
OAS	Oracle Analytics Server
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
CMI	Customer Minutes Interrupted
CAIDI	Customer Average Interruption Duration Index
MAIFI	Momentary Average Interruption Frequency Index

Chapter 1

Dashboard Content Reference

Oracle Utilities Analytics Warehouse Dashboards provides analysis of and data from Oracle Utilities Network Management System using Oracle Analytics Server built-in metrics. Non-spatial analytics, information that is not tied to geography, is represented in a series of dashboards showing tables, bar graphs, pie charts, and gauges. Spatial analytics, or information that is geographically related, use OAS integrated Map Viewer technology to represent events, weather data, map data, and other geographical information.

This chapter describes the Oracle Utilities Analytics Warehouse Dashboards content for Oracle Utilities Network Management System. The dashboards are grouped by the following analytics:

- Outage Analytics
- Distribution Analytics
- Sample NMS DV Projects

Outage Analytics

This section describes the metrics available in Outage Analytics of Oracle Utilities Analytics Warehouse Dashboards. Outage Analytics enables utilities' customers to monitor and measure outage management system metrics.

Outage Analytics mainly focuses on restoration of power. It helps business users to prioritize restoration efforts and manage resources based on the criteria, such as number of customers impacted, locations of emergency facilities, size of outages, duration of outages, and more.

Oracle Utilities Analytics Warehouse provides Outage Analytics content in the following dashboards:

- Overview
- Current Outages
- Customers
- Customers and Crews
- Damage Assessments
- Events
- Historical Outages
- Reliability
- Storm Analysis
- Switching
- Distribution

Overview

The Overview dashboard provides a high-level overview of the near real-time information about outages. The near real-time period can be configured.

To access this dashboard:

1. Go to the **Home** page.
2. Select **Dashboards** > **Outage Analytics** > **Overview**.

Outage Summary Events and Customer Metrics

Property	Details
Description	This analysis shows performance tiles of various categories of active events and metrics related to customers impacted. The performance tiles include: outages, non-outages, confirmed outages, service outages, fuzzy outages, and device outages, customers impacted, critical customers out, average outage duration, and customer minutes interrupted.
Purpose	Users can get a quick overview of the extent of outages and the customers impacted.

Property	Details
Representation	Each tile represents a metric that is calculated for the selected set of criteria on the prompt.
Drill Down	The **Customers Impacted** and **Critical Customers Out** tiles drill down to the Customer Outages dashboard page in the Customers dashboard. The event related tiles drill down to an **Event Details** page specific to the performance tile.
Source Object	Recent Customer Outage Fact, Recent Job Fact
OAS Subject Area	NMS - NRT Overview
Metrics	Outage Events, Non Outage Events, Confirmed Outages, Service Outages, Fuzzy Outages, Device Outages, Customers Impacted, Critical Customers Out, Average Outage Duration, Customer Minutes Interrupted

Restoration Trend

Property	Details
Description	This analysis shows the number of customers currently in outage, the number of customers who have been restored, the number of new customers in outage, and the total number of events. The data is shown as of the last 24 hours.
Purpose	Users can see the trend of customers impacted, restorations, and events over the last 24 hours. This trend can help users understand the progress that is being made after a large storm event.
Representation	The bar graph shows the number of new customers in outage, number of customers restored, and number of customers remaining out. The line on the graph represents the number of events. The X-axis represents the time in hours. The Y1-axis represents the number of customers, while the Y2-axis represents the number of events. Hover over the bars for specific details.
Drill Down	No drill down
Source Object	Outage Fact
OAS Subject Area	NMS - NRT Overview
Metrics	Customers Out, New Customers Impacted, Customers Restored, Remaining Customers that are Out, Number of Events

Outage by Device Category

Property	Details
Description	This analysis shows the distribution of outage events across each device category.

Property	Details
Purpose	This analysis helps users to get a quick view of the device categories that are associated with the active outage events.
Representation	The pie chart shows the distribution of outage events against each device category.
Drill Down	The pie chart segments drill down to an **Event Details** page specific to this chart.
Source Object	Recent Customer Outage Fact
OAS Subject Area	NMS - Recent Customer Outage
Metrics	Outage Events

Critical Customers Impacted

Property	Details
Description	This analysis focuses on the critical customer Outages across various classifications of customers (critical, key, medical, and LSE).
Purpose	This analysis provides the details of critical customers outages.
Representation	The **Revenue Class** drop-down displays the data by various revenue classifications. The bar graph shows the number of critical customers impacted in each type of customer classification. The X-axis represents the Division (control zone) of the customer. The Y-axis represents the number of critical customers. Hover over the bars for specific values.
Drill Down	The bars on the graph drill down to the details of the critical customer outages.
Source Object	Recent Customer Outage Fact
OAS Subject Area	NMS - NRT Overview
Metrics	Critical Customers Impacted, Medical Customers Impacted, Key Customers Impacted, Sensitive Customers Impacted, Emergency Customers Impacted

Crew Assignment Summary

Property	Details
Description	This analysis displays the number of tasks assigned to each crew type.
Purpose	This analysis provides an overview of the work load assigned to various crew types.

Property	Details
Representation	The bar chart shows the distribution of assignments across various crew types. The X-axis represents the crew type. The Y-axis represents the number of assignments. Hover over the bars for specific details.
Drill Down	There is no drill down.
Source Object	Recent Crew Fact
OAS Subject Area	NMS - NRT Overview
Metrics	Assignments

Wire Down

Property	Details
Description	This analysis provides an overview of all the wire down events, number of customer calls due to wire down, and total number of customers affected due to the wire downs at control zone hierarchy level.
Purpose	This analysis provides a summary view of wire down events recorded in each control zone hierarchy level. It also provides the number of events, as well as customers impacted and calls received in relation to these wire down events. Users can drill down through this analysis to detailed information about wire down events and their status in other parts of the application.
Representation	The tables shows the number of events, and also number of calls and customers impacted due to those events, collated as a control zone hierarchy and control zone secondary hierarchy respectively.
Drill Down	The **Events** column link drills down to the Wire Down Events dashboard page (in the Current Outages dashboard) for more details.
Source Object	Recent Job Fact, Recent Customer Outage Fact, Recent Call Fact
OAS Subject Area	NMS - NRT Overview
Metrics	Number of Events, Customers Interrupted, Number of Calls

Current Outages

The Current Outages dashboard provides a snapshot of the current outages recorded in a region.

To access this dashboard:

1. Go to the **Home** page.
2. Select **Dashboards** > **Outage Analytics** > **Current Outages**.

The dashboard includes the following dashboard pages. The data for current calendar year and month is displayed by default. You may modify the criteria per requirement.

- Overview
- Hourly Trend
- Analysis
- Calls Received
- Wire Down Events
- ETR Analysis Hierarchy
- ETR Analysis Secondary Hierarchy

Overview

The Overview dashboard page provides a geographical representation of all the recent customers impacted and average outage duration in a region.

Current Customer Outages

Property	Details
Description	This map displays all un-restored current outages by either customer minutes interrupted, customers impacted, or average outage duration, that are within near real-time range. It also shows the regions where outage events occurred, the number of customers impacted on the respective events and if there are crews present on those outage events.
Purpose	The spatial representation of current outages helps in providing a comprehensive overview of the current outage situation. The analysis also helps business users to understand the spatial distribution of key metrics, such as customers impacted, customer minutes interrupted, and average outage duration.
Representation	The color-coded region on the map shows specific details about the outages in that region, such as the city where the outage has occurred, number of customers impacted, and customer minutes interrupted. Use the **Customers Impacted**, **Average Outage Duration (in Minutes)**, and **Customer Minutes Interrupted** check boxes to color fill the outage locations based on the selection. Use the **Events by Customers Impacted** check box to color fill the regions based on the number of events in that region. The **Events with Crew** check box can be used to color fill the presence of crew in the outage location. The table shows the event details, outage duration, estimated restoration time, and customers impacted.
Drill Down	The **Event Number** column link drills down to the Event Profile dashboard page for respective event details.
Source Object	Recent Customer Outage Fact
OAS Subject Area	NMS - NRT Overview

Property	Details
Metrics	Customers Impacted, Customer Minutes Interrupted, Average Outage Duration (in Minutes)

Hourly Trend

The Hourly Trend dashboard page provides an hourly summary of the number of customers interrupted, customers restored, along with the events occurring in every hour. It gives an overview of the overall restoration progress.

Restoration Trend

Property	Details
Description	This analysis shows the number of customers currently in outage, the number of customers who have been restored, and the number of events. The data is shown as of the last 24 hours of the specified date prompt.
Purpose	Business users can analyze the trend of new customers impacted, new outages, and restorations over the past 24 hours.
Representation	The bar graph shows the number of new customers in outage, number of customers restored, and number of customers remaining out. The line graph represents the number of events. The X-axis represents the snapshot time in hours. The Y1-axis represents the number of customers, while the Y2-axis represents the number of outage events. Hover over the bars for specific details.
Drill Down	No drill down
Source Object	Outage Fact
OAS Subject Area	NMS - NRT Overview
Metrics	Number of Customers Out, Number of New Customers Impacted, Number of Customers Restored, Number of Events

Estimated Number of Restorations

Property	Details
Description	This analysis shows the number of customers expected to be restored in the next 24 hours of the specified date prompt.
Purpose	Business users can track the number of estimated customers that will be restored at each time interval.
Representation	The line graph shows the number of customers going to be restored on an hourly basis. The X-axis represents the time in hours. The Y-axis represents the number of customers. Hover over the line for specific details.

Property	Details
Drill Down	No drill down
Source Object	Outage Fact
OAS Subject Area	NMS - Recent Customer Outage
Metrics	Number of Customers Expected to be Restored

Events Hourly Trend

Property	Details
Description	This analysis shows the number of restored and unrestored events in the last 24 hours as of the specified date on the prompt. The data is shown for each hour of the day.
Purpose	Business users can view the trend of restored vs un-restored outages for hour by hour.
Representation	The bar graph shows the number of restored and unrestored events on an hourly basis. The X-axis represents the hour of the day. The Y-axis represents the number of events at each hour. Hover over the line for specific details. Number of Unrestored Events = (Number of Events + Number of New Events) - (Number of Events Restored + Number of Events Cancelled)
Drill Down	No drill down
Source Object	Outage Fact
OAS Subject Area	NMS - Outage
Metrics	Restored Events, Unrestored Events

Analysis

The Analysis dashboard page provides a summary of current outages and unrestored events.

Current Outage Events by Device Type

Property	Details
Description	This analysis shows the current outage events (as percentage) categorized by the device type.
Purpose	This analysis provides business users with a quick overview of how events are distributed across various device types.

Property	Details
Representation	The pie chart shows the distribution of current outage events across each device type. The table displays the respective event numbers against each device type, and also the number of customers impacted for each of the events.
Drill Down	The **Event Number** column link drills down to the Event Profile dashboard page for specific details about the selected event.
Source Object	Recent Customer Outage Fact
OAS Subject Area	NMS - Recent Customer Outage
Metrics	% of Current Outage Events by Device Type, Customers Impacted

Unresolved Events

Property	Details
Description	This analysis displays the number of events grouped by event status. The events are categorized into event statuses. For example: new (NEW), onsite (ONS), assigned (ASN), and enroute (ENR).
Purpose	Based on the number of events against each status, business analysts can quickly identify how the events are progressing.
Representation	The bar graph shows the number of events against each outage event status. The X-axis represents the event status. The Y-axis represents the number of events. Hover over the graph for respective values. The table shows the number of events against the respective event status.
Drill Down	The **Event Number** column link drills down to the Event Profile dashboard page for specific details about the selected event.
Source Object	Recent Customer Outage Fact
OAS Subject Area	NMS - NRT Overview
Metrics	Number of Events, Customers Impacted

Calls Received

The Calls Received dashboard page focuses on the details of the customer calls received for active events.

Call Details

Property	Details
Description	This analysis shows the caller details and the respective event details recorded for each caller. The data is displayed as of the selected date range.
Purpose	Users can search for specific call details for active outages.
Representation	The table shows the call details (ID, caller name, phone number, and comments) and some event status details for each recorded call.
Drill Down	The **Event Number** column link drills down to the Event Profile dashboard page for specific details about the selected event. The **Account ID** column link drills down to the Customer Profile dashboard page for specific details about the selected account ID.
Source Object	Recent Call Fact
OAS Subject Area	NMS - Recent Call
Metrics	Call Details

Wire Down Events

The Wire Down Events dashboard page displays the call details associated with active wire down events. The page also provides an hourly trend of active wire down events, as well as a trend of the number of calls received related to wire downs.

Events with Wire Down Calls

Property	Details
Description	This analysis displays the number of events associated with active wire downs for the last 24 hours as of the prompt date.
Purpose	Business users can see the trend of active wire down events over the last 24 hours.
Representation	The bar graph shows the number of active events in a specific time bucket, thus helping to understand the trend of number of outage events. The X-axis represents the time buckets for the last 24 hours. The Y-axis represents the active outage events with active wire down calls. Hover over the graph for specific details.
Drill Down	No drill down
Source Object	Recent Job Fact
OAS Subject Area	NMS - NRT Overview
Metrics	Number of Events

Active Call Summary

Property	Details
Description	This analysis shows the hourly active call summary in the last 24 hours as of the prompt date.
Purpose	This analysis helps business users to monitor the number of wire down calls being received.
Representation	The line graph shows the number of customer calls received on an hourly basis. The X-axis represents the time in hours. The Y-axis represents the number of customer calls. Hover over the graph for specific details.
Drill Down	No drill down
Source Object	Recent Call Fact
OAS Subject Area	NMS - NRT Overview
Metrics	Number of Calls

Active Wire Down Calls

Property	Details
Description	This analysis displays a list of all wire down calls that are associated with active events only. The event number and caller information are also displayed to help take immediate action on those calls.
Purpose	This analysis provides details about wire down calls, so outage managers can follow up with a specific wire down event and its resolution progress. The **Active Wire Down Calls** table acts as a directory of wire down events, including information such as caller name, call time, event number, and caller comments.
Representation	The table displays the event number and caller information.
Drill Down	The **Event Number** column link drills down to the Event Profile dashboard page for specific details about the selected event.
Source Object	Recent Call Fact
OAS Subject Area	NMS - NRT Overview
Metrics	Call Details

ETR Analysis Hierarchy

The ETR Analysis Hierarchy dashboard page focuses on the estimated restoration time information based on the control zone hierarchy.

ETR Analysis Hierarchy 1

Property	Details
Description	This analysis shows the distribution of events grouped by the time estimated to restore them. The data is displayed as of the last extraction time.
Purpose	Business analysts can analyze the distribution of ETRs across various estimated restoration duration ranges.
Representation	The table displays the number of events grouped by each of the estimated restoration duration buckets (such as, < 15 min, < 30 min, etc). The data is displayed across the selected control zone hierarchy and you can view the details in each level in the control zone hierarchy.
Drill Down	There is no drill down.
Source Object	Recent Job Fact
OAS Subject Area	NMS - NRT Overview
Metrics	ETR Buckets

Jobs

Property	Details
Description	This analysis shows the number of jobs either assigned or dispatched. The data is displayed as of the last extraction time.
Purpose	Business analysts can analyze the number of jobs for which a crew is assigned or dispatched.
Representation	The pie chart shows the distribution of events that are assigned or dispatched. Further, the **Customers Out** prompt can be used to view the same metric for various "customers out ranges".
Drill Down	There is no drill down in this analysis.
Source Object	Recent Jobs Fact
OAS Subject Area	NMS - NRT Overview
Metrics	Number of Jobs

Customers

Property	Details
Description	This analysis shows the number of customers experiencing outage for which the crew is either assigned or dispatched. The data is displayed as of the last extraction date/time.
Purpose	Business analysts can analyze the number of customers out for which a crew is assigned or dispatched.

Property	Details
Representation	The pie chart shows the distribution of customers out that are assigned and/or dispatched. Further, the **Customers Out** prompt can be used to view the same metric for various "customers out ranges".
Drill Down	There is no drill down in this analysis.
Source Object	Recent Customer Outage Fact
OAS Subject Area	NMS - NRT Overview
Metrics	Number of Customers Out

Events

Property	Details
Description	This analysis lists the events associated with a customer outage and also the outage duration as well as the estimated restoration time for each event. The data is displayed as of the last extraction date/time.
Purpose	This analysis helps business analysts to identify events with the longest outage duration and highest customers affected so that these events can be prioritized better in terms of restoration.
Representation	The table shows event status, the device where there is an outage, the number of customers experiencing the outage, the outage duration, and the estimated restoration time for each recorded event.
Drill Down	The **Event Number** column drills down to the Event Profile dashboard page for specific details.
Source Object	Recent Job Fact
OAS Subject Area	NMS - NRT Overview
Metrics	Estimated Restoration Time, Duration, Customers Out

ETR Analysis Secondary Hierarchy

The ETR Analysis Secondary Hierarchy dashboard page focuses on the estimated restoration time information based on the secondary control zone hierarchy.

ETR Analysis Hierarchy 2

Property	Details
Description	This analysis shows the distribution of events grouped by the time estimated to restore them. The data is displayed as of the last extraction date/time.
Purpose	Business analysts can analyze the estimation restoration duration distribution across various expiration ranges.

Property	Details
Representation	The table displays the number of events grouped by each of the estimated restoration duration buckets. The data is displayed across the selected secondary control zone hierarchy and you can view the details in each level of that secondary control zone hierarchy.
Drill Down	There is no drill down.
Source Object	Recent Customer Outage Fact
OAS Subject Area	NMS - NRT Overview
Metrics	ETR Buckets

Jobs

Property	Details
Description	This analysis shows the number of jobs either assigned or dispatched. The data is displayed as of the last extraction time.
Purpose	Business analysts can analyze the number of jobs for which a crew is assigned or dispatched.
Representation	The pie chart shows the distribution of events that are assigned or dispatched. Further, the Customers Out prompt can be used to view the same metric for various "customer out ranges".
Drill Down	There is no drill down in this analysis.
Source Object	Recent Jobs Fact
OAS Subject Area	NMS - NRT Overview
Metrics	Number of Jobs

Customers

Property	Details
Description	This analysis shows the number of customers experiencing outage for which the crew is either assigned or dispatched. The data is displayed as of the last extraction date/time.
Purpose	Business analysts can analyze the number of customers out for which a crew is assigned or dispatched.
Representation	The pie chart shows the distribution of customers out affected by events that have crews that are assigned and/or dispatched. Further, the Customer Out prompt can be used to view the same metric for various "customer out ranges".
Drill Down	There is no drill down in this analysis.
Source Object	Recent Customer Outage Fact

Property	Details
OAS Subject Area	NMS - NRT Overview
Metrics	Number of Customers Out

Events

Property	Details
Description	This analysis lists the events associated with a customer outage and also the outage duration as well as the estimated restoration time for each event. The data is displayed as of the last extraction date/time.
Purpose	This analysis helps business analysts to identify events with the longest outage duration and highest customers affected so that these events can be prioritized better in terms of restoration.
Representation	The table shows event status, the device where there is an outage, the number of customers experiencing the outage, the outage duration, and the estimated restoration time for each recorded event.
Drill Down	The **Event Number** column drills down to the Event Profile dashboard page for specific details.
Source Object	Recent Job Fact
OAS Subject Area	NMS - NRT Overview
Metrics	Estimated Restoration Time, Duration, Customers Out

Customers

The Customers dashboard helps users to search for specific list of customers based on a combination of criteria. The dashboard further enables users to drill down to a specific customer, and view consolidated information on the specific entity.

To access this dashboard:

1. Go to the **Home** page.
2. Select **Dashboards** > **Outage Analytics** > **Customers**.

The dashboard includes the following dashboard pages.

- Customers
- Customer Profile
- Customer Outages

Customers

The Customers dashboard page provides insight into the details of customers being served by the utility. The page also provides comprehensive search capabilities for a user through an extensive set of prompt elements. Users can combine these prompt elements

in various ways to slice and dice the customer database in the Oracle Utilities Analytics Warehouse schema.

Customers

Property	Details
Description	This analysis displays a list of customers served by the utility.
Purpose	Business users can quickly search for a customer and then view associated address, phone, critical customer type, account ID, device name, and meter number.
Representation	The table shows the customer details (name, contact number, and the address), the name of the device installed at each customer location, and the respective meter number of each device. It also identifies the criticality type for each customer.
Drill Down	The **Account ID** column link drills down to the Customer Profile dashboard page for specific details about the account ID associated with the customer.
Source Object	This analysis is not associated with any of the fact tables. Rather, the information are sourced from various customer-related dimensions.
OAS Subject Area	Shared SNL
Metrics	No metrics

Note: This analysis is based on a combination of dimensional attributes and does not rely on the fact. The response time of this analysis may be greater than the remaining analyses.

Customer Profile

The Customer Profile dashboard page displays the details of the account ID associated with a specific customer selected in the Customers dashboard page.

Customer Locations

Property	Details
Description	This analysis shows a list of all addresses associated with the selected customer.
Purpose	This analysis provides key details about a specific customer. Typically, it can be used by Customer Service or Audit team members to analyze or work with a single customer's location history.
Representation	The table shows the customer details (name, contact number, ID, and the address), the meter number on the device installed at the customer location, and the criticality type of the customer.
Drill Down	No drill down
Source Object	This analysis loads data from the Supply Node Lookup (CD_SNL) dimension table. It is not associated with any of the fact tables.

Property	Details
OAS Subject Area	Shared - SNL
Metrics	None

Note: This analysis is based on a combination of dimensional attributes and does not rely on the fact. The response time of this analysis may be greater than the remaining analyses.

Outage Locations

Property	Details
Description	This analysis shows the location details that experienced an outage recently, along with the number of days since last outage, for the specific address(es) of the customer. **Note**: This analysis is based on a combination of dimensional attributes and is not associated with any fact table. Its response time may be greater than the other analyses. You may prefer to hide it to avoid any performance issues.
Purpose	Business users can identify the locations where the customer experienced outages and how long ago the outages were.
Representation	The table shows the customer locations where there was an outage and the number of days since the last outage.
Drill Down	No drill down
Source Object	Recent Customer Outage Fact
OAS Subject Area	NMS - Recent Customer Outage NMS - Customer Outage
Metrics	Days Since Last Outage

Event Summary

Property	Details
Description	This analysis shows the monthly count of all events for the selected customer.
Purpose	The Customer Service representatives use these details while responding to customer calls.
Representation	The table shows the number of events in each month.
Drill Down	There is no drill down.
Source Object	Restored Customer Outage Fact
OAS Subject Area	NMS - Historical Overview

Property	Details
Metrics	Events

Event Log

Property	Details
Description	This analysis shows the details of all events that occurred for the specific customer. It shows the current status, outage duration, when the event started and when the event is restored.
Purpose	Business users can get a clear picture of the events that occurred for the selected customer. If there are multiple events at same location, they can analyze the reasons for the same and take appropriate measures.
Representation	The **Meter** and **Premise** drop-down boxes can be used to further filter the data for the selected meter and premise values. The table shows the outage begin date, its restoration date, and the outage duration for each of the events. It also shows the status of each event.
Drill Down	No drill down
Source Object	Restored Customer Outage Fact
OAS Subject Area	NMS - Restored Customer Outage
Metrics	Outage Duration

Call Summary

Property	Details
Description	This analysis shows the summary of all calls received from the selected customer every month.
Purpose	The Customer Service representatives use these details to analyze the number of calls from the customer and identify any priority calls.
Representation	The table shows the number of customer calls received in each month.
Drill Down	There is no drill down.
Source Object	Restored Call Fact
OAS Subject Area	NMS - Restored Call
Metrics	Number of Calls

Call Log

Property	Details
Description	This analysis shows the date when the customer call was logged, the call number, its status (whether resolved or not), its priority, and any other comments.
Purpose	Business users can view the number of calls from a specific customer and analyze the call details. They can also identify the priority calls logged and the respective status of each call.
Representation	The Meter and Premise drop-down lists can be used to further filter the data shown. The table shows the date and time when the call was received, the caller details (such as name, and call number), the call's priority, and its status (whether resolved or not), and any other comments related to the call.
Drill Down	There is no drill down.
Source Object	Restored Call Fact
OAS Subject Area	NMS - Restored Call
Metrics	None

Customer Outages

The Customer Outages dashboard page displays the customer outage details within a time period defined in the prompts. The analysis is set to return the top 500 records. This limit can be changed in the dashboard configuration.

Customer Outages

Property	Details
Description	This analysis returns the customers that were out during a specific time period.
Purpose	This analysis is used to return a list of customers that were out during a specific time period.
Representation	The Statistics table shows the summary of customer details (such as number of customers interrupted, customer minutes interrupted, MCI and CAIDI). The individual details for the customer outages, such as account ID, critical customer type, event status, outage duration, and begin and restoration date are shown in a table below.
Drill Down	The **Event Number** and **Account ID** column links drill down to the Event Profile and Customer Profile dashboard pages, respectively, for more details.
Source Object	Restored Customer Outage Fact
OAS Subject Area	NMS - Customer Outage

Property	Details
Metrics	CI, CMI, MCI, CAIDI, Outage Duration

Customers and Crews

The Customers and Crews dashboard page provides a snapshot of the customers currently experiencing outages and the crews allocated to those outages.

To access this dashboard:

1. Go to the **Home** page.
2. Select **Dashboards** > **Outage Analytics** > **Customers and Crews**.

The dashboard includes the following dashboard pages.

- Current Crews
- Crews Assigned Hierarchy 1
- Crews Assigned Hierarchy 2

Current Crews

The Current Crews dashboard page focuses on the details of the crew working on current outages.

Current Crews

Property	Details
Description	This map displays the outage event locations and the time spent by crews currently working on those locations on a near real-time basis.
Purpose	Since this analysis is based on near real-time data, business analysts can identify the current situation of outages and the crews working on them. The additional information available in the tabular report, will help analyze crews that are spending lot of time working on the outages. Business analysts can take note and decide whether additional help might be required in certain cases.
Representation	The color-coded dots on the map show specific locations where various crews are currently working for the outages in the field. The color coding is based on the number of minutes the crew has spent at the outage location. The table shows the individual crew level details along with event number, status, crew, crew ID, the actual date/times when the crew was assigned, en route and onsite at the location, and the duration in minutes the crew has spent assigned, en route and onsite at the location.

Property	Details
Drill Down	The **Event Number** column drills down to the Event Profile dashboard page for specific event details.
Source Object	Recent Crew Activity Fact
OAS Subject Area	NMS - NRT Overview
Metrics	Time Spent Assigned, Time Spent En Route, Time Spent Onsite

Crews Assigned Hierarchy 1

The Crews Assigned Hierarchy 1 dashboard page provides details about how crews are allocated and are responding to the current outages that are under the control zone hierarchy.

Crew Assignment Summary

Property	Details
Description	This analysis displays a list of all crew assignments for the current outages. These details provide an overview of how crews are assigned various tasks.
Purpose	Users can see the assignment load for crews.
Representation	The table displays the crew type, crew names corresponding to each type, and the number of assignments for each of the crews.
Drill Down	The **Assignments** column link drills down to the **Crew Assignment Details** page.
Source Object	Recent Crew Activity Fact
OAS Subject Area	NMS - NRT Overview
Metrics	Number of Assignments

On-Site Crew List

Property	Details
Description	This analysis displays the crew activity times for crews that have an on-site status.
Purpose	Users can see the assignment, en route, and arrival times for crews that are on-site.
Representation	The table displays the crew details (crew and crew type), along with assignment time, en route time, on site time for each of the crews, and for which event (event number).
Drill Down	The **Event Number** column link drills down to the Event Profile dashboard page for specific details about the selected event.

Property	Details
Source Object	Recent Crew Activity Fact
OAS Subject Area	NMS - NRT Overview
Metrics	n/a

Crews Assigned Hierarchy 2

The Crews Assigned Hierarchy 2 dashboard page provides details about how crews are allocated and are responding to the current outages in the control zone secondary hierarchy.

Crew Assignment Summary

Property	Details
Description	This analysis displays a list of all crew assignments for the current outages. These details provide an overview of how crews are assigned various tasks.
Purpose	Users can see the assignment load for crews.
Representation	The table displays the crew type, crew names corresponding to each type, and the number of assignments for each of the crews.
Drill Down	The **Assignments** column link drills down to the **Crew Assignment Details** page.
Source Object	Recent Crew Activity Fact
OAS Subject Area	NMS - NRT Overview
Metrics	Number of Assignments

On-Site Crew List

Property	Details
Description	This analysis shows the crew activity times for crews that have an on-site status.
Purpose	Business users can see crew activity time for crews that have an on-site status.
Representation	The table displays the crew details (crew and crew type), along with assignment time, en route time, and on site time for each of the crews and for which event (event number).
Drill Down	The **Event Number** column link drills down to the Event Profile dashboard page for specific details about the selected event.
Source Object	Recent Crew Activity Fact

Property	Details
OAS Subject Area	NMS - NRT Overview
Metrics	Assignment Time, En-route time, On-site Time

Damage Assessments

The Damage Assessments dashboard provides information about damage assessments based on status, damage type, crew type, and location.

To access this dashboard:

1. Go to the **Home** page.
2. Select **Dashboards** > **Outage Analytics** > **Damage Assessments**.

The dashboard includes the following dashboard pages. The data for the selected data range is displayed by default. You may modify the criteria per requirement.

- Damage Assessments Summary
- Damage Assessments Map
- Damage Assessment Reports
- Damage Assessments Profile

Damage Assessments Summary

The Damage Assessments Summary dashboard page focuses on the damage assessment details for the selected data range and hierarchy level.

Assessments by Status

Property	Details
Description	This analysis shows the number of damage assessments grouped according to their statuses. The data is displayed for specific data range and hierarchy level.
Purpose	Business users can identify the status where damage assessments are recorded and take appropriate action to reduce them.
Representation	The pie chart shows the distribution of damage assessments by their status category (assigned, new, or obsolete).
Drill Down	The pie chart segments drill down to the Damage Assessments Map and Damage Assessment Reports dashboard pages for specific details.
Source Object	Damage Assessment Fact
OAS Subject Area	NMS - Damage Assessment
Metrics	Damage Assessments Percentage

Damage Type

Important! Note that this report shows data only for Oracle Utilities Network Management System version lower than 2.4.0.1. From v2.4.0.1 it does not show any data.

Property	Details
Description	This analysis shows the damage types observed and how many of each damage types are accessible or inaccessible in the selected damage assessment status. The data is displayed for the selected date range.
Purpose	Business users can identify, for each damage type, how many of the damage types are accessible and inaccessible that can help in coming up with estimates of the time to repair based on the damage type and whether it's accessible or inaccessible.
Representation	The **Damage Assessment Status** drop-down lists the various statuses that a damage assessment can be in (such as assessed, new, complete, etc). The bar chart shows the accessible count and inaccessible counts for damage assessments grouped by damage type against each damage assessment status. The X-axis represents the damage type and the Y-axis represents the damage assessment counts.
Drill Down	The bars on the graph drill down to the Damage Assessments Map and Damage Assessment Reports dashboard pages for specific details.
Source Object	Damage Assessment Detail Fact
OAS Subject Area	NMS - Damage Assessment Details
Metrics	Accessible Count, Inaccessible Count

Assessments by Crew Type

Property	Details
Description	This analysis displays the damage assessments grouped under each crew type and damage assessment status. The data is displayed for the selected date range.
Purpose	Business users can identify the type of crew and the percentage of crews needed to repair the damages.
Representation	The **Damage Assessment Status** drop-down lists the various statuses that a damage assessment can be in (such as assessed, new, complete, etc). The pie chart shows the damage assessments sliced by respective crew types in each damage assessment status.
Drill Down	The segments on the pie chart drill down to the Damage Assessments Map and Damage Assessment Reports dashboard pages for specific details.
Source Object	Damage Assessment Detail Fact

Property	Details
OAS Subject Area	NMS - Damage Assessment Details
Metrics	Damage Assessments Percentage

Damage Assessments Map

The Damage Assessments Map dashboard page provides a geographical representation of all the damage assessments.

Damage Assessments

This report shows data only if the Oracle Utilities Network Management System version is lower than 2.4.0.1. It does not display any data for versions 2.4.0.1 and higher when the Damage Type prompt is selected.

Property	Details
Description	This map displays all damage assessments for selected date range. It also shows the locations where damage events occurred, and the number of customers impacted due to the damages. The data is displayed for the selected date range.
Purpose	The spatial representation of current damage assessments helps in providing the location of damage assessments. The analysis also helps business users to understand the spatial distribution of key metrics, such as report ID, event number, assessor, mobile number, feeder, device name, address, and region.
Representation	The damage assessment locations are shown on the map. The table shows the event details, and the damage assessment details.
Drill Down	The **Report ID** and **Event Number** column links drill down to the Damage Assessments Profile and Event Profile dashboard pages respectively for more details.
Source Object	Damage Assessment Detail Fact
OAS Subject Area	NMS - Damage Assessment Details
Metrics	Damage Assessments, Customers Out

Damage Assessment Reports

The Damage Assessment Reports dashboard page focuses on the damage assessment details recorded for the selected date range period.

Damage Assessments

This report shows data only if the Oracle Utilities Network Management System version is lower than 2.4.0.1. It does not display any data for versions 2.4.0.1 and higher when the Damage Type prompt is selected.

Property	Details
Description	This analysis shows the event details, damage assessment status, and the number of customers experiencing outage due to the damage. The data is displayed for the selected date range.
Purpose	Business users can get a summary of the recorded damage assessments and their current statuses.
Representation	The table shows the event details and damage assessment status.
Drill Down	The **Report ID** and **Event Number** column links drill down to the Damage Assessments Profile and Event Profile dashboard pages respectively for more details.
Source Object	Damage Assessment Fact
OAS Subject Area	NMS - Damage Assessment Details
Metrics	Damage Assessments, Customers Out

Damage Assessments Profile

The Damage Assessments Profile dashboard page provides the details of a damage assessment report.

Damage Assessment Details

Property	Details
Description	This analysis shows the details of the selected damage assessment report.
Purpose	Business users can view the specific details of the selected damage assessment.
Representation	The table shows the assessor and details for the selected damage assessment and event number.
Drill Down	There is no drill down.
Source Object	Damage Assessment Fact
OAS Subject Area	NMS - Damage Assessment
Metrics	No metrics

Damage Location

Property	Details
Description	This analysis shows the location details (such as the address, company, region, division, substation, feeder, longitude and latitude) of the selected damage assessment report.
Purpose	Business users can view the specific details of the selected damage assessment report.
Representation	The table shows the location and device details for the selected damage assessment.
Drill Down	There is no drill down.
Source Object	Damage Assessment Fact
OAS Subject Area	NMS - Damage Assessment
Metrics	No metrics

Damage Specifics

Important! Note that this report shows data only for Oracle Utilities Network Management System version lower than 2.4.0.1. From v2.4.0.1 it does not show any data.

Property	Details
Description	This analysis provides the specific details of the selected damage Assessment report, such as the affected phases and sections.
Purpose	Business users can view the specific details of the selected damage assessment.
Representation	The table shows the damage specific information for the selected damage assessment. Along with the affected phase, section type, location, and load affected information, the analysis also shows each damage type associated with it, along with the accessible and inaccessible counts for each damage type.
Drill Down	There is no drill down.
Source Object	Damage Assessment Details Fact
OAS Subject Area	NMS - Damage Assessment Details
Metrics	Accessible Count, Inaccessible Count

Crews Required

Property	Details
Description	This analysis provides the types and counts of crews required to repair the recorded damage assessments. The data is displayed for the selected damage assessment ID.

Property	Details
Purpose	Business users can view the specific crew details of the selected damage assessment.
Representation	The table shows the damage specific information for the selected damage assessment. Along with the affected phase, section type, location, and load affected information, the analysis also shows each damage type associated with it, along with the accessible and inaccessible counts for each damage type.
Drill Down	There is no drill down.
Source Object	Damage Assessment Details Fact
OAS Subject Area	NMS - Damage Assessment Details
Metrics	Crews Needed

Required Material

Property	Details
Description	This analysis lists the materials required to restore/repair the selected damage assessment report.
Purpose	This analysis helps the crew to identify detailed parts required to perform the repair.
Representation	The table shows the part ID, part name, and quantity of the required material.
Drill Down	There is no drill down.
Source Object	Damage Assessment Details Fact
OAS Subject Area	NMS - Damage Assessment Details
Metrics	Quantity

Comments

Property	Details
Description	This analysis shows the details of the required material and the damage specifics for which the materials are utilized. The data is displayed for the selected damage assessment ID.
Purpose	Business users can analyze the comments that display remarks associated with the required materials.
Representation	The table shows the required material and the damage specification.
Drill Down	No drill down
Source Object	Damage Assessment Details Fact

Property	Details
OAS Subject Area	NMS - Damage Assessment Details
Metrics	n/a

Attachments

Property	Details
Description	This analysis allows you to see if there any attached files or links to an externally stored file that are associated with the selected damage assessment report.
Purpose	Business users can view the extra information associated with the damage assessment. It helps in better analysis.
Representation	The table shows the name of the attachment, the file size, date of modification, and the report ID associated with that file.
Drill Down	There is no drill down.
Source Object	NMS Replication Schema Fact
OAS Subject Area	NMS Replication Schema
Metrics	n/a

Events

The Events dashboard helps users to search for specific list of events based on a combination of criteria. The dashboard further enables users to drill down on a specific event and view the consolidated information on the specific entity.

To access this dashboard:

1. Go to the **Home** page.
2. Select **Dashboards** > **Outage Analytics** > **Events**.

The dashboard includes the following dashboard pages:

- Event Search
- Event Profile
- Event Call Log
- Event Log

Event Search

The Event Search dashboard page provides comprehensive search capabilities across events. It is supported by an extensive set of prompt elements that can be use in various combinations for searching. It presents the resulting list of events with basic information against each.

Event Search

Property	Details
Description	This analysis displays the event number, its status, outage details, and crew details for each event that falls within the selected date range.
Purpose	This page allows business analysts to search for events based on certain criteria.
Representation	The table shows all the events that satisfy the selection criteria. It includes information about the events, such as current status, the outage cause, the outage start and restoration time, the crew assigned, the crew type, the number of customer calls received, the number of customers impacted, and the outage duration.
Drill Down	The **Event Number** column link drills down to the Event Profile, Event Call Log, or Event Log dashboard pages for specific details about the selected event.
Source Object	Customer Restored Outage Fact Restored Job Fact
OAS Subject Area	NMS - Job NMS - Customer Outage
Metrics	Calls Received, Customers Impacted, Outage Duration

Event Profile

The Event Profile dashboard page displays the details of the event that was selected.

Event Profile

Property	Details
Description	This analysis shows the selected event's profile, including its device details, outage cause, control zone hierarchy details, customers impacted, customer minutes interrupted and the outage duration.
Purpose	Business users can identify details of an event, such as the feeder ID, the substation of the feeder, the event's status, its restoration date, etc.
Representation	The table shows the location and feeder details of the selected outage event, its status, cause for the outage, number of customers impacted, Customer Minutes Interrupted, and device details
Drill Down	There is no drill down.
Source Object	Customer Restored Outage Fact
OAS Subject Area	NMS - Restored Customer Outage
Metrics	Customer Minutes Interrupted, Customers Impacted, Outage Duration

Crew Actions

Property	Details
Description	This analysis shows the crew details along with the assignment details.
Purpose	Business users can analyze the details of the crews and their statuses.
Representation	The table displays the crew name, crew type, the assignment/ unassignment date and time, and the operator comments.
Drill Down	There is no drill down.
Source Object	Restored Crew Fact
OAS Subject Area	NMS - Restored Crew Activity
Metrics	n/a

Customers Impacted

Property	Details
Description	This analysis shows the list of customers impacted due to the selected event.
Purpose	Business users can identify the customers impacted due to a specific event. They can further analyze the criticality of the customers impacted so that they can prioritize restoring certain events to avoid repercussions to critical customers.
Representation	The table shows the details of the customers impacted, such the customer name, customer phone, revenue type, location details, outage duration, and the estimated restoration time. This table also lists whether a customer impacted is a medical customer, life support customer, critical customer or a key customer.
Drill Down	The **Account ID** column link drills down to the Customer Profile dashboard page for more details.
Source Object	Restored Customer Outage Fact
OAS Subject Area	NMS - Restored Customer Outage
Metrics	Outage Duration

Event Call Log

The Event Call Log dashboard page focuses on the customer call details associated with the event.

Event Call Log

Property	Details
Description	This analysis shows the call details for the selected event.
Purpose	Business users can view the number of calls logged against the specific event and analyze the event details. They can also identify the priority calls logged and the respective status of each call.
Representation	The table shows the date and time when the call (reporting an outage) was received, the caller details (such as name, ID and the phone number of the caller), the call's priority, and its status (whether resolved or not), along with the trouble code and any captured call comments.
Drill Down	There is no drill down.
Source Object	Restored Call Fact
OAS Subject Area	NMS - Restored Call
Metrics	n/a

Event Log

The Event Log dashboard page provides the logs associated with a specific event.

Event Log

Property	Details
Description	This analysis shows the logs associated with the selected event.
Purpose	Business users can get a clear picture of the different states the event went through based on its user logs.
Representation	The table shows all the user logs associated with the selected, including but not limited to status changes and crew assignments.
Drill Down	There is no drill down.
Source Object	B1_EVENT_VW
OAS Subject Area	NMS - Replication Switching
Metrics	n/a

Historical Outages

The Historical Outages dashboard provides historical information showing trends that can be used to help plan for future actions. The historical data can be filtered by date range, storm name, control zone, etc.

To access this dashboard:

1. Go to the **Home** page.
2. Select **Dashboards** > **Outage Analytics** > **Historical Outages**.

The dashboard includes the following dashboard pages. The data for the selected date and time is displayed by default. You may modify the criteria per requirement.

- Cause Category Analysis
- Historical Outage Map
- Trend
- Duration Analysis

Cause Category Analysis

The Cause Category Analysis dashboard page provides an analysis of the causes for outages and the respective categories into which each outage is classified.

CMI Across Cause Categories

Property	Details
Description	This analysis focuses on the customer minutes interrupted distributed across causes categories. The data is displayed for the selected period.
Purpose	This analysis provides users with how the customer minutes interruption are distributed across cause categories. Such type of information could help in implementing adequate preventive maintenance measures to improve the system reliability.
Representation	The pie chart shows the distribution of customer minutes interrupted across outage causes (as percentage of total).
Drill Down	There is no drill down.
Source Object	Customer Restored Outage Fact
OAS Subject Area	NMS - Historical Overview
Metrics	CMI

CMI Across Device Type

Property	Details
Description	This analysis shows the customer minutes interrupted across device types. The data is displayed for the selected time period using begin and end dates.

Property	Details
Purpose	Business users can identify the device types that are affected by outage events.
Representation	The pie chart shows the distribution of customer minutes interrupted (as percentage of total) for each device type.
Drill Down	There is no drill down.
Source Object	Customer Restored Outage Fact
OAS Subject Area	NMS - Historical Overview
Metrics	CMI

CI Across Cause Categories

Property	Details
Description	This analysis focuses on the customers interrupted because of various causes that are classified into different categories. The data is displayed for the selected time period using begin and end dates.
Purpose	This analysis provides users with how many customers are interrupted across cause categories. Such type of information could help in implementing adequate preventive maintenance measures to improve the system reliability.
Representation	The pie chart shows the distribution of customers experiencing outages sliced by various outage causes (as percentage of total).
Drill Down	There is no drill down.
Source Object	Customer Restored Outage Fact
OAS Subject Area	NMS - Historical Overview
Metrics	CI

CI Across Device Type

Property	Details
Description	This analysis shows the customers impacted across device types. The data is displayed for the selected time period using begin and end dates.
Purpose	Business users can identify the device types that are affected by outage events.
Representation	The pie chart shows the distribution of customers experiencing outages sliced by device types (as percentage of total).
Drill Down	There is no drill down.
Source Object	Customer Restored Outage Fact

Property	Details
OAS Subject Area	NMS - Historical Overview
Metrics	CI

Events Across Cause Categories

Property	Details
Description	This analysis shows the number of events distributed across outage causes for the selected period. The outage causes can include tree trimming, foreign interference, weather, etc.
Purpose	This analysis provides users with how many events are caused by certain outage causes. Such type of information could help in implementing adequate preventive maintenance measures to improve the system reliability.
Representation	The pie chart shows the distribution of outage causes (as percentage of total) for the selected time period using begin and end dates.
Drill Down	There is no drill down.
Source Object	Restored Job Fact
OAS Subject Area	NMS - Restored Job
Metrics	Events

Events Across Device Type

Property	Details
Description	This analysis shows the number of events distributed across device types for the selected period.
Purpose	Business users can identify the device types that are affected by outage events.
Representation	The pie chart shows the distribution of events sliced by each device type (as percentage of total).
Drill Down	There is no drill down.
Source Object	Restored Job Fact
OAS Subject Area	NMS - Restored Job
Metrics	Events

Summary Across Outage Causes

Property	Details
Description	This analysis provides a summary of CMI, CI and events across the causes of outage in the selected period.
Purpose	Business users can view a summary of the outage causes, including the total customer minutes interrupted, customers interrupted and the number of events for each outage cause and the percentage of each metric against the total.
Representation	The table shows the customers impacted, customer minutes interrupted, and number of events recorded for each outage cause. These are represented as percentage also.
Drill Down	The **Events** column link drills down to the **Events** dashboard page for more details.
Source Object	Customer Restored Outage Fact Restored Job Fact
OAS Subject Area	NMS - Historical Overview
Metrics	CMI, CI, Events

Summary Across Device Type

Property	Details
Description	This analysis provides a summary of outage across various device types in the selected period.
Purpose	Business users can view a summary of the device types affected by outages, including the total customer minutes interrupted, customers interrupted and number of events for each device type and the percentage of each metric against the total.
Representation	The table shows the customers impacted, customer minutes interrupted, and number of events recorded for each device type. These are represented as percentage also.
Drill Down	The **Events** column link drills down to the **Events** dashboard page for more details.
Source Object	Customer Restored Outage Fact Restored Job Fact
OAS Subject Area	NMS - Historical Overview
Metrics	CMI, CI, Events

Historical Outage Map

The Historical Outage Map dashboard page provides a geographical representation of the outage details.

Historical Outages

Property	Details
Description	This analysis provides a geographical view to quickly identify the number of customers impacted and/or the total customer minutes interrupted due to outages in various postal codes.
Purpose	This analysis allows user to analyze and identify historical outages that occurred across regions over a specific period of time.
Representation	The color-coded region on the map shows the customers impacted due to outages, and minutes interrupted in that postal code region. Use the **Customers Impacted** and **Customer Minutes Interrupted** check boxes to color fill the outage locations based on the respective values.
Drill Down	The **Event Number** link on the map drills down to the Event Profile dashboard page for more event details.
Source Object	Restored Customer Outage Fact
OAS Subject Area	NMS - Historical Overview
Metrics	CI, CMI

Trend

The Trend dashboard page provides a snapshot of all the events that occurred.

Events and Customers Impacted - Monthly Summary

Property	Details
Description	This analysis displays the number of events against the impacted customers. It shows a trend of whether the number of events and customers impacted are increasing or decreasing over the months. The number of customers is calculated as count of all customers who had at least one interruption in that period. The data is displayed for the last two months up to the last 24 months by selecting the appropriate Number of Months on the prompt.
Purpose	Business users can compare the data and analyze the event trend. If there is an increase in the number of events along with an increase in customers interrupted from the previous month, appropriate business decisions need to be taken to reduce it.

Property	Details
Representation	This analysis provides information on the monthly trend of customers impacted and number of events. Users can get the trend over a period of 2 to 24 months based on the month/year and number of months selected in the prompt. The X-axis represents the month and year. The Y1-axis represents the number of customers impacted due to events, while the Y2-axis represents the number of events. Hover over the bars for specific values.
Drill Down	There is no drill down.
Source Object	Restored Job Fact, Restored Customer Outage Fact
OAS Subject Area	NMS - Historical Overview
Metrics	Number of Events, Customer Interrupted

Difference Between Estimated and Actual Restoration Duration

Property	Details
Description	This analysis shows the difference between estimated restoration time and actual restoration time for each month in the selected time scale.
Purpose	If there is a large difference between the estimated and the actual restorations times, businesses may need to change their estimation methods.
Representation	The stacked bar graph shows the number of outage events that occurred in the last 2 to 24 months distributed across the various estimated restoration duration deviation buckets (for example: 0-10 min, 10-20 min, 20-30 min, etc). The X-axis represents the month and year. The Y-axis represents the number of outage events. Hover over the bars for specific values.
Drill Down	The bars drill down to the Duration Analysis dashboard page for specific duration details.
Source Object	Restored Job Fact
OAS Subject Area	NMS - Restored Job
Metrics	Events Across Duration Deviation

Outage Causes

Property	Details
Description	This analysis displays the monthly trend in outage events across outage causes. It shows whether the number of events are increasing or decreasing over the selected period due to certain causes.
Purpose	The analysis helps the business users to plan appropriate preventive maintenance activities to improve the system reliability.

Property	Details
Representation	The stacked bar graph shows a month-to-month comparison of the number of events that occurred due to each outage cause. The X-axis represents the month and year. The Y-axis represents the number of events. Hover over the bars for specific values.
Drill Down	There is no drill down.
Source Object	Restored Job Fact
OAS Subject Area	NMS - Restored Job
Metrics	Number of events per outage cause.

Average Duration by Crew Activities

Property	Details
Description	This analysis shows the average duration (in minutes) of various crew activities for the selected time scale.
Purpose	Business users can analyze how the time spent by a crew on various activity stages varies across the selected period. It helps to pinpoint inefficiencies in the crew assignment or task execution plans.
Representation	The stacked bar graph displays the average duration spent for each crew activity in the selected month. The X-axis represents the year and month. The Y-axis represents the average duration. Hover over the bars for specific details.
Drill Down	There is no drill down.
Source Object	Restored Crew Fact
OAS Subject Area	NMS - Historical Overview
Metrics	Time between Arrival and Completion, Time between Enroute and Arrival, Time between Assignment and Enroute, Time between Call Received and Assignment

Duration Analysis

The Duration Analysis dashboard page provides a detailed analysis of the outage durations.

Estimated Restoration Time Analysis

Property	Details
Description	This analysis shows the average actual restoration time, average estimated restoration time, and the difference (variation) for the selected period

Property	Details
Purpose	Business users can identify if there are any huge deviations between the estimated restoration times versus the actual restoration times. This will help them analyze if improvements are necessary when estimating the restoration period for outages.
Representation	The **View By** drop-down slices the data by crew, crew type, district or primary outage cause category. The table displays the average estimated restoration time, average actual restoration time, and the difference between actual and estimated restoration times for the selected attribute. Difference = Average Estimated (In Minutes) - Average Actual (In Minutes)
Drill Down	There is no drill down.
Source Object	Restored Job Fact
OAS Subject Area	NMS - Restored Job
Metrics	Average Estimated (In Minutes), Average Actual (In Minutes), Difference (between Estimated and Actual restoration Times)

Reliability

The Reliability dashboard provides a summary of the feeder performance and also the following IEEE performance metrics:

- SAIDI (System Average Interruption Duration Index)
- SAIFI (System Average Interruption Frequency Index)
- CAIDI (Customer Average Interruption Duration Index)
- MAIFI (Momentary Average Interruption Frequency Index)

These indices are calculated as per IEEE standards and help in tracking system reliability.

To access this dashboard:

1. Go to the **Home** page.
2. Select **Dashboards** > **Outage Analytics** > **Reliability**.

The dashboard includes the following dashboard pages.

- Feeder Performance
- Monthly Trend
- Yearly Trend
- Reliability by Control Zone Hierarchy
- Reliability by Control Zone Secondary Hierarchy
- City Reliability Map
- Device Analysis Map

Feeder Performance

The Feeder Performance dashboard page provides a snapshot of the overall health of the feeders, particularly those that are worst performing.

Top 10 Worst Performing Feeders

Property	Details
Description	This analysis shows the top 10 worst performing feeders in the selected period. It displays the feeders sorted by their SAIDI numbers, and also how each feeder contributes to the total System SAIDI value.
Purpose	Business users can identify the feeders that are not performing well, and thus analyze how each feeder contributes to the total SAIDI value. Based on the analysis, they might choose to target feeders for improvement.
Representation	The table shows the SAIDI values and ranks (for the selected period) for each of the top 10 worst performing feeders. The percentage of total value is also shown.
Drill Down	The **Feeder** column drills down to the Historical Outages dashboard page for more details.
Source Object	Control Zone Outage Fact
OAS Subject Area	NMS - Control Zone Outage
Metrics	SAIDI, % of System SAIDI, Rank of SAIDI

Feeder Analysis

Property	Details
Description	This analysis shows the percentages of system SAIDI and SAIFI for the selected period.
Purpose	By comparing SAIDI and SAIFI values in an analysis, business users can view the percentage of customers interrupted against the percentage of outage duration. This helps them in targeting improvements on feeders that are having the biggest impact on system SAIDI and SAIFI.

Property	Details
Representation	The scatter graph shows the percentages of SAIDI and SAIFI. The X-axis represents the percentage of system SAIDI. The Y-axis represents the percentage of system SAIFI. Hover over the dots for specific values. SAIDI = Customer Minutes Interrupted/Number of Customers Served SAIFI = Number of Customers Interrupted/Number of Customers Served % System SAIFI = CI of a feeder/system CI % System SAIDI = CMI of a feeder/system CMI
Drill Down	There is no drill down.
Source Object	Control Zone Outage Fact
OAS Subject Area	NMS - Control Zone Outage
Metrics	% System SAIFI, % System SAIDI

Top 10 Worst Feeders Impact on System SAIFI

Property	Details
Description	This analysis shows the percentage of system SAIFI and cumulative percentage of system SAIFI for the top ten worst performing feeders. The data is displayed for the selected period.
Purpose	Business users can focus on improving feeders having biggest impact on system SAIFI.
Representation	The line graph shows the percentages of system SAIFI for each of the feeders. The X-axis represents the feeder. The Y-axis represents the percentage of SAIFI. Hover over the bars to view specific values.
Drill Down	There is no drill down.
Source Object	Control Zone Outage Fact
OAS Subject Area	NMS - Control Zone Outage
Metrics	% of System SAIFI, Cumulative % of System SAIFI

Monthly Trend

The Monthly Trend dashboard page provides a snapshot of the monthly SAIDI trends for the selected period.

System Average Interruption Duration Index

Property	Details
Description	This analysis shows the monthly SAIDI trend in the last 2 to 24 months (provided as Number of Months in the prompt) of the selected calendar year and months.
Purpose	The analysis compares the SAIDI values for each month in the selected period. Business users can analyze whether the system performance is trending better or worse than the previous months.
Representation	The line graph shows the SAIDI values for each month, along with the cumulative SAIDI. The X-axis represents the month and year. The Y-axis represents the SAIDI values. Hover over the lines for specific details.
Drill Down	There is no drill down.
Source Object	Control Zone Outage Fact
OAS Subject Area	NMS - Control Zone Outage
Metrics	SAIDI, Cumulative SAIDI

System Average Interruption Frequency Index

Property	Details
Description	This analysis shows the monthly SAIFI trend in the last 2 to 24 months (provided as Number of Months in the prompt) of the selected calendar year and month.
Purpose	The analysis compares the monthly SAIFI values for the selected period. Business users can analyze whether the feeder performance is trending better or worse than the previous period.
Representation	The line graph shows the SAIFI values for each month, along with the cumulative SAIFI. The X-axis represents the month and year. The Y-axis represents the interruptions. Hover over the lines for specific details.
Drill Down	There is no drill down.
Source Object	Control Zone Outage Fact
OAS Subject Area	NMS - Control Zone Outage
Metrics	SAIFI, Cumulative SAIFI

Momentary Average Interruption Frequency Index

Property	Details
Description	This analysis shows the monthly MAIFI trend in the last 2 to 24 months (provided as Number of Months in the prompt) of the selected calendar year and month.
Purpose	The analysis compares the MAIFI values for the current and previous months. Business users can analyze whether the system performance is trending better or worse than the previous period.
Representation	The line graph shows the year to date MAIFI and cumulative MAIFI values for each month. The X-axis represents the month and year. The Y-axis represents the MAIFI values. Hover over the lines for specific details.
Drill Down	There is no drill down.
Source Object	Control Zone Outage Fact
OAS Subject Area	NMS - Control Zone Outage
Metrics	MAIFI, Cumulative MAIFI

Events

Property	Details
Description	This analysis shows the monthly event trend in the last 2 to 24 months (provided as Number of Months in the prompt) of the selected calendar year and month.
Purpose	The analysis compares the event values for the current and previous months. Business users can analyze whether the system performance is better or worse than the previous period.
Representation	The line graph shows the number of events for each month. The X-axis represents the month and year. The Y-axis represents the number of events. Hover over the lines for specific details.
Drill Down	There is no drill down.
Source Object	Control Zone Outage Fact
OAS Subject Area	NMS - Control Zone Outage
Metrics	Number of Events, Cumulative Events

Monthly Reliability Statistics

Property	Details
Description	This analysis shows the reliability statistics for 2-24 months as selected in the prompts.

Property	Details
Purpose	The analysis compares the SAIDI, SAIFI, and MAIFI values over the previous six months. Business users can analyze whether the system performance is better or worse than the previous period.
Representation	The table shows the SAIDI, SAIFI, and MAIFI values, number of events, cumulative SAIDI, cumulative SAIFI, and cumulative MAIFI, and cumulative events for each month and year.
Drill Down	The **Number of Events** column drills down to the Event Profile dashboard page for specific values.
Source Object	Control Zone Outage Fact
OAS Subject Area	NMS - Control Zone Outage
Metrics	SAIDI, SAIFI, MAIFI, Number of Events, Cumulative SAIDI, Cumulative SAIFI, Cumulative MAIFI, Cumulative Events

Yearly Trend

The Yearly Trend dashboard page provides a snapshot of the SAIDI SAIFI, MAIFI, and event trends for the selected year.

System Average Interruption Duration Index

Property	Details
Description	This analysis shows the SAIDI trend in the time period selected using the time scale.
Purpose	The analysis compares shows a SAIDI trend for the time period selected. Business users can analyze whether the system performance is improving or getting worse over a long term trend.
Representation	The line graph shows the SAIDI values for each year. The X-axis represents the calendar year. The Y-axis represents the SAIDI values. Hover over the lines for specific details.
Drill Down	There is no drill down.
Source Object	Control Zone Outage Fact
OAS Subject Area	NMS - Control Zone Outage
Metrics	SAIDI

System Average Interruption Frequency Index

Property	Details
Description	This analysis shows the SAIFI trend for the selected feeder in the time period selected using the time scale. The default values are shown for previous two years.

Property	Details
Purpose	The analysis shows the SAIFI trend for the selected time period. Business users can analyze whether the system performance is improving or getting worse over a long term trend.
Representation	The line graph shows the SAIFI values for each calendar year. The X-axis represents the year. The Y-axis represents the interruptions. Hover over the lines for specific details.
Drill Down	There is no drill down.
Source Object	Control Zone Outage Fact
OAS Subject Area	NMS - Control Zone Outage
Metrics	SAIFI

Momentary Average Interruption Frequency Index

Property	Details
Description	This analysis shows the MAIFI trend for the selected time period.
Purpose	The analysis shows the MAIFI trend for the selected time period. Business users can analyze whether the system performance is trending better or worse over the selected time period.
Representation	The line graph shows MAIFI for each calendar year. The X-axis represents the calendar year. The Y-axis represents the MAIFI values. Hover over the lines for specific details.
Drill Down	There is no drill down.
Source Object	Control Zone Outage Fact
OAS Subject Area	NMS - Control Zone Outage
Metrics	MAIFI

Events

Property	Details
Description	This analysis shows the trend of events for the selected time period.
Purpose	The analysis shows a trend of event counts for the selected time period. Business users can analyze how the number of events per year is trending.
Representation	The line graph shows the number of events for each year. The X-axis represents the calendar year. The Y-axis represents the number of events. Hover over the lines for specific details.
Drill Down	There is no drill down.
Source Object	Control Zone Outage Fact

Property	Details
OAS Subject Area	NMS - Control Zone Outage
Metrics	Number of Events

Yearly Reliability Statistics

Property	Details
Description	This analysis shows the reliability statistics for the selected time period.
Purpose	The analysis shows the SAIDI, SAIFI, and MAIFI values over the selected time period. Business users can analyze whether the system performance is trending better or worse.
Representation	The table shows the SAIDI, SAIFI, and MAIFI values, and the number of events for each calendar year.
Drill Down	There is no drill down.
Source Object	Control Zone Outage Fact
OAS Subject Area	NMS - Control Zone Outage
Metrics	SAIDI, SAIFI, MAIFI, Number of Events

Reliability by Control Zone Hierarchy

The Reliability by Control Zone dashboard page focuses on the reliability indices calculated for each control zone.

Momentary/Sustained Interruptions

Property	Details
Description	This analysis shows control zone level reliability metrics for the selected period.
Purpose	Business users can analyze reliability metrics in a specific control zone.
Representation	The table shows reliability metrics for the control zone hierarchy for the selected period.
Drill Down	There is no drill down.
Source Object	Control Zone Outage Fact
OAS Subject Area	NMS - Control Zone Outage
Metrics	MAIFI, Number of Momentary Interruptions, Number of Customer Served, SAIDI, SAIFI, MAIFI, Sustained Interruptions, CMI, CAIDI

Customers Interrupted by Substation

Property	Details
Description	This analysis shows the customers interrupted by substation for the selected period and the selected Division.
Purpose	Business users can identify the substations with the highest number of customer interruptions.
Representation	The **Division** drop-down lists the division details. The stacked bar graph shows the momentary and sustained interruptions in each of the substations. The X-axis represents the substations. The Y-axis represents the customer interruptions. Hover over the bars for specific details.
Drill Down	The labels on the X-axis of the stacked bar graph have the master-detail interaction with the Customers Interrupted by Feeder analysis on the same dashboard page. Clicking on a specific substation label refreshes the Customers Interrupted by Feeder to show the data for the specific substation.
Source Object	Control Zone Outage Fact
OAS Subject Area	NMS - Control Zone Outage
Metrics	Customers Interrupted

Customers Interrupted by Feeder

Property	Details
Description	This analysis shows the customers interrupted by feeder for the selected time period.
Purpose	Business users can identify the substations with the highest number of customer interruptions.
Representation	Use the **Substation** drop-down list to select the substation with feeders having interruptions. The stacked bar graph shows the momentary and sustained interruptions in each of the feeders in the selected substation. The X-axis represents the feeder. The Y-axis represents the customers interrupted. Hover over the bars for specific details.
Drill Down	There is no drill down.
Source Object	Control Zone Outage Fact
OAS Subject Area	NMS - Control Zone Outage
Metrics	Customers Interrupted

Reliability by Control Zone Secondary Hierarchy

The Reliability by Control Zone dashboard page focuses on the reliability indices calculated for each control zone secondary hierarchy.

Momentary/Sustained Interruptions

Property	Details
Description	This analysis shows control zone level reliability metrics for the selected period.
Purpose	Business users can analyze reliability metrics at the control zone level.
Representation	The table shows the number of momentary interruptions and the customers impacted in the control zone hierarchy, and also the number of sustained interruptions and the customers impacted in the control zone secondary hierarchy, along with SAIDI, CMI, SAIFI, and CAIDI values. The data is shown for the selected period.
Drill Down	There is no drill down.
Source Object	Control Zone Outage Fact
OAS Subject Area	NMS - Control Zone Outage
Metrics	MAIFI, Number of Momentary Interruptions, Number of Customer Served, SAIDI, SAIFI, MAIFI, Sustained Interruptions, CMI, CAIDI

Customers Interrupted by Substation

Property	Details
Description	This analysis shows the interruptions occurring at the substations for the selected period.
Purpose	Business users can identify the substations with the highest number of customer interruptions.
Representation	The **Division** drop-down lists the division details. The stacked bar graph shows the momentary and sustained interruptions in each of the substations. The X-axis represents the substations. The Y-axis represents the customer interruptions. Hover over the bars for specific details.
Drill Down	The labels on the X-axis of the stacked bar graph have the master-detail interaction with the Customers Interrupted by Feeder analysis on the same dashboard page. Clicking on a specific substation label refreshes the Customers Interrupted by Feeder to show the data for the specific substation.
Source Object	Control Zone Outage Fact
OAS Subject Area	NMS - Control Zone Outage
Metrics	Customers Interrupted

Customers Interrupted by Feeder

Property	Details
Description	This analysis shows the interruptions occurring at the feeders for the selected time period.
Purpose	Business users can identify the substations with the most customer interruptions.
Representation	Use the **Substation** drop-down list to select the substation. The stacked bar graph shows the momentary and sustained interruptions in each of the feeders in the selected substation. The X-axis represents the feeder. The Y-axis represents the customers interrupted. Hover over the bars for specific details.
Drill Down	There is no drill down.
Source Object	Control Zone Outage Fact
OAS Subject Area	NMS - Control Zone Outage
Metrics	Customers Interrupted

City Reliability Map

The City reliability Map dashboard page focuses on the reliability indices calculated for each city and control zone.

City Reliability Map

Property	Details
Description	This analysis provides a spatial representation of the customers interrupted in a specific region. It displays the reliability indices and CMI calculated for each city in the selected time period.
Purpose	Business users can view reliability metrics by city in a spatial perspective.
Representation	The color-coded region on the map shows the customers interrupted in that region. The table displays the number of customers interrupted in each city, along with the respective SAIDI, CMI, CAIDI, and SAIFI indices.
Drill Down	There is no drill down.
Source Object	City Outage Fact
OAS Subject Area	NMS - City Outage
Metrics	Customers Interrupted, SAIDI, CAIDI, CMI, SAIFI

Device Analysis Map

The Device Analysis Map dashboard page focuses on the device performance.

Device Analysis Map

Property	Details
Description	This map displays the number of outages for each device and the customer minutes interrupted due to the outage. The data is displayed for the selected time period.
Purpose	Business users can see locations of devices that have had more outages than normal.
Representation	The images (flag icons in red, yellow, and green) represent the device location of outage. Hover over the flags for number of outage devices, device coordinates, name of the device, customers interrupted and customer minutes interrupted. The table displays the device name, number of outages for each device, customers interrupted, and the total customer minutes interrupted due to the outages.
Drill Down	The **Outages by Devices** column link drills down to the Events dashboard page for more details.
Source Object	CI, Number of Outages, CMI
OAS Subject Area	NMS - Restored Customer Outage
Metrics	Customer Minutes Interrupted, Customers Interrupted, Outages by Devices

Storm Analysis

The Storm Analysis dashboard provides an analysis of the storms and their impact on the customers in a given period.

To access this dashboard:

1. Go to the **Home** page.
2. Select **Dashboards** > **Outage Analytics** > **Storm Analysis**.

The dashboard includes the following dashboard pages. The data for current calendar year and month is displayed by default. You may modify the criteria per requirement.

- Storm Overview
- Storm Analysis Overview

Storm Overview

The Storm Overview dashboard provides an overview of the storms that occurred in the selected period.

Storm List

Property	Details
Description	This analysis provides a list of storms and their details, including how the storms impacted customers. The list includes storms that happened during the selected period.
Purpose	Business users can analyze specific information about each storm recorded, and how many customers it impacted. Using this analysis, they can predict the damage that a future storm, with similar condition and level, may bring.
Representation	The table shows the details of the storm including when it started and ended, the control zone hierarchy it affected, its special condition and storm level, its status, the number of customers it affected and the customer minutes that it interrupted.
Drill Down	The **Storm Name** column link drills down to the Storm Analysis Overview dashboard page for details about a specific storm.
Source Object	Restored Customer Outage Fact
OAS Subject Area	NMS - Restored Customer Outage
Metrics	Customers Interrupted, Customer Minutes Interrupted

Excludable Storm List

Property	Details
Description	This analysis lists excludable storms in the selected period.
Purpose	Business users can see and analyze the storms that are tagged as excluded from reporting.
Representation	The table shows the details of the excludable storm including when it started and ended, the control zone hierarchy it affected, its special condition and storm level, any comments entered about it, the number of customers it affected and the customer minutes that it interrupted.
Drill Down	The **Storm Name** column link drills down to the Storm Analysis Overview dashboard page for details about a specific storm.
Source Object	Restored Customer Outage Fact
OAS Subject Area	NMS - Restored Customer Outage
Metrics	Customers Interrupted, Customer Minutes Interrupted

Storm Analysis Overview

The Storm Analysis Overview dashboard provides an overview of a selected storm including the reliability metrics during the storm, how the storm affected customers and how the utility is responding to outages caused by the storm.

Storm Statistics

Property	Details
Description	This analysis provides the storm details, including all metrics calculated for the actual storm period and its excludable period (portion of a storm that can be excluded when reporting reliability metrics).
Purpose	Reliability users can use the calculated indices during the storm period to identify the major event dates so that they can go back to NMS and update an existing storm's record to indicate an excludable period, if necessary.
Representation	The **Storm Name** drop-down lists all the storms recorded. The storm name selected in the Storm Overview dashboard page is shown by default. The table shows the storm's calculated metrics based on its storm period and its excludable period.
Drill Down	There is no drill down in this analysis.
Source Object	Storm Fact
OAS Subject Area	NMS - Storm
Metrics	Customers Interrupted, Customer Minutes Interrupted, Momentary Customers Interrupted, Number of Events, Damage Assessments, SAIDI, SAIFI, MAIFI, CAIDI

Storm Summary by Hour - Customers View

Property	Details
Description	This analysis displays hourly information about customers who experienced outages due to the selected storm.
Purpose	Business users can analyze how the storm affected customers every hour during a specific date of the storm period (or its excludable period), as well as providing insight on how the utility is servicing the customers' needs for energy restoration during the storm.

Property	Details
Representation	The **Storm Type** drop-down allows you to display the data for the storm period or the excludable period. **Note**: These drop-down details are broadcast to the Storm Summary by Hour - Events View and Hourly Statistics analyses on the same dashboard page. The bar graph shows the number of customers who experienced out-ages in the specific time (hour) as well as those customers who were restored in that hour. The X-axis represents the time of the day (in hours) . The Y1-axis represents the number of customers, while the Y2-axis represents the cumulative customers. The lines on the graph represent the cumulative customers who are either newly experiencing an outage, still in an outage or have been restored. Hover over the lines for specific details.
Drill Down	There is no drill down in this analysis.
Source Object	Storm Fact
OAS Subject Area	NMS - Storm
Metrics	New Customers Out, Customers Remaining Out, Cumulative New Customers Out, Customers Restored, Cumulative Customers Restored

Storm Summary by Hour - Events View

Property	Details
Description	This analysis displays hourly information about outage events that occurred due to the selected storm.
Purpose	Business Analysts can identify how many outage events happened every hour the storm is active, as well as how well the utility is responding in closing these events during the storm period and its excludable period, if any.

Property	Details
Representation	The Storm Type drop-down allows you to display the data for the Storm period or excludable period. **Note**: This drop-down is broadcast to the Storm Summary by Hour - Customers View and Hourly Statistics analyses on the same dashboard page. The bar graph shows the number of outage events that are either new or closed during the specific time (hour). The X- axis represents the time of the day (in hours). The Y1-axis represents the number of events, while the Y2-axis represents the cumulative events. The lines on the graph represent the cumulative events. Hover over the lines for specific details.
Drill Down	There is no drill down in this analysis.
Source Object	Storm Fact
OAS Subject Area	NMS - Storm
Metrics	New Events, Closed Events, Remaining Events, Cumulative New Events, Cumulative Closed Events

Hourly Statistics

Property	Details
Description	This analysis gives a tabular summary on how the storm affected customers and how many outages it brought about on an hourly basis, as well as providing information on how the utility is restoring the energy for these customers and closing the events.
Purpose	Reliability users can use the data during the storm period to identify the major event dates so that they can go back to Network Management System and update an existing storm's record to indicate an excludable period, if necessary.
Representation	The Storm Type drop-down allows you to display the data for the storm period or excludable period. **Note**: This drop-down is broadcast to the Storm Summary by Hour - Customers View and Storm Summary by Hour - Events View analyses on the same dashboard page. The table displays the remaining customers out and events, new/ closed events, cumulative new/closed events, new/ restored customers, cumulative customers interrupted/restored, customer minutes interrupted and the cumulative customer minutes interrupted, on an hourly basis.
Drill Down	The **New Events** link drills down to the Event Search to see more details about these new events caused by the storm.
Source Object	Storm Fact

Property	Details
OAS Subject Area	NMS - Storm
Metrics	Customers Remaining Out, Remaining Events, New Events, Closed Events, Cumulative New Events, Cumulative Closed Events, New Customers Out, Customers Restored, Cumulative Customers Interrupted, Cumulative Customers Restored, Customer Minutes Interrupted, Cumulative Customer Minutes Interrupted

Switching

The Switching dashboard focuses on the switching plans to maximally transfer all existing feeders supplied by the transformers to adjacent power transformers or adjacent substations.

To access this dashboard:

1. Go to the Home page.
2. Select **Dashboards** > **Outage Analytics** > **Switching**.

The dashboard includes the following dashboard pages. The data for current calendar year and month is displayed by default. You may modify the criteria per requirement.

- Switch Plans
- Switch Plan Profile
- Abnormal Devices

Switch Plans

The Switch Plans dashboard page focuses on the switch plans, their types, and statuses.

Switch Plans By Status

Property	Details
Description	This analysis shows the switch plans distributed according to their status. The data is displayed for the selected period and hierarchy.
Purpose	Business users can identify if the switching sheets are passing through the different phases of its state transitions and plan accordingly to ensure that switching sheets end up completed.
Representation	The pie chart shows the distribution of switch plans across each status (such as active, completed, abandoned, hold, etc).
Drill Down	There is no drill down.
Source Object	Switch Plan Fact
OAS Subject Area	NMS - Switch Plan
Metrics	Switch Plans

Switch Plans By Type

Property	Details
Description	This analysis shows the switch plans distributed across switch plan types. The data is displayed for the selected period and hierarchy.
Purpose	Business users can see the percentage of switch plans on each switch plan type that could help improve the coordination and accuracy of switching.
Representation	The pie chart shows the distribution of switch plans across each type (such as planned, emergency, outage correction, FLISR, etc).
Drill Down	There is no drill down.
Source Object	Switch Plan Fact
OAS Subject Area	NMS - Switch Plan
Metrics	Switch Plans

Switch Plan List

Property	Details
Description	This analysis shows the list of switch plans, along with detailed information. The data is displayed for the selected period and hierarchy.
Purpose	Business users can identify the switch plans allowing them to track proposed switching actions, analyze the results, and implement the plan.
Representation	The table shows the details of each switch plan, such as its current status, switch plan type, switch plan sheet number, feeder information, device information, user information, and when it was started, and finished.
Drill Down	The **Sheet #** column link drills down to the Switch Plan Profile dashboard page for more details.
Source Object	Switch Plan Fact
OAS Subject Area	NMS - Switch Plan
Metrics	Switch Plans, Number of Steps

Switch Plan Profile

The Switch profile dashboard page focuses on the details of a selected switch sheet number.

Details

Property	Details
Description	This analysis shows the details of the selected switch sheet.
Purpose	Business users can analyze the details of a specific switch plan.
Representation	The table shows various details (such as charge numbers, location details, feeder, start/finish date/time, crew details, etc) for the selected sheet number.
Drill Down	There is no drill down.
Source Object	Switch Plan Fact
OAS Subject Area	NMS - Switch Plan
Metrics	Customers Impacted

Steps

Property	Details
Description	This analysis shows the steps involved in the switch plan.
Purpose	Business users can analyze the steps related to this switch plan.
Representation	The table shows the step number, operations carried out on specific devices, the step's status, when the step is planned to be performed, who provided instructions and when they were given, and who completed the step and when it was done.
Drill Down	There is no drill down.
Source Object	NMS Replication Tables
OAS Subject Area	NMS - Replication - Switching
Metrics	n/a

Impacted Customers

Property	Details
Description	This analysis provides information about the customers impacted by the selected switch plan.
Purpose	Business users can identify the customers affected by the switch plan.
Representation	The table shows information of impacted customers, such as customer name, account, meter number, criticality, address and results of the impact.
Drill Down	There is no drill down.
Source Object	Customer Outage Fact

Property	Details
OAS Subject Area	NMS - Customer Outage
Metrics	Customer Impacted

Overlaps

Property	Details
Description	This analysis focuses on any overlaps that the selected switch plan has with other switching sheets in terms of time, control zone or affected devices.
Purpose	Business analysts can analyze switch plans that overlap with the selected switch plan.
Representation	The table shows the overlap type and status, the overlapping sheet number and its type, the number of steps included in the switching sheet, the number of device overlaps, the number of overlapping control zones, the number of hours the sheet overlaps with the selected sheet, the number of impacted nodes shared by the two switching sheets, the user who requested the overlapping sheet, and when the overlapping sheet was started and finished.
Drill Down	There is no drill down.
Source Object	NMS Replication Tables
OAS Subject Area	NMS - Replication - Switching
Metrics	Number of Device Overlaps, Number of Steps, Number of Hours, Number of Overlapping Control Zones, Number of Impacted Zones

External Documents

Property	Details
Description	The external documents are Word documents, pictures, or any other type of files associated with the switch plan. They are typically stored on the Oracle Utilities Network Management System server. This analysis shows the external documents attached against switch plans.
Purpose	Business users see the attachments that are associated with the selected switch plan.
Representation	The table shows the name of the external document, the file size, status, and modified date for each file.
Drill Down	There is no drill down.
Source Object	NMS Replication Tables
OAS Subject Area	NMS - Replication - Switching

Property	Details
Metrics	n/a

Safety Documents

Property	Details
Description	This analysis shows the safety documents' details.
Purpose	The analysis provides information about a particular operation and records the issuance and release of tags on devices.
Representation	The table shows the name of the document number, type, status, and crew details for each safety document.
Drill Down	There is no drill down.
Source Object	NMS Replication Tables
OAS Subject Area	NMS - Replication - Switching
Metrics	n/a

Abnormal Devices

The Abnormal Devices dashboard page focuses on the devices currently in an abnormal state for a control zone or geographical jurisdiction.

Abnormal Devices

Property	Details
Description	This analysis provides a geographical view to capture the history of when devices go into abnormal state and return back to normal condition.
Purpose	Business users can identify the list of devices that were in an abnormal state, but have been reset to normal during the selected period.
Representation	The map shows the location of the abnormal devices in the selected period. The color coded regions represent the abnormal devices by the current state (open = green, closed = red) If an abnormal device had multiple alarms during the selected period, each alarm is represented as a single point on the map. The table lists each abnormal device, date from when the device turned abnormal and date when it got back to normal, and current state of the device.
Drill Down	There is no drill down.
Source Object	Abnormal Device Log Fact
OAS Subject Area	NMS - Abnormal Devices

Property	Details
Metrics	n/a

Distribution Analytics

This section describes the metrics available in Distribution Analytics of Oracle Utilities Analytics Warehouse Dashboards. The analytics enable the Utilities' customers to monitor and measure network distribution.

The analytics mainly focus on feeder functionality. Based on certain feeder values (such as its length, capacity, etc), users can calculate the power actually distributed.

Oracle Utilities Analytics Warehouse Dashboards for Oracle Utilities Network Management System provides Distribution Analytics content in the Distribution dashboard.

Distribution

The Distribution dashboard provides various analytics about feeders and their performance.

To access this dashboard:

1. Go to the **Home** page.
2. Select **Dashboards** > **Distribution Analytics** > **Distribution**.

The dashboard includes the following dashboard pages. The data for current calendar year and previous month is displayed by default. You may modify the criteria per requirement.

- Feeder Load (Composite)
- Feeder Performance

Feeder Load (Composite)

The Feeder Load (Composite) dashboard page focuses on the feeder load statistics in the Oracle Utilities Network Management System model.

Feeder Load

Property	Details
Description	This analysis shows the average feeder load, on a monthly basis, for the previous 15 months. The load is measured in kilovolt-ampere (kVA).
Purpose	Business users can analyze if the feeder is handling the load as per its capacity or it is being overloaded.
Representation	The line graph shows the average feeder load for the previous 15 months. Hover over the line for specific details. The X-axis denotes the calendar month. The Y-axis denotes the average feeder load in kVA. Use the graph to view the low-level details of the feeder load.
Drill Down	No drill down
Source Object	Feeder Delivered Load Snapshot Fact
OAS Subject Area	DMS - Feeder Delivered Load Snapshot

Property	Details
Metrics	Average kVA, kw, kVAr, Amp, Voltage

Feeder Load Detail

Property	Details
Description	This analysis displays the maximum daily feeder load details for the selected month. The details include feeder information and maximum load that can be carried by the feeder in terms of amperes, voltage, etc.
Purpose	Business users can analyze the data and observe or monitor the peaks in the feeder load for the selected month. Any deviations in the load will impact the network distribution.
Representation	The table shows the name of the feeder, manufacturing company of the feeder, and load details for the selected month.
Drill Down	No drill down
Source Object	Feeder Delivered Load Snapshot Fact
OAS Subject Area	DMS - Feeder Delivered Load Snapshot
Metrics	Maximum kVA, Maximum kw, Maximum kVAr, Maximum Amp, Maximum Voltage

Greatest Feeder Peak Load Detail

Property	Details
Description	This analysis shows the feeders that experienced the maximum peak load (in kVA) in the selected month. It also shows where the heaviest load exists within the distribution network.
Purpose	The feeders are ranked based on the load each one of them experienced in the selected month. Business users can monitor such feeders closely to ensure that the overload conditions do not occur. Overload might cause breakdown leading to outages.
Representation	The table shows the maximum load for each of the feeder and also the ranking.
Drill Down	No drill down
Source Object	Feeder Delivered Load Snapshot Fact
OAS Subject Area	DMS - Feeder Delivered Load Snapshot
Metrics	Maximum kVA

Smallest Feeder Capacity Margin

Property	Details
Description	"Breaker capacity" is the margin before which an overload may occur. This analysis displays the breaker capacity for each feeder that helps to determine the feeders having the smallest remaining margin before overloads may occur, possibly resulting in a breaker lock out.
Purpose	Business users can identify the feeders with lowest margin and take necessary measures to set an even distribution amongst the feeders.
Representation	The table shows the maximum amplitude, maximum breaker amp limit, and the capacity margin for the respective feeder. Capacity Margin = (Maximum Breaker Amp Limit - Maximum Amp)
Drill Down	No drill down
Source Object	Feeder Delivered Load Snapshot Fact
OAS Subject Area	DMS - Feeder Delivered Load Snapshot
Metrics	Capacity Margin, Maximum Amp, Maximum Breaker Amp Limit

Feeder Performance

The Feeder Performance dashboard page provides a snapshot of the overall health of feeders, such as worst performing feeders. It also compares the feeder performance with that of the previous period, along with the number of interruptions and customers impacted. This can alert the businesses to take preventive action in advance.

Feeder Performance

Property	Details
Description	This analysis displays the reliability indices for company, region, division, and feeder level, along with the number of customers served per control zone. The data is displayed for the selected calendar year.
Purpose	Business users can verify the reliability indices to state the effectiveness of feeders. Users can identify the impact of outages in a specific year and control zone.
Representation	The table shows the number of sustained interruptions, number of momentary interruptions, number of customers served, and the relative reliability indices, for the selected calendar year.
Drill Down	No drill down
Source Object	Control Zone Outage Fact
OAS Subject Area	NMS - Control Zone Outage
Metrics	SAIDI, SAIFI, CMI, CAIDI, MAIFI, Number of Sustained Interruptions, Number of Customer Served

Top 10 Worst Performing Feeders

Property	Details
Description	This analysis displays the top 10 worst performing feeders in the selected month, sorted by their SAIDI numbers.
Purpose	Business users can identify the feeders that are not performing well, and thus analyze how each feeder contributes to the total SAIDI value. Based on the analysis, they might choose to replace or upgrade feeders or check if there are any external factors impacting the feeder performance. Also, they can figure out if any load balancing techniques have to be used.
Representation	The table shows the SAIDI values for each of the feeders and their corresponding SAIDI rank. The previous SAIDI rank is also shown to compare the performance in the current month and the previous month. It also shows the percentage of total SAIDI for each of the feeders. % of Total = (SAIDI * 100) / Total SAIDI The pie chart shows the share of each feeder in total SAIDI.
Drill Down	No drill down
Source Object	Control Zone Outage Fact
OAS Subject Area	NMS - Control Zone Outage
Metrics	SAIDI, SAIFI, CMI, CAIDI, MAIFI, Number of Sustained Interruptions, Number of Customer Served

Top 10 Consecutive Worst Performing Feeders

Property	Details
Description	Sometimes, feeders tend to under perform due to environmental factors, overload, or outdated hardware issues. This analysis displays the top 10 feeders that are consecutively performing badly. The data is shown for the selected month.
Purpose	Feeders that consecutively perform worse might need more attention. Any degrade in the performance might need necessary measures.
Representation	The table shows the SAIDI values and the respective SAIDI ranks for each of the top 10 worst performing feeders in the selected and previous months. It also shows the percentage of total SAIDI for each of the feeders. % of Total = (SAIDI * 100) / Total SAIDI The **Rank** text box displays selected ranks in the report.
Drill Down	No drill down

Property	Details
Source Object	Control Zone Outage Fact
OAS Subject Area	NMS - Control Zone Outage
Metrics	SAIDI, % of Total, Rank of SAIDI, Previous SAIDI Rank, Previous SAIDI

Sample NMS DV Projects

This section describes the metrics available in Sample NMS DV Projects.

Oracle Utilities Analytics Warehouse provides Sample NMS DV Projects content in the following visualizations:

- Log Normal CMI Box Plot

Log Normal CMI Box Plot

The Log Normal CMI Box Plot visualization provides an analysis of the CMI distribution over time.

To access this visualization:

1. Go to the **Home** page.
2. Select **Catalog** > **Shared Folders** > **Sample NMS DV Projects**.

The project includes the following canvas. The data for 5 calendar years is displayed by default. You may modify the criteria per requirement.

CMI Distribution Over Time

Property	Details
Description	Daily CMI has a log normal distribution. This box plot analysis applies a transformation to the daily CMI so that it has a normal distribution. Visually this chart shows how the normal CMI performance trends year over year and how many days are outliers. You can also see from this analysis if extreme days are becoming more frequent an how the severity is changing.
Purpose	This analysis provides the details of normal CMI performance trend.
Representation	The box plot shows log normal CMI by Calendar year. The X-axis represents the calendar year. The Y-axis represents the Log normal values. Hover over the lines for specific details.
Drill Down	There is no drill down.
Source Object	Control Zone Outage Fact
OAS Subject Area	NMS - Control Zone Outage
Metrics	CMI, LN_CMI

Chapter 2

NMS Management Reporting

The management reporting modules were designed specifically to meet the challenges of measuring, monitoring, and reporting performance of electric distribution operations. Considerable design and implementation guidance from the user community was incorporated into these modules, resulting in powerful, easy-to-use measuring, monitoring, and reporting tools.

A set of standard Trouble reports are available in Oracle Analytics Server Publisher. These Trouble reports reflect the information that executives and regulatory agencies typically require from a utility's operations systems.

For more details about management reporting and using Oracle Analytics Server Publisher, refer to the *Oracle Utilities Analytics Warehouse Installation and Configuration Guide* in the Oracle Utilities Analytics Warehouse documentation.

Trouble Reporting Reports

The Oracle Utilities Network Management System – Trouble Reporting module gathers pertinent information about completed outages from the Oracle Analytics Server Data Warehouse and calculates performance measures of the distribution system. The information gathered consists of historical data from various areas such as causes, devices, outage times, call details, crew details, and customer details. In addition to reports of trouble-related information, Trouble Reporting includes reports of performance measures based on reliability indices.

This section describes the following reports:

- CEMI
- CELID
- Daily Trouble
- Device Outage History
- Feeder Impact on Systems Metrics
- Recurring Device Outages
- IEEE Indices Calculations
- IEEE TMED Calculations
- IEEE Benchmarking

CEMI

The CEMI report calculates the IEEE CEMI and CEMSMI metric at the company, district, and feeder levels. CEMI is the percentage of customers that have experienced N or more number of sustained outages. CEMSMI is the percentage of customers that have experienced N or more number of sustained and momentary outages. For this report, CEMI and CEMSMI are calculated for N between 1 and 10.

The CEMI report displays the following columns:

- **% of Customers with >= N Interruptions** contains the CEMI metric corresponding to the Number of Interruptions value of that row.
- **Average Customers Served** contains the average number of customers that were served during the time period selected. This value is used as the denominator in the CEMI metric.
- **District** (in the **District** tab of the report) shows the District for which the metric is being calculated.
- **Substation** (in the **Feeder** tab of the report) shows the Substation the Feeder belongs to.
- **Feeder** (in the **Feeder** tab of the report) shows the Feeder for which the metric is being calculated.

CELID

The CELID report calculates the IEEE CELIDT metric at the company, district, and feeder levels. CELIDT is the percentage of customers that have experienced N or more hours of total outage duration.

The CELID report displays the following columns:

- **Company** contains the name of the company for which the metric is calculated.
- **District** contains the name of the district for which the metric is calculated.
- **Feeder** contains the name of the feeder for which the metric is calculated.
- **Substation** contains the name of the substation the feeder belongs to.
- **Hours of Interruption** is the N number of hours value for which the metric is calculated.
- **% of Customers With >= N Hours of Interruption** value is the CELID metric for the corresponding Hours of Interruption.
- **Average Customers Served** is the average customers served for the company, district, or feeder and time period selected.

Daily Trouble

The Daily Trouble Report displays events on a daily basis. It identifies the crew, hours worked, resolution and primary cause. Each column is organized by the report categories.

This report contains the following columns:

- **Company** contains the name of the company where the outage is located.
- **Region** contains the name of the region where the outage is located.

- **Division** contains the name of the division where the outage is located.
- **District** contains the name of the district where the outage is located.
- **Substation** contains the name of the substation where the outage is located.
- **Feeder** contains the name of the feeder where the outage is located.
- **Device Name** contains the name of the interrupting device associated with the outage.
- **Event #** contains the system identification number for the outage.
- **CI** contains the number of customers impacted for the outage.
- **MCI** contains the number of momentary customers impacted for the outage.
- **CMI** contains the customer minutes interrupted for the outage.
- **Begin Date Time** contains the date and time the outage began.
- **Restore Date Time** contains the date and time the outage was restored.
- **Primary Cause** contains the primary cause of the outage as determined from the drop-down selection in the **Event Details** window. This is useful for filtering, sorting, and analyzing outage causes.
- **Crew Assigned** contains the name of the crew leader for the crew associated with the outage, if any.
- **Operator Comments** contains the operations event note associated with the outage.

Device Outage History

The Device Outage History displays the history of outages for a selected device during a selected period. A summarization of the customer interruptions, customer minutes interrupted and number of events for each distinct interrupting device and each distinct interrupting device type is also displayed.

This report contains the following columns:

- **Device Type** contains the type of device.
- **Device Name** contains the name of the interrupting device.
- **Begin Date** contains the date and time the outage began.
- **Restored Date** contains the date and time the outage was restored.
- **Customer Interruptions** contains the total number of customers affected by the outage.
- **Customer Minutes Interrupted** contains the sum of the customers affected by the outage multiplied by the outage duration.
- **Event #** contains the system identification number for the outage.
- **Primary Cause** contains the primary cause of the outage as determined from the drop-down selection in the **Event Details** window. This is useful for filtering, sorting, and analyzing outage causes.

Feeder Impact on Systems Metrics

The Feeder Impact on Systems Metrics Report has 3 tabs. The **SAIDI Impact** tab shows the impact of feeders on the SAIDI metric. The **SAIFI Impact** tab shows the impact of feeders on the SAIFI metric. The **MAIFI Impact** tab shows the impact of feeders on the MAIFI metric.

The report has the following prompts:

- **Begin** constrains outages occurring on or after the selected date.
- **End** constrains outages occurring before the selected date.
- **Excluding Major Events** includes or excludes major events.
- The report displays the following columns:
- **Feeder** contains the name of the feeder for which the metrics are calculated.
- **CMI** contains the Customer Minutes of Interruption occurred on the feeder during the selected time period.
- **System SAIDI Impact** contains the percentage of the system SAIDI the feeder accounts for.
- **Cumulative System SAIDI** contains the Cumulative Impact of System SAIDI up to the current row.
- **System SAIFI Impact** contains the percentage of the system SAIFI the feeder accounts for.
- **Cumulative System SAIFI** contains the Cumulative Impact of System SAIFI up to the current row.
- **System MAIFI Impact** contains the percentage of the system MAIFI the feeder accounts for.
- **Cumulative System MAIFI** contains the Cumulative Impact of System MAIFI up to the current row.

Recurring Device Outages

The Recurring Device Outages report identifies interrupting devices that have been associated with a specified number or more sustained and momentary outages. This report displays all device outages for the period requested and is organized by the report categories.

This report displays the following columns:

- **Company** contains the name of the company where the outages are located.
- **Region** contains the name of the region where the outages are located.
- **Division** contains the name of the division where the outages are located.
- **District** contains the name of the district where the outages are located.
- **Substation** contains the name of the substation where the outages are located.
- **Feeder** contains the name of the feeder where the outages are located.
- **Device Type** contains the device type of the interrupting device on which the outages are located.

- **Device Name** contains the device name of the interrupting device on which the outages are located.
- **Total Outages** contains the total number of outages on the device during the specified period.
- **Total Duration** contains the total duration of outages on the device experiencing outages during the specified period.
- **Customer Minutes Interrupted** contains the sum of the customers affected multiplied by the outage duration for each outage on the device during the specified period.
- **Sustained Customers Interrupted** contains the total number of sustained customers interrupted on the device experiencing outages during the specified period.
- **Momentary Customers Interrupted** contains the total number of momentary customers interrupted on the device experiencing outages during the specified period.
- **Customer Minutes Interrupted** contains the sum of the customers affected multiplied by the outage duration for each outage on the device during the specified period.

IEEE Indices Calculations

The reliability indices are calculated values that provide a measure of reliability of the distribution system. This report has tabs for reliability indices calculated at 6 control zone levels (Company, Region, Division, District, Substation, and Feeder). Users can filter by Begin and End date, Major Event Type, and Primary Cause.

For more information about reliability indices, refer to the IEEE Std 1366-2003.

The report displays the following columns:

- **Region** contains the name of the Region for the indices calculations.
- **Division** contains the name of the Division for the indices calculations.
- **District** contains the name of the District for the indices calculations.
- **Substation** contains the name of the Substation for the indices calculations.
- **Feeder** contains the name of the Feeder for the indices calculations.
- **Avg Customers Served** contains the Average Customers Served during the selected time period.
- **SAIDI** contains the SAIDI metric (Customer Minutes Interrupted/Avg Customers Served).
- **SAIFI** contains the SAIFI metric (Sustained Customer Interruptions/Avg Customers Served).
- **CAIDI** contains the CAIDI metric (Customer Minutes Interrupted/Sustained Customers Interrupted).
- **MAIFI** contains the MAIFI metric (Momentary Customers Interrupted/Avg Customers Served).

- **ASAI** contains the ASAI metric (Customer Service Availability/Customer Service Demand).
- **CAIFI** contains the CAIFI metric (Sustained Customers Interrupted/Total Number of Distinct Sustained Customers Interrupted).
- **CTAIDI** contains the CTAIDI metric (Customer Minutes Interrupted/Total Number of Distinct Sustained Customers Interrupted).

IEEE TMED Calculations

The IEEE TMED Calculations report calculates the Major Event Threshold using the IEEE 1366-2003 2.5 Beta Method. The report has 4 tabs. The tabular view shows the daily SAIDI, SAIFI, and CAIDI metrics, and the Major Event Threshold calculation details. The other tabs show a graph of the daily SAIDI, SAIFI, and CAIDI metric for major events included and excluded.

The IEEE TMED Calculations report consists of the following columns:

- **Year** contains year for the Major Event Threshold calculation.
- **Non-Zero Days** contains the number of days that had sustained outages in the 5-year period used for the Major Event Threshold calculation.
- **Alpha** contains the average of natural log of the daily SAIDI values for the 5-year period used in the Major Event Threshold calculation.
- **Beta** contains the standard deviation of the natural log of the daily SAIDI values for the 5-year period used in the Major Event Threshold calculation.
- **SAIDI TMED** contains the calculated Major Event SAIDI threshold.
- **Average Customers Served** contains the Average Customers Served for the year the major event threshold was calculated for.
- **CMI TMED** contains the Customer Minutes Interrupted Major Event Threshold.
- **SAIDI IEEE Cumulative** contains the Cumulative Daily SAIDI IEEE value.
- **SAIFI IEEE Cumulative** contains the Cumulative Daily SAIFI IEEE value.
- **CAIDI IEEE Cumulative** column contains the Cumulative Daily CAIDI IEEE value.
- **SAIDI All Cumulative** contains the Cumulative Daily SAIDI All value.
- **SAIFI All Cumulative** contains the Cumulative Daily SAIFI IEEE value.
- **CAIDI All Cumulative** contains the Cumulative Daily CAIDI All value.
- **Daily SAIDI** contains the Daily SAIDI value.
- **Daily SAIFI** contains the Daily SAIFI value.
- **MED** indicates if the day exceeded the Major Event Threshold and qualifies as a Major Event Day.

IEEE Benchmarking

The IEEE Benchmarking Report contains columns necessary to submit data to the IEEE Distribution Reliability Working Group for participation in benchmarking activities.

This report displays the following columns:

- **Year** contains year for the Average Customers Served measure.
- **Average Customers Served** contains the average customers served for the year.
- **Date** contains the date for outage metrics.
- **CMI** contains Customer Minutes Interrupted for the date.
- **CI** contains the Sustained Customer Interruptions for the date.
- **Events** contains the number of sustained outages for the date.