# Oracle Utilities Data Intelligence

## Data Intelligence Analytics Reference Guide

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Oracle Utilities Data Intelligence Data Intelligence Analytics Reference Guide,

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# 1
# Preface

## Audience

This document is intended as a reference for consumers and creators of visualizations and workbooks using Oracle Utilities Data Intelligence. Consumers work with their favorite visualizations and workbooks delivered with the application or built by your organization. Creators understand the business needs of the consumers and create visualizations and workbooks that answers their business questions.

## Documentation Accessibility

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

## Conventions

The table below describes the conventions used in this document.

**Text Conventions**

| Convention | Meaning |
|---|---|
| **boldface** | Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary. |
| *italic* | Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values. |
| `monospace` | Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter. |


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# 2
# Introduction

## About Oracle Utilities Data Intelligence

Oracle Utilities Data Intelligence is a suite of analytics applications that provides real-time access to data in the on-premise Oracle Utilities Customer To Meter application and in cloud services such as Oracle Customer Cloud Service and Oracle Meter Solution Cloud Service. It is powered by Oracle Autonomous Data Warehouse and Oracle Analytics Cloud, and it offers a library of ready-to-use, best practice key metrics across customer and meter applications to help you make quick and collaborative decisions. It includes rich pre-built analytical subject areas, measures, key performance indicators, and workbooks that allow you to create visualizations from your data and derive strategic insights.

Oracle Utilities Data Intelligence is based on the Fusion Data Intelligence platform. This guide therefore contains references to Fusion Data Intelligence documentation where you can find more detailed guidance and information. Most core Fusion Data Intelligence capabilities are available in Oracle Utilities Data Intelligence, including data connectors, data augmentation capabilities, bundle deployment concepts, and Microsoft Power BI integration. However, some Fusion Data Intelligence features may not be applicable, enabled, or supported in Oracle Utilities Data Intelligence. Where applicable, this guide identifies those differences.

**Important Differences from Fusion Data Intelligence**

The following Fusion Data Intelligence features are currently not applicable or not supported in Oracle Utilities Data Intelligence.

| Feature or Capability | Oracle Utilities Data Intelligence Behavior |
|---|---|
| Viewing objects within the Data Augmentation framework | Not applicable. Source tables can still be viewed. |
| Frequent Data Refresh Schedule and Frequent Refresh Tables | Not supported. |
| Global Bundle Repository | Not enabled by default. Requires enablement before use. |

## Subject Areas

One of the key benefits of Oracle Utilities Data Intelligence is that it comes with predefined subject areas that are specific to the utilities industry.

A subject area is a data model that presents business data for analysis in a manner that reflects the structure of the business. Subject areas enable analysts to structure queries in the same intuitive fashion as they ask business questions.

This document covers the Customer subject areas available in Oracle Utilities Data Intelligence. See the following topics for details:

- Customer Subject Areas
- Customer Insights Subject Areas


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- Customer Program Management Subject Areas
- Device Analytics Subject Areas
- Grid Insights Subject Areas
- Work and Asset Subject Areas


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# 3
# General Configuration

Administrators can perform general configuration tasks to make data available in Oracle Utilities Data Intelligence, such as enabling custom attributes and defining standard measurements.

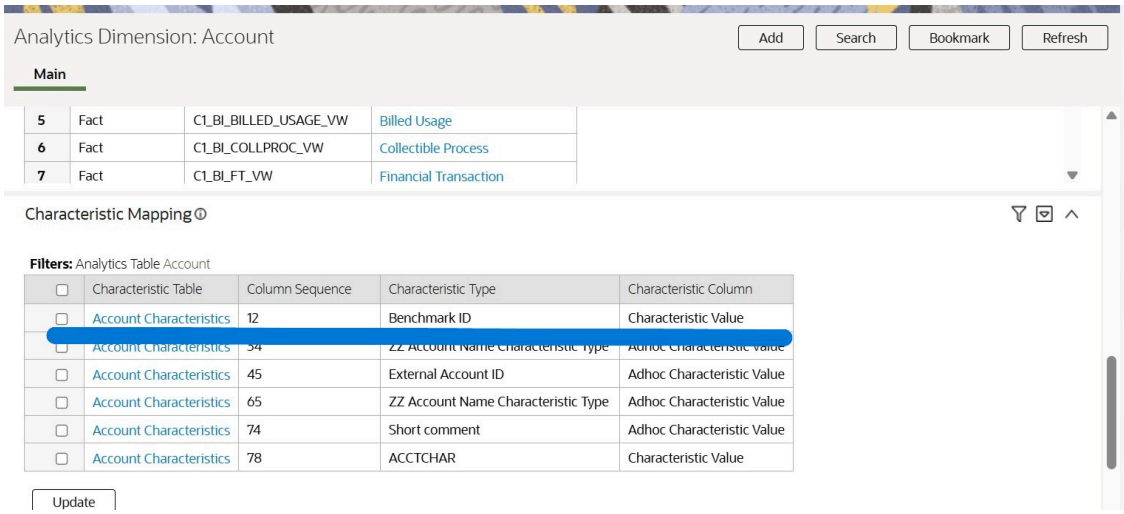
- Enable Custom Attributes
- Define Standard Measurement Identifiers for AMI Data

## Enable Custom Attributes

Characteristics of the type Predefined Value and Ad Hoc Value may be exposed in Energy Water Data Intelligence subject areas so they can be used for analysis and data visualization.

### About Characteristics and Dimensions

Custom values defined by characteristics types appear as columns in the dimension tables after they have been mapped to target dimensions in Energy and Water Data Intelligence. For example, in the image shown below, the Account dimension includes the characteristic type “Benchmark ID":




In Energy and Water Data Intelligence, characteristics are displayed at the end of the dimension below the separator **==Custom Columns==** in a given subject area.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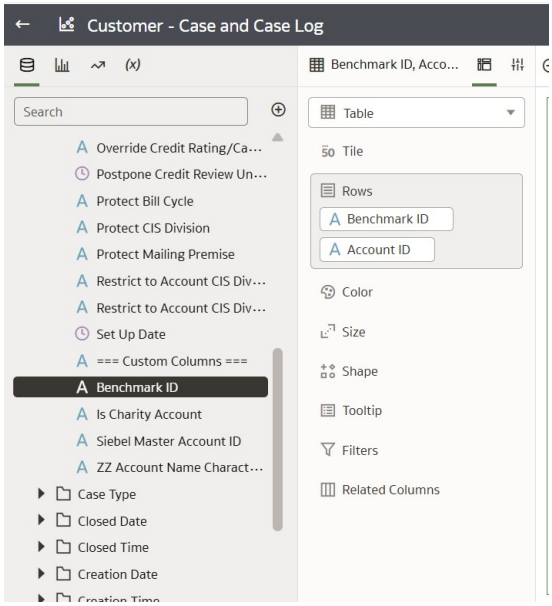


Currently Energy and Water Data Intelligence supports custom attributes for the following dimensions and ranges:

| Dimension | Characteristics | Range | SKUs Availability |
|---|---|---|---|
| Account | Account Characteristics<br>CI_ACCT_CHAR | 1 to 70 | Customer (EWDI_CUST) , Device (EWDI_DVC) and Grid Insights (EWDI_GRID) |
| Person | Person Characteristics<br>CI_PER_CHAR | 1 to 30 | Customer (EWDI_CUST) , Device (EWDI_DVC) |
| Premise | Premise Characteristic<br>CI_PREM_CHAR | 1 to 30 | Customer (EWDI_CUST) , Device (EWDI_DVC) |
| Service Point | SP Characteristics<br>CI_SP_CHAR | 1 to 30 | Customer (EWDI_CUST) |
| Service Agreement | SA Characteristics<br>CI_SA_CHAR | 1 to 30 | Customer (EWDI_CUST) , Device (EWDI_DVC) |
| Service Agreement | SA Type Characteristic<br>CI_SA_TYPE_CHAR | 71 to 75 | Customer (EWDI_CUST) , Device (EWDI_DVC) |

# Map Characteristics to Dimensions

The underlying maintenance object of an analytics dimension supports a set of empty or free columns, as shown by the ranges mentioned above. These empty columns can be used by implementation teams to map characteristics to dimensions. Each of these empty columns has a unique identifier known as its Column Sequence number. To map a characteristic to a target dimension in Energy and Water Data Intelligence means to select a characteristic type of an analytics table in the source application, and to map it to an empty dimension column identified by its Column Sequence number from the supported set of ranges.

For example, the Service Agreement dimension supports characteristics mapping for the CI_SA analytics dimensions from range 1 to 30, and for the CI_SA_TYPE analytics dimensions


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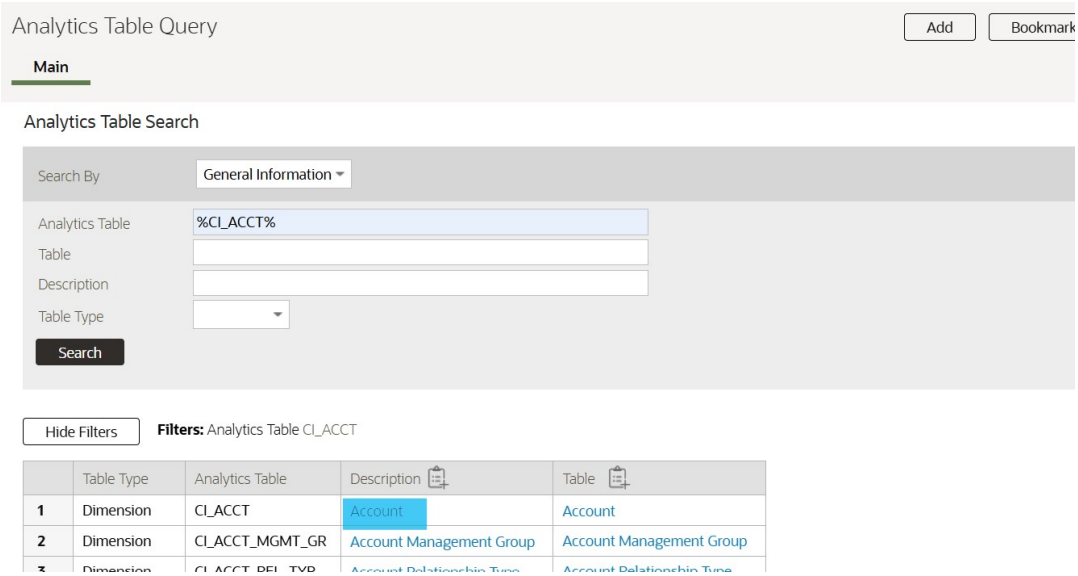
from range 71 to 75. The **Column Sequence** number above these ranges are not supported. (The **Column Sequence** number determines the order in which characteristics are displayed in the dimension.)

> **Warning**
>
> During implementation it may be necessary to change the **Column Sequence** number of characteristics or even remove mappings by changing or deleting the column sequence number. However be aware that changing the column sequence number of a characteristics may break or modify the existing analytics canvas that uses the column's previous position or removed position. The change or removal of mappings of characteristics in the source application to dimensions in the application should be performed by application administrator.

**To map a characteristic to a dimension:**

1. In the **Search Menu** of your enterprise application (such as Customer Cloud Service or Meter Solution Cloud Service), enter "Analytics Table". The *Analytics Table Search* page displays.
2. Search for the dimension you want to map to. A set of results displays.
3. Select the **Description** link of the table where you want characteristics mapped.




Clicking the description link takes you to the **Analytic Dimension** page.

4. Expand the **Characteristic Mapping** zone. This zone manages characteristic mapping extensions for the dimensions. By default, only mapped characteristics are listed.
5. In the Characteristic Mapping zone, click the filter icon to search for a characteristic. To facilitate your search, use the options available to display all mapped and unmapped characteristics.
6. Select one or more characteristic types that you want to map and click **Update**. This allows you to adjust your mappings for a selected list of characteristics.
7. Specify a value for the Column Sequence to create a mapping. Since Column Sequences are unique identifiers of dimension columns, the values that you specify must also be unique. It is best to start numbering your column sequence starting at 1 and increasing by 1.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> **Tip**
>
> If the characteristic mapping was done while you were editing a project, then to view the new characteristics, click **Menu** on the project toolbar and click **Refresh Data Sets**.

**To remove a characteristic mapping to a dimension:**

1. In the Characteristic Mapping zone, press the filter icon to search for the characteristic.
2. Select the characteristic types that you want to unmap and click Update.
3. Delete the Column Sequence for the mapping and click Save.

> **Note**
>
> Removing the Column Sequence of a characteristic will break the analytics canvases that used it.

# Define Standard Measurement Identifiers for AMI Data

Oracle Utilities Data Intelligence can perform data aggregation and enrichment on Advanced Metering Infrastructure (AMI) data extracted from your connected Meter Solution Cloud Service and Customer Cloud Service. Data is extracted using a Measurement Data Extract process, and can then be displayed in an AMI data dashboard.

Enabling the extract process requires defining the data to extract. This in turn involves defining the "standard measurement identifiers" used by Oracle Utilities Data Intelligence. Defining the identifiers must be completed in the Meter Solution Cloud Service and Customer Cloud Service. Implementers can then map those identifiers to specific combinations of Units of Measure (UOM), Time of Use (TOU), and Service Quantity Identifiers (SQI) for specific service types.

The base package includes the predefined standard measurement identifiers below. For specific instructions on how to define them, see Defining Standard Measurement Identifiers in the *Oracle Utilities Customer Cloud Service Business User Guide*.

| Standard Measurement Identifier | Standard Service Type | Status | Description |
|---|---|---|---|
| E-KW | Electric | Active | Electric Kilowatt |
| E-KWH | Electric | Active | Electric Kilowatt Hours |
| E-KWH-CONS | Electric | Active | Electric kWh - Consumed |
| E-KWH-GEN | Electric | Active | Electric kWh - Generated |
| G-THERMS | Gas | Active | Gas Therms |
| W-CCF | Water | Active | Water - 100 Cubic Feet |


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# 4
# Common Subject Areas

Common subject areas are based on data objects that are shared across multiple Oracle Utilities cloud service applications, such as batches and To Dos.

- Common - Batch
- Common - To Do Entry

## Common - Batch

The Batch subject areas leverage the batch run, submission, and execution objects.

### Common - Batch Performance

This subject area exposes common metrics based upon batch control. These can be used as reference metrics in conjunction with other subject areas in this family.

**Answer questions like these:**

- What is the average execution time for a particular batch control?
- What is the confidence interval for execution times?
- How many executions are used in this metric?

### Common - Batch Run History

Every time a batch process is executed, a number of objects are created and updated to track the progress of the process during and after execution. This subject area is provided to allow for strategic analysis using history of execution at the batch run level.

**Answer questions like these:**

- What is the trend for executing a particular batch control?
- What method is used to initiate batches and when?
- Are there particular users overly contributing to my batch workload by manual submission?
- Is volume a factor in run-time overruns?
- What types of batch processes are executing over time?
- What is the trend of the executions over the last few months?
- Is my execution failing regularly or are there sporadic failures?
- Is my batch workload using the service functionality or predominately extensions?

### Common - Batch Run Thread History

Every time a batch process is executed, a number of objects are created and updated to track the progress of the process during and after execution. Each thread of execution is recorded for post-execution analysis.

**Answer questions like these:**


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- Are the threads of a batch process ending at the same time or is there data skew in processing? If some threads are ending later, what could be the cause?
- Are there any threads that are outliers in terms of elapsed time?
- Are certain threads consistently using up the resources over other threads?
- Is thread processing consistent over time?

**Common - Batch Thread Capacity History**

Every time a batch process is executed, a number of objects are created and updated to track the progress of the process during and after execution. This subject area allows you to subdivide a date into desired time intervals (for example, 10- or 15-minute intervals), and tells you what was running during that period for capacity analysis.

**Answer questions like these:**

- Are there peaks in my daily thread processing that I can move to other times?
- Am I running too many batches at the same time?
- Can I distribute workload evenly over the period to reduce capacity requirements over time?
- What type of workload is being executed at any time in my physical day?

# Common - To Do Entry

This subject area includes pre-built metrics that can be used to analyze To Dos by attributes of Account, Contact, Device, Person, Premise, Service Agreement, Service Point, Measuring Component, and Usage Subscription.

> **Note**
>
> Account, Person, Premise, and Service Agreement dimensions are visible only for utilities that have a Customer Analytics subscription. Device, Service Point, Measuring Component, and Usage Subscription dimensions are visible only for utilities that have a Device Analytics subscription.

**Answer questions like these:**

- How many incomplete To Do Entries are currently not being worked on / being worked on by users?
- What is the trend (volume and current incomplete state) of created To Do Entries over the past 24 months?
- Which accounts / premises have the highest number of incomplete To Do Entries?
- Which users have the highest number of incomplete To Do Entries?
- What is the average unassigned duration trend, based on creation date, for open To Do Entries belonging to a specific To Do Type?
- What is the average assigned duration trend, based on assigned date, for To Do Entries being worked on belonging to a specific To Do Type?


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# Common - Data Lineage

The Oracle Utilities Data Intelligence Common Subject Areas data lineage spreadsheet provides a summary of how Common Subject Areas presentation layer objects map to the underlying physical and source data structures.

Use the spreadsheet to review lineage details for shared Common subject areas. The spreadsheet identifies presentation tables and attributes, physical tables and attributes, and source tables and columns where the mapping is available.


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# 5
# Customer Analytics

This section lists the predefined objects for Oracle Utilities Data Intelligence Customer Analytics. Customer Analytics are based on data objects available in Customer Cloud Service and Oracle Utilities Customer to Meter, such as billed usage and financial transactions.

## Customer Analytics Prerequisites

This section describes prerequisite tasks for setting up and configuring your customer analytics.

- Configure the Analytics Options Extendable Lookup
- Configure Custom Buckets - Customer
- Take Monthly Snapshots of Service Agreement Arrears

### Configure the Analytics Options Extendable Lookup

Oracle Utilities cloud service applications come with the ability to define and customize extendable lookups. Extendable lookups are a way of defining valid values that are more sophisticated than simple lookups. For Oracle Utilities Data Intelligence, you must configure the Analytics Options extendable lookup that comes packaged with your application so that you can analyze and report on subject areas that are unique to your application.

#### Configure the Lookup for High Bill Complaint Cases

The Billing Overview subject area in the Customer Cloud Service includes the High Bill Complaint Cases Count metric. This metric is calculated by counting (1) cases associated with bills, (2) cases that have a case type that are classified as "High Bill Complaints," and (3) cases that are not in a specific case life cycle state (for example, cases in a "canceled," "rejected," or "resolved" state). Before this metric can be used, it is necessary to configure the Analytics Options extendable lookup. For example, you may want to do the following:

- Identify which characteristic type associated with a case can be used to identify the Bill ID on the case. This way, you can limit the cases to those associated with bills.
- Since case types vary by utilities, you must specify which case types should be classified as "High Bill Complaints".
- Identify life cycle states of High Bill Complaint cases (for example, cases in a "cancelled," "rejected," or "resolved" state) that should be excluded from the count.

**To configure the lookup for High Bill Complaint cases:**

1. Navigate to your instance of Oracle Utilities Customer Cloud Service and log in.
2. In the search menu, enter "Extendable Lookup."
3. Do one of the following:
    - In the Business Object field, enter F1-AVAnalyticsOptions


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- In the description field, enter Analytics Options

4. If this is the first time you are using this Analytics Options Extendable Lookup, click **Add** to create an extendable lookup for storing configurations that will be used by Oracle UtilitiesAnalytics Visualization.
5. In the **Analytics Options** page that displays, enter the following:
   - **Option Name**: OUAV Extendable Lookup Config
   - **Description**: OUAV Extendable Lookup Config
   - **Detailed Description**: OUAV Extendable Lookup Config
6. Scroll down to the **Billing Overview** section.
7. From the **High Bill Complaint Case Type** drop-down list, select one or more case types you want classified as "High Bill Complaints". You can select one or more case types. The sequence number must be unique for each selected case type.
8. From the **Exclude High Bill Complaint Case States** drop-down list, select the life cycle states of these High Bill Complaint cases (for example, cases in a canceled, rejected, or resolved state) that should be excluded from the count.
9. From the **Bill ID Char Type on Cases** drop-down list, select the characteristic type associated with a case that can be used to identify the Bill ID on the case.
10. Save your configuration.

## Configure the Lookup for Revenue and Tax Amounts

The Financial Transaction and Financial Transaction GL Details subject areas of the Customer Cloud Service include the Revenue Amount and Tax Amount metrics. These metrics are calculated based on revenue and tax characteristic values for the GL Account Type characteristic type specified for each Distribution Code GL Account. Each Distribution Code GL Account, in turn, identifies whether the GL record contributes to revenue or tax. Before these metrics can be used, the values of the GL Account Type characteristic type must be configured for each Distribution Code's GL Account.

**Step 1: Configure the Distribution Code GL Account Characteristic Type**

1. Navigate to your instance of Oracle Utilities Customer Cloud Service and log in.
2. In the search menu, enter "Distribution Code."
3. Select a distribution code.
4. In the **Distribution Code** page that displays, scroll down to the **GL Account** section.
5. In the **Characteristic Type** drop-list, select the **GL Account** type.
6. In the **Characteristic Value** field, click the search and choose a value to indicate whether the Distribution Code's GL Account will contribute to revenue or tax.


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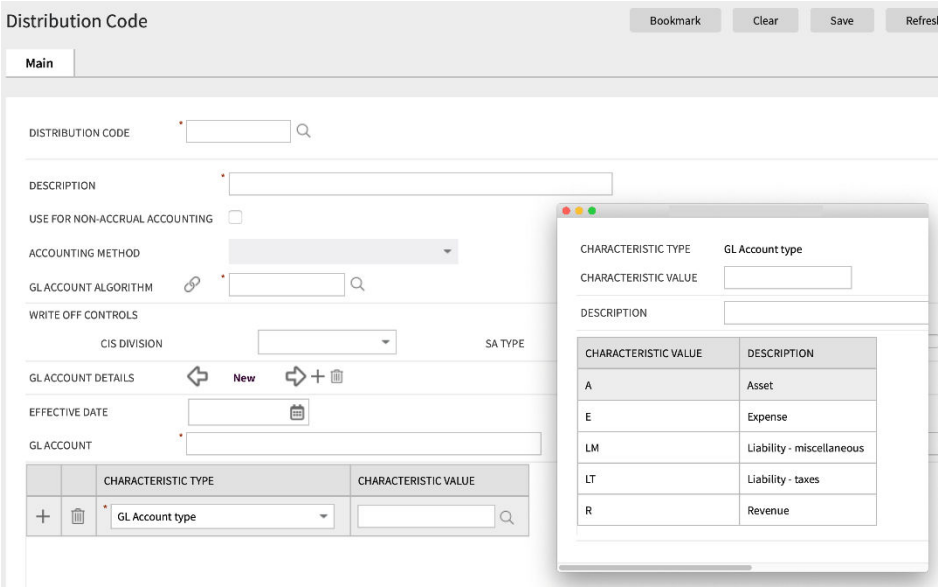


7. Repeat the above steps for each applicable distribution code, and click Save.

**Step 2: Configure the Analytics Options Extendable Lookup for Revenue and Tax**

1. Navigate to your instance of Oracle Utilities Customer Cloud Service and log in.
2. In the search menu, enter "Extendable Lookup."
3. Do one of the following:
   - In the Business Object field, enter F1-AVAnalyticsOptions
   - In the description field, enter Analytics Options
4. In the Analytics Options page that displays, go to the Financial Transactions section.
5. In the **GL Account Type Identifying Char Type** section, in the **CHAR TYPE** drop-down list, select **GL Account Type**.
6. In the **Revenue Identifying Char Values** section, enter a **Sequence** and a **Char Value** for the GL Account Type Characteristic Values that represent revenue to be included in this subject area. You can create additional entries as necessary for your implementation.
7. In the **Tax Identifying Char Values** section, enter a **Sequence** and a **Char Value** for the GL Account Type Characteristic Values that represent taxes to be included in this subject area. You can create additional entries as necessary for your implementation.


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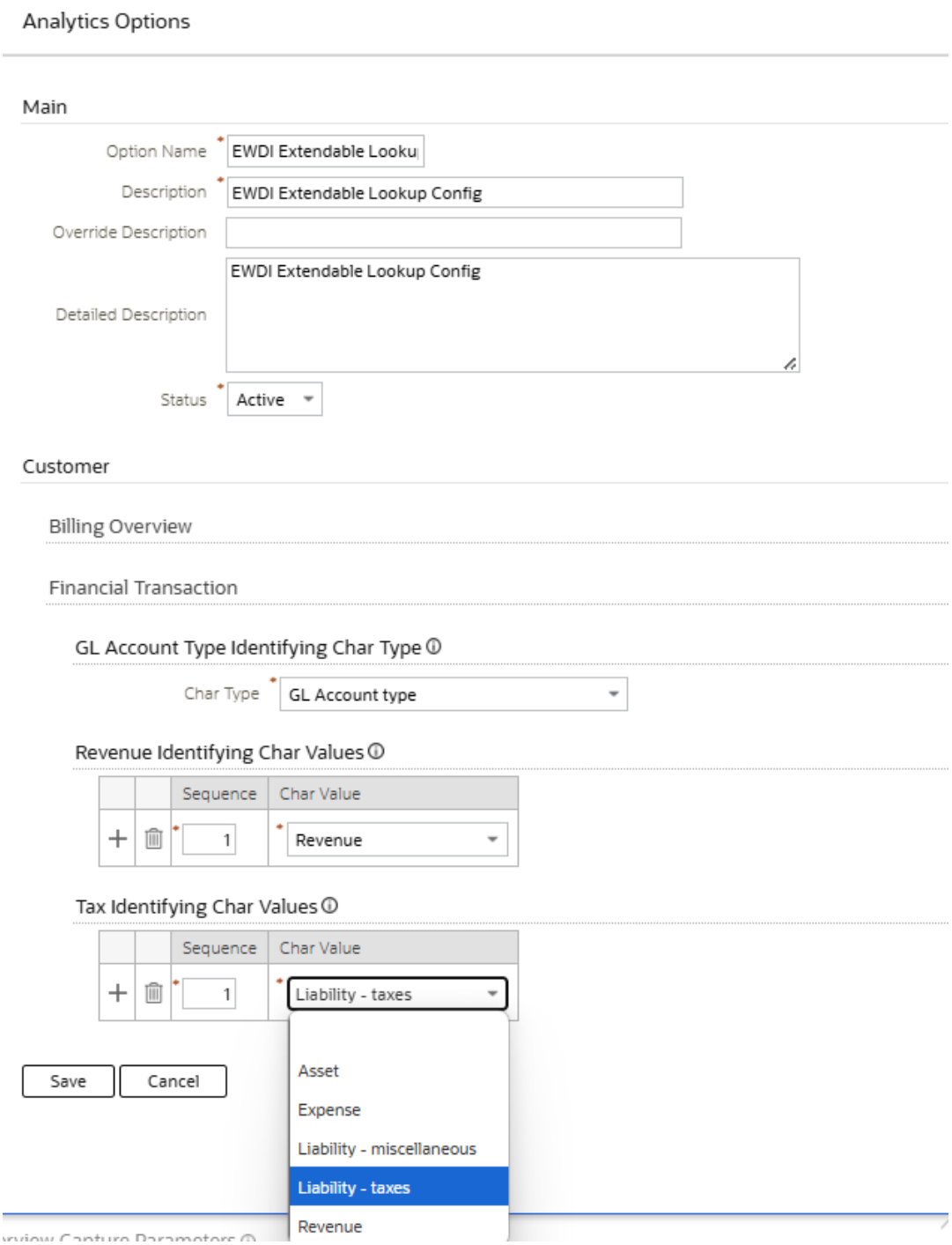


8. Click **Save**.

# Configure Custom Buckets - Customer

Facts and dimension attributes in the dimensional data model provided by Oracle Utilities Data Intelligence may contain numerical attributes that become more useful when grouping them into categories that represent specific number intervals. This process is often referred to as "binning" or "bucketing." For example, an age attribute value may be assigned to an age bucket such as 0-1 days, 1-2 days, 2-3 days, 3-4 days, or >=5 days.


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Utilities business applications support a set of predefined bucket business objects that are used in Device Analytics. Intervals representing each bucket must be defined before the analytics solution can use bucket columns.

## Supported Buckets

Buckets must be configured in the Customer Cloud Service application by an administrator before they can be used by Data Intelligence. The following fact and dimension buckets are currently supported. In Oracle Utilities analytics products, a fact represents a measurable event or value (such as energy consumption or charges), while a dimension provides descriptive context (such as customer, time, or location) used to categorize and analyze those facts.

**Supported Dimension Buckets**


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| Dimension | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| **Dimension**: Completed in Billing Day Window Bucket **Attributes**: • | Identify the period in a bill cycle window when a bill was completed for example, Bill Window, earl | Provides a meaningful illustration to users about when a bill was completed within its bill | DAYS_COMPLETED_AFTER_WIN_START Days Completed After Window Started | **Bucket Column**: Description<br>**Business Object Name**: Billing Day In Window Configuration<br>**Business Object Code**: C1-BillingDayInWindow |


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| Dimension | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| • <br>• | Cycle Window in the bill cycle window Category Description Bill | cycle window. **Example:** <br>• <br>• <br>• <br>• | 0 to 1: Day 1 1 to 2: Day 2 2 to 3: Day 3 3 t | |


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| Dimension | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| • | ingDaysinWindowBucketConfigCodeEndRangeRan | • | o4:Day44to99999:Day5+ | |


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| Dimension | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| • • | geDescriptionSequenceNumberCodeStartRange | | | |


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| Dimension | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| **Dimension**: Days Before Bill Window Closes Bucket **Attributes**: • | Identifies how much time is left in an open bill cycle window for a bill to be closed. | Provides a meaningful illustration to users about the time remaining in an open bill cycle | DAYS_BEFORE_BILL_WIN_CLOSES Days Before Bill Window Closes | **Bucket Column**: Description<br>**Business Object Name**: Days Before Bill Window Closes Configuration<br>**Business Object Code**: C1-DaysBeforeBillWindowCloses |


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| Dimension | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| • CategoryBillWindowCategoryDescriptionBill | Category Bill Window for a bill to be completed. **Example:** • • | 0 to 1: Day 1 1 to 2: Day 2 | | |


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| Dimension | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| • | ingDaysinWindowBucketConfigCodeEndRangeRan | • | 2to3:Day33to4:Day44to99999:Day5+ | |


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| Dimension | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| • • | geDescriptionSequenceNumberCodeStartRange | | | |


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### Supported Fact Buckets


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| **Fact**: Payment Arrangement **Attribute**: Future Payment Amount Buckets (1-10) | Future amount buckets segment expected collections into time periods (for example, 0- | Defines configurable day ranges indicating the age of future scheduled payments for paym | A1_PA_FUTURE_PAY_AMT1 A1_PA_FUTURE_PAY_AMT2 ... A1_PA_FUTURE_PAY_AMT10 | **Bucket Column:** Description<br>**Business Object Name:** PA Future Payment Age Configuration **Business Object Code:** C1-PAFuturePaymentAge |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | 30 or 31-60 days), enabling clear forecasting of when outstanding payments are likely to be re | entar rangements. 1. | No gaps or overlaps are allowed with hi | |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | ceived and supporting cash flow planning. | 2. | nthebucketranges. Upperboundvaluesareexcl | |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | | | usive in the defined range. If the range is given a | |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | | 3. | s0 to 30, the values 0 to 29 are considered. Amaxi | |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | | 4. | mum of 10 buckets can be configured. The last buck | |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | | **Example:** | e t s h o u l d h a v e a n e n d r a n g e o f 9 9 , 9 9 9 . | |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | | | | |

| Sequence | Start Range | End Range | Description |
|---|---|---|---|
| 1 | 0 | 30 | Future Payment Amount Between 0 to 29 Days |
| 2 | 30 | 60 | Future Payment Amount Between 30 to 59 Days |
| 3 | 60 | 90 | Future Payment Amount Between 60 to 89 Days |
| 4 | 90 | 120 | Future Payment Amount Between 90 to 119 Days |
| 5 | 120 | 150 | Future Payment Amount Between 120 to 149 Days |
| 6 | 150 | 180 | Future Payment Amount Between 150 to 189 Days |
| 7 | 180 | 210 | Future Payment Amount Between 180 to 209 Days |
| 8 | 210 | 240 | Future Payment Amount Between 210 to 239 Days |
| 9 | 240 | 280 | Future Payment Amount Between 240 to 279 Days |
| 10 | 280 | 99999 | Future Payment Amount After 280 Days |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| **Fact**: Payment Arrangement **Attribute**: Total Number of Installments | The installment count bucket groups payment arrangements by the number of payments | Defines configurable ranges for number of installments. 1. | A1_INSTALLMENT_CNT No gaps or overlap | **Bucket Column:** Description<br>**Business Object Name:** PA Number of Installments Configuration<br>**Business Object Code:** C1-PANumberOfInstallments |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | required allowing analysis of success rates or risks based on agreement length. | 2. | sare allowed within the bucket ranges. Upperbo | |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | | | undvaluesarreexclusiveinthedefinedrange.If | |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | | | the range is given as 0 to 30, the values 0 to 29 are | |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | | 3. | considered. A maximum of 10 buckets can be config | |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | | 4. | ured. The last bucket should have an end range of | |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | | **Example:** | 99,999. | Bucket Value Ranges<br><br>Sequence \| Start Range \| End Range \| Description<br>1 \| 0 \| 3 \| < 3 Installments<br>2 \| 3 \| 5 \| 3 - 4 Installments<br>3 \| 5 \| 8 \| 5 - 7 Installments<br>4 \| 8 \| 99999 \| 8+ Installments |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| **Fact**: Payment Arrangement **Attribute**: Total Scheduled Payment Amount | The recurring charge bucket categorizes arrangements by their scheduled installment amount | Defines configurable recurring charge amount ranges. 1. | A1_REC_CHARGE_AMT No gaps or overlaps a | **Bucket Column:** Description<br>**Business Object Name:** PA Future Payment Age Configuration<br>**Business Object Code:** C1-PAFuturePaymentAge |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | ount, enabling the business to assess performance and risk for different payment sizes. | 2. | reallowed within the bucket ranges. Upper boun | |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | | | dvaluesareexclusiveinthedefinedrange.Ifth | |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | | | erangeisgivenas0to30,thevalues0to29arco | |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | | 3. | nsidered. Amaximumof10bucketscanbeconfigur | |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | | 4. | ed. The last bucket should have an end range of 99 | |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | | **Example:** | ,999. | Bucket Value Ranges<br><br>Sequence \| Start Range \| End Range \| Description<br>1 \| 0 \| 250 \| Installment Amount Less than $249<br>2 \| 250 \| 500 \| Installment Amount Between $250 - $499<br>3 \| 500 \| 1000 \| Installment Amount Between $500 - $999<br>4 \| 1000 \| 1500 \| Installment Amount Between $1000 - $1499<br>5 \| 1500 \| 2000 \| Installment Amount Between $1500 - $1999<br>6 \| 2000 \| 99999 \| Installment Amount $2000 and more |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| **Fact**: Payment Plan **Attribute**: Future Payment Amount Buckets (0-10) | Future amount buckets segment expected collections into time periods (for example, 0- | Defines configurable day ranges indicating the age of future scheduled payments for paym | A1_PP_FUTURE_PAY_AMT01 A1_PP_FUTURE_PAY_AMT02 .... A1_PP_FUTURE_PAY_AM | **Bucket Column**: Description<br>**Business Object Name**: PP Future Payment Age Configuration<br>**Business Object Code**: C1-PPFuturePaymentAge |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | 30, 31-60 days), enabling clear forecasting of when outstanding payments are likely to be re | entarrangements.<br>1. | T10<br>No gaps or overlaps are allowed with hi | |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | ceived and supporting cash flow planning. | 2. | nthebucketranges.Upperboundvaluesareexcl | |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | | | usive in the defined range. If the range is given a | |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | | 3. | s 0 to 30, the values 0 to 29 are considered. A maxi | |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | | 4. | mumof10bucketscanbeconfigured. Thelastbuck | |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | | **Example:** | e t s h o u l d h a v e a n e n d r a n g e o f 9 9 , 9 9 9 . | |


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| Fact and Attributes | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| | | Bucket Configuration<br>Main<br>Bucket Configuration: C1-PPFuturePaymentAge<br>Description: Pay Plan Buckets<br>Bucket Value Ranges | | |

| Sequence | Start Range | End Range | Description |
|---|---|---|---|
| 10 | 0 | 30 | Future Payment Schedule between 0 to 29 days |
| 20 | 30 | 60 | Future Payment Schedule between 30 to 59 days |
| 30 | 60 | 90 | Future Payment Schedule between 60 to 89 days |
| 40 | 90 | 120 | Future Payment Schedule between 90 to 119 days |
| 50 | 120 | 240 | Future Payment Schedule between 120 to 239 days |
| 60 | 240 | 280 | Future Payment Schedule between 240 to 279 days |
| 70 | 280 | 99999 | Future Payment Schedule beyond 279 days |

## Configure Custom Buckets

1. Sign in to the Oracle Utilities source cloud application.
2. In the search bar at the top of the screen, search for the "Bucket Configuration" menu and open it.


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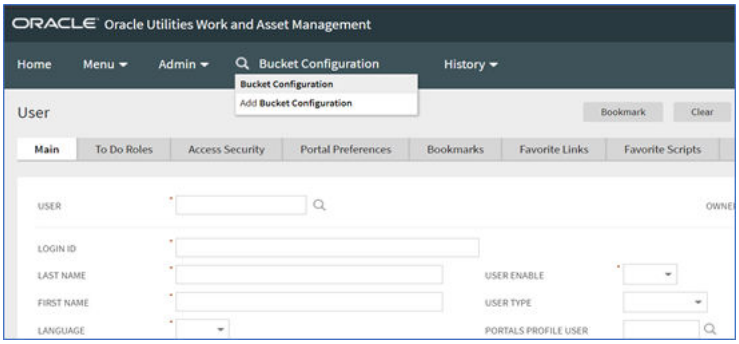
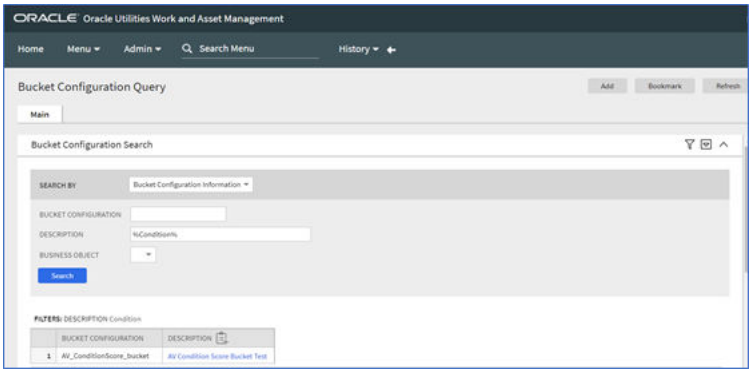



3. In the **Description** field, enter the percent symbol (%) to search for any predefined buckets.




> **Note**
>
> A newly installed application will not have any default configurations. If there are any records available, results will be displayed based on the search criteria. Select any of the bucket configuration records returned from search results to navigate and view the configuration.

4. To add a new bucket configuration, click **Add** at the top right of the page.
5. Select an option from the **Bucket Configuration Business Objects** menu. These options represent the placeholder for the bucket definition.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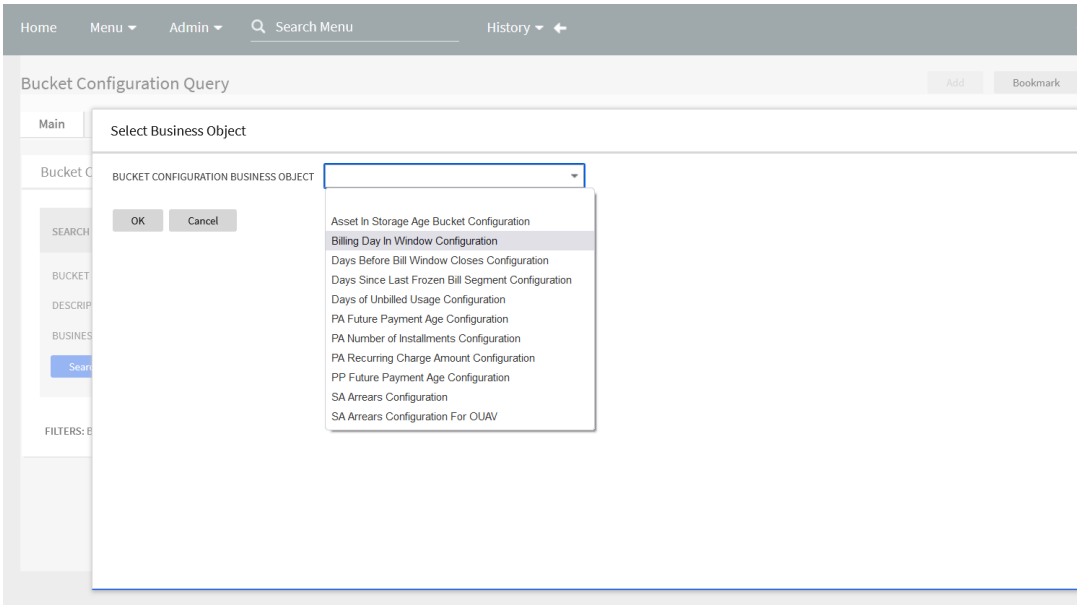
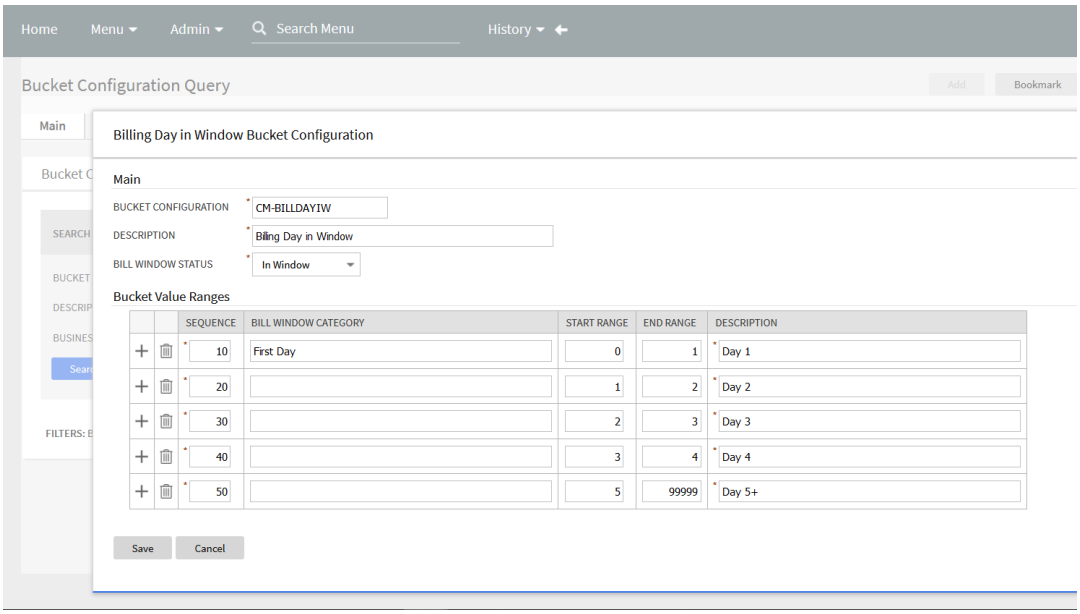



6. In the **Bucket Configuration** field, define the bucket configuration code and its description. The code must be unique and should reflect the purpose of the bucket. For example, if the purpose of the bucket is for binning when a bill was completed within a bill cycle window, then your bucket configuration code could be CM-BILLDAYIW, where CM is a prefix that identifies that it is custom, and where BILLDAYIW represents that it is for binning Billing Day In Window.

7. In the **Bucket Value Ranges** section, define a sequence of intervals for the start and end ranges that represents how the data should be grouped or binned. In most cases, the ranges must be continuous, and the start range must be the end range of the previous interval. The existing functionality will assign the attribute being binned into a range using the formula: Start Range <= x < End Range, where x is the numerical attribute being binned. The intervals must include all possible values of the underlying attribute that is binned into buckets. It is best practice to use a high value for the last end range to ensure that a large value is included in the interval defining the default bucket.




**Important Constraints**: Follow these guidelines to avoid incorrect behavior of buckets.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- Only one bucket configuration for each Bucket Business Object is supported by Analytics Visualization. Otherwise the application will return incorrect values and may double-count measures.
- The bucket definition must have intervals that do not overlap and must cover all possible values. Otherwise, the application will return incorrect values and may under- or double-count measures.

## Configure Pay Plan Future Payment Age Buckets

The Pay Plan Future Payment Age bucket defines the age buckets for which future payments for pay plans are scheduled to be paid. This bucket's configuration data is used in the Pay Plan Accumulation fact.

1. Run the following query in the source database application schema.

   ```
   Select c.bkt_config_cd,val.bkt_start_range,val.bkt_end_range from
   f1_bkt_config c, f1_bkt_config_val val Where c.bkt_config_cd=val.bkt_config_cd
   and c.bus_obj_cd='C1-PPFuturePaymentAge';
   ```

2. Validate the following:
   - One bucket should have the start range as 0.
   - One bucket should have the end range as 99999.
   - No gaps or overlaps are allowed within the bucket ranges.

# Take Monthly Snapshots of Service Agreement Arrears

The monthly Service Agreement Arrears subject area allows you to answer questions about customers who have outstanding debt. The batch process below must be configured and scheduled using your scheduler of choice to run on a monthly basis so that you can capture a snapshot of the service agreement arrears for the previous month.

- **Batch Control**: C1-SASNM
- **Batch Name**: Capture Monthly SA Arrears Snapshot

  This batch process captures the service agreement (SA) arrears snapshot for the previous month. For example, if the job was submitted on any day in January, 2022, it would take the previous month's snapshot through December 31, 2021. The following criteria are used to select SAs and include them in the snapshot:

  – Exclude cancelled SAs.

  – Exclude SAs whose start date is later than the snapshot's end date. For example, if you ran a batch on May 5, a snapshot would be generated for the month of April. Any SA created after April 30 would be excluded.

  – Exclude closed SAs whose end date is before the snapshot date and where the difference, in days, between the snapshot end date and SA end date is greater than the configured number of days to exclude closed SAs. The configured number of days to exclude closed SAs is based on the daysSinceClosed parameter below. See the parameter description for details and examples.

- **Parameters**:

  – **daysSinceClosed**: Number of days to include closed SAs relative to the snapshot's end date. Any SAs that closed within the number of days provided will be included in the snapshot. A closed SA is one whose arrears balance is 0, meaning there are no more financial responsibilities.


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For example, let's say you configure daysSinceClosed to 7, and then you run a batch on May 5. A snapshot would be generated for the month of April. Since daysSinceClosed was set to 7, then any SAs that were closed within 7 days dating backwards from April 30 (that is, from April 23-30) would be included in the snapshot. Any SAs closed before April 23 would be excluded.

It is recommended that you set the daysSinceClosed parameter to 0. This way, the snapshot will not include any SAs that were closed within the previous month. If you want to include SAs that were closed in the previous month in your snapshot, then set the parameter to 30.

*Take Monthly Snapshots of Service Agreement Arrears*

You can run the batch process to generate a snapshot of the previous month. You can also run the batch process to generate a snapshot of a month in the past prior to the previous month.

*To generate a snapshot of the previous month*:

1. Set the daysSinceClosed parameter to the desired number of days within which to include closed SAs as part of the snapshot. It is recommended that you set the parameter to 0. This way, the snapshot will not include any SAs that were closed within the previous month. If you want to include SAs that were closed in the previous month in your snapshot, then set the parameter to 30.
2. Run the batch process. It will generate a snapshot of the previous month.
3. Use a batch scheduler of your choice to run the batch process on a recurring monthly basis.

*To generate a snapshot of a month other than the previous month*:

1. Set the business date of the batch process to a date in the month that follows the month for which you want a snapshot. For example, let's say you are in the month of May, and you want a snapshot for the month of February. You would set the business date of the batch process to March 1 or any other day in March.
2. Set the daysSinceClosed parameter to the desired number of days within which to include closed SAs as part of the snapshot. See the procedure above for an example of the values you might want to use.
3. Run the batch process. It will generate a snapshot of the month prior to the business date you set.

> **Note**
>
> When you follow this procedure, the status of the SAs included in the snapshot may not be accurate. This is because the system always uses the latest status of an SA. This means that your historical snapshot may include SAs that were active in the past, but have since been closed. However, the arrears amount of the historical snapshot will still be accurate.

# Customer Subject Areas

The customer subject areas are based on customer data objects available in Oracle Utilities Customer to Meter, such as billed usage and financial transactions. You can use this data to gain insights about your business and your customers related to billing. For example, you can visualize what business users have the most number of open cases and what state these are cases in, or create a chart or graph of the number of pending and completed bills within a


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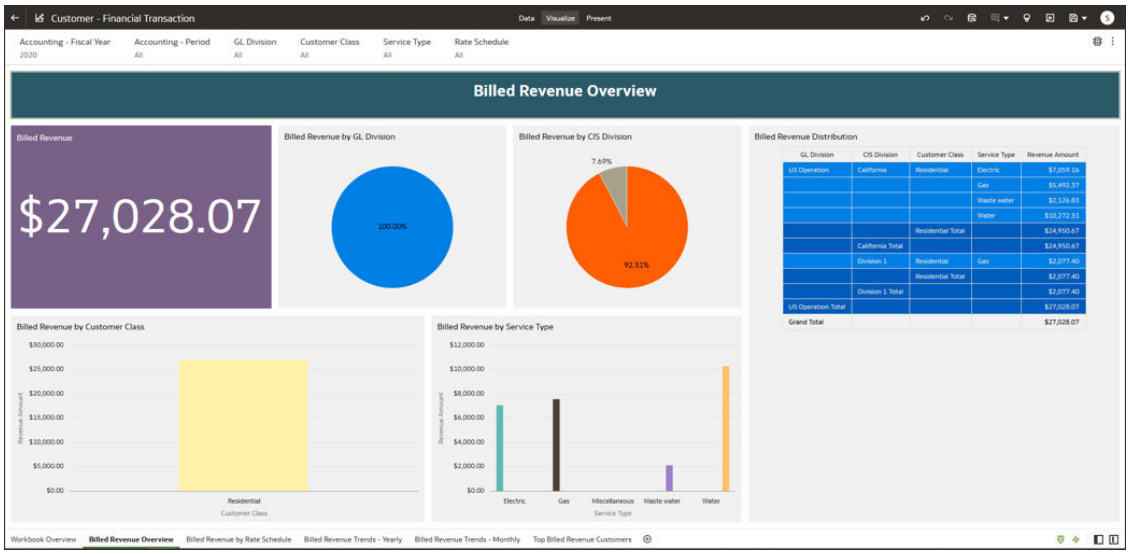
period of time. The image below is an example of how data could look in the Financial Transactions subject area.




# Customer - Accounts and Service Agreements

The Accounts and Service Agreements subject area provides a comprehensive view of account and service agreement data, enabling detailed analysis of customer segments, program participation, contact information, and relationships between customers, accounts, and premises.

**Answer questions like these:**

- How many active accounts are there for each customer class or each rate code, and what percentage of total accounts do they represent?
- What proportion of active accounts are currently on pay plans or payment arrangements?
- What proportion of active accounts are enrolled in e-bill, autopay, budget billing, or non-billed budget programs?
- How many active accounts have provided email, phone, or fax contact details, and how does this vary by region?
- Which customer segments or geographic areas have less participation in digital or payment programs, indicating opportunity for outreach?
- What is the count of active service agreements associated with each account?
- Are there persons associated with multiple premises, and what is the geographic spread of these multi-premise customers?

# Customer - Adjustment

The Adjustment subject area can be used to analyze count and current amount of adjustment data by adjustment status, cancel reason, and adjustment type.

**Answer questions like these:**

- Which adjustments are not yet finalized and therefore have not impacted a customer's account balance (for example, not frozen)?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- What is the trend (for example, volume, current amount) and current status of created adjustments over the past 12 months?
- What is the trend (for example, volume, current amount) and current status of created adjustments over the past 31 days?
- What are the main reasons adjustments have been cancelled?
- What is the distribution of created adjustments by adjustment type over the past 12 months?
- Which adjustments are still waiting to be approved by a business user?

## Customer - Billed Usage

The Billed Usage subject area can be used to visualize, review, and analyze billed usage information.

**Answer questions like these:**

- What are the billed amounts and billed quantities by Customer Class?
- What is the month by month comparison of billed amounts and billed quantities over a period of time?
- What were the highest billed amounts and billed quantities by Rate?

## Customer - Billing Overview

The Billing Overview subject area can be used to visualize, review, and analyze billing information.

**Answer questions like these:**

- What is the number of pending and completed bills within a period of time?
- What are the trends in bill completions and bill amounts over a period of time?
- How many pending bills are without exceptions?

## Customer - Cases

The Cases subject area can be used to analyze case data by attributes of Account, Case Type, Person, Premise, and User.

**Answer questions like these:**

- What is the distribution of open cases across customer classes and case types?
- Which business users have the most number of open cases and what state are these cases in?
- Which persons / addresses have had the most number of cases opened against them?
- What is the trend (for example, volume) and case condition of created cases over the past 12 months?
- What is the trend (for example, volume) and case condition of created cases over the past 31 days?
- For a specific case type, how long were cases in the previous state for?
- For a specific case type, what is the distribution across the final states the cases ended up in?


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- For a specific case type, what was the average case completion duration?

# Customer - Collectible Process

The Collectible Process subject area can be used to review and analyze collectible processes. A collectible process is a collection process and the severance processes it initiates.

A collection process is a series of events meant to encourage a customer to make payments for overdue debt for an account. A severance process is a more encouraging series of events to get a customer to make payments for overdue debt for a service agreement which may lead to a disconnection of service.

**Answer questions like these:**

- How many accounts are there, and what is the overall overdue debt under collectible and collection processing?
- What are the trends in the creation of collectible processes?
- Which Collection Process Templates were the most commonly and least commonly used?
- How effective were collectible processes in reducing a customer's overdue debt?
- Which customers have the highest levels of debt under collectible processing?

# Customer - Collection Process

The Collection Process subject area can be used to analyze the count and arrears amount of collection process data by collection status, collection status reason, collection process template, and attributes of account.

> **Note**
>
> The Collection Process subject area is superseded by the Collectible Process subject area, which may be used to review and analyze collection processes.

**Answer questions like these:**

- How are currently active collection processes, by count and initiated arrears amounts, distributed across customer classes and collection process templates?
- What is the distribution of active collection processes by initiated arrears amount and process age?
- Over the past 12 months, what is the current status of created collection processes by volume and initiated arrears amounts?
- Over the past 12 months, what is the distribution across Collection Status Reasons why collection processes were made inactive by volume and initiated arrears amounts?
- Based on Collection Status Reason, what were the most and least effective collection process templates that encouraged customers to make payment?
- Which accounts have had the most number of collection processes initiated against them over the past 12 months?


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# Customer - Customer Contacts

The Customer Contacts subject area can be used to analyze customer contact data by attributes of Account, Person, Premise, and User.

**Answer questions like these:**

- How are customer contacts distributed across Customer Contact Classes and Customer Contact Types?
- What is the monthly trend for customer contacts?
- What is the daily trend for customer contacts?

# Customer - Deposit Control

The Deposit Control subject area can be analyzed to find unexpected anomalies with their ending balance. For example, this model can be used to find whether there are balanced deposit controls with a non-zero ending balance, or if deposit controls created in the past have still not been balanced.

**Answer questions like these:**

- Which deposit controls are unbalanced?
- What are the Ending Balances for balanced deposit controls?

# Customer - Financial Transaction

The Financial Transaction subject area can be used to visualize, review, and analyze financial transaction information.

**Answer questions like these:**

- What is the billed revenue by Customer Class and General Ledger Division?
- What is the billed revenue by Rate?
- What is the yearly and monthly trend in billed revenue?

# Customer - Financial Transaction General Ledger

The Financial Transaction General Ledger subject area can be used to visualize, review, and analyze financial transaction general ledger information.

**Answer questions like these:**

- What is the billed revenue and tax amount by General Ledger Division?
- What is the general ledger accounts summary over a period of time?

# Customer - Payment Arrangement

The Payment Arrangement subject area provides a comprehensive view of payment agreements made between customers and the utility, enabling analysis of their status, balances, and trends to support effective account management and operational decision-making.

**Answer questions like these:**


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- How many payment arrangements exist and what is the distribution of payment arrangements by their current status (active, broken, canceled, or kept)?
- What is the total outstanding balance under payment arrangements, and how much has already been paid compared to what remains due in the future?
- What is the trend in the effectiveness of payment arrangements?
- Which customers are most often enrolled in payment arrangements?
- What is the total amount associated with broken or canceled payment arrangements?
- For a specific customer or account, what is the current outstanding balance under payment arrangements, total number of installments, and status of their payment arrangement(s)?

## Customer - Payment Header

This subject area can be used to analyze the count and payment amount of payment header data by payment status, pay cancel reason, and customer class.

**Answer questions like these:**

- What is the extent of payments not yet finalized and therefore have not yet impacted a customer's account balance (for example, not frozen)?
- What is the age distribution for payments that have not yet been finalized based on payment date?
- What is the trend (for example, volume and payment amount) and payment status of created payments over the past 12 months?
- What is the trend (for example, volume and payment amount) and payment status of created payments over the past 31 days?

## Customer - Payment Tender

This subject area can be used to analyze count and tender amount of payment tender data by tender status, tender type, cancel reason and customer class.

**Answer questions like these:**

- What is the trend (for example, volume, tender amount) and tender status of created payment tenders (i.e., how payments were made) over the past 12 months?
- What is the trend (for example, volume, tender amount) and tender status of created payment tenders (i.e., how payments were made) over the past 31 days?
- Over the past 12 months, what is the distribution of payments across how payments were made (for example, check, cash, etc.)?
- Which accounts had the most number of payment cancellations due to non-sufficient funds?

## Customer - Pay Plan

The Pay Plan subject area enables users to monitor, analyze, and report on aspects of customer pay plans within the utility, providing key insights to support effective financial management.


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> **Note**
>
> Pay plans differ from Customer - Payment Arrangement in that pay plans have user-defined scheduled payment dates, which are independent of the customer's billing dates. In other words, payment arrangements appear on the customer's bills, whereas pay plan scheduled payments do not.

**Prerequisite**: Configure Pay Plan Future Payment Age Buckets

**Answer questions like these:**

- How many pay plans exist, and what are their statuses (active, broken, canceled, or kept)?
- What are the trends in the effectiveness of pay plans?
- How do pay plans vary by payment method, pay plan type, or debt class?
- What are the remaining amounts that customers still need to pay towards their pay plans?

## Customer - Pay Plan Snapshot

The Pay Plan Snapshot subject area can be used to review and analyze pay plan status, trends, and effectiveness as of selected snapshot periods.

**Prerequisite**: Configure Pay Plan Future Payment Age Buckets

**Answer questions like these:**

- How many pay plans existed as of a selected snapshot period, and how were they distributed by status such as active, broken, canceled, and kept?
- How is pay plan effectiveness trending over time based on paid-to-date amount compared with total scheduled payment amount?
- As of a selected snapshot period, how much has already been paid toward pay plans and how much remains scheduled for future payment?
- How many future scheduled payments remain, and what future scheduled payment amount is expected?
- How is the future scheduled payment amount distributed across configured future payment amount buckets?
- What are the average scheduled payment amount, average remaining amount, and pay plan duration as of each snapshot period?

## Customer - Service Agreement Arrears

The Service Agreement Arrears subject area can be used to review and analyze arrears (outstanding debt).

**Answer questions like these:**

- What is the distribution of outstanding debt by age (for example, by 30, 60, or 90 days)? This can be further analyzed by Customer Class, Service Type, and Service Agreement Type.
- What is the trend over the past 15 months of outstanding debt by age (for example, by 30, 60, or 90 days)?


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- Who are the top 100 customers with the highest amount of outstanding debt older than 30 days?

## Customer - Severance Process

The Severance Process subject area can be used to analyze the count and arrears amount of severance process data by customer class, service type, and attributes of account and service agreement.

**Answer questions like these:**

- What are the trends in the creation of severance processes?
- Which Severance Process Templates were the most-commonly used and least-commonly used?
- What is the trend in service disconnections and reconnections?
- How effective were severance processes in reducing a customer's overdue debt?
- Which customers have the highest levels of debt under severance processing?

## Customer - Tender Control

This subject area can be used to analyze the starting and ending balances of balanced and open tender controls by batch control, deposit control, tender source, and user.

**Answer questions like these:**

- Which tender controls are unbalanced?
- What are the Ending Balances for balanced tender controls?

## Customer - Write-Off Process

The Write-Off Process subject area can be used to review and analyze outstanding debt associated with write-off processes.

**Answer questions like these:**

- How many active write-off processes exist, and what amount of outstanding debt initiated these processes?
- What is the trend in the effectiveness of write-off processes collecting outstanding debt over time?
- How many write-off processes are being created over time?
- What is the trend in the amount of outstanding debt initiating write-off processes (active and inactive) over time?
- Has the amount of outstanding debt to be written off been increasing or decreasing over time?
- Has the time it takes to complete or cancel a write-off process (debt written off / debt collected) been increasing or decreasing over time?


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# Customer Analytics Data Lineage

The Oracle Utilities Data Intelligence Customer Analytics data lineage spreadsheet provides a summary of how Customer Analytics presentation layer objects map to the underlying physical and source data structures.

Use the spreadsheet to review lineage details for Customer Analytics subject areas. The spreadsheet identifies presentation tables and attributes, physical tables and attributes, and source tables and columns where the mapping is available.


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# 6
# Customer Insights Analytics

Customer Insights Analytics are based on data objects available in Oracle Utilities Opower Analytics Visualization, which enables utilities to explore customer data and generate custom reports and insights related to the Opower program. It includes rich pre-built analytical subject areas and visualizations that allow you to derive strategic insights from your data, such as energy affordability, energy efficiency savings, communication history, and customer engagement with Opower products.

For utilities that have an Opower program, there is a Delivery Team available to provide program support. You can contact your Delivery Team with any questions.

## Customer Insights Prerequisites

Customer Insights Analytics are based on data objects in Oracle Utilities Opower Analytics Visualization, which provides access to data and insights related to customers in the Oracle Utilities Opower program. Utilities must have purchased one or more Oracle Utilities Opower cloud services to use these analytics.

## Customer Insights Subject Areas

The Customer Insights Analytics are based on data objects in Oracle Utilities Opower Analytics Visualization. The default subject areas available are listed below.

- Disaggregation Insights
- Energy Affordability Identification
- Energy Efficiency (EE) - Savings
- Opt Out - Products
- Opt Out - Products and Channels
- Outbound Communications - Dispatch and Engagement
- Products - Historical Preferences
- Survey - Questions and Answers
- Unauthenticated Home Energy Analysis (HEA)
- Web - Authentications
- Web - Pageviews

There are also shared data elements that apply across most or all subject areas. See Shared Data Elements for details.

### Measures, Attributes, and Dimensions

There are three common components within Customer Insights Analytics subject areas: measures, attributes, and dimensions.


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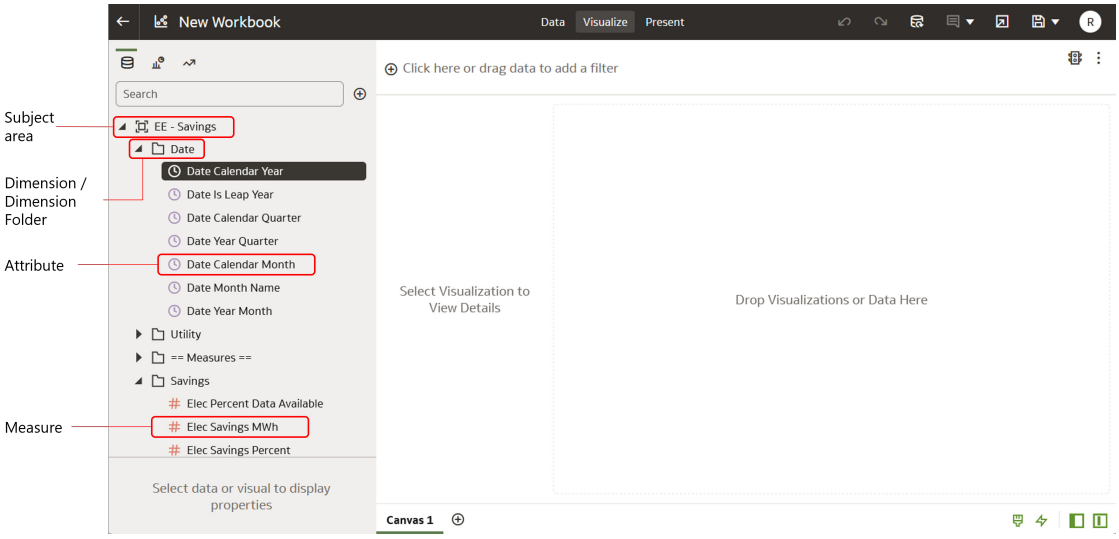
Measures and attributes are data elements that you use to build your visualizations. Dimensions are simply categories or folders that contain attributes.

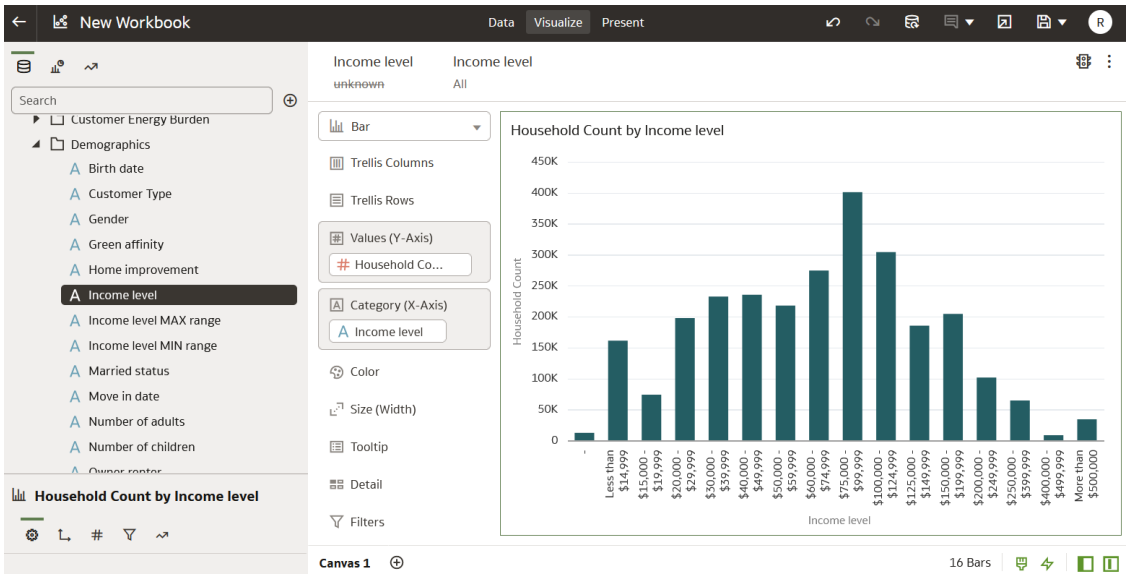
You can think of a *measure* as a "numerator" with a quantitative number that can be divided or filtered by an attribute. Conversely, an *attribute* is a "denominator" that can divide or filter a measure. Or you can think of a *measure* as a quantity for the y-axis of a graph, and an *attribute* as a value used on the x-axis of a graph. Both elements are used to dissect and analyze your data in different ways.




### Example: Households by Income Level

One common measure in Opower Analytics Visualization is household count, which can be found in the Household - Count of Customers subject area. Let's say you want to know the number of households in your service area that have a certain income level. You would want to filter the number of households in your service territory into income level groupings.

To do this, you would navigate to the Household - Count of Customer subject area. Then you would select Household Count as your measure, and select Income Level as your attribute, and drag both to the canvas. See the screenshot below for how this might look in the user interface. Notice that Household Count is on the y-axis and Income Level is on the x-axis.





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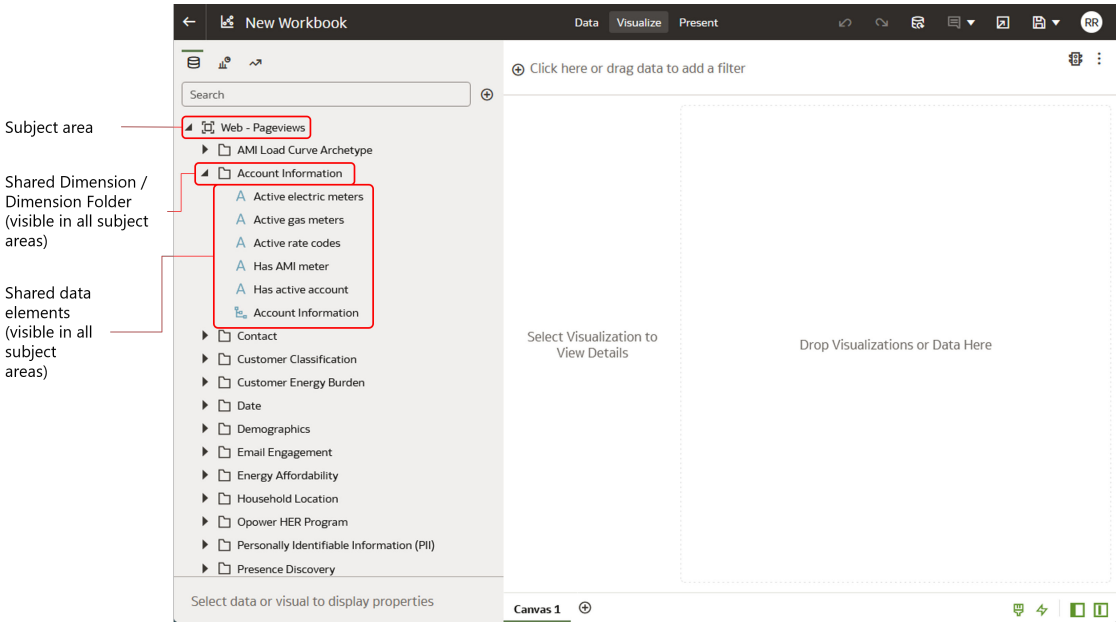
### Note about Attributes Filtering Attributes

Note that an attribute cannot be used to filter another attribute. For example, let's say you wanted to create a x-y axis bar graph with two attributes: Site Sections and Income Level. This would be a nonsensical filter because site sections are just names for different sections of a website, and income level groupings are just names for different categories of income. Neither of these attributes has a quantity, and so there would be no numerical value to show.

## Shared Data Elements

The Customer Insights Analytics include a variety of data elements that are shared across subject areas. These data elements are organized in "dimensions", which are simply categories or folders that contain them. To find these dimensions and their shared data elements, open a subject area and look in the folders that appear immediately under the name of the subject area.




Use the information in this section to learn more about each dimension and the shared data elements it contains.

## AMI Load Curve Archetype

The AMI Load Curve dimension contains shared data elements about common customer energy use patterns, also known as load curve archetypes or load curve profiles. This information categorizes customers based on the times of day when they tend to use the most energy.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| Data Element | Description |
|---|---|
| Centroid Index | A numeric classification for the Usage Archetype attribute, such as 1 for Evening Peaker or 2 for Night Owl.<br>**Example Values**:<br>• **-1**: None<br>• **0**: Steady Eddie<br>• **1**: Evening Peaker<br>• **2**: Night Owl<br>• **3**: Daytimer<br>**Type**: Attribute |
| Evening user | A usage classification indicating that a customer tends to use energy in the evening (5 PM - 8 PM).<br>**Type**: Attribute |
| Flat user | A usage classification indicating that a customer's energy usage is relatively constant throughout the 24-hour cycle.<br>**Type**: Attribute |
| Home during day | A usage classification indicating that a customer's energy usage is relatively constant throughout the 24-hour cycle.<br>**Type**: Attribute |
| Late bedtime | A usage classification indicating that a customer's energy usage typically extends into the late evening (past 10 PM).<br>**Type**: Attribute |
| Midday user | A usage classification indicating that a customer's energy usage typically peaks in the middle of the day.<br>**Type**: Attribute |
| Morning user | A usage classification indicating that a customer tends to use energy in the morning (6 AM - 9 AM).<br>**Type**: Attribute |
| Overnight user | A usage classification indicating that a customer tends to use energy throughout the night.<br>**Type**: Attribute |
| Usage Archetype | A classification indicating the type of energy use pattern for a customer. The values can be “Steady Eddie”, “Evening Peaker”, “Night Owl”, “Daytimer”, or “None” in correspondence with the Centroid Index attribute.<br>**Type**: Attribute |

## Account Information

The Account Information dimension contains shared data elements about a customer's account.

| Data Element | Description |
|---|---|
| Active electric meters | The number of electric meters associated with a service point.<br>**Type**: Attribute |
| Active gas meters | The number of gas meters associated with a service point.<br>**Type**: Attribute |


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| Data Element | Description |
|---|---|
| Active rate codes | A list of rate codes associated with a customer's utility accounts.<br>**Type**: Attribute |
| Has AMI meter | An indicator of whether a resident has an AMI meter.<br>**Type**: Attribute |
| Has active account | An indicator of whether a customer is an active customer at a utility. It is recommended that you use this attribute as a common filter in your dashboards to ensure you are viewing customers who are active.<br>**Type**: Attribute |

## Contact

The Contact dimension contains shared data elements about customer email addresses , phone numbers, and contact preferences.

| Data Element | Description |
|---|---|
| Email Has Hard Bounced | An indicator of whether an email cannot be delivered. A hard bounce typically indicates a permanent reason that an email cannot be delivered.<br>**Type**: Attribute |
| Has Email Address | An indicator of whether there is an email address for the customer.<br>**Type**: Attribute |
| Has Phone Number | An indicator of whether there is a phone number for the customer.<br>**Type**: Attribute |
| Has Push Notifications | An indicator of whether the customer receives push notifications.<br>**Type**: Attribute |
| Has SMS Phone Number | An indicator of whether there is an SMS phone number for the customer.<br>**Type**: Attribute |
| Has Voice Phone Number | An indicator of whether there is a voice phone number for the customer.<br>**Type**: Attribute |
| Locale Code | The customer's preferred language with which to be contacted, if provided.<br>**Type**: Attribute |

## Customer Classification

The Customer Classification dimension contains shared custom data elements from the Customer Classification File that a utility can send to Oracle Utilities Opower. The purpose of the file is to categorize customers into different groups or “classifiers." Based on this information, Oracle Utilities can then create tailored communications and user experiences. Note that there is an additional charge for setting up this data feed. Contact your Delivery Team if you have any questions.


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| Data Element | Description |
|---|---|
| Classifier | The utility-specific classifier used to designate a group of customers. For example, this could be a classifier that identifies low-income customers.<br>**Type**: Attribute |
| Value | The value of the utility-specific classifier. For example, this could be a value like True or False, or some other value that supports the classifier.<br>**Type**: Attribute |

## Customer Energy Burden

The Customer Energy Burden dimension contains shared data elements about household spending on energy costs.

| Data Element | Description |
|---|---|
| HH Level Energy Burden | The energy burden of an individual customer's household. Energy burden is defined as the total household energy costs divided by the household's income. This value is a percentage which ranges from 0-100%. An energy burden above 6% is considered a high energy burden.<br>**Note**<br>The HH Level Energy Burden attribute is different from the Energy Burden attribute defined in the Energy Affordability dimension. HH Level Energy Burden is calculated for individual households, whereas Energy Burden is calculated for groups of households within the same census tract. Each household in a tract is assigned the same value as other households in the tract.<br>**Type**: Attribute |

## Date

The Date dimension contains shared data elements about calendar information, such as a day, month, and year.

| Data Element | Description |
|---|---|
| Date Calendar Date | The calendar date in a standard date (MM/DD/YYYY) and time (HH:MM:SS) format.<br>**Example**: 01/13/2021 12:00:00 AM<br>**Type**: Attribute |
| Date Calendar Day | A numeric value for a calendar day in a month. The number can be 1-31.<br>**Example**: 13<br>**Type**: Attribute |


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| Data Element | Description |
|---|---|
| Date Calendar Month | A numeric value for a calendar month in the year. The number can be 1-12.<br>**Example**: 1<br>**Type**: Attribute |
| Date Calendar Quarter | A numeric value for a calendar quarter in a year. The number can be 1-4.<br>**Example**: 1<br>**Type**: Attribute |
| Date Calendar Year | The calendar year in YYYY format.<br>**Example**: 2021<br>**Type**: Attribute |
| Date Day Name | The name of the day of the week.<br>**Example**: Wednesday<br>**Type**: Attribute |
| Date Day Of Week | The numeric value of the day of the week. The number can be 1-7.<br>**Example**: 4<br>**Type**: Attribute |
| Date Day Of Week Iso | The day of the week in ISO format.<br>**Example**: 3<br>**Type**: Attribute |
| Date Day Of Year | The numeric value of the day of the year. The number can be 1-365.<br>**Example**: 13<br>**Type**: Attribute |
| Date First Day In Month | The first day of the month in date and time format.<br>**Example**: 01/01/2021 12:00:00 AM<br>**Type**: Attribute |
| Date First Day In Week | The first day of the week in date and time format, where Sunday is the first day of the week.<br>**Example**: 01/10/2021 12:00:00 AM<br>**Type**: Attribute |
| Date First Day In Week Iso | The first day of the week in ISO date and time format, where Monday is the first day of the week.<br>**Example**: 01/11/2021 12:00:00 AM<br>**Type**: Attribute |
| Date Is Leap Year | A flag to indicate whether the year is a leap year.<br>**Example**: 0<br>**Type**: Attribute |


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| Data Element | Description |
|---|---|
| Date Is Weekday | A flag to indicate whether the day is a week day.<br>**Example**: 1<br>**Type**: Attribute |
| Date Last Day In Month | The last day in the month in date and time format.<br>**Example**: 01/31/2021 12:00:00 AM<br>**Type**: Attribute |
| Date Last Day In Week | The last day in the week in date and time format, where Saturday is the last day.<br>**Example**: 01/16/2021 12:00:00 AM<br>**Type**: Attribute |
| Date Last Day In Week Iso | The last day in the week in ISO date and time format, where Sunday is the last day.<br>**Example**: 01/17/2021 12:00:00 AM<br>**Type**: Attribute |
| Date Month Name | The name of the month.<br>**Example**: January<br>**Type**: Attribute |
| Date Week Of Month | The numeric value of the week of the month.<br>**Example**: 3<br>**Type**: Attribute |
| Date Week Of Month Iso | The numeric value of the week of the month in ISO numbering.<br>**Example**: 3<br>**Type**: Attribute |
| Date Week Of Year | The numeric value of the week of the year.<br>**Example**: 3<br>**Type**: Attribute |
| Date Week Of Year Iso | The numeric value of the week of the year in ISO numbering.<br>**Example**: 3<br>**Type**: Attribute |
| Date Year Month | The month of the year in YYYY-Mmm format.<br>**Example**: 2021-Jan<br>**Type**: Attribute |
| Date Year Month Day | The calendar date in YYYY-MM-DD format.<br>**Example**: 2021-11-02<br>**Type**: Attribute |
| Date Year Quarter | The quarter of the year in YYYY-Q format.<br>**Example**: 2021-1<br>**Type**: Attribute |


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| Data Element | Description |
|---|---|
| Date Year Week | The week of the year in YYYY-WW format.<br>**Example**: 2021-02<br>**Type**: Attribute |

## Email Engagement

The Email Engagement dimension contains shared data elements about how customers interact with Oracle Utilities Opower email products.

| Data Element | Description |
|---|---|
| Load Shifting: Rate Coach - adjusted click to open rate | The rate at which Load Shifting: Rate Coach email communications opened from *non auto-opening email clients only* were clicked.<br>**Type**: Attribute |
| Load Shifting: Rate Coach - adjusted open rate | The rate at which Load Shifting: Rate Coach email communications delivered to *non auto-opening email clients only* were opened.<br>**Type**: Attribute |
| Load Shifting: Rate Coach - click rate | The rate at which delivered Load Shifting: Rate Coach email communications were clicked. This is calculated by: Email Clicked Count / (Email Dispatched Count - Email Hard Bounce Count - Email Soft Bounce Count).<br>**Type**: Attribute |
| Load Shifting: Rate Coach - click to open rate | The rate at which opened Load Shifting: Rate Coach emails, including auto-opens, were clicked. This is calculated by: Email Clicked Count / Email Opened Count.<br>**Type**: Attribute |
| Load Shifting: Rate Coach - open rate | The rate at which delivered Load Shifting: Rate Coach emails were opened, including auto-opens. This is calculated by: Email Opened Count / (Email Dispatched Count - Email Hard Bounce Count - Email Soft Bounce Count).<br>**Type**: Attribute |
| Load Shifting: Rate Coach - received | An indicator of whether a customer received a Load Shifting: Rate Coach email from Oracle Utilities Opower.<br>**Type**: Attribute |
| High Bill Alert (AMI) - adjusted click to open rate | The rate at which High Bill Alert AMI email communications opened from *non auto-opening email clients only* were clicked.<br>**Type**: Attribute |
| High Bill Alert (AMI) - adjusted open rate | The rate at which High Bill Alert AMI email communications delivered to *non auto-opening email clients only* were opened.<br>**Type**: Attribute |
| High Bill Alert (AMI) - click rate | Percentage of High Bill Alert AMI opened emails that were opened and had at least one link clicked.<br>**Type**: Attribute |
| High Bill Alert (AMI) - click to open rate | The rate at which opened High Bill Alert AMI emails, including auto-opens, were clicked. This is calculated by: Email Clicked Count / Email Opened Count.<br>**Type**: Attribute |


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| Data Element | Description |
|---|---|
| High Bill Alert (AMI) - open rate | The rate at which delivered High Bill Alert AMI emails were opened, including auto-opens. This is calculated by: Email Opened Count / (Email Dispatched Count - Email Hard Bounce Count - Email Soft Bounce Count).<br>**Type**: Attribute |
| High Bill Alert (AMI) - received | An indicator of whether an AMI customer received a High Bill Alert AMI email from Oracle Utilities Opower.<br>**Type**: Attribute |
| High Bill Alert (non-AMI) - adjusted click to open rate | The rate at which High Bill Alert (non-AMI) email communications opened from *non auto-opening email clients only* were clicked.<br>**Type**: Attribute |
| High Bill Alert (non-AMI) - adjusted open rate | The rate at which High Bill Alert (non-AMI) email communications delivered to *non auto-opening email clients only* were opened.<br>**Type**: Attribute |
| High Bill Alert (non-AMI) - click rate | Percentage of High Bill Alert (non-AMI) emails that were opened and had at least one link clicked.<br>**Type**: Attribute |
| High Bill Alert (non-AMI) - click to open rate | The rate at which opened High Bill Alert (non-AMI) emails, including auto-opens, were clicked. This is calculated by: Email Clicked Count / Email Opened Count.<br>**Type**: Attribute |
| High Bill Alert (non-AMI) - open rate | The rate at which delivered High Bill Alert (non-AMI) emails were opened, including auto-opens. This is calculated by: Email Opened Count / (Email Dispatched Count - Email Hard Bounce Count - Email Soft Bounce Count).<br>**Type**: Attribute |
| High Bill Alert (non-AMI) - received | An indicator of whether a non-AMI customer received a High Bill Alert (non-AMI) email from Oracle Utilities Opower.<br>**Type**: Attribute |
| Overall adjusted click to open rate | The overall rate at which emails opened from *non auto-opening email clients only* were clicked.<br>**Type**: Attribute |
| Overall adjusted open rate | The overall rate at which emails delivered to *non auto-opening email clients only* were opened.<br>**Type**: Attribute |
| Overall click rate | Percentage of opened emails that had at least one link clicked.<br>**Type**: Attribute |
| Overall click to open rate | The overall rate at which opened emails, including auto-opens, were clicked. This is calculated by: Email Clicked Count / Email Opened Count.<br>**Type**: Attribute |
| Overall open rate | The overall rate at which delivered emails were opened, including auto-opens. This is calculated by: Email Opened Count / (Email Dispatched Count - Email Hard Bounce Count - Email Soft Bounce Count).<br>**Type**: Attribute |
| Received Opower email | An indicator of whether the customer received an email from Oracle Utilities Opower.<br>**Type**: Attribute |


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| Data Element | Description |
|---|---|
| WAMI - adjusted click to open rate | The rate at which Weekly Energy Update email communications opened from *non auto-opening email clients only* were clicked.<br>**Type**: Attribute |
| WAMI - adjusted open rate | The rate at which Weekly Energy Update email communications delivered to *non auto-opening email clients only* were opened.<br>**Type**: Attribute |
| WAMI - click rate | Percentage of opened Weekly Energy Update emails that had at least one link clicked.<br>**Type**: Attribute |
| WAMI - click to open rate | The rate at which opened Weekly Energy Update emails, including auto-opens, were clicked. This is calculated by: Email Clicked Count / Email Opened Count.<br>**Type**: Attribute |
| WAMI - open rate | The rate at which delivered Weekly Energy Update emails were opened, including auto-opens. This is calculated by: Email Opened Count / (Email Dispatched Count - Email Hard Bounce Count - Email Soft Bounce Count).<br>**Type**: Attribute |
| WAMI - received | An indicator of whether the customer received a Weekly Energy Update email from Oracle Utilities Opower.<br>**Type**: Attribute |
| eBill - adjusted click to open rate | The rate at which email utility bills opened from *non auto-opening email clients only* were clicked.<br>**Type**: Attribute |
| eBill - adjusted open rate | The rate at which email utility bills delivered to *non auto-opening email clients only* were opened.<br>**Type**: Attribute |
| eBill - click rate | Percentage of opened email utility bills that had at least one link clicked.<br>**Type**: Attribute |
| eBill - click to open rate | The rate at which opened email utility bills, including auto-opens, were clicked. This is calculated by: Email Clicked Count / Email Opened Count.<br>**Type**: Attribute |
| eBill - open rate | The rate at which delivered email utility bills were opened, including auto-opens. This is calculated by: Email Opened Count / (Email Dispatched Count - Email Hard Bounce Count - Email Soft Bounce Count).<br>**Type**: Attribute |
| eBill - received | An indicator of whether the customer received an email utility bill from Oracle Utilities Opower.<br>**Type**: Attribute |
| eHER - adjusted click to open rate | The rate at which Email Home Energy Reports opened from *non auto-opening email clients only* were clicked.<br>**Type**: Attribute |
| eHER - adjusted open rate | The rate at which Email Home Energy Reports delivered to *non auto-opening email clients only* were opened.<br>**Type**: Attribute |


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| Data Element | Description |
|---|---|
| eHER - click rate | Percentage of opened Email Home Energy Reports that had at least one link clicked.<br>**Type**: Attribute |
| eHER - click to open rate | The rate at which opened Email Home Energy Reports, including auto-opens, were clicked. This is calculated by: Email Clicked Count / Email Opened Count.<br>**Type**: Attribute |
| eHER - open rate | The rate at which delivered Email Home Energy Reports were opened, including auto-opens. This is calculated by: Email Opened Count / (Email Dispatched Count - Email Hard Bounce Count - Email Soft Bounce Count).<br>**Type**: Attribute |
| eHER - received | An indicator of whether the customer received an email Home Energy Report from Opower.<br>**Type**: Attribute |

## Energy Affordability

The Energy Affordability dimension contains data elements about the income level of customers in a given area. This data is primarily sourced from the US Census and other reputable US government sources. The Energy Affordability shared data comes with the benefit of offering nearly comprehensive coverage for each attribute for all of the customers in your service territory. The US Census asks a number of questions and then offers a number which is an average for an area, such as a census tract. There could be as few as 1,500 people in a census tract, but there are typically ~5,000 people in an average census tract, so each person in that area would be assigned the same value.


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| Data Element | Description |
|---|---|
| Ability to Pay | The Ability to Pay of a household is defined as income minus housing costs, by Census Tract. The Ability to Pay serves as a proxy for a consumer's available household budget. (Housing costs are the sum of payments for mortgages, rent, and real estate taxes; fire, hazard, and flood insurance on the property; utilities; and fuels). This index was calculated using an Analytical Hierarchical Process (AHP) weighting method to reconcile the relative importance of income versus housing costs, where income is a first order factor and housing cost is second order.<br>The AHP method resulted in an index that ranged from 0-1000 where 1000 represented the highest need, or lowest available income, by households that had the least income and the highest housing costs. By contrast, those households with the highest income and the lowest housing costs would have the lowest index, closest to 0. The index is normalized for a number of households. Income bins used are derived from the Area Median Household (AMI) delineation.<br>• Non-LMI: 0 to 310 or >120% Area Median Income (AMI)<br>• Moderate: 310 to 580 or 80-120%<br>• Low: 580 to 720 50-80%<br>• Very Low: 720 to 860 or 30-50%<br>• Extremely Low: 860 to 1000 or < 30% AMI<br>**Allowed Values**: double<br>**Source**: 2016 US Department of Energy. Calculated from the American Community Survey. For more information, see Affordability and Access in Focus: Metrics and Tools of Relative Energy Vulnerability (Lin et al. 2018).<br>**Notes**: The ability to pay provides a more accurate interpretation of affordability for communities that have high housing costs, such as New York City, San Francisco, and other high-cost metro areas.<br>**Type**: Attribute |
| Approximate Income Level | Median household income in the past 12 months (in 2018 Inflation-Adjusted Dollars). This data is available in $10,000 increments.<br>**Allowed Values**: integer<br>**Source**: 2018 US Census, American Community Survey (ACS)<br>**Type**: Attribute |
| Dominant Fuel Price | The price of the dominant fuel type.<br>**Source**: American Community Survey (ACS)<br>**Type**: Attribute |
| Dominant Fuel Type | Dominant heating fuel type. This data is available at the county level.<br>**Allowed Values:** Fuel price units are $/mmbtu.<br>**Source**: Fuel type estimates are from the 2014 US Census American Community Survey housing units by fuel type estimates. Fuel costs are from the 2017 Energy Information Administration (EIA) Residential Energy Consumption Survey (RECS). Costs are joined to counties by the dominant fuel type and census division.<br>**Type**: Attribute |


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| Data Element | Description |
|---|---|
| Energy Burden | Energy burden is defined as the total household energy costs divided by the household's income. (Transportation is out of scope.) This value is a percentage which ranges from 0-100%. An energy burden above 6% is considered a high energy burden.<br>**Note**: This attribute is different from the HH Level Energy Burden attribute in the Customer Energy Burden dimension.<br>**Allowed Values**: integer<br>**Source**: 2016 US Department of Energy. Low Income Energy Affordability Data (LEAD) Tool.<br>**Type**: Attribute |
| Housing Vintage | Percentage of houses by vintage for a census tract.<br>**Sources**: 2016 US Census, American Community Survey. Data downloaded using IPUMS NHGIS, University of Minnesota, NHGIS.<br>**Type**: Attribute |
| Locale | The locale of the customer using the National Center for Education Statistics (NCES) framework. The NCES locale framework is composed of four basic types: City, Suburban, Town, and Rural. Each of these basic types contains three subtypes. It relies on standard urban and rural definitions developed by the U.S. Census Bureau. Each type of locale is either urban or rural in its entirety. A city is considered urban, and a town is considered a subset of the "Rural" category.<br>**Allowed Values**:<br>• City: Large, midsize, or small<br>• Suburban: Large, midsize, or small<br>• Town: Distant, fringe, or remote<br>• Rural: Distant, fringe, or remote<br>**Source**: 2016 National Center for Education Statistics (NCES), Education Demographic and Geographic Estimates Program (EDGE).<br>**Type**: Attribute |
| Percent Children and Elderly | Tract-level estimates for percent children (<18 years) and elderly (>65 years) populations.<br>**Sources**: 2016 US Census, American Community Survey. Data downloaded using IPUMS NHGIS, University of Minnesota, NHGIS.<br>**Type**: Attribute |
| Sub Locale | The sub locale of the population.<br>**Type**: Attribute |

## Household Location

The Household Location dimension contains shared data elements about a household's city, state, and postal code.

| Data Element | Description |
|---|---|
| City | The city where the household is located.<br>**Type**: Attribute |
| State | The state where the household is located.<br>**Type**: Attribute |


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| Data Element | Description |
|---|---|
| Postal code | The postal code where the household is located.<br>**Type**: Attribute |

## Opower HER Program

The Opower HER Program dimension contains shared data elements about Oracle Utilities Opower Home Energy Reports (HERs) and the deployment waves in which customers are placed. A deployment wave is used to track the year, month, and fuel type of a customer recipient or control group that is launched on Home Energy Reports.

| Data Element | Description |
|---|---|
| Deployment Wave | An identifier for a population of customers who start receiving Home Energy Reports around the same time. The population can include a control group of customers who do *not* receive reports but who are associated with the recipients for measurement purposes. The identifier includes indicators for the year and month of the launch of HERs for a specific customer population, followed by the fuel type of the customer population. The fuel type can be E (electricity), G (gas), or D (dual fuel).<br>**Example(s)**:<br>• 202303_E<br>• 202303_G<br>• 202303_D<br>**Type**: Attribute |
| Opt out status | A flag to indicate if a customer has opted out of the Oracle Utilities Opower program.<br>**Type**: Attribute |
| Recipient status | A flag to indicate if a household is a recipient or control group member in an Opower Home Energy Reports program. This is used for measurement purposes.<br>**Type**: Attribute |

## Personally Identifiable Information (PII)

The Personally identifiable information (PII) dimension includes shared data elements about customers' location and contact information. This data is sent by the utility to Oracle Utilities Opower.

| Data Element | Description |
|---|---|
| Account Number | The customer's account number in a utility's Customer Information System or other system of record.<br>**Type**: Attribute |
| Email | The customer's email address.<br>**Type**: Attribute |


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| Data Element | Description |
|---|---|
| First Name | The customer's first name.<br>**Type**: Attribute |
| Full Name | The customer's first and last name.<br>**Type**: Attribute |
| Last Name | The customer's last name.<br>**Type**: Attribute |
| Mail City | The city where the customer receives mail.<br>**Type**: Attribute |
| Mail State | The state where the customer receives mail.<br>**Type**: Attribute |
| Mail Street | The street where the customer receives mail.<br>**Type**: Attribute |
| Mail Zip | The zip code where the customer receives mail.<br>**Type**: Attribute |
| Mailing Address | The mailing address on record for the customer. This may be different than the customer's site address. For example, a customer may own a property, but rent it out while living at a different address.<br>**Type**: Attribute |
| Phone SMS | SMS phone number for the customer.<br>**Type**: Attribute |
| Phone Voice | Primary voice phone number for the customer.<br>**Type**: Attribute |
| Premise ID | Premise ID in a utility's Customer Information System or other system of record. Often the premise ID is part of the Util Customer ID field listed below.<br>**Type**: Attribute |
| Site Address | The address of the site where the customer's meter is located.<br>**Type**: Attribute |
| Site City | The city of the site where the meter is located.<br>**Type**: Attribute |
| Site Country | The country of the site where the customer's meter is located.<br>**Type**: Attribute |
| Site Latitude | The latitude of the site address, expressed as a decimal number.<br>**Type**: Attribute |
| Site Longitude | The longitude of the site address, expressed as a decimal number.<br>**Type**: Attribute |


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| Data Element | Description |
|---|---|
| Site State | The state of the site where the customer's meter is located.<br>**Type**: Attribute |
| Site Street | The street of the site where the customer's meter is located.<br>**Type**: Attribute |
| Site Zip | The zip code of the site where the customer's meter is located.<br>**Type**: Attribute |
| Util Customer ID | A customer identifier in a utility's Customer Information System or other system of record. Often this is a number that includes the customer's premise ID.<br>**Type**: Attribute |
| Util Internal ID | An internal customer identifier in a utility's Customer Information System or other system of record.<br>**Type**: Attribute |
| Util Internal ID 2 | A secondary internal customer identifier in a utility's Customer Information System or other system of record. This is not applicable for all utilities.<br>**Type**: Attribute |
| Util Service Point ID | A unique identifier for the customer's service point.<br>**Type**: Attribute |

## Presence Discovery

The Presence Discovery dimension includes shared data elements about whether a major appliance is present at a customer's household. These shared data elements are tied to customer IDs and can be used as attributes in other subject areas to show customer counts related to Presence Discovery. There is also a Presence Discovery subject area that is based on timeline data and should only be used for historical analysis, such as how the number of major appliances has changed over time.

**Note**: Use caution when interpreting and applying Presence Discovery data. See Presence Discovery - Usage Notes for more information.


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| Data Element | Description |
|---|---|
| Appliance | The type of appliance that may be present at a customer's site. The appliances currently available for presence discovery include:<br>• Electric Heating. This represents the presence of electric heating, but does not specify the equipment type (such as electric furnace, heat pump, or baseboard).<br>• Level 1 EV Charger<br>• Level 2 EV Charger<br>• Solar<br>**Note**: Solar customers are excluded from certain presence discovery processes. This is because the data science models have not yet been trained to produce results for solar customers who have Level 1 EV chargers or electric heating. Therefore, customers who have Level 1 EV chargers will be excluded if the presence of solar technology is predicted to be "very likely" for them. Similarly, customers with electric heating will be excluded if the presence of solar technology is predicted to be "very likely" or "somewhat likely" for them.<br>**Type**: Attribute |
| ISO Week | The numeric value of the week of the month in ISO numbering.<br>**Example**: 3<br>**Type**: Attribute |
| Site Presence | The likelihood that an appliance is present at a customer site. Oracle Utilities uses proprietary data science models to determine the likelihood of an appliance's presence. The values currently available are:<br>• **Unlikely**: The models predict with a high degree of confidence that a major appliance is not present at a customer's household.<br>• **Somewhat Likely**: The models predict with a moderate degree of confidence that a major appliance is present at a customer's household. This information is useful for utilities interested in reaching as many customers as possible where an appliance may be present.<br>• **Very Likely**: The models predict with a high degree of confidence that a major appliance is present at a customer's household. This information is useful for utilities interested in reaching customers who are most likely to have an appliance present.<br>**Type**: Attribute |


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## Program Participation

The Program Participation dimension contains shared data elements based on Program Participation Files received from a utility. Program participation files are used to measure customer participation in utility-sponsored energy efficiency programs. For example, a program participation file could specify customers who participate in an EnergyStar appliance or recycling program at a utility.

| Data Element | Description |
|---|---|
| Measure Name | The name of the measure used in the program. For example, the name of a measure in a recycling program could be "Freezer_recycled."<br>**Type**: Attribute |
| Program Name | The name of the utility program in which a customer participates. For example, the name of an appliance recycling program could be "Recycling."<br>**Type**: Attribute |

## Usage

The Usage dimension contains shared data elements about customer energy usage as measured in kilowatt-hours for electricity or therms for gas.

| Data Element | Description |
|---|---|
| Avg Daily Elec | Average daily electric usage.<br>**Type**: Attribute |
| Avg Daily Elec Fall | Average daily electric usage in the fall season.<br>**Type**: Attribute |
| Avg Daily Elec Spring | Average daily electric usage in the spring season.<br>**Type**: Attribute |
| Avg Daily Elec Summer | Average daily electric usage in the summer season.<br>**Type**: Attribute |
| Avg Daily Elec Winter | Average daily electric usage in the winter season.<br>**Type**: Attribute |
| Avg Daily Gas | Average daily gas usage.<br>**Type**: Attribute |
| Avg Daily Gas Fall | Average daily gas usage in the fall season.<br>**Type**: Attribute |
| Avg Daily Gas Spring | Average daily gas usage in the spring season.<br>**Type**: Attribute |
| Avg Daily Gas Summer | Average daily gas usage in the summer season.<br>**Type**: Attribute |


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| Data Element | Description |
|---|---|
| Avg Daily Gas Winter | Average daily gas usage in the winter season.<br>**Type**: Attribute |
| Elec Days | A count of days that have usage reads for a customer's active electric meter. For example, if a customer has an active electric meter for a year, and used electricity every day of that year, then the Elec Days would be 365.<br>**Type**: Attribute |
| Elec Percent Actual Reads | The percentage of *actual* electric usage reads versus *estimated* electric usage reads over the available time period.<br>**Type**: Attribute |
| Gas Days | A count of days that have usage reads for a customer's active gas meter. For example, if a customer has an active gas meter for a year, and used gas every day of that year, then the Gas Days would be 365.<br>**Type**: Attribute |
| Gas Percent Actual Reads | The percentage of *actual* gas usage reads versus *estimated* gas usage reads over the available time period.<br>**Type**: Attribute |

## Utility

The Utility dimension indicates the operating company for utilities that have chosen to roll up the data from the various operating companies to the parent company. It can be used as a filter for disaggregating data about operating companies that are part of a larger operating company.

| Data Element | Description |
|---|---|
| Utility | A filter that shows data for a specific utility operating company within a collection of operating companies. This is only applicable for utilities that have multiple operating companies, and that want to aggregate data from those companies.<br>**Type**: Attribute |

## Web Metrics - Actions

The Web Metrics - Actions dimension contains shared data elements about customer web behavior, such as completing tips or finishing the Home Energy Analysis survey.

| Data Element | Description |
|---|---|
| Exports - num data exports | The number of data exports the customer has performed using the web portal.<br>**Type**: Attribute |


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| Data Element | Description |
|---|---|
| Exports - num data exports bucket | A category in which customers are placed based on how many data exports they have performed.<br>• **1:** The category for customers who have exported data once.<br>• **1+**: The category for customers who have exported data two or more times.<br>• **Unknown**: The category for customers if there is no data export data available for them.<br>**Type**: Attribute |
| Tips - has done | An indicator of whether the customer has indicated on the web portal that they have completed a tip action.<br>**Type**: Attribute |
| Tips - num clicked | The total number of tips on the web portal that the customer has indicated a tip action for (done, will do, or no thanks).<br>**Type**: Attribute |
| Tips - last action | The last tip action that the customer has performed.<br>**Type**: Attribute |
| Tips - visited | An indicator of whether the customer has visited the Ways to Save page on the web portal.<br>**Type**: Attribute |
| Web Audit - completed | An indicator of whether a customer has finished the Home Energy Analysis survey.<br>**Type**: Attribute |
| Web Audit - not started | An indicator of whether a customer has not started the Home Energy Analysis survey.<br>**Type**: Attribute |
| Web Audit - started | An indicator of whether a customer has answered at least one question in the Home Energy Analysis survey.<br>**Type**: Attribute |
| Web Audit - started not completed | An indicator of whether a customer has started but not completed the Home Energy Analysis survey.<br>**Type**: Attribute |
| Web Audit - visited | An indicator of whether a customer has visited the Home Energy Analysis tab.<br>**Type**: Attribute |

## Web Metrics - Logins

The Web Metrics - Logins dimension contains shared data elements about customer login actions. For data elements related to the total number of logins, see Web Authentications.


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| Data Element | Description |
|---|---|
| Has Logged In | The total number of unique web logins across all customers. This shows how many different usernames have been used to log in. For example, if one user logs in three times and a separate user logs in five times, this would count as two unique logins.<br>**Type**: Attribute |
| Has Returned | A flag to indicate whether a customer has logged in two or more times.<br>**Type**: Attribute |
| Login Frequency Recency Group | An indication of how recently a customer has logged in and how frequently they log in. For example, a customer may be designated in one of the following ways:<br>• Logging in frequently: Defined as having logged in 25% of the months of the available time period.<br>• Logging in recently: Defined as having a login within the last three months.<br>• Logging in frequently but not recently: Defined as having logged in 25% of the months of the available time period, but not within the last three months.<br>**Type**: Attribute |
| Login count | The number of times the customer has logged into the Opower web portal while being an active customer.<br>**Type**: Attribute |
| Login frequency | The frequency with which the customer logs in to the Opower web portal.<br>**Type**: Attribute |
| Login recency | The amount of time that has elapsed since the user last logged in.<br>**Type**: Attribute |

# Disaggregation Insights

The Disaggregation Insights subject area contains customer-level data elements derived from proprietary data science models.

The following datasets are currently available:

- Appliance - Presence Discovery: Data about whether or not a major appliance (such as electric heating or an electric vehicle charger) exists at a customer's home.
- Appliance - Usage Insights: Data about how much energy customers use on individual types of appliances.

## Appliance - Presence Discovery

The Appliance - Presence Discovery subject area includes data elements about whether a major appliance is present at a customer's household. This data is automatically generated by Oracle Utilities proprietary data science models. The models use customer AMI data and weather data to predict the presence of an appliance at a household.

The goal of this information is to help utility program managers improve the performance of their energy efficiency programs and marketing use cases. For example, you might use this information to send targeted communications to your customers to promote an electric vehicle program, or to offer a rebate incentivizing customers to install a more energy efficient type of electric heating.


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## Usage Notes

### Treating the Presence Discovery output as a prediction

The output of the Presence Discovery models is a prediction, not an absolute. This means that some households might not be identified as having a major appliance, while other households may be misidentified as having a major appliance when in fact there isn't one. Use caution depending upon the intended use.

For example, if you intend to use this data to send targeted customer communications, think about how to adjust the language of your communication to account for the possibility of a misidentified home, and offer a clear way to opt out of the communication if it isn't relevant to the customer. You could also design your communication to prompt customers to take the Home Energy Analysis survey so that they can confirm the presence or absence of a major appliance, and thereby receive more accurate personalized recommendations.

If you have any questions or would like some guidance about how best to use or interpret this information, contact your Delivery Team.

### Using the Presence Discovery subject area versus attribute

The Appliance - Presence Discovery subject area is based on timeline data and includes data for all past historical weeks, as defined by the International Standards Organization (ISO). It should therefore only be used for historical analysis, such as showing how the number of major appliances has changed over time. For all other scenarios, use the *shared* Presence Discovery attributes, which are tied to customer IDs and can be used in other subject areas. For example, you can use the shared Presence Discovery attributes in the Household - Count of Customers subject area to see how many major appliances are predicted to be present in a specific city.


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## Data Elements

| Data Element | Description |
|---|---|
| Appliance | The type of appliance that may be present at a customer's site. The appliances currently available for presence discovery include:<br>• Electric Heating. This represents the presence of electric heating, but does not specify the equipment type (such as electric furnace, heat pump, or baseboard).<br>• Level 1 EV Charger<br>• Level 2 EV Charger<br>• Solar<br><br>**Note**<br>Solar customers are excluded from certain presence discovery processes. This is because the data science models have not yet been trained to produce results for solar customers who have Level 1 EV chargers or electric heating. Therefore, customers who have Level 1 EV chargers will be excluded if the presence of solar technology is predicted to be "very likely" for them. Similarly, customers with electric heating will be excluded if the presence of solar technology is predicted to be "very likely" or "somewhat likely" for them.<br><br>**Type**: Attribute |
| Appliance Detections | The number of total detections of all or selected appliances.<br>**Type**: Attribute |
| Presence Confidence Level | The likelihood that an appliance is present at a customer site. Oracle Utilities uses proprietary data science models to determine the likelihood of an appliance's presence. The values currently available are:<br>• **Unlikely**: The models predict with a high degree of confidence that a major appliance is not present at a customer's household.<br>• **Somewhat Likely**: The models predict with a moderate degree of confidence that a major appliance is present at a customer's household. This information is useful for utilities interested in reaching as many customers as possible where an appliance may be present.<br>• **Confirmed**: The presence of an appliance has been confirmed because the customer completed the Home Energy Analysis survey and indicated that they own the appliance.<br>**Type**: Attribute |
| Response Count | A count of the total number of responses to the Home Energy Analysis.<br>**Type**: Measure |


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| Data Element | Description |
|---|---|
| Unique Household Count | A count of how many unique households have one or more major appliances. For example, this shows a count of how many households at a utility are very likely or somewhat likely to have electric heating, or how many households do not have electric heating. The households in this case are households with AMI data.<br>**Type**: Measure |

## Limitations

- Non-residential customers are excluded from the Presence Discovery process.
- Customers with more than one electricity service point are excluded from the Presence Discovery process.

# Appliance - Usage Insights

The Appliance - Usage Insights subject area includes data elements about energy use for individual electricity appliances, such as clothes washers, ovens, heating, and cooling. Utilities can use this data to gain insights into how customers use energy in different appliance end-use categories. For example, you could use these data elements to create a bar graph that visualizes what types of appliance are used the most, or a time-based line graph to show which appliances draw the most energy at different points during the day.

> **Note**
>
> The appliance usage insights are for electricity usage only.

| Data Element | Description |
|---|---|
| Appliance | The name or type of appliance for which usage insights are available. The appliances that can be reported on include:<br>• Clothes Washer<br>• Dishwasher<br>• Level 2 EV Charger<br>• Electric Cooling<br>• Electric Dryer<br>• Electric Heating<br>• Electric Oven<br>• Refrigerator<br>• Water Heater<br>**Type**: Attribute |
| Appliance Usage | The energy use of selected appliances during a selected period of time. This value is calculated using Oracle Utilities Opower proprietary data science models.<br>**Type**: Measure |
| Appliance Usage per HH | The energy use of selected appliances during a selected period of time for each household at a utility. This value is calculated by dividing the following: Appliance Usage / Unique Household Count.<br>**Type**: Measure |


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| Data Element | Description |
|---|---|
| Hour | The hour of the day for the appliance usage, expressed in whole numbers between 0 and 23.<br><br>**Note**<br>This attribute can be found in the **Hour** dimension folder within the subject area.<br><br>**Type**: Attribute |
| Presence Confidence Level | The level of confidence about the presence of an appliance in a customer's household. This indication is derived from the Oracle Utilities Opower proprietary data science models or the results of customers taking the Home Energy Analysis survey. The values currently available are:<br>• **Somewhat Likely**: The models predict with a moderate degree of confidence that a major appliance is present at a customer's household.<br>• **Very Likely**: The models predict with a high degree of confidence that a major appliance is present at a customer's household.<br>• **Confirmed**: The presence of an appliance has been confirmed because the customer completed the Home Energy Analysis survey and indicated that they own the appliance.<br>**Type**: Attribute |
| Unique Household Count | A count of how many unique households have one or more major appliances.<br>**Type**: Measure |

# Energy Affordability Identification

The Energy Affordability Identification subject area contains data that will help users identify customers who are likely to have a limited income or who are behind on their bills.

| Data Element | Description |
|---|---|
| Household-Level Energy Burden | Household-level energy burden is defined as the total household energy costs divided by the household's income. The input for energy usage is derived from the customer’s actual energy usage so this data is more accurate than the US Department of Energy’s energy burden data, which is based on US Census sources. (Transportation is out of scope.)<br>This value is a percentage which ranges from 0-100%. An energy burden above 6% is considered a high energy burden.<br>This data is refreshed automatically over time.<br>**Allowed Values**: integer<br>**Source**: Customer energy usage information from the utility, as well as US American Community Survey (ACS) Census income information.<br>**Type**: Attribute |


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# Energy Efficiency (EE) - Savings

The Energy Efficiency - Savings subject area contains data elements about the energy savings achieved through Oracle Utilities Opower products. Savings data is organized into groupings called measurements. Each measurement includes a population of utility customers who received one or more Oracle Utilities Opower products during a particular month and year. Information about each measurement is shown in the Measurement Name element defined below.

> **Note**
>
> Depending on your setup and configuration, your savings data may be the result of customers either using a single product (such as Home Energy Reports) or a combination of products working together to contribute to the savings. Contact your Delivery Team if you have any questions.

| Data Element | Description |
|---|---|
| Elec percent data available | The percentage of electricity usage data that is available for the customers in a measurement. As new electricity usage values are made available over time, measured savings values may change.<br>**Type**: Measure |
| Elec savings MWh | Electricity savings in megawatt hours for the customers in a measurement.<br>**Type**: Measure |
| Elec Savings Percent | Electricity savings in percent for the customers in a measurement. This number is expressed a percent of the baseline energy usage.<br>**Type**: Measure |
| Elec Savings kWh | Electricity savings in kilowatt-hours for the customers in a measurement.<br>**Type**: Measure |
| Elec usage MWh | Electricity usage in megawatt hours for the customers in a measurement.<br>**Type**: Measure |
| Elec usage kWh | Electricity usage in kilowatt hours for the customers in a measurement.<br>**Type**: Measure |
| Elec Usage per Household MWh | Average electricity usage in megawatt hours per household in a measurement.<br>**Note**: Only customers who receive Oracle Utilities Opower products are included. Control customers are not included.<br>**Type**: Measure |


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| Data Element | Description |
|---|---|
| Elec Usage per Household kWh | Average electricity usage in kilowatt hours per household in a measurement.<br>**Note**<br>Only customers who receive Oracle Utilities Opower products are included. Control customers are not included.<br>**Type**: Measure |
| Gas Percent Data Available | The percentage of gas usage data that is available for the customers in a measurement. As new gas usage values are made available over time, measured savings values may change.<br>**Type**: Measure |
| Gas Savings Percent | Gas savings in percent for the customers in a measurement. This number is expressed a percent of the baseline energy usage.<br>**Type**: Measure |
| Gas Savings Therm | Gas savings in therms for the customers in a measurement.<br>**Type**: Measure |
| Gas Usage Therm | Gas usage in therms for the customers in a measurement.<br>**Type**: Measure |
| Gas Usage per Household Therm | Average gas usage in therms per household in the measurement.<br>**Note**<br>Only customers who receive Oracle Utilities Opower products are included. Control customers are not included.<br>**Type**: Measure |


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| Data Element | Description |
|---|---|
| Measurement Name | The name of the measurement used for the energy efficiency savings. For example, a measurement name may look something like gec_202301_e. The name consists of several components separated by underscores to indicate information about the measurement, such as the utility abbreviation, product, year, and month.<br>• **Utility Abbreviation**: A three- or four-letter lowercase abbreviation for the name of the utility (for example, gec for “Great Energy Company”).<br>• **Product or Program (Optional)**: A lowercase abbreviation of the Oracle Utilities Opower product being measured. For example, this could be “her” for Home Energy Reports.<br>• **Year and Month**: The year (yyyy) and month (mm) in which the customers of the measurement started to receive an Oracle Utilities Opower product.<br>• **Fuel Type**: An indicator of the fuel type. This could be “e” for electricity or “g” for gas.<br>**Examples**:<br>• gec_her_202308_e<br>• gec_bls_202303_e<br>• gec_202301_e<br>• gec_bls_202302_e_trial<br>**Type**: Attribute |

# Household - Count of Customers

The Household - Count of Customers subject area contains data elements about the number of unique customers in a utility's service territory. This data is commonly combined with other data elements (see Shared Data Elements, for example) to help utilities gain useful insights into their Oracle Utilities Opower program.

| Data Element | Description |
|---|---|
| Household Count | The number of households in a utility's service territory.<br>**Type**: Measure |

# Opt Out - Products

The Opt Out - Products subject area contains data elements about customers who have chosen to opt out of an Oracle Utilities Opower product, such as Home Energy Reports, High Bill Alerts AMI, or any other product in the program.

| Data Element | Description |
|---|---|
| Product | The product which the customer opted out of.<br>**Type**: Attribute |
| Unique Customers Opted Out | The number of unique customers who have opted to no longer receive a product. This can include customers who have been opted out of a product by Customer Service Representatives using the Oracle Utilities Opower Customer Service Interface tool.<br>**Type**: Measure |


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| Data Element | Description |
|---|---|
| Total Opt Outs | The total number of product opt outs. This can include multiple product opt opts per customer.<br>**Type**: Measure |

# Opt Out - Products and Channels

The Opt Out - Products and Channels subject area contains data elements about customers who have chosen to opt out of an Oracle Utilities Opower product or communication (such as Home Energy Reports, High Bill Alerts AMI, or any other product) and a specific channel through which the product or communication was delivered.

| Data Element | Description |
|---|---|
| Channel | The channel through which the product or communication was sent, such as email, print, SMS, or interactive voice response (IVR).<br>**Type**: Attribute |
| Product | The product which the customer opted out of.<br>**Type**: Attribute |
| Unique Customers Opted Out | The number of unique customers who have opted to no longer receive a product. This can include customers who have been opted out of a product by Customer Service Representatives using the Oracle Utilities Opower Customer Service Interface tool.<br>**Type**: Measure |
| Total Opt Outs | The total number of product opt outs. This can include multiple product opt opts per customer.<br>**Type**: Measure |

# Outbound Communications - Dispatch and Engagement

The Outbound Communications - Dispatch and Engagement subject area contains data elements about customer interactions with Oracle Utilities Opower email and print products.

| Data Element | Description |
|---|---|
| Adjusted Email Click to Open Rate | The rate at which email communications opened from non auto-opening email clients only were clicked.<br>**Type**: Measure |
| Adjusted Email Open Rate | The rate at which email communications delivered to non auto-opening email clients only were opened.<br>**Type**: Measure |
| Adjusted Email Opened Count | A count of the email communications delivered to non auto-opening email clients only that were opened.<br>**Type**: Measure |
| Channel | The digital channel through which the communication was sent, such as email, print, SMS, or interactive voice response (IVR).<br>**Type**: Attribute |
| Email Auto-Opened Count | A count of email communications that were auto-opened.<br>**Type**: Measure |


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| Data Element | Description |
|---|---|
| Email Click Rate | The number of unique clicks in an email compared to the number of unique opens for an email.<br>**Type**: Measure |
| Email Clicked Count | The number of opened communications that had at least one link clicked.<br>**Type**: Measure |
| Email Click to Open Rate | The rate at which opened emails, including auto-opens, were clicked. This is calculated by: Email Clicked Count / Email Opened Count.<br>**Type**: Measure |
| Email Dispatched Count | The number of email communications dispatched by Oracle Utilities Opower.<br>**Type**: Measure |
| Email Hard Bounce Count | The number of email communications that could not be delivered for permanent reasons, such as a fake email address or an email server not accepting emails.<br>**Type**: Measure |
| Email Manually Opened Count | The number of email communications that were manually opened rather than automatically opened.<br>**Type**: Measure |
| Email Open Rate | The rate at which delivered emails were opened, including auto-opens. This is calculated by: Email Opened Count / (Email Dispatched Count - Email Hard Bounce Count - Email Soft Bounce Count).<br>**Type**: Measure |
| Email Opened Count | The number of email communications opened at least once, including auto-opens.<br>**Type**: Measure |
| Email Soft Bounce Count | The number of communications that could not be delivered for temporary reasons, such as a full inbox or an email that is too large.<br>**Type**: Measure |
| Engagement Count | A total count of all engagement types: clicks, hard bounces, not sent, opens, sent, soft bounces, and spam complaints.<br>**Type**: Measure |
| Engagement Type | An indicator of how the communication was delivered, such as hard bounce, clicked, soft bounce, not sent, or opened.<br>**Type**: Attribute |
| Event Type | The type of outbound communication event, such as Home Energy Reports (HERs), Email Home Energy Reports (eHERs), etc.<br>**Type**: Attribute |
| IVR Dispatched Count | The number of interactive voice response (IVR) communications dispatched.<br>**Type**: Measure |
| Is Auto Open | A flag to indicate whether an open event was triggered by an auto-opening email client. This data element only applies to the OPEN engagement type.<br>**Note**: Currently the only auto-opening email client that can be flagged in this manner is Apple Mail.<br>**Type**: Attribute |


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| Data Element | Description |
|---|---|
| Print Dispatched Count | The number of print communications dispatched.<br>**Type**: Measure |
| Report Period End Tstamp | The end date and time of the report period. In this context, a report period defines the time frame in which a customer on a specific track can receive a report or communication from Oracle Utilities Opower. (See Track Name below for details about tracks.)<br>**Type**: Time |
| Report Period Start Tstamp | The start date and time of the report period.<br>**Type**: Time |
| SMS Dispatched Count | The number of SMS communications dispatched.<br>**Type**: Measure |
| Template Name | The name of the template for the module used in the outbound product or communication. There are different templates with different layouts and designs to provide customers with a dynamic experience. Contact your Delivery Team if you need help understanding the meaning of a template name.<br>**Type**: Attribute |
| Total Dispatched Count | The total number of outbound communications (email, print, IVR, or SMS communications) dispatched.<br>**Type**: Measure |
| Track Name | The name of the track in which a customer population has been placed. A track is a set of product, report, or communication experiences for a group of customers to receive over time. For example, a track could specify that a population of customers with electricity and monthly billing will receive an Email Home Energy Report every month of the year.<br>**Type**: Attribute |
| Unique Customers Count | A count of unique customers.<br>**Type**: Attribute |

# Products - Historical Preferences

The Products - Historical Preferences subject area contains data elements about customers who have enrolled in or unenrolled from an Oracle Utilities Opower product, such as Home Energy Reports, High Bill Alerts AMI, or any other product in the program. Enrollments and unenrollments in this subject area may have originated from the customer, the utility, or Opower. This differs from the Opt Out - Products subject area, which only includes unenrollments originating from the customer or utility.

> **Note**
>
> When using time series visualizations, be aware of the shared data elements for "Date Enrolled" and "Date Unenrolled". Selecting "Date Enrolled" will break down metrics according to the date customers were enrolled in the product, while selecting "Date Unenrolled" will break down metrics by the date customers were unenrolled (if unenrolled). Choose the appropriate date field to ensure the visualization accurately reflects the desired breakdown.


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| Data Element | Description |
|---|---|
| Audit Detail | The audit detail associated with the unenrollment (only applies to unenrollments).<br>**Type**: Attribute |
| Audit Source | The audit source associated with the unenrollment (only applies to unenrollments).<br>**Type**: Attribute |
| Audit Type | The audit type associated with the unenrollment (only applies to unenrollments).<br>**Type**: Attribute |
| Channel | The channel the customer enrolled into or unenrolled from.<br>**Type**: Attribute |
| Record Count | The number of total enrollments and unenrollments.<br>**Type**: Measure |
| Product | The product the customer enrolled into or unenrolled from.<br>**Type**: Attribute |
| Unique Customers Count | The number of unique customers who have enrolled into or unenrolled from a product.<br>**Type**: Measure |

# Survey - Questions and Answers

The Survey - Questions and Answers subject area contains data elements related to the surveys available in the Oracle Utilities Opower program, including the Home Energy Analysis (HEA) survey, Savings Hub survey, and Business Profile.

| Data Element | Description |
|---|---|
| Answer | The exact response to the question presented in the survey. The response will vary depending on the type of question.<br>Some questions call for a numeric response, in which case an integer is collected. For example, if the survey presents a question asking users to enter their age, then users will enter a numeric value. Other questions do not require a numeric response, but instead call for a response to a check box, radio button, or drop-down menu.<br>**Type**: Attribute |
| Answer Bucket | The bucket associated with the response to the given question in the survey.<br>Answer buckets are used to simplify aggregations for numeric answers, such as questions about a customer's age or the size of the home. For example, for customers who enter a numeric value for their age, the Answer Bucket might group responses into buckets such as **25-35 y.o.** and **36-45 y.o.**<br>For answers that are non-numeric in nature, the Answer Bucket value typically matches the Answer value. For example, if the survey question is "Do you own your home?" and the customer answers "Yes", then the Answer will be "Yes" and the Answer Bucket will also be "Yes".<br>**Type**: Attribute |


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| Data Element | Description |
|---|---|
| Is Latest Answer | A Boolean flag to indicate whether an answer value for a specific survey question is the latest one or not. This is helpful, for example, in the event that an end user answers the same question in a survey at different points in time. Multiple answer values will be recorded, but only one answer value will be the latest. The 'Is Latest Answer' attribute indicates "No" for historical answers and "Yes" for the latest answer.<br><br>**Note**<br>You can pair this data element with a **Date** dimension such as **Date Calendar Date** to determine when the latest answer value was made.<br><br>**Type**: Attribute |


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| Data Element | Description |
|---|---|
| Question | The abbreviated form of the survey question.<br><br>**Note**<br>Custom survey questions are included as well, but are not defined in the list of default questions below. Contact your Delivery Team if you need to know the text for any custom survey questions.<br><br>**Questions related to the Business Profile:**<br>• buildingSize ("Approximate square footage")<br>• businessCoolingType ("Cooling equipment")<br>• businessHeatSystem ("Heating equipment")<br>• businessHeatType ("Primary heating fuel type")<br>• businessName ("Business name")<br>• businessType ("Business type")<br>**Questions related to the Savings Hub survey :**<br>• EMERGENCY ("Do any of these crisis situations currently apply to you?")<br>• GOVERNMENT_PROGRAM ("What programs are you currently receiving benefits from?")<br>• INCOME_ANNUAL ("What is your annual household income before taxes?")<br>• NUM_PEOPLE ("How many people live in your home?")<br>• OWNER_RENTER ("Do you own or rent your home?")<br>• PRIORITY_GROUP ("Are there members of your household who fit any of these categories?")<br>**Questions related to the Home Energy Analysis (HEA) Survey**:<br>• appliancesAge ("On average, how old are the appliances in your home?")<br>• auditReason ("?")<br>• boilerAge ("?")<br>• boilerType ("What type of boiler?")<br>• centralHeating ("What's the primary way you heat your home?")<br>• cfls ("Do you turn off lights when nobody is in the room?")<br>• clothesDryerLoadsPerWeek ("How often do you use your clothes dryer?")<br>• clothesWasherLoadsPerWeek ("How often do you use your clothes washer?")<br>• coolingMechanism ("What's the primary way you cool your home?")<br>• devicesInHome ("Which of the following do you use in your home?")<br>• dishwasherLoadsPerWeek ("How often do you use your dishwasher?")<br>• evYearsOwnership ("How long have you owned or leased an electric vehicle?")<br>• fireplace ("Do you use a wood fireplace?")<br>• frequencyAirConditioningUsedDuringSummer ("How often do you use air conditioning in the summer?") |


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| Data Element | Description |
|---|---|
| | • frequencyEvCharging ("How often do you charge your electric vehicle at home?")<br>• frequencyEvMiles ("How many miles (round trip) do you commute each day in your electric vehicle?")<br>• fuelWaterHeater ("What type of fuel does your water heater use?")<br>• furnaceType ("What type of furnace?")<br>• hasElectricVehicle ("Do you own or lease a plug-in electric vehicle?")<br>• hasHotTub ("Do you own a hot hub?")<br>• hasPool ("Do you own a pool?")<br>• heatType ("What type of fuel does your heating system use?")<br>• heatingCoolingSystemAge ("On average, how old are the heating and cooling systems in your home?")<br>• homeSize ("What's the size of your home (square feet)?")<br>• homeType ("What type of home do you live in?")<br>• hoursTelevisionPerDay ("In a typical day, how often is your TV on?")<br>• indoorLightingAmount ("When do you use indoor lights?")<br>• numChildren ("?")<br>• numPeople ("How many people live in your home?")<br>• numberElectricVehicles ("How many plug-in electric vehicles do you own or lease?")<br>• outdoorLightingAmount ("When do you use outdoor lights?")<br>• ovenFuelType ("What type of fuel does your oven use?")<br>• ownedElectronics ("Which of the following do you use in your home?")<br>• ownerRenter ("Do you own your home?")<br>• poolHeating ("What type of fuel do you use to heat your pool?")<br>• summerAC ("Do you use air conditioning in the summer?")<br>• thermostatOffWhenAway ("How often do you turn down your air conditioner when you're away from home or asleep?")<br>• thermostatWhenCold ("In the winter, where do you set your thermostat when you're home?")<br>• thermostatWhenHot ("When you're home in the summer, where do you set your thermostat?")<br>• turnDownHeat ("How often do you turn down the heat when you're away from home or asleep?")<br>• typeCharger ("Do you use a level 1 or level 2 charging station when you charge at home?")<br>• typeWaterHeater ("What type of water heater do you have?")<br>• useAirConditioning ("Do you use air conditioning in the summer?")<br>• useFans ("Do you use fans to cool your home?")<br>• whichHaveAirLeaks ("Which of the following have air leaks in your home?")<br>• winterHeating ("Do you heat your home in the winter?")<br>**Type**: Attribute |
| Response Count | The total number of responses to questions in the survey.<br>**Type**: Attribute |


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| Data Element | Description |
|---|---|
| Survey Type | The type of survey that was taken. The available values include:<br>• **BUSINESS_PROFILE**: The Business Profile questionnaire, which allows business customers to capture basic information about their businesses.<br>• **LMI**: The Savings Hub survey, which presents customers with a series of questions about their home and finances, and then uses the answers to determine their eligibility for financial assistance programs.<br>• **WHAT_USES_MOST**: The Home Energy Analysis (HEA) survey, which shows a breakdown of a customer's energy use in different categories, ordered by which category uses the most to the least amount of energy.<br>**Type**: Attribute |
| Unique Customers Count | The number of unique customers for whom there are survey results.<br>**Type**: Measure |

# Survey - Starts and Completions

The Survey - Starts and Completions subject area contains data elements about customer interactions with different surveys available in the Oracle Utilities Opower program, including the Home Energy Analysis (HEA) survey, Savings Hub survey, and Business Profile. For example, you can find engagement metrics such as how many customers started and completed the survey, and how they accessed the survey. With this information, you can gain insight into the performance of the survey in different authentication scenarios.

| Data Element | Description |
|---|---|
| Auth Type | A flag to indicate the customer's method of authentication when taking the survey. The available values include:<br>• **LOGIN**: Customers who signed in to their account before starting or completing the survey.<br>• **UHEA**: Customers who were partially authenticated before starting or completing the survey. This is the case for customers who followed the pre-authenticated Home Energy Analysis survey flow by clicking a link in their email and receiving an access token that uniquely identifies them.<br>• **UNKNOWN**: Customers whose authentication method is not known.<br>• **CONVERSION**: Customers who switched from being anonymous to signing in to their account before starting or completing the survey. See Conversions below for more information.<br>• **BITESIZE**: Customers who arrived at the survey after responding to a single survey question embedded in an email and receiving an access token that uniquely identifies them. This is a known use case, for example, with the Home Energy Analysis. See Mini HEA Confirmation for more background information about this experience.<br>**Type**: Attribute |
| Completed Count | A count of the number of times the survey was completed.<br>**Type**: Measure |


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| Data Element | Description |
|---|---|
| Completion Rate | The rate of customers who started and completed the survey. This number is expressed as a percentage and is calculated by simple division: Completed Count / Started Count.<br>**Type**: Measure |
| Conversions | The number of customers who started the survey flow as anonymous users, and then signed into their account before completing the survey. This is applicable to situations where anonymous users are given the option to complete the survey anonymously, as well as the option to sign in before completing it.<br>**Type**: Measure |
| Event Count | A sum of the number of customers who started and completed the survey. This number is calculated by simple addition: Started Count + Completed Count.<br>**Type**: Measure |
| Event Type | A flag to indicate whether the survey was started or completed.<br>**Type**: Attribute |
| Event Timestamp | A timestamp indicating when the survey was started or completed.<br>**Type**: Attribute |
| Is Csr Event | A flag to indicate if a Customer Service Representative (CSR) signed in to a customer's account and started or completed the survey on the customer's behalf. For example, this scenario may occur if a customer calls in to their utility to ask for help with general troubleshooting or with improving their energy efficiency tips.<br>**Type**: Attribute |
| Questionnaire Version | The version of the survey being used. Whenever a change is made to the survey, such as updating a question or adding or removing a question, a new version of the survey is released. The highest Questionnaire Version number refers to the latest version of the survey. With this data, you can track the number of survey starts or completions on a version-by-version basis, or investigate how the latest version of the survey is performing.<br>**Type**: Attribute |
| Started Count | The number of customers who have started but not finished the survey.<br>**Type**: Measure |
| Survey Type | The type of survey that was taken. The available values include:<br>• **BUSINESS_PROFILE**: The Business Profile questionnaire, which allows business customers to capture basic information about their businesses.<br>• **LMI**: The Savings Hub survey, which presents low and medium income (LMI) customers with a series of questions about their home and finances, and then uses the answers to determine their eligibility for financial assistance programs.<br>• **WHAT_USES_MOST**: The Home Energy Analysis (HEA) survey, which shows a breakdown of a customer's energy use in different categories, ordered by which category uses the most to the least amount of energy.<br>**Type**: Attribute |
| Unique Customers Count | A count of unique customers who started or completed the survey.<br>**Type**: Measure |


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# Unauthenticated Home Energy Analysis (HEA)

The Unauthenticated Home Energy Analysis subject areas contain data about customers who were unauthenticated when they took the Home Energy Analysis (HEA) survey. It includes elements such as how many unauthenticated customers started and completed the survey, click rates for links leading to the survey, and so on. With this information, you can gain more insights into the performance of the unauthenticated version of the survey.

## Unauthenticated HEA Shared Data Elements

The data elements on this page are shared across the Unauthenticated Home Energy Analysis survey subject areas.

### Date

These attributes are the same as those described in the shared Date data elements page.

### Email Provided

| Data Element | Description |
|---|---|
| Email | The email address of the unauthenticated customer (if the customer provided one when taking the survey).<br>**Type**: Attribute |

### Unauthenticated User

| Data Element | Description |
|---|---|
| Has Email | An indicator of whether there is an email address for the customer.<br>**Type**: Attribute |
| Locale | The locale of the unauthenticated customer, as described in the **Locale** attribute in the shared Energy Affordability dimension.<br>**Type**: Attribute |
| Opt In | Indicates a user's preference to receive marketing communications from their utility after providing their email address to receive a link back to the results from the anonymous survey.<br>**Type**: Attribute |
| Primary Pa | The Primary Program Administrator for the customer. This is generally only applicable for state-wide implementations of the unauthenticated version of the survey.<br>**Type**: Attribute |


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| Data Element | Description |
|---|---|
| Referral Code | Unique code a customer can enter to help track the origin of a referral or marketing campaign that drove the customer to take the unauthenticated survey.<br>**Type**: Attribute |
| Secondary Pa | The Secondary Program Administrator for the customer. This is generally only applicable for state-wide implementations of the unauthenticated version of the survey.<br>**Type**: Attribute |
| State | The state manually entered by the user as part of the survey flow to validate that they live in the correct service territory and to select their utility. This attribute is only applicable for state-wide implementations of the unauthenticated version of the survey.<br>**Type**: Attribute |
| Zip Code | The zip code manually entered by the user as part of the survey flow to validate that they live in the correct service territory. This attribute is only applicable to state-wide or single implementations of the unauthenticated survey.<br>**Type**: Attribute |

### Utility

This is the same as the Utility attribute provided in the shared Utility dimension.

## Unauthenticated HEA Email Events

The Unauthenticated HEA Email Events subject area lets you track the email events that occurred after unauthenticated customers completed the Oracle Utilities Opower Home Energy Analysis (HEA) survey. Unauthenticated customers who complete the survey have the option of entering their email address into a field so they can be sent a link to review their survey results at a later time. The email events in this subject area are related to this capability.

| Data Element | Description |
|---|---|
| Event | The type of unauthenticated email event that occurred. Possible values include:<br>• **Bounce**: The email is returned back to the server.<br>• **Click**: A link in the email is clicked.<br>• **Complaint**: An is marked as spam or junk.<br>• **Open**: An email is opened.<br>• **Sent**: An email is sent.<br>**Type**: Attribute |


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| Data Element | Description |
|---|---|
| Event Count | The number of times that an unauthenticated email event occurred, such as the number of bounces, clicks, or opens.<br>**Type**: Measure |

## Unauthenticated HEA Starts and Completions

The Unauthenticated HEA - Anonymous Starts and Completions subject area contains data elements about customers who interacted anonymously with the Oracle Utilities Opower Home Energy Analysis (HEA) survey. It focuses on engagement metrics such as how many unauthenticated customers started and completed the survey, and how they accessed the survey. With this information, you can gain insight into the performance of the unauthenticated version of the survey.

For information about starts and completions for the authenticated version of the survey, see Survey - Starts and Completions.

| Data Element | Description |
|---|---|
| Auth Type | The customer's method of authentication when taking the survey. The only value available is ANON_SURVEY.<br>**Type**: Attribute |
| Completed Count | The number of times the Home Energy Analysis survey was completed anonymously (that is, by unauthenticated customers).<br>**Type**: Measure |
| Completion Rate | The rate of unauthenticated customers who completed the survey. This number is expressed as a percentage and is calculated by simple division: Completed Count / Started Count.<br>**Type**: Measure |
| Event Count | The number of unauthenticated customers who started and completed the Home Energy Analysis survey. This number is calculated by simple addition: Started Count + Completed Count.<br>**Type**: Measure |
| Event Type | A flag to indicate whether the unauthenticated Home Energy Analysis survey was started or completed.<br>**Type**: Attribute |
| First Timestamp | The timestamp indicating when a user started a specific version of the survey, and when a user completed a specific version of the survey. There are different timestamps for the start event and completion event.<br>**Type**: Attribute |


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| Data Element | Description |
|---|---|
| Questionnaire Version | The version of the survey being used. Whenever a change is made to the survey, such as updating a question or adding or removing a question, a new version of the survey is released. The highest Questionnaire Version number refers to the latest version of the survey. With this data, you can track the number of survey starts or completions on a version-by-version basis, or investigate how the latest version of the survey is performing.<br>**Type**: Attribute |
| Started Count | The number of unauthenticated customers who have started but not finished the Home Energy Analysis survey.<br>**Type**: Measure |

## Unauthenticated HEA User Count

The Unauthenticated User Count subject area lets you track how many unauthenticated users completed the Oracle Utilities Opower Home Energy Analysis (HEA) survey.

| Data Element | Description |
|---|---|
| Unauthenticated User Count | The number of unauthenticated users who completed the survey.<br>**Type**: Measure |

## Unauthenticated HEA Web Events

The Unauthenticated Web Events subject area lets you track how many events (such as survey clicks and tip displays) occurred while unauthenticated users completed the Oracle Utilities Opower Home Energy Analysis (HEA) survey.

| Data Element | Description |
|---|---|
| Authenticated Survey Clicks | The total number of survey clicks representing the decision to take the *authenticated* version of the survey.<br>**Type**: Measure |
| Device Type | The type of device used to complete the survey, such as a tablet, desktop computer, or mobile phone.<br>**Type**: Attribute |
| HEA Tip Click Rate | The percentage of Unique HEA Tip Clicks divided by Unique HEA Tip Displays in the unauthenticated survey flow.<br>**Type**: Measure |
| HEA Tip Clicks | The total number of clicks on tips which displayed after the unauthenticated survey was completed.<br>**Type**: Measure |


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| Data Element | Description |
|---|---|
| HEA Tip Displays | The total number of times tips displayed after the survey was completed.<br>**Type**: Measure |
| Is Embedded | A flag to indicate whether or not the anonymous HEA survey is embedded on a utility's web page. If the survey not embedded, then it is part of the standalone version of the Digital Self Service - Energy Management web portal.<br>**Type**: Attribute |
| Page Views | The total number of pageviews of a web page or widget by all users who visit the site. The definition of a view varies depending on the type and version of the product.<br>• **Standalone Web**: The total number of pages viewed by all users who visit the site. For example, if one user views three pages and a separate user views four pages, this would count as a total of seven page views. Repeated views of a single page by the same user are counted.<br>• **Embedded Widgets v1**: The number of times that a v1 widget is loaded on a utility's website. If two widgets are embedded on the same web page, and a customer visits that page, then two pageview events are triggered—one for each widget—even though the customer technically only visited one page.<br>• **Embedded Widgets v2**: The number of times that an impression event is triggered when a v2 widget appears in a customer's browser (as opposed to when a widget loads). An impression event is triggered when the widget is 10% viewable on a web page. If a customer scrolls down past a widget, then scrolls back up to see the same widget again, multiple impression events are triggered. For this reason, impression events are triggered much more frequently than traditional pageviews.<br>**Type**: Measure |
| Site Section | The web page or widget in the web experience that the customer viewed.<br>**Type**: Attribute |
| Survey Clicks | The total number of survey clicks representing the decision to take the *authenticated* version of the survey.<br>**Type**: Measure |


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| Data Element | Description |
|---|---|
| Tip Name | The name of a tip that was clicked after the survey was completed. (When the survey is completed, tips are displayed below the customer's energy use breakdown.)<br>**Type**: Attribute |
| Unauthenticated Survey Clicks | The total number of survey clicks representing the decision to take the *unauthenticated* version of the survey.<br>**Type**: Measure |
| Unique Authenticated Survey Clicks | The number of unique clicks representing the decision to take the authenticated version of the survey.<br>**Type**: Measure |
| Unique HEA Tip Clicks | The number of unique clicks on the tips which displayed after the unauthenticated survey was completed.<br>**Type**: Measure |
| Unique HEA Tip Displays | The number of unique times tips displayed after the survey was completed.<br>**Type**: Measure |
| Unique Page Views | The total number of *unique* pageviews by all users who visit the site. The definition of a unique view varies depending on the type and version of the product.<br>• **Standalone Web**: A unique pageview takes all the pageviews that are from the same user, on the same page, in the same session, and counts them as one. For example, a single user could visit a single page and refresh that page three times in the same session. This would count as only one unique pageview.<br>• **Embedded Widgets v1**: The number of unique web sessions during which a widget loaded on a web page.<br>• **Embedded Widgets v2**: The number of unique web sessions during which a widget came into view as the customer scrolled through the page.<br>**Type**: Measure |
| Unique Survey Clicks | The number of unique clicks representing the decision to take the authenticated version of the survey.<br>**Type**: Measure |
| Unique Unauthenticated Survey Clicks | The number of unique clicks representing the decision to take the unauthenticated version of the survey.<br>**Type**: Measure |


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# Web - Authentications

The Web - Authentications subject area contains data elements about customers logging in to their web accounts or viewing an embedded widget. Contact your Delivery Team if you have questions about how logins are defined and tracked.

| Data Element | Description |
|---|---|
| Unique Customer Count | A count of unique customers who authenticated.<br>**Type**: Measure |
| Web Authentications Count | The total number of web authentications or logins across all customers. For example, if one user logs in three times and a separate user logs in five times, this would count as a total of eight authentications. The definition of an authentication varies slightly depending on how the web product is implemented.<br>• **Standalone Web Implementation**: An authentication is defined as a customer logging in to the web portal site.<br>• **Embedded Widget Implementation**: An authentication is defined as any session during which a customer views at least one Opower widget in a web session. If a customer logs in to their utility's website but does not navigate to any pages where Opower data is served through an embedded widget, a login would not be counted.<br>**Note**: If you have both an embedded and a standalone web portal implementation, then the web authentications count is a sum of both types of implementations. The count does not distinguish between authentications for each type.<br>**Type**: Measure |

# Web - Pageviews

The Web - Pageviews subject area contains data elements about pageview counts for web pages or embedded widgets. The definition of a pageview varies slightly depending on whether your product has a standalone or embedded implementation.

> **Note**
>
> If you have both an embedded and a standalone web portal implementation, then the pageview counts are a sum of both types of implementations. The counts do not distinguish between each type. Contact your Delivery Team if you have questions.

| Data Element | Description |
|---|---|
| Page Views by Location | The number of page views by location of the web experience. The definition of a pageview varies depending on the type and version of the product.<br>• **Standalone Web**: The number of page views by location.<br>• **Embedded Widgets v1**: The number of times a v1 widget loaded on a web page, by location.<br>• **Embedded Widgets v2**: The number of times a v2 widget came into view as a customer scrolled through a web page, by location.<br>**Type**: Measure |


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| Data Element | Description |
|---|---|
| Percent (%) Page Views by Location | The percentage of page views by location of the web experience. The definition of a pageview varies depending on the type and version of the product.<br>• **Standalone Web**: The percentage of pageviews by location. For example, the percentage of times the Compare My Bills page was viewed as compared to other pages.<br>• **Embedded Widgets v1**: The percentage of times a v1 widget loaded, by location. For example, the percentage of times the Compare My Bills widget loaded compared to other widgets.<br>• **Embedded Widgets v2**: The percentage of times a v2 widget came into view as a customer scrolled through a web page, by location. For example, the percentage of times the Compare My Bills widget came into view as customers scrolled through the web pages, as compared to other widgets.<br>**Type**: Measure |
| Site Section | The web page or widget in the web experience that the customer viewed.<br>• **Standalone Web**: The site section refers to individual web pages, such as the Home Energy Survey or Compare My Bills page.<br>• **Embedded Widgets (v1 and v2)**: The site section refers to the individual widgets that are embedded on a page, such as the Home Energy Survey or Compare My Bills widget.<br>**Type**: Attribute |
| Unique Pageview Count | The total number of *unique* pageviews by all users who visit the site. The definition of a unique view varies depending on the type and version of the product.<br>• **Standalone Web**: A unique pageview takes all the pageviews that are from the same user, on the same page, in the same session, and counts them as one. For example, a single user could visit a single page and refresh that page three times in the same session. This would count as only one unique pageview.<br>• **Embedded Widgets v1**: The number of unique web sessions during which a widget loaded on a web page.<br>• **Embedded Widgets v2**: The number of unique web sessions during which a widget came into view as the customer scrolled through the page.<br>**Type**: Measure |
| Unique Visitors | The number of unique visitors who arrived at a web page or widget in the Oracle Utilities Opower program.<br>**Type**: Measure |


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| Data Element | Description |
|---|---|
| Web Page View Count | The total number of pageviews of a web page or widget by all users who visit the site. The definition of a view varies depending on the type and version of the product.<br>• **Standalone Web**: The total number of pages viewed by all users who visit the site. For example, if one user views three pages and a separate user views four pages, this would count as a total of seven page views. Repeated views of a single page by the same user are counted.<br>• **Embedded Widgets v1**: The number of times that a v1 widget is loaded on a utility's website. If two widgets are embedded on the same web page, and a customer visits that page, then two pageview events are triggered—one for each widget—even though the customer technically only visited one page.<br>• **Embedded Widgets v2**: The number of times that an impression event is triggered when a v2 widget appears in a customer's browser (as opposed to when a widget loads). An impression event is triggered when the widget is 10% viewable on a web page. If a customer scrolls down past a widget, then scrolls back up to see the same widget again, multiple impression events are triggered. For this reason, impression events are triggered much more frequently than traditional pageviews.<br>**Type**: Measure |

# Contact Your Delivery Team

Your Oracle Delivery Team is the group responsible for setting up, configuring, launching, or expanding your Oracle Utilities Opower program. Contact your Delivery Team if you have any questions about your program products and implementation.

**To contact your Delivery Team:**

1. Sign in to Inside Opower (https://inside.opower.com). This is your portal for questions and information related to your program.
2. Go to the Community tab to see who is on your Delivery Team.
3. Contact any of the team members using the information provided.

If you need to report an issue or get technical support, contact My Oracle Support.

# Customer Insights Analytics Data Lineage

The Oracle Utilities Data Intelligence Customer Insights Analytics data lineage spreadsheet provides a summary of how Customer Insights Analytics presentation layer objects map to the underlying physical and source data structures.

Use the spreadsheet to review lineage details for Customer Insights Analytics subject areas. The spreadsheet identifies presentation tables and attributes, physical tables and attributes, and source tables and columns where the mapping is available.


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# 7
# Customer Program Management Analytics

This section lists the predefined objects for Oracle Utilities Data Intelligence Customer Program Management Analytics. Customer Program Management analytics are based on data objects available in Oracle Utilities Customer Program Management Cloud Service.

## Customer Program Management Subject Areas

The Customer Program Management subject areas are based on data objects available in Oracle Utilities Customer Program Management Cloud Service. These subject areas can be used to analyze and create analytics dashboards and reports that facilitate decision-making for various utility demand response and energy efficiency programs. For example, you can use the Customer Program Management data to monitor program enrollments, evaluate un-enrollment and re-enrollment rates, and analyze program performance. These insights can then be applied to improve program design and increase program participation.

### Program Subscription

The Program Subscription subject area can be used to visualize and analyze program enrollment information. This information can then be used to determine any changes needed to maintain participation levels, improve program design, and reduce attrition rates.

**Answer questions like these:**

- How many program enrollments have occurred over the past year?
- What is the un-enrollment rate or re-enrollment rate over a specified period of time?
- What is the enrollment count by program, technology, and device type?
- How many program enrollments were canceled or are pending?

### Program Subscription, Service Point, Event

The Program Subscription/Service Point/Event subject area can used to analyze information about program events and program performance in terms of energy efficiency or reductions in demand.

**Answer questions like these:**

- How many program events have taken place over the past year?
- What month, season, or time of day is most popular for event participation?
- What was the program participation by region, segment, or device?
- What were the expected reductions (for example, in energy use or energy demand) as a result of the event versus the actual reductions?
- What was the percentage of reduction by program?


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# Customer Program Management Analytics Data Lineage

The Oracle Utilities Data Intelligence Customer Program Management Analytics data lineage spreadsheet provides a summary of how Customer Program Management Analytics presentation layer objects map to the underlying physical and source data structures.

Use the spreadsheet to review lineage details for Customer Program Management Analytics subject areas. The spreadsheet identifies presentation tables and attributes, physical tables and attributes, and source tables and columns where the mapping is available.


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# 8
# Device Analytics

This section lists the predefined objects for Oracle Utilities Data Intelligence Device Analytics. Device Analytics are based on meter data objects available in Oracle Utilities Customer Cloud Service or Meter Solution Cloud Service (or Customer to Meter for on-premises implementations), such as device events and service orders.

## Device Analytics Prerequisites

This section describes prerequisite tasks for setting up and configuring your device analytics.

- Set Up and Access AMI Data in Object Storage
- Set Up and Access Meter Passthrough Data in Object Storage

### Set Up and Access AMI Data in Object Storage

Oracle Utilities Data Intelligence comes with an AMI Publisher feature that allows you to extract AMI usage data from your connected Customer Cloud Service or Meter Solution Cloud Service and publish it to your Oracle Cloud Infrastructure (OCI) object storage. From there, Oracle Utilities Data Intelligence will copy it and transform it to iceberg table format, a high performance open-source format for large datasets. Oracle Utilities Data Intelligence will then deliver the iceberg-formatted data as parquet files back to your object storage, where you can access it directly to support custom data science use cases. For example, data scientists at your organization can use the data to create feature sets and machine learning models, or run analyses in support of your business goals.

You must configure and run a Run a Specialized Data Export Job job to publish new AMI data to your object storage. When the job is run, Oracle Utilities Data Intelligence will provide an initial load of 13 months of historical data. The job will start by loading the most recent day, and work its way back to the oldest day by day. During this period, the data will be available to query once the first day has arrived, and subsequent days will be available for querying as they flow in. If new data becomes available from the source system while initial load is still running, the new data will be prioritized and loaded once available. The initial load will then continue backfilling until finished.

**About V Model Data**

In addition to AMI data, the AMI Publisher also delivers V model data from your connected source application. V model data refers to data objects that form the core of the system: Person, Account, Premise, Service Agreement, and Service Point. These objects hold demographic, geographic, and financial information about your customers and properties. When V model data is combined with AMI usage data, you can gain deeper insights into your customers and your business operations. See Understanding the V for more information about this data.

### Run a Specialized Data Export Job

Run a specialized data export job to extract AMI data from your connected source application and copy it to your OCI object storage.


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1. Configure your OCI object storage following the guidance at External File Storage. The steps apply to Customer Cloud Service and Meter Solution Cloud Service.
2. Follow the steps in the Customer Cloud Service user guide to configure the Specialized Data Export for measurement data:
   - Specialized Data Export
   - Measurement Data Export

> **Note**
>
> Make sure you set up incremental export.

## Provide Oracle Utilities Access to Your Object Storage

After your AMI data has been copied to your object storage, Oracle Utilities will need access so the data can be copied and transformed to iceberg table format. If you have not already provided this access, see Provide Oracle Energy and Water with Access to Object Storage in the Administrator Guide for steps.

## Access Your Transformed AMI Data

After Oracle Utilities has copied and transformed your AMI data to iceberg format, it will be delivered to your OCI object storage in the following directory: /AMI_PUBLISHER. If applicable, there will be partitions organized under each table prefix.

The list below is an example of the directories which may appear under /AMI_PUBLISHER. This list is not exhaustive.

- /AMI_PUBLISHER
  - /CISADM
    - /data
      - /CI_TIME_ZONE
      - /D1_ACTIVITY
      - /D1_ACTIVITY_TYPE
      - ...
      - /D1_MSRMT
        - /YEAR=2025
          - /MONTH=1
            - /DAY=1
      - /D1_MEASR_COMP/
      - ...

The data provided is based on the core data objects from your connected cloud service: Person, Account, Premise, Service Agreement, and Service Point. For more information about this data, see Understanding the V.


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## Explore AMI Publisher Data with Sample Notebooks

It is recommended that you use OCI Data Science notebooks as a way to explore your data and develop solutions to data-oriented problems before turning them into production services. For guidance on how to configure a data science notebook, see Manually Configuring a Data Science Tenancy in the OCI cloud documentation.

Oracle Utilities provides sample notebooks to help you explore and use AMI Publisher data delivered to your OCI object storage. These samples show common ways to connect to the AMI Publisher Iceberg tables, inspect available data, run starter queries, aggregate measurement data, join measurement data with related master data, and use the data as input for analytics or machine learning workflows.

https://github.com/oracle-samples/oudi-samples/

The samples are intended for use in OCI Data Science notebooks. Download or clone the sample files from the Oracle Utilities AMI Publisher samples repository. You can then upload the notebooks and helper file to the same OCI Data Science notebook folder. Each notebook includes inline explanations and setup steps alongside the code.

The sample code is provided as a starting point for data exploration and custom analysis. Review and adapt the notebooks for your organization's data, tenancy configuration, object storage location, and business requirements.

## AMI Publisher Data Tables Reference

AMI Publisher delivers transformed AMI data to object storage using Apache Iceberg tables. The published data includes measurement data, aggregated measurement data, master data, and reference data that can be used to join measurement records with related customer, account, premise, service agreement, and service point information. The available tables are grouped into the following categories:

| Table Category | Description |
|---|---|
| Measurement tables | Tables that contain the core AMI measurement data. The primary measurement table is now named `measurement`. This table replaces the earlier `D1 measurement` naming and has been transformed from the previous structure. |
| Pass-through measurement tables | Tables that contain measurement data that is not processed through MDM. The table currently referred to as `D1 measurement non-MDM` is expected to be renamed to `measurements pass through`. |
| Aggregated measurement tables | Tables that contain aggregated measurement values, such as daily, hourly, or monthly aggregations where available. These tables may include estimated values. |
| Master data tables | Tables that contain related master data, such as customer account, premise, service agreement, service point, and supporting entities. These tables make up most of the published table set. |
| Master data reference table | A lookup or joining table that consolidates foreign keys from the master data tables. Use this table to join measurement data to related master data without having to manually navigate the full set of master data tables. The final table name is TBD. |


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## Customer Cloud Service Table Reference

The following table lists the AMI Publisher tables available for Oracle Utilities Customer Cloud Service, grouped by category and described at a high level to help identify the type of data each table provides.

| Table Name | Category | Description |
|---|---|---|
| MEASUREMENT | Measurement | Contains AMI measurement data. |
| MEASUREMENT_PASS_THROUGH | Pass-through measurement | Contains measurement data not processed through MDM/MSCS. |
| MEASUREMENT_HOURLY | Aggregated measurement | Contains hourly aggregated measurement values. |
| MEASUREMENT_DAILY | Aggregated measurement | Contains daily aggregated measurement values. |
| CI_TIME_ZONE | Master data | Contains time zone records. |
| D1_ACTIVITY | Master data | Contains activity records. |
| D1_ACTIVITY_TYPE | Master data | Contains activity type records. |
| D1_DVC_CFG | Master data | Contains Device Configuration records. |
| D1_DVC_CFG_CHAR | Master data | Contains characteristics related to Device Configuration records. |
| D1_DVC_EVT | Master data | Contains Device Event records. |
| D1_DVC_EVT_TYPE | Master data | Contains Device Event Type records. |
| D1_DVC_TYPE | Master data | Contains Device Type records. |
| D1_DVC_TYPE_CHAR | Master data | Contains characteristics related to Device Type records. |
| D1_DVC_TYPE_L | Master data | Contains localized text for Device Type records. |
| D1_FACILITY | Master data | Contains Facility records. |
| D1_FACILITY_CHAR | Master data | Contains characteristics related to Facility records. |
| D1_FACILITY_IDENTIFIER | Master data | Contains identifiers related to Facility records. |
| D1_FACILITY_L | Master data | Contains localized text for Facility records. |
| D1_FACILITY_SP | Master data | Contains records defining relationships between Facility and Service Point records. |
| D1_INSTALL_EVT | Master data | Contains Install Event records. |
| D1_INSTALL_EVT_CHAR | Master data | Contains characteristics related to Install Event records. |
| D1_MEASR_COMP | Master data | Contains Measuring Component records. |
| D1_MEASR_COMP_CHAR | Master data | Contains characteristics related to Measuring Component records. |
| D1_MEASR_COMP_IDENTIFIER | Master data | Contains identifiers related to Measuring Component records. |
| D1_MEASR_COMP_TYPE | Master data | Contains Measuring Component Type records. |
| MEASUREMENT_COMPONENT_MASTER_REFERENCES | Master data reference | Contains reference data for joining measurement data with related master data. |
| D1_MC_TYPE_VALUE_IDENTIFIER | Master data | Contains Value Identifiers related to Measuring Component Type records. |


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| Table Name | Category | Description |
|---|---|---|
| D1_NW_LOC | Master data | Contains Network Location records. |
| D1_NW_NODE | Master data | Contains Network Node records. |
| D1_SP | Master data | Contains Service Point records. |
| D1_SPR | Master data | Contains Service Provider records. |
| D1_SPR_CHAR | Master data | Contains characteristics related to Service Provider records. |
| D1_SPR_L | Master data | Contains localized text for Service Provider records. |
| D1_SP_CHAR | Master data | Contains characteristics related to Service Point records. |
| D1_SP_EQPMNT | Master data | Contains equipment related to Service Point records. |
| D1_SP_FACILITY | Master data | Contains relationships between Service Point and Facility records. |
| D1_SP_IDENTIFIER | Master data | Contains identifiers related to Service Point records. |
| D1_SP_TYPE | Master data | Contains Service Point Type records. |
| D1_SP_TYPE_CHAR | Master data | Contains characteristics related to Service Point Type records. |
| D1_SP_TYPE_L | Master data | Contains localized text for Service Point Type records. |
| D1_US | Master data | Contains Usage Subscription records. |
| D1_US_SP | Master data | Contains relationships between Usage Subscription and Service Point records. |
| D1_US_CHAR | Master data | Contains characteristics related to Usage Subscription records. |
| F1_INSTALLATION | Master data | Contains Installation Options data. |
| F1_MST_CONFIG | Master data | Contains Master Configuration records. |
| C1_PER_CONTDET | Master data | Contains Person Contact records. |
| CI_ACCT | Master data | Contains Account records. |
| CI_ACCT_CHAR | Master data | Contains characteristics related to Account records. |
| CI_ACCT_PER | Master data | Contains relationship between Account and Person records. |
| CI_CIS_DIVISION | Master data | Contains CIS Division records. |
| CI_CIS_DIVISION_L | Master data | Contains localized text for CIS Division records. |
| CI_CUST_CL | Master data | Contains Customer Class records. |
| CI_CUST_CL_L | Master data | Contains localized text for Customer Class records. |
| CI_ENRL | Master data | Contains Enrollment records. |
| CI_LANDLORD | Master data | Contains Landlord records. |
| CI_PER | Master data | Contains Person records. |
| CI_PER_CHAR | Master data | Contains characteristics related to Person records. |
| CI_PER_NAME | Master data | Contains Person Name records. |
| CI_PREM | Master data | Contains Premise records. |


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| Table Name | Category | Description |
|---|---|---|
| CI_PREM_CHAR | Master data | Contains characteristics related to Premise records. |
| CI_PREM_GEO | Master data | Contains Premise Geographic Location records. |
| CI_RC | Master data | Contains Rate Component records. |
| CI_RC_CHAR | Master data | Contains characteristics related to Rate Component records. |
| CI_RC_L | Master data | Contains localized text for Rate Component records. |
| CI_RS | Master data | Contains Rate Schedule records. |
| CI_RS_L | Master data | Contains localized text for Rate Schedule records. |
| CI_SA | Master data | Contains Service Agreement records. |
| CI_SA_CHAR | Master data | Contains characteristics related to Service Agreement records. |
| CI_SA_REL | Master data | Contains relationships between Service Agreement records. |
| CI_SA_RS_HIST | Master data | Contains Service Agreement Rate Schedule History records. |
| CI_SA_SP | Master data | Contains relationships between Service Agreement and Service Point records. |
| CI_SA_SP_CHAR | Master data | Contains characteristics related to relationships between Service Agreement and Service Point records. |
| CI_SA_TYPE | Master data | Contains Service Agreement Type records. |
| CI_SA_TYPE_CHAR | Master data | Contains characteristics related to Service Agreement Type records. |
| CI_SA_TYPE_L | Master data | Contains localized text for Service Agreement Type records. |
| CI_SP | Master data | Contains Service Point records. |
| CI_SP_CHAR | Master data | Contains characteristics related to Service Point records. |

## Meter Solution Cloud Service Table Reference

The following table lists the AMI Publisher tables available for Oracle Utilities Meter Solution Cloud Service, grouped by category and described at a high level to help identify the type of data each table provides.

| Table Name | Category | Description |
|---|---|---|
| MEASUREMENT | Measurement | Contains AMI measurement data. |
| MEASUREMENT_PASS_THROUGH | Pass-through measurement | Contains measurement data not processed through MDM/MSCS. |
| MEASUREMENT_HOURLY | Aggregated measurement | Contains hourly aggregated measurement values. |
| MEASUREMENT_DAILY | Aggregated measurement | Contains daily aggregated measurement values. |
| CI_TIME_ZONE | Master data | Contains time zone records. |
| D1_ACTIVITY | Master data | Contains activity records. |


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| Table Name | Category | Description |
|---|---|---|
| D1_ACTIVITY_TYPE | Master data | Contains activity type records. |
| D1_DVC_CFG | Master data | Contains Device Configuration records. |
| D1_DVC_CFG_CHAR | Master data | Contains characteristics related to Device Configuration records. |
| D1_DVC_EVT | Master data | Contains Device Event records. |
| D1_DVC_EVT_TYPE | Master data | Contains Device Event Type records. |
| D1_DVC_TYPE | Master data | Contains Device Type records. |
| D1_DVC_TYPE_CHAR | Master data | Contains characteristics related to Device Type records. |
| D1_DVC_TYPE_L | Master data | Contains localized text for Device Type records. |
| D1_FACILITY | Master data | Contains Facility records. |
| D1_FACILITY_CHAR | Master data | Contains characteristics related to Facility records. |
| D1_FACILITY_IDENTIFIER | Master data | Contains identifiers related to Facility records. |
| D1_FACILITY_L | Master data | Contains localized text for Facility records. |
| D1_FACILITY_SP | Master data | Contains records defining relationships between Facility and Service Point records. |
| D1_INSTALL_EVT | Master data | Contains Install Event records. |
| D1_INSTALL_EVT_CHAR | Master data | Contains characteristics related to Install Event records. |
| D1_MEASR_COMP | Master data | Contains Measuring Component records. |
| D1_MEASR_COMP_CHAR | Master data | Contains characteristics related to Measuring Component records. |
| D1_MEASR_COMP_IDENTIFIER | Master data | Contains identifiers related to Measuring Component records. |
| D1_MEASR_COMP_TYPE | Master data | Contains Measuring Component Type records. |
| MEASUREMENT_COMPONENT_MASTER_REFERENCES | Master data reference | Contains reference data for joining measurement data with related master data. |
| D1_MC_TYPE_VALUE_IDENTIFIER | Master data | Contains Value Identifiers related to Measuring Component Type records. |
| D1_NW_LOC | Master data | Contains Network Location records. |
| D1_NW_NODE | Master data | Contains Network Node records. |
| D1_SP | Master data | Contains Service Point records. |
| D1_SPR | Master data | Contains Service Provider records. |
| D1_SPR_CHAR | Master data | Contains characteristics related to Service Provider records. |
| D1_SPR_L | Master data | Contains localized text for Service Provider records. |
| D1_SP_CHAR | Master data | Contains characteristics related to Service Point records. |
| D1_SP_EQPMNT | Master data | Contains equipment related to Service Point records. |
| D1_SP_FACILITY | Master data | Contains relationships between Service Point and Facility records. |


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| Table Name | Category | Description |
|---|---|---|
| D1_SP_IDENTIFIER | Master data | Contains identifiers related to Service Point records. |
| D1_SP_TYPE | Master data | Contains Service Point Type records. |
| D1_SP_TYPE_CHAR | Master data | Contains characteristics related to Service Point Type records. |
| D1_SP_TYPE_L | Master data | Contains localized text for Service Point Type records. |
| D1_US | Master data | Contains Usage Subscription records. |
| D1_US_SP | Master data | Contains relationships between Usage Subscription and Service Point records. |
| D1_US_CHAR | Master data | Contains characteristics related to Usage Subscription records. |
| F1_INSTALLATION | Master data | Contains Installation Options data. |
| F1_MST_CONFIG | Master data | Contains Master Configuration records. |
| D1_US_RS_CLASS | Master data | Contains Usage Subscription Rate Schedule Class records. |

## Your Data Responsibilities

It is recommended that you not perform any actions on the AMI data other than reading it. You can copy the data to another location for further modification, but any changes or custom solutions built on top of this data are your sole responsibility. Keep in mind the scenarios below.

| Customer Action | AMI Publisher Response or Impact |
|---|---|
| Deletes data from the table | The AMI Publisher will attempt to recover deleted data. Large deletions may cause job failure and require technical support. |
| Adds data to the table independently | The AMI Publisher will not interact with customer-added data. |
| Updates data in the table independently | Updates will remain unless the source system provides new updates, in which case the AMI Publisher will overwrite it with the latest value. |
| Deletes the table entirely | The AMI Publisher may try to rebuild the table, but large data volumes can cause job failure. |
| Deletes the object storage bucket | The AMI Publisher job will fail. |
| Deletes the user or changes user permissions | The AMI Publisher job will fail. |
| Needs to reload the entire table | Full table reload is possible, but a support ticket must be opened. |
| Needs regular backups of delivered data | Not required unless customer has advanced or specific needs, such as protection against rare regional outages. |
| Builds custom solutions or modifies data in another copy | All customer-built solutions or data modifications are solely the customer's responsibility. |

# Set Up and Access Meter Passthrough Data in Object Storage

Oracle Utilities Data Intelligence can deliver meter passthrough data from Meter Solution Cloud Service to your Oracle Cloud Infrastructure (OCI) object storage. Meter passthrough data includes measurements from channels such as voltage, power factor, amperage, and other


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meter telemetry that may not need to be stored as regular meter data in Meter Solution Cloud Service. Oracle Utilities Data Intelligence copies the passthrough data, transforms it to iceberg table format, and delivers the transformed data as Parquet files back to your object storage. You can then access the data directly to support analytics, machine learning, and custom data science use cases.

Meter passthrough data is delivered separately from standard advanced metering infrastructure usage data. Standard usage channels, such as kilowatt hour usage, can continue to be processed and stored as regular meter data. Other channels can be configured for passthrough processing so they are routed for external use without being stored as regular meter measurements.

## Configure Meter Solution Cloud Service for Meter Passthrough Data

Before the data can be delivered to object storage, configure the applicable external measuring component types and measuring components in Meter Solution Cloud Service so their initial measurement data is handled as passthrough data. For the detailed setup process, go to Direct Measurement Processing and see Measuring Component Filtering.

## Provide Oracle Utilities Access to Your Object Storage

After your passthrough data has been copied to your object storage, Oracle Utilities needs access so the data can be copied and transformed to Apache Iceberg table format. If you have not already provided this access, follow the object storage access setup process in the Administrator Guide: Provide Oracle Utilities with Access to Object Storage.

## Access Your Transformed Meter Passthrough Data

After Oracle Utilities has copied and transformed your meter passthrough data to iceberg format, it is delivered to your OCI object storage under the AMI Publisher directory. If applicable, partitions are organized under the table prefix.

The list below is an example of the directory path where the meter passthrough data may appear under /AMI_PUBLISHER.

- /AMI_PUBLISHER
  - /CISADM
    - /data
      - /MEASUREMENT_PASS_THROUGH

## Your Data Responsibilities

It is recommended that you not perform any actions on the delivered meter passthrough data other than reading it. You can copy the data to another location for further modification, but any changes or custom solutions built on top of this data are your sole responsibility. Keep in mind the scenarios below.

| Customer Action | AMI Publisher Response or Impact |
|---|---|
| Deletes data from the table | AMI Publisher attempts to recover deleted data. Large deletions may cause job failure and require technical support. |
| Adds data to the table independently | AMI Publisher does not interact with customer-added data. |


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| Customer Action | AMI Publisher Response or Impact |
|---|---|
| Updates data in the table independently | Updates remain unless the source system provides new updates, in which case AMI Publisher overwrites the data with the latest value. |
| Deletes the table entirely | AMI Publisher may try to rebuild the table, but large data volumes can cause job failure. |
| Deletes the object storage bucket | The AMI Publisher job fails. |
| Deletes the user or changes user permissions | The AMI Publisher job fails. |
| Needs to reload the entire table | Full table reload is possible, but a support ticket must be opened. |
| Needs regular backups of delivered data | Backups are not required unless you have advanced or specific needs, such as protection against rare regional outages. |
| Builds custom solutions or modifies data in another copy | All customer-built solutions or data modifications are solely your responsibility. |

# Device Analytics Subject Areas

The Device Analytics subject areas are based on data objects available in Oracle Utilities Customer to Meter, such as device events and service orders. You can use this data to visualize trends and gain insights about the devices in your program. For example, you can answer a variety of business questions related to device commands, service orders, and field work activities. The image below is an example of how data could look in the Service Orders subject area.

## Meter - 24 Hour Measurement Daily Summary

This subject area can be used to review and analyze daily summaries of hourly aggregated AMI (Advanced Metering Infrastructure) data.

**Answer questions like these:**

- What hourly load patterns emerge for each customer class and rate code, with results available in tabular format?


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- At what hour was the load at its highest for each customer class and rate code each day?

# Meter - Activities

This subject area can be used to answer a variety of business questions related to device commands, service orders, and field work activities.

**Device Commands**: This section of Meter - Activities can be used to visualize Smart Grid Gateway commands issued. These analytics will examine smart meter (AMI) command counts and duration. Answer questions like these:

- Is there a particular time of day when the AMI network is over-saturated? Are we calling a lot of commands at this time? Could we move the time when these commands are called?
- How many AMI commands are being called?
- How many disconnects are being called? Are we disconnecting people during very cold or hot weather periods?

You can also use maps to review and analyze device command activities data (such as over-saturated AMI networks, total disconnections per month, and more) in high-level summaries and detailed street views. Answer questions like these:

- Are commands failing in a particular area?
- Where are the customers with pending commands?

**Service Orders**: This section of Meter - Activities can be used to visualize Service Order Management activities. These analytics will examine service orders issued, trends, duration, and problem orders. Each of these analytics will include counts, duration, and tools to create additional calculations. Answer questions like these:

- How many service orders are we doing?
- How long does it take to enable service for a customer?
- How many open service orders do we have?

You can also use maps to review and analyze service orders data in high-level summaries and detailed street views. Answer questions like these:

- Where are the customers with open service orders?
- Where are the water leak service investigative orders?

**Field Work Activities**: This section of Meter - Activities can be used to visualize field work tasks. These analytics will examine counts and duration, and included tools to create additional calculations. Answer questions like these:

- How much field work are we requesting?
- How many open field work orders do we have?
- How long does field work take by field task type?

You can also use maps to review and analyze field work data in high-level summaries and detailed street views. Answer questions such as: Where are the customers with outstanding field work?

# Meter - Aggregated AMI

This subject area can be used to review and analyze hourly aggregated AMI (Advanced Metering Infrastructure) data.


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**Answer questions like these:**

- For each hour, what are the total delivered and generated loads by customer class and rate code?
- At what hours are peak load recorded for each customer class and rate code?
- What are the patterns of hourly load across different months, and at what times of day do the highest loads occur during the year?

## Meter - Customer Classification

This subject area can be used to review and analyze usage consumption by customer classification. This helps you analyze water, gas, or electricity usage consumption by various dimensions like profile class and usage subscription class and type. This data is useful for regulatory reporting, revenue analysis, rate design, and planning.

**Answer questions like these:**

- What is total consumption by region, zip code, and customer type?
- What is the total consumption for residential customers?
- How does usage break down by usage subscription class (electricity, gas, or water) and usage subscription type (commercial, industrial, or residential)?

## Meter - Device Event

This subject area can be used to count, visualize, and analyze device events coming from smart meters. You can also look at meter read remarks from legacy meter systems.

**Answer questions like these:**

- How many device events am I getting?
- How are the device events trending?
- Which meters have critical events (low battery, outage, high temperature) that must be evaluated quickly?
- Which service points have the most theft events?
- Which service points have the most diagnostics events?

You can also display device events on a map to review and analyze event data such as power outages, diagnostics, thefts, leaks, and low batteries in high-level views or detailed street views.

**Answer questions like these:**

- Which areas have leak events?
- Where are most theft events occurring?
- Which geographical areas are having the most device communication failures?
- Which geographical areas are having the most device diagnostic failures?

## Meter - Distribution Nodes

This subject area can be used to review and analyze usage consumption by distribution node or region. It helps you analyze usage by various nodes like substation, feeder, and


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transformers (facilities). This data is useful for regulatory reporting, distribution analysis, planning, and grid analysis.

**Answer questions like these:**

- What is the usage consumption by distribution node (such as substation, feeder, and transformer or facility)?
- Which are the top N loaded transformers for a particular region?
- What is the usage consumption by region (such as city or postal code)?

## Meter - Install Event and Usage Subscription Service Point

These subject areas together provide a multidimensional analysis of an organization's Meter Master Data counts within the Meter Solution Cloud Service, including devices, service points, and usage subscriptions. This data can reduce project times and improve efficiency by providing standard views to: verify data counts post conversion, track device installations during AMI rollouts, identify connected or disconnected devices and service points, and review and analyze active service points and any associated devices geographically.

**Answer questions like these:**

- How do I verify master data counts post conversion?
- How many devices or service points were installed or removed within the last seven days?
- How many devices were installed during an AMI rollout?
- How many connected or disconnected devices are there, and where are they located?
- How many connected or disconnected service points are, and where are they located?

## Meter - Losses

The following subject areas enable a multidimensional analysis of your organization's meter losses. This helps you to identify possible losses, identify meters assigned to the wrong district meter or transformer, and identify where losses are happening (such as water leaks and electric revenue protection issues). It also helps work crews by providing the possible loss amounts and loss areas.

- Meter – Facilities
- Meter – Facility Usage
- Meter – Downstream Usage
- Meter – Downstream Service Points

**Meter – Facilities**

This subject area can be used to review and analyze individual service points mapped with facility.

**Answer questions like these:**

- Is a facility (transformer) installed in an optimal geographical location with respect to connected downstream service points, or is there another facility that is better located?
- Are there facilities with incorrect geo coordinates?


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### Meter – Facility Usage

This subject area can be used to review and analyze the relationship of usage between a facility and downstream service points.

**Answer questions like these:**

- What is the usage by facility?
- (When combined with Meter - Downstream Usage ) What is the difference between the usage of the facility and the sum of the usage of the connected service points?

### Meter – Downstream Usage

This subject area can be used to review and analyze the total downstream usage along with the percentage downstream usage by date.

**Answer questions like these:**

- What is the downstream usage by day and location?
- What is the average downstream usage?
- (When combined with Meter - Facility Usage) What is the difference between the usage of the facility and the sum of the usage of the connected service points?

### Meter – Downstream Service Points

This subject area can be used to review and analyze a downstream service point's physical location in a map, along with other details such as geographic latitude, longitude, address, and so on.

**Answer questions like these:**

- What is the physical location (such as address and postal code) of a service point on a map?
- How many downstream service points are connected to a facility in a particular area or location?

## Meter - Timeliness, Count, and Quality

The following subject areas enable an analysis of your AMI system's quality and timeliness.

- Meter – Aggregated Measurement Count
- Meter – Aggregated Measurement Quantity
- Meter – Aggregated Timeliness Count
- Meter – Aggregated Timeliness Quantity

### Meter - Aggregated Measurement Count

This subject area can be used to review and analyze the quality of interval reads.

**Answer questions like these:**

- Which AMI system has the most estimated measurements?
- Which meter type has the most missing measurements?


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### Meter - Aggregated Measurement Quantity

This subject area can be used to review and analyze the quantity of interval reads based on quality. For example, the quantity of estimated or regular interval data.

**Answer questions like these:**

- What is the quantity of estimated measurements?
- What is the quantity of regular measurements?

### Meter - Aggregated Timeliness Count

This subject area can be used to review and analyze AMI timeliness delivery of interval reads.

**Answer questions like these:**

- Which AMI system has the most late measurements?
- Which meter type has the most on-time measurements?

### Meter - Aggregated Timeliness Quantity

This subject area can be used to review and analyze the quantity of interval reads based on timeliness. For example, the quantity on-time or the quantity late.

**Answer questions like these:**

- What is the quantity of late measurements?
- What is the quantity of on-time measurements quantities?

## Meter - Usage Exceptions

This subject area can be used to review and analyze usage exception data.

**Answer questions like these:**

- How many billing determinant exceptions per customer type are there?
- Which usage exceptions are holding up billing?

## Meter - VEE Exceptions

This subject area can be used to review and analyze validation, edit, and estimation (VEE) data.

**Answer questions like these:**

- Which VEE rules generate the most exceptions?
- Which service points / accounts have the most VEE errors?

# Device Analytics Data Lineage

The Oracle Utilities Data Intelligence Device Analytics data lineage spreadsheet provides a summary of how Device Analytics presentation layer objects map to the underlying physical and source data structures.


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Use the spreadsheet to review lineage details for Device Analytics subject areas. The spreadsheet identifies presentation tables and attributes, physical tables and attributes, and source tables and columns where the mapping is available.


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# 9
# Grid Insights Analytics

This section lists the predefined objects for Oracle Utilities Data Intelligence Grid Insights Analytics. Grid Insights analytics are based on interval data and master data objects available in Oracle Utilities Customer To Meter.

## Grid Insights Prerequisites

This section describes the prerequisite tasks for setting up Grid Insights analytics.

- Provide Input Master Data for Grid Insights
- Provide Input Configurable Data for Grid Insights

### Provide Input Master Data for Grid Insights

The input master data specified in this section must be provided in CSV format to Oracle Utilities on a regular basis to support the Grid Insights data visualizations.

As an administrator, you can choose the frequency with which to provide this data, but it is recommended that you provide it once a month to keep it as current as possible. A complete snapshot of the specified input master data is required each time it is provided.

To provide this data to Oracle Utilities, place the CSV file in your Oracle Cloud Infrastructure Object Storage. Oracle Utilities will then sync the data to the Oracle Utilities Data Intelligence platform and use it for Grid Insights.

#### Transformer Geo Coordinates

| Column | Description |
|---|---|
| TRANSFORMER_ID | Transformer ID (unique key).<br>**Type**: VARCHAR2(30 CHAR)<br>**Can be empty?**: No. |
| TRANSFORMER_TYPE | Transformer type (underground or overhead).<br>**Type**: VARCHAR2(90 CHAR)<br>**Can be empty?**: No. |
| STATUS | Transformer status.<br>**Example Values**:<br>• Active<br>• Inactive<br>**Type**: VARCHAR2(30 CHAR)<br>**Can be empty?**: No. |


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| Column | Description |
|---|---|
| PHASE | Transformer phase. Do not include any separators. For example, a single phase can be denoted as A. Three phases can be denoted as A, B, and C.<br>**Type**: VARCHAR2(14 CHAR)<br>**Can be empty?**: No. |
| RATING | Transformer rating (in kVA).<br>**Type**: NUMBER(35,6)<br>**Can be empty?**: No. |
| GEO_LAT | Transformer latitude.<br>**Type**: NUMBER(35,6)<br>**Can be empty?:** No. |
| GEO_LONG | Transformer longitude.<br>**Type**: NUMBER(35,6)<br>**Can be empty?:** No. |

## Feeder Geo Coordinates

| Column | Description |
|---|---|
| FEEDER_ID | Feeder ID (unique key).<br>**Type**: VARCHAR2(30 CHAR)<br>**Can be empty?**: No. |
| STATUS | Feeder status.<br>**Example Values**:<br>• Active<br>• Inactive<br>**Type**: VARCHAR2(30 CHAR)<br>**Can be empty?**: No. |
| GEO_LAT | Feeder latitude.<br>**Type**: NUMBER(35,6)<br>**Can be empty?**: No. |
| GEO_LONG | Feeder longitude.<br>**Type**: NUMBER(35,6)<br>**Can be empty?**: No. |

## Service Point Transformer Connectivity

| Column | Description |
|---|---|
| SP_ID | Service Point ID (composite key).<br>**Type**: VARCHAR2(30 CHAR)<br>**Can be empty?**: No. |
| TRANSFORMER_ID | Transformer ID (composite key).<br>**Type**: VARCHAR2(30 CHAR)<br>**Can be empty?**: No. |


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## Transformer Feeder Connectivity

| Column | Description |
|---|---|
| TRANSFORMER_ID | Transformer ID (composite key).<br>**Type**: VARCHAR2(30 CHAR)<br>**Can be empty?**: No. |
| FEEDER_ID | Feeder ID (composite key).<br>**Type**: VARCHAR2(30 CHAR)<br>**Can be empty?**: No. |

# Provide Input Configurable Data for Grid Insights

The input configurable data specified below is used for the Grid Insights - Transformer Load Monitoring subject area. If you want to keep the default settings of this data, no action is necessary. However, you can change the default settings. For example, you may want to modify the labels that describe the load range of the transformers, or modify the start and end ranges associated with each label.

If you want to change the default, you must provide an updated file in CSV format to Oracle Utilities. Use the information in the tables below to understand each column and default values, and how the can be changed. When you are ready, place the CSV file in your Oracle Cloud Infrastructure Object Storage. Oracle Utilities will then configure the data and sync it with the Oracle Utilities Data Intelligence platform.

## Input Configurable Data

| Column | Description |
|---|---|
| A1_RANGE_CONFIG_CD | A hard coded value of "TLM-RANGE". "TLM" refers to transformer load management.<br>**Allowed Value**: TLM-RANGE<br>**Type**: VARCHAR2(30 CHAR)<br>**Can be empty?**: No. |
| A1_RANGE_CONFIG_SEQ | A unique sequence from 1-8. This determines the sequence for the labels in the A1_RANGE_LABEL column.<br>**Type**: NUMBER<br>**Can be empty?**: No. |
| A1_RANGE_LABEL | A label describing the load range of the transformer. There are five default labels available. The names of the labels can be changed, and up to eight labels can be used.<br>**Default Values**:<br>• Under Loaded<br>• Normal<br>• Watch List<br>• Overload<br>• Immediate<br>**Type**: VARCHAR2(30 CHAR)<br>**Can be empty?**: No. |


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| Column | Description |
|---|---|
| A1_START_RANGE | Start range of the TLM range.<br>**Type**: NUMBER<br>**Can be empty?**: No. |
| A1_END_RANGE | End range of the TLM range.<br>**Type**: NUMBER<br>**Can be empty?**: No. |
| A1_RANGE_DESCR | A description of the TLM range, expressed in the following form: >A1_START_RANGE and <=A1_END_RANGE<br>This means that the start range value is not included in the range, but the end range value is included. For example, based on the default values below, if the transformer capacity load capacity rises to 120%, then it would fall in the 70% to 120% range.<br>No gaps are permitted between each range. For example, you cannot have one range end at <=70% and then have the next range start at >71%. The next range must start at >70%.<br>**Default Values**:<br>• >0% and <=70%<br>• >70% and <=120%<br>• >120% and <=140%<br>• >140% and <=180%<br>• >180% and <=1000%<br>**Type**: VARCHAR2(100 CHAR) |
| A1_WEEKLY_COUNT | A count of hours to be met to classify a transformer as any bucket in weekly mode.<br>**Type**: NUMBER<br>**Can be empty?**: No. |
| A1_MONTHLY_COUNT | A count of hours to be met to classify a transformer as any bucket in monthly mode.<br>**Type**: NUMBER<br>**Can be empty?**: No. |

## Default Configuration

The default configuration shown below is in place to put transformers into five categories, such as Under Loaded, Normal, Watch List, Overload, and Immediate based on their load. This configuration is required only for the Grid Insights - Transformer Load Monitoring subject area that is available in the Grid Insights data.

| | A1_RANGE_CONFIG_CD | A1_RANGE_CONFIG_SEQ | A1_RANGE_LABEL | A1_START_RANGE | A1_END_RANGE | A1_RANGE_DESCR | A1_WEEKLY_COUNT | A1_MONTHLY_COUNT |
|---|---|---|---|---|---|---|---|---|
| 1 | TLM-RANGE | 1 | Under Loaded | 0 | 70 | >0% and <=70% | 0 | 0 |
| 2 | TLM-RANGE | 2 | Normal | 70 | 120 | >70% and <=120% | 1 | 1 |
| 3 | TLM-RANGE | 3 | Watch List | 120 | 140 | >120% and <=140% | 28 | 96 |
| 4 | TLM-RANGE | 4 | Overload | 140 | 180 | >140% and <=180% | 16 | 48 |
| 5 | TLM-RANGE | 5 | Immediate | 180 | 1000 | >180% and <=1000% | 8 | 16 |
| 6 | TLM-RANGE | 6 | Bucket6 | (null) | (null) | (null) | (null) | (null) |
| 7 | TLM-RANGE | 7 | Bucket7 | (null) | (null) | (null) | (null) | (null) |
| 8 | TLM-RANGE | 8 | Bucket8 | (null) | (null) | (null) | (null) | (null) |

As an administrator, you can configure up to eight buckets and modify the start and end range for their classification. Any changes to this configuration after the insights data is loaded into


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target requires a full data refresh of Transformer Load Management-related Insights. Otherwise, customers will observe their change in the subsequent load, and the existing data will have no impact on this configuration change.

# Grid Insights Subject Areas

The Grid Insights subject areas are based on interval data and master data objects available in Oracle Utilities Customer To Meter. These subject areas contain data related to devices on the grid such as transformers, meters, and electric vehicles. You can use this data to create visualizations of how devices are operating on the grid, and if necessary, identify what preventive or corrective actions to take.

For example, the Grid Insights data can be used to visualize the distribution of electric vehicles across different geographic regions, view transformer load capacity over time, or identify mismaps between meters and transformers to resolve. This allows analysts to make informed business decisions about devices on the grid and take preventive or corrective action to save energy, avoid system failures, and reduce risk.

## Grid Insights - Device to Feed Phase Mismap

The Device to Feed Phase Mismap subject area can be used to analyze phase discrepancies between electric meters and feeder connections.

**Answer questions like these:**

- How many meters have phase discrepancies in their feeder connections?
- What percentage of the total meter population is affected by phase mismaps?
- Which areas have the highest number of phase mismaps in their meter-to-feeder connections?
- Which zip codes have the highest concentration of phase mismaps?
- How does the predicted phase distribution compare to the actual distribution observed in the system?
- Are there geographical clusters of phase mismaps that indicate specific problem areas?

## Grid Insights - Device to Transformer Mismap

The Device to Transformer Mismap subject area can be used to analyze mappings and mismappings between meters and transformers. This helps in identifying any discrepancies in device-to-transformer mapping data.

**Answer questions like these:**

- Which areas have the highest number of mismapped meters?
- What percentage of the overall meter population does this mismap represent?
- Which transformers are associated with the highest number of mismapped meters?
- What are the top 10 transformers with the most significant mapping discrepancies?
- How do discrepancies in meter-to-transformer mapping vary across different zip codes?
- Which meters are mismapped, and what are the recommended transformers for correction?


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## Grid Insights - Electric Vehicle Detection

The Electric Vehicle Detection subject area provides insights to detect and quantify the impact of electric vehicle (EV) charging on the grid at the device level. This is achieved by breaking down EV energy consumption data into its component parts, such as charging location, time, and speed. You can use this data to visualize the regional distribution of EVs and accurately identify the customers using them.

**Answer questions like these:**

- What is the overall trend of EV adoption over time?
- Which service points have detected EVs?
- How many unique service points have detected EVs over a certain period?
- Which transformers or feeders are detecting the highest number of EVs?
- Are there geographical hotspots for EV adoption?
- What is the distribution of EVs spread across different geographical regions?

## Grid Insights - Transformer Load Monitoring

The Transformer Load Monitoring subject area can be used to analyze transformer patterns and trends, such as transformer load variations over time, hourly energy consumption of transformers, and geographical patterns showing transformer failure risk. This data can help with monitoring and controlling the electrical load on a transformer to ensure it operates within its designed capacity and efficiency. It can also help prevent costly downtime, equipment damage, and power quality issues while promoting energy conservation and sustainability.

**Answer questions like these:**

- How does transformer load vary over time (for example, weekly versus monthly)?
- Are there any transformers consistently operating at or near their load capacity?
- How many transformers fall into different load or risk buckets (such as low, medium, or high risk)?
- What is the distribution of transformers across these risk buckets?
- How does the distribution of transformers in each bucket change over time or with different load conditions?
- How does the number of transformers operating during a specific period correlate with load and failure risk?

# Grid Insights Analytics Data Lineage

The Oracle Utilities Data Intelligence Grid Insights Analytics data lineage spreadsheet provides a summary of how Grid Insights Analytics presentation layer objects map to the underlying physical and source data structures.

Use the spreadsheet to review lineage details for Grid Insights Analytics subject areas. The spreadsheet identifies presentation tables and attributes, physical tables and attributes, and source tables and columns where the mapping is available.


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# 10
# Work and Asset Analytics

This section lists the predefined objects for Oracle Utilities Data Intelligence Work and Asset Analytics. Work and Asset Analytics are based on data objects in the Oracle Utilities Work and Asset Cloud Service, such as activities, asset costs, and labor hours.

## Work and Asset Analytics Prerequisites

This section describes the prerequisite tasks for setting up Work and Asset analytics.

### Configure Custom Buckets - Asset

Facts and dimension attributes in the dimensional data model provided by Oracle Utilities Data Intelligence may contain numerical attributes that become more useful when grouping them into categories that represent specific number intervals. This process is often referred to as "binning" or "bucketing." For example, an age attribute value may be assigned to an age bucket such as < 1 Year, 1-5 Years, 5-10 Years, 10-20 Years, or >=20 years.

Utilities business applications support a set of predefined bucket business objects that are used in Data Intelligence. Intervals representing each bucket must be defined before the analytics solution can use bucket columns.

> **Note**
>
> Bucket configuration does not prevent the definition of multiple buckets for a predefined bucket business object. However, only one bucket definition per bucket business object is supported.

#### Supported Buckets

Buckets must be configured by an administrator before they can be used by Data Intelligence. The following buckets are currently supported.


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| Dimension | Importance | Bucket Value Ranges (Examples) | Column with Value to Be Bucketed | Column Details |
|---|---|---|---|---|
| **Dimension**: Asset<br>**Attribute**: Condition Rating Bucket | Asset Condition rating is the assessment score that is calculated based on various assessments that are available for an asset. | Condition Rating Bucket will provide a meaningful illustration to users where condition rating can be structured in different buckets.<br>Example:<br>• 0 to 1: Unrated<br>• 1 to 2: Very Good<br>• 2 to 3: Good<br>• 3 to 4: Average<br>• 4 to 5: Poor<br>• 5+: Very Poor | W1_ASSET.CONDITION_RATING<br>Asset.Condition Rating | **Bucket Column**: Asset.Condition Rating Bucket<br>**Business Object Name**: Asset Condition Score Bucket Configuration<br>**Business Object Code**: W1-AssetConditionScoreBuckets |
| **Dimension**: Asset Location<br>**Attribute**: Criticality Bucket | Criticality defines the importance of the location in terms of the potential impact of having issues or problems at that location. | Criticality Bucket will provide a meaningful illustration to users where criticality can be structured in different buckets.<br>Example:<br>• 0 to 4: Low<br>• 4 to 7: Medium<br>• 7 to 9: High<br>• 9+: Critical | W1_NODE.CRITICALITY_FLG<br>Location / Organization.Criticality Flag | **Bucket Column**: Location / Organization.Criticality Flag Bucket<br>**Business Object Name**: Asset Criticality Bucket Configuration<br>**Business Object Code**: W1-AssetCriticalityBuckets |
| **Dimension**: Work Orders<br>**Attribute**: Work Priority Bucket | Work Priority defines the importance of the work in terms of the potential impact of not addressing issues. For example, emergency type work is a higher priority than routine maintenance work. | Work Priority Bucket will provide a meaningful illustration to users where work priority can be structured in different buckets.<br>Example:<br>• 0 to 5: Low<br>• 5 to 6: Normal<br>• 6 to 7: High<br>• 7 to 9: Urgent<br>• 9+: Emergency | W1_WO.WORK_PRIORITY_FLG<br>Work Order.Work Priority Flag | **Bucket Column**: Work Order.Work Priority Flag Bucket<br>**Business Object Name**: Work Priority Bucket Configuration<br>**Business Object Code**: W1-WorkPriorityBuckets |


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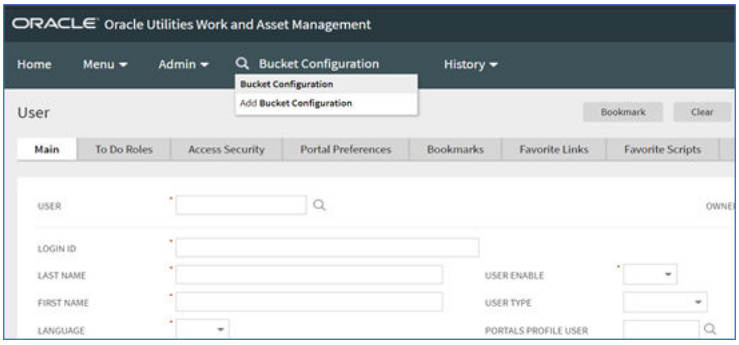
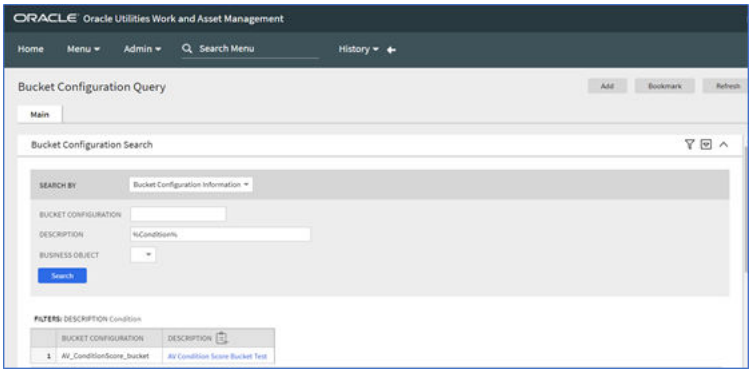
# Configure Custom Buckets

1. Sign in to the Oracle Utilities Work and Asset Management application.
2. In the search bar at the top of the screen, search for the "Bucket Configuration" menu and open it.

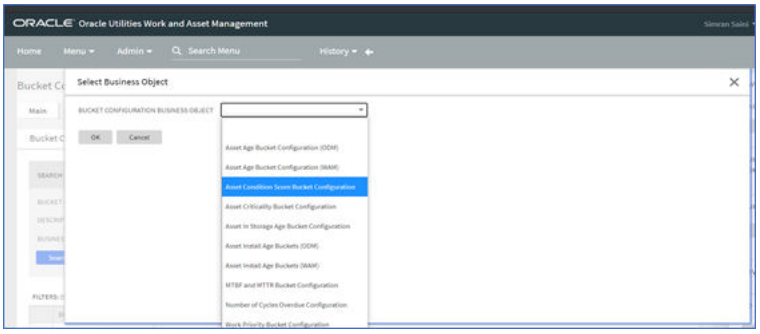



3. In the **Description** field, enter the percent symbol (%) to search for any predefined buckets.




**Note**: A newly installed application will not have any default configurations. If there are any records available, results will be displayed based on the search criteria. Select any of the bucket configuration records returned from search results to navigate and view the configuration.

4. To add a new bucket configuration, click **Add** at the top right of the page.
5. Select an option from the **Bucket Configuration Business Objects** menu. These options represent the placeholder for the bucket definition.




6. In the **Bucket Configuration** field, define the bucket configuration code and its description. The code must be unique and should reflect the purpose of the bucket. For example, if the purpose of the bucket is for binning Asset Condition Scores, then your bucket configuration code could be CM-CONDITIONSCORE, where CM is a prefix that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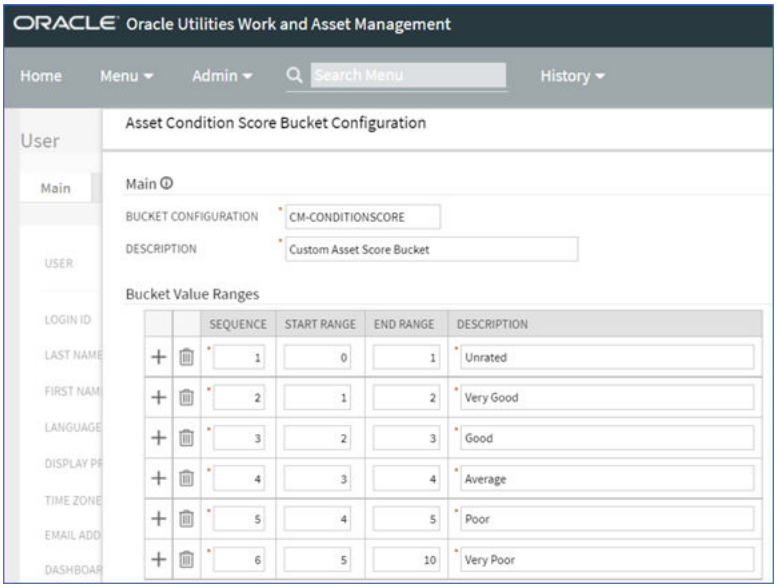
identifies that it is custom, and where CONDITIONSCORE represents that it is for binning Asset Condition Scores.

7. In the **Bucket Value Ranges** section, define a sequence of intervals for the start and end ranges that represents how the data should be grouped or binned. In most cases, the ranges must be continuous, and the start range must be the end range of the previous interval. The existing functionality will assign the attribute being binned into a range using the formula: Start Range <= x < End Range, where x is the numerical attribute being binned. The intervals must include all possible values of the underlying attribute that is binned into buckets. It is best practice to use a high value for the last end range to ensure that a large value is included in the interval defining the default bucket.




**Important Constraints**: Follow these guidelines to avoid incorrect behavior of buckets.

- Only one bucket configuration for each Bucket Business Object is supported by Analytics Visualization. Otherwise the application will return incorrect values and may double-count measures.
- The bucket definition must have intervals that do not overlap and must cover all possible values. Otherwise, the application will return incorrect values and may under- or double-count measures.

# Work and Asset Subject Areas

The Work and Asset subject areas are based on data from the Oracle Utilities Work and Asset Cloud Service, such as activities, asset costs, and labor hours. You can use the data to analyze budget amounts, identify trends in labor hours, forecast the preventive maintenance cost of assets, view the key attributes of stock items, track the location and status of stock items, or find patterns in work orders in different categories.

The image below is an example of how data could look in the Labor Hours subject area.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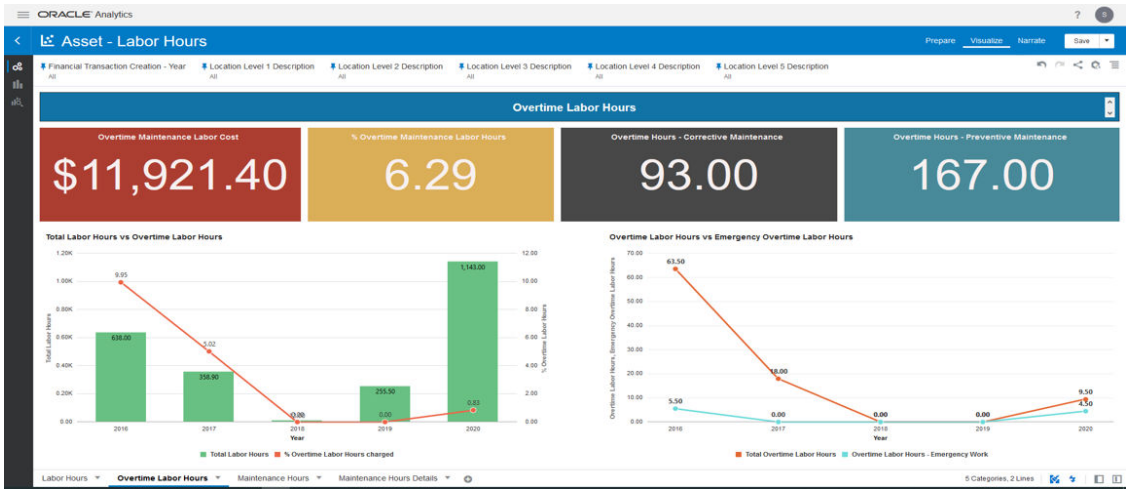


# Asset - Activities

This subject area exposes all data directly related to activities. The metrics and attributes of this model can be used for various types of business analysis.

**Answer questions like these:**

- How many corrective work activities are in my backlog?
- How many preventive work activities are in my backlog?
- What is my breakdown by work priority of corrective and preventive work?
- What is my planned activity backlog by work type or status?
- What is my non-planned activity backlog by work type or status?
- What is the distribution and performance of compliance-related activities?

# Asset - Activity Cost

This subject area can be used to analyze Failure Repair Costs, Maintenance Costs, Renewal Cost and Total Costs by Activity, Asset, Asset Location, Location Hierarchy, and Work Order.

**Answer questions like these:**

- What is the failure count by activity?
- What is the failure repair cost?
- What is the total maintenance cost?
- What is the total renewal cost?
- What is the total cost of all work activities?
- How is the performance of different organizations or departments in terms of Maintenance Cost, Renewal Cost, and Total Cost?
- What is the estimated and actual cost for different maintenance types, and how does it break down by resource class, cost category, or cost center?
- What is the corrective maintenance cost compared to the maintenance cost and its trend?
- What is the Estimate versus Actual Activity Cost trend?


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# Asset - Asset Availability Based on Downtime Service History

This subject area uses Downtime Service History to determine the number of hours or days an asset has been down due to failure. However, it only uses Downtime Service Histories associated to Work Activities with an unplanned downtime reason. This model can be used to analyze failures by the attributes of Activity, Asset, Asset Location, Crew, Failure Service History, Location Hierarchy, and Work Order.

**Answer questions like these:**

- What is the failure rate of assets based on downtime service history?
- What are the lifetime failures for an asset based on downtime service history?
- What is the count of asset failures for the last 12, 24, and 60 months based on downtime service history?
- What is the lifetime mean time between failure for assets based on downtime service history?
- What is the asset mean time between failure for the last 12, 24, and 60 months based on downtime service history?
- What is the mean time to repair by hours or days for assets based on downtime service history?
- What is the total failure downtime based on downtime service history?
- What is the total uptime by hours or days for assets based on downtime service history?

# Asset - Asset Availability Based on Work Order

This subject area is based on the duration of asset-related work activity that has an associated Failure Service History. Note that if a work request is related to a failure work activity, then the creation date of the work request (rather than the work order) is used to calculate the duration of the downtime. This model can be used to analyze failures by the attributes of Activity, Asset, Asset Location, Crew, Failure Service History, Location Hierarchy, and Work Order.

**Answer questions like these:**

- What are the lifetime failures for an asset based on work order failure history?
- What is the count of asset failures for the last 12, 24, and 60 months based on work order failure history?
- What is the lifetime mean time between failure for assets based on work order failure history?
- What is the asset mean time between failure for the last 12, 24 and 60 months based on work order failure history?
- What is the mean time to repair by hours or days for assets based on work order failure history?
- What is the total failure downtime based on work order failure history?
- What is the total uptime by hours or days for assets based on work order failure history?

# Asset - Asset Cost

This subject area can be used to analyze metrics and key performance indicators related to asset cost.


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**Answer questions like these:**

- What is the asset life-to-date cost?
- What is the annual asset maintenance cost for the last three years?
- What is the average failure repair cost?
- What is the average outage repair cost?
- What is the total failure repair cost, maintenance cost, or renewal cost for assets?

## Asset - Financial Transaction GL Detail

This subject area exposes all data directly related to financial transaction details. The metrics and attributes of this model can be used for various types of business analysis.

**Answer questions like these:**

- What is my budget amount by cost center?
- What are my costs by expense code?
- What are my costs by cost center?

## Asset - Forecasted Activity Hours

This subject area can be used to determine the forecasted hours for activities along with related dimensions.

**Answer questions like these:**

- What is the forecasted number of labor hours on all open work activities?
- What is the forecasted number of labor hours for planned maintenance work activities?
- What is the forecasted number of labor hours for planned construction work activities?
- What is the number of planned versus unscheduled labor hours for maintenance work activities?

## Asset - Forecasted Asset Cost

This subject area can be used to analyze the information about forecasted preventive maintenance and forecasted failure costs.

**Answer questions like these:**

- What is the forecasted preventive maintenance cost for the first year and next 2, 5, and 10 years?
- What is the forecasted preventive maintenance cost for the remaining life of an asset?
- What is the forecasted failure cost for the next 5 and 10 years?
- What is the forecasted failure cost for the remaining life of an asset?

## Asset - Forecasted Asset / Resource Hours Fact

This subject area can be used to determine the forecasted preventive maintenance labor hours for each asset along with related dimensions.

**Answer questions like these:**


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- What is the number of forecasted preventive maintenance labor hours needed for an asset in the next 1, 2, 5, or 10 years?
- What are the hours needed, by different resource type, for preventive maintenance work in the next 1, 2, 5, and 10 years?

## Asset - Labor Hours

This subject area includes information related to labor hours against different charge types like activity, cost center, employee unavailability, or project in timesheet. You can get details about regular and overtime labor hours charged for different maintenance types.

**Answer questions like these:**

- What is the total labor cost, total labor hours, total regular labor hours, or total overtime labor hours distributed across departments or organizations?
- What is the breakdown of labor hours by regular versus overtime?
- What is the breakdown of labor hours by preventive maintenance versus corrective maintenance?
- What are the top ten Asset Type, Activity Type, Resource Type consuming maximum labor hours?
- What is the trend of total labor hours and overtime hours?

## Asset - Service History

This subject area can be used to analyze service history by Activity, Asset, Failure Cause, Failure Component, Failure Mode, Failure Repair, Asset Location, User, and more.

**Answer questions like these:**

- What is my count of service history by category?
- What is my count of service history by type?
- What is my failure count by failure cause, failure mode, failure component, and failure repair?

## Asset - Stock Item Details

This subject area enable organizations to monitor and analyze their asset inventory by providing visibility on the key attributes of a stock item.

**Answer questions like these:**

- How are stock items distributed across storerooms and their availability?
- What is the dollar value of the inventory?
- How many capital spares are available?
- How are vendors distributed across geography and insights related to supplied stock items?
- What is the overall A-B-C categorization across storerooms?
- How much is the value of inventory over max?


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## Asset - Stock Transactions

This subject area provides insights on stock transactions, such as the location and status of stock items.

**Answer questions like these:**

- How many stock items are in transfer, in reserve, or on demand?
- What stock items are understocked, high on demand, or currently have open orders?
- Which top stock items have the highest utilization?

## Asset - Timesheet Detail

This subject area exposes all data directly related to timesheet details. The metrics and attributes of this model can be used for various types of business analysis.

**Answer questions like these:**

- What is my labor hour breakdown by overtime verses regular time?
- What is my labor cost breakdown by overtime versus regular time?
- What is my labor hour breakdown by activity type for corrective and regular time?
- What are the top 10 crews with the most labor hours?
- What is the labor hour breakdown by employee for regular and overtime?

## Asset - Work Orders

This subject area exposes all data directly related to work orders. The metrics and attributes of this model can be used for various types of business analysis.

**Answer questions like these:**

- What is the total count of all work orders?
- What is the count breakdown by regular and preventive work orders?
- What is the count of completed work orders, open work orders, or canceled work orders?
- What is the count of work orders by status for regular versus preventive work orders?
- What is the count of overdue work orders?
- What is the trend of maintenance work order creation versus completion?
- What is the backlog distribution across Asset Criticality and Work Priority?
- What is the overall work order backlog and how much planned work is unscheduled?
- What is the count of total work orders by asset location?

# Work and Asset Analytics Data Lineage

The Oracle Utilities Data Intelligence Work and Asset Analytics data lineage spreadsheet provides a summary of how Work and Asset Analytics presentation layer objects map to the underlying physical and source data structures.


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Use the spreadsheet to review lineage details for Work and Asset Analytics subject areas. The spreadsheet identifies presentation tables and attributes, physical tables and attributes, and source tables and columns where the mapping is available.


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# 11
# Tables

This section provides details of Oracle Utilities Data Intelligence analytics tables, such as key columns, data types, and table descriptions. Use the Referred Table and Referred Column information to decide on the join condition between fact and dimension tables.

Download this 26-6-oudi-analytics-tables.zip#GUID-ED79912A-166A-4C57-A713-4CECCF3C7B65 that contains available analytics tables for Oracle Utilities Data Intelligence. After the file downloads, extract the file, open the folder, and then open the release-specific HTML file.

> **Note**
>
> Most Oracle Utilities Data Intelligence analytics tables include the W$_INSERT_DT and W$_UPDATE_DT system date columns, which identify when a record was inserted or updated in the table. Do not use these columns for reporting purposes. Use these columns with caution for downstream custom ETL because historical records may be truncated and reloaded as required. Some objects in the analytics table reference may not include these columns.


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# 12
# Data Lineage

The Oracle Utilities Data Intelligence data lineage spreadsheets provide a summary of how presentation layer objects map to the underlying physical and source data structures. Use these spreadsheets to review lineage details by product area and subject area. The spreadsheets identify presentation tables and attributes, physical tables and attributes, and source tables and columns where the mapping is available.

Find the spreadsheets in the appropriate topic for each subject area:

- Common - Data Lineage
- Customer Analytics Data Lineage
- Customer Insights Analytics Data Lineage
- Customer Program Management Analytics Data Lineage
- Device Analytics Data Lineage
- Grid Insights Analytics Data Lineage
- Work and Asset Analytics Data Lineage


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# 13
# Content Explorer

Use the content explorer spreadsheet linked below for a list of the subject areas, workbooks, and metrics available in Oracle Utilities Data Intelligence. This information will allow you to gain a deeper understanding of each subject area's attributes and how they are mapped to your Oracle Utilities source application (such as Customer Cloud Service or Meter Solution Cloud Service).

Content Explorer Spreadsheet


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